ORDINANCE No. 116012

COUNCIL BILL No. 108855

COMPTROLLER FILE No.

Introduced: OCT 7 1991	By: SMITH
Referred: OCT 7 1991	To: Utilities
Referred:	To:
Referred:	To:
Reported: DEC 1 4 1991	Second Reading: DEC 1 4 1991
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Vetoed by Mayor:	Veto Published:
Passed over Veto:	Veto Sustained:

Law

The City

Honorable President:

Your Committee on 12/10/91

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report that we have considered the

12/10/91 P

Full Cou

Law Department

The City of Seattle--Legislative Department

Date Reported and Adopted

REPORT OF COMMITTEE

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mittee on Public Safety & Civil

was referred the within Council Bill No. 108255

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10/91 Pass 1-0

Full Council Vote 8-0

Committee Chair

ORDINANCE 116012

AN ORDINANCE relating to the Seattle Building Code, repealing Section 22.100.010 (Ordinances 113700 and 113701), and adding a new Section 22.100.010; adopting Chapters 4 through 30, 32 through 43, 47, 48, 50, 52, 53, 54 and 56 of the 1991 Uniform Building Code; adopting Chapter 35 contained in the Appendix of the 1991 Uniform Building Code; adopting the 1991 Uniform Building Code Standards; amending the adopted Uniform Building Code and Standards by: adding new Chapters 1, 2 and 3 related to administration, permitting and enforcement; amending Chapter 4, Definitions; amending certain provisions of Chapters 5 through 12 regulating occupancies; amending certain provisions of Chapters 17 through 22 regulating types of construction; amending certain provisions of Chapters 23 through 28 regulating engineering standards for the quality and design of materials of construction; amending certain provisions of Chapter 29 regulating foundations and retaining walls; amending certain provisions of Chapter 30 regulating veneer; amending certain provisions of Chapter 32 regulating roof construction; amending certain provisions of Chapter 33 regulating exits; amending certain provisions of Chapter 35 regulating sound transmission; amending certain provisions of Chapter 36 regulating penthouses; amending certain provisions of Chapter 37 regulating chimneys and fireplaces; amending certain provisions of Chapter 38 regulating fire-extinguishing systems; amending certain provisions of Chapter 39 regulating stages and platforms; amending certain provisions of Chapter 42 regulating interior finishes; amending certain provisions of Chapter 52 regulating light-transmitting plastic; amending Chapter 53, relating to energy conservation; amending certain provisions of Chapter 54 regulating glass and glazing; amending certain provisions of Chapter 56 regulating covered mall buildings; repealing Table No. 23-C; and adding a new Chapter 16, establishing a downtown fire district; adding a new Chapter 44 referencing the Street Use Ordinance; adding a new Chapter 45 regulating structural projections into the public right-of-way; adding a new Chapter 46 regulating awnings; adding a new Chapter 49 regulating signs; adding a new Chapter 51 regulating elevators and escalators; adding a new Chapter 55 regulating transformer vaults; adding a new Chapter 57 establishing the City's address system; adding a new Chapter 58 regulating floating homes, and adding a new Chapter 59 regulating waterfront structures; as required and allowed by the State Building Code Act, Chapter 19.27 of the Revised Code of Washington.

Section 1. Section 22.100.010 of the Seattle Municipal Code adopting the 1985 Uniform Building Code and Uniform Building Code Standards (Ordinance 113700 as amended by Ordinance 113701) is hereby repealed, and new Section 22.100.010 is added to the Seattle Municipal Code to read as follows:

22.100.010. Adoption of the Uniform Building Code

The Uniform Building Code, 1991 Edition, excepting Chapters 1, 2, 3, 31, 44, 45, 51, Tables No. 5-A, 23-C and 26-A-7 and including Appendix Chapter 35 and the Uniform Building Code Standards, 1991 Edition, as published by the International Conference of Building Officials, one copy of each which is filed with the City Comptroller in C.F. 298633/298612, are hereby adopted and by this reference made a part of this subtitle. The Uniform Building Code and Uniform Building Code Standards, 1991 Editions, together with the amendments and additions thereto adopted shall constitute the Seattle Building Code.

Section 2. The Uniform Building Code, 1991 Edition, is amended by adding new Chapters 1, 2, and 3 as follows:

Chapter 1

TITLE, SCOPE AND GENERAL

TITLE

Sec. 101. This subtitle shall be known as the "Seattle Building Code" and may be so cited, and is referred to herein as "this building code" or "this code."

PURPOSE

Sec. 102. The purpose of this building 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 all buildings and structures within the City and certain equipment specifically regulated herein.

The purpose of this building code is 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 building code.

SCOPE OF THIS BUILDING CODE

Sec. 103. (a) **Applicability.** The provisions of this building code shall apply to the construction, alteration, moving, demolition, repair and occupancy of any building or structure within the City, except work located primarily in a public way, public utility towers and poles, mechanical equipment not specifically regulated in this building code, and hydraulic flood control structures.

Additions, alterations, repairs, and changes of occupancy or character of occupancy in all buildings and structures shall comply with the provisions for new buildings and structures, except as otherwise provided in Sections 104, 308 and 502 of this building code.

(b) **Internal Consistency.** Where in any specific case, different sections of this building code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

Wherever in this building code reference is made to the Appendix, the provisions in the Appendix shall not apply unless specifically adopted.

APPLICATION TO EXISTING BUILDINGS AND STRUCTURES

Sec. 104. (a) **Occupancy.** Buildings in existence at the time of the passage of this building code which were legally constructed and occupied in accordance with the provisions of a prior code may have their existing occupancy continued, provided such occupancy is not hazardous. Any change in the occupancy or character of occupancy of any existing building, structure or portion thereof shall comply with the provisions of this section, Section 308 and Section 502. In order to legalize an existing occupancy for the record, it is required that the building comply with the fire and life safety requirements of this building code or the effective code at the time the building was constructed. If the existing occupancy or character of occupancy is other than that for which the building was constructed, the building shall comply with this building code or the effective code at the time the existing occupancy was legally established.

(b) **Compliance with Retroactive Ordinances.** Alterations and repairs to existing buildings which 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, Fire Code or other ordinances applicable to existing buildings, shall be permitted to be made in accordance with the standards contained in those ordinances, rather than the standards for new buildings contained in this building code. Where standards are not specified in those ordinances, such alterations or repairs must conform to the requirements of this section of the building code.

(c) **Standards for Additions, Alterations, Repairs and Changes of Occupancy.** 1. **General.** Additions, alterations or repairs may be made to any building or structure without requiring the existing building or structure to comply with all the requirements of this code, provided the addition, alteration or repair conforms to that required for a new building or structure. See also applicable provisions of the Seattle Energy Code.

In cases where total compliance with all the requirements of this building code is physically impossible and/or impracticable, the applicant may arrange a pre-design conference with the design team and the building official to identify design solutions which will provide equivalent protection. The building official may waive specific requirements in this building code which he/she has determined to be impracticable.

2. **Non-structural Alterations or Repairs.** Alterations or repairs which are non-structural and do not affect any member or part of the building or structure having required fire-resistance may be made with the same materials of which the building or structure is constructed, provided that no change shall be permitted which increases its hazard.

3. **Change of Occupancy.** Where there is a change of occupancy, all of the requirements of the chapter for the specific occupancy shall be satisfied.

In addition to the requirements of Chapter 12, upon conversion of an existing building to residential occupancy, the elements of the dwelling unit envelope which are altered shall comply with the sound transmission control requirements of Chapter 35.

4. **Maintenance of Structural Stability.** When approved by the building official, minor structural alterations or repairs necessary to maintain the structural stability of the building may be made with the same material of which the building or structure is constructed.

5. **Additions.** All work performed on any addition shall comply with the requirements of this building code for a new building or structure, provided that the existing building or structure shall not be required to comply with all the requirements of this building code. Any building plus new additions shall not exceed the height, number of stories and area specified for new buildings.

> **EXCEPTION:** An addition to an existing nonconforming building if an area separation wall is provided and the existing building is not made more nonconforming.

6. **Substantial Alterations or Repairs.**

A. **Definition.** For the purpose of this section, substantial alterations or repairs may mean any one of the following and as determined by the building official:

(i) Extensive structural repair.

(ii) Remodeling to substantially extend the useful physical and/or economic life of the building or significant portion of the building, such as a complete floor except for typical office tenant remodeling.

(iii) A change in occupancy that is more hazardous than the existing occupancy, based on life and fire risk. See Table 5-E. A change of tenant does not necessarily constitute a change of occupancy.

(iv) Reoccupancy of a building that has been substantially vacant for more than 12 months.

B. **Fire and Life Safety Regulations.** Any building or structure to which additions, or substantial alterations or repairs are made shall be required to conform only with the requirements of Section 1807 (when applicable) and Chapters 16, 33, 38, 42 and 43 for new buildings or structures.

C. **Seismic Regulations.** The provisions of Part III of Chapter 23 Earthquake Regulations, shall apply to all buildings or structures to which additions, alterations or repairs are made, except as follows:

(i) Where alterations or repairs are made to buildings constructed prior to July 26, 1967, such buildings need comply only with earthquake-resistive requirements as specified in Section 2336, except that in lieu of the requirements set forth in Section 2337(b)9, the building official may accept an opinion submitted by a licensed structural engineer that the existing floors, walls, roof and other resisting elements, when interconnected to provide sufficient transfer of stresses, are able to withstand lateral seismic forces at least equal to those experienced in the seismic disturbance in Seattle on April 13, 1949.

(ii) The building official may waive requirements of Section 2336 when it can be demonstrated to his/her satisfaction that there is sufficient strength and safety in the existing construction to resist the lateral forces at least equal to those experienced in the seismic disturbance in Seattle on April 13, 1949, provided the requirements of Section 2337 are met.

(iii) The building official may further require, as he/she deems necessary, a comprehensive report by a licensed structural engineer of an investigation and structural analysis of the building for the purpose of determining conformance of the building to the structural requirements of this building code. This requirement shall also apply to Section 203 as conditions may require.

D. **Other Structural Work.** All other structural work shall comply with the requirements of Chapters 23 through 32.

7. **Damaged Buildings.** When a building is damaged, by fire or other means, in excess of 60 percent of its value, as determined by the assessed value per King County records or an appraised value made by a recogized appraisal agency approved by the building official, the entire building, when repaired, shall conform to the requirements of this building code.

8. **Radon Resistive Construction Requirements.** The requirements of Section 1720 shall apply to all Group R buildings to which either an addition or substantial alteration is made except where the basement, foundation or crawl space is not being altered or expanded.

(d) **Maintenance.** 1. **General** All buildings or structures, both existing and new, and all parts thereof shall be maintained in a safe and sanitary condition. All devices or 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 good working order. The owner or a designated agent shall be responsible for such maintenance of buildings and structures.

The means of exit, fire escapes, sprinkler systems, standpipes, occupancy or area separations, fire doors, construction for segregating dangerous uses and all other parts of the building or equipment thereof which are intended to assist in the extinguish-

ing of fire, or to prevent the origin or spread of fire or to safeguard life or property from fire, shall be maintained in a usable and safe condition. It shall be unlawful to fail to so maintain these parts of the building or equipment or to fail to immediately comply with any lawful notice or order of the fire chief or the building official.

EXCEPTIONS: 1. The building official may modify the requirements of this subsection where all or a portion of a building is unoccupied, closed off and reasonably secure from unlawful entry.

2. Occupants of Group R, Division 1 apartments, and Group R, Division 3 dwellings shall be responsible for the maintenance of smoke detectors required by Section 1210.

2. **Unsafe Building Appendages.** Parapet walls, cornices, spires, towers, tanks, statuary and other appendages or structural members which are supported by, attached to, or a part of a building and which are in a deteriorated condition or are otherwise unable to sustain the design loads which are specified in this building code, are hereby designated as unsafe building appendages. All such unsafe building appendages are public nuisances and shall be abated in accordance with Section 203 of this building code.

3. **Central Waterfront Piers.** All piers located between West Harrison Street and South Massachusetts Street, both existing and new, and all portions thereof shall be maintained in a safe condition capable of supporting the design loads as specified in this building code. See also Chapter 59.

(e) **Moved Buildings.** Buildings or structures moved into or within the city shall comply with standards adopted by the building official. No building shall be moved into or within the city unless, prior to moving, the building official has inspected the building for compliance with this building code and the permit holder has agreed to correct all deficiencies found and has been issued a building permit for the work. A bond or cash deposit in an amount sufficient to abate or demolish the building shall be posted prior to issuance of a permit. See Section 302 for information required on plans. Any moved building that is not in complete compliance with standards for moved buildings within eighteen months from the date of permit issuance and is found to be a public nuisance may be abated.

(f) **Historic Buildings and Structures.** The building official may modify the specific requirements of this building code as it applies to buildings and structures designated as landmarks of historical or cultural importance and require in lieu thereof alternate requirements which in the opinion of the building official will result in a reasonable degree of safety to the public and the occupants of those buildings.

A historic building or structure is one which has been designated for preservation by City Council or the State of Washington, has been listed, or has been determined eligible to be listed, on the National Register of Historic Places, has been officially nominated for such status, or is a structure contributing to the character of a designated landmark or historic district.

ALTERNATE MATERIALS, METHODS OF CONSTRUCTION AND DESIGN

Sec. 105. The provisions of this code are not intended to prevent the use of any material or method of construction not specifically prescribed by this code, provided any alternate has been approved and its use authorized by the building official.

The building official may approve any such alternate, provided he/she finds that the proposed design is satisfactory and complies with the provisions of this code and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this code in suitability, strength, effectiveness, fire resistance, durability, safety and sanitation.

The building official may require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding the use of alternate materials or methods of construction. The details of any action granting approval of an alternate shall be recorded and entered in the files of the building official.

MODIFICATIONS

Sec. 106. Whenever there are practical difficulties involved in carrying out the provisions of this code, the building official may grant modifications for individual cases, provided the building official shall first find that a special individual reason makes the strict letter of this code impractical and that the modification is in conformity with the intent and purpose of this code and that such modification does not lessen any fire protection requirements or any degree of structural integrity. The details of any action granting modifications shall be recorded and entered in the files of the building official.

TESTS

Sec. 107. Whenever there is insufficient evidence of compliance with any of the provisions of this code or evidence that any material or construction does not conform to the requirements of this code, the building official may require tests as proof of compliance to be made at no expense to the City.

Test methods shall be specified by this code or by other recognized test standards. If there are no recognized and accepted test methods for the proposed alternate, the building official shall determine the test procedures.

All tests shall be made by an approved agency. Reports of such tests shall be retained by the building official.

DEMOLITIONS

Sec. 108. The demolition of any building or structure shall conform to the following provisions:

1. All asbestos material shall be removed prior to demolition, in accordance with regulations of the Environmental Protection Agency and the Puget Sound Air Pollution Control Agency.

2. All utilities shall be disconnected prior to demolition or during the demolition process in accordance with require-

ments of the governing utility including, but not limited to, the Seattle Engineering Department, Water Department, Fire Department, City Light, Washington Natural Gas Company, and U.S. West Communications.

3. Removal of combustible waste and welding and cutting shall be performed in accordance with the Fire Code.

4. During demolition, streets and sidewalks shall be left clean at the end of each day's operation.

5. Provision shall be made to stabilize ground conditions to eliminate dust and erosion.

6. All concrete or masonry floors, foundations, footings, basement walls and retaining walls not to be reused shall be removed to 18 inches 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.

7. If the demolition results in a change of drainage patterns, provision shall be made to assure that the flow of all water courses, including streams, ditches, drains, combined sewers, and runoff, intercepted during the progress of the work, are returned to the condition present before the demolition or as specified on the permit.

8. The site shall be left level and free of debris upon completion of the demolition, and all holes shall be filled or protected with secure fences. Holes may be filled with concrete, rocks or other non-decaying material no larger than 12 inches in diameter. Wood and other organic material may not be buried on the site.

   Leaving the site level means:

   (i) The grade conforms to that existing on all sides of the building prior to demolition;

   (ii) Surface water will drain off;

   (iii) Surface is smooth; and

   (iv) Broken sections of the foundation or other material are not exposed.

9. The site shall be seeded upon completion of the demolition if it is to be left vacant for more than six months.

10. The building official may require a structural engineer's analysis of proposed demolitions or any portions of a structure remaining after demolition.

11. When demolition occurs, all underground tanks on the site shall either be removed or filled, as required in Article 79, Division I, of the Fire Code regulating Abandonment and Status of Tanks.

Chapter 2

ORGANIZATION AND ENFORCEMENT

DEPARTMENT OF CONSTRUCTION AND LAND USE - JURISDICTION

Sec. 201. The "Department of Construction and Land Use" shall be the code enforcement agency in the City of Seattle for this building code. The Department shall be under the administrative and operational control of the Director of the Department of Construction and Land Use who shall be the building official.

POWERS AND DUTIES OF THE BUILDING OFFICIAL

Sec. 202. (a) **General.** The building official is authorized and directed to enforce this building code, except where authority as elsewhere provided in this building code is specifically vested in the Director of Public Health, the fire chief or the Director of Engineering. Compliance with the requirements of this building code shall be the obligation of the owner of the building, structure, or premises, the duly authorized agent of the owner, or other person responsible for the condition or work, and not of the City or any of its officers or employees.

(b) **Deputies.** The building official may appoint such officers, inspectors and assistants and other employees as shall be authorized from time to time. The building official may deputize such employees as may be necessary to carry out the functions of the Department of Construction and Land Use.

(c) **Right of Entry.** With the consent of the owner or occupier of a building or premises, or pursuant to a lawfully issued warrant, the building official may enter a building or premises at any reasonable time to perform the duties imposed by this code.

(d) **Stop Orders.** Whenever any work is being done contrary to the provisions of this building code, or in the event of dangerous or unsafe conditions related to construction or demolition, the building official may order the affected work stopped by a notice describing the violation in writing, posted on the premises or served on any person responsible for the condition or work. It shall be unlawful for any person to engage in or to cause any further work to be done until authorization from the building official is received.

(e) **Occupancy Violations.** Whenever any building or structure is being occupied contrary to the provisions of this building code, the building official may order such occupancy discontinued and the building or structure, or portion thereof, vacated by notice, posted on the premises or served on any person causing such occupancy to be continued.

Any person occupying the building or structure shall discontinue the occupancy within 10 days after receipt or posting of such notice or shall make the building or structure, or portion thereof, comply with the requirements of this building code; provided, however, that in the event of an unsafe building, Section 203 may apply. It shall be unlawful for any person to fail to comply with an order or notice issued by the building official.

(f) **Liability.** Nothing contained in this building code is intended to be nor shall be construed to create or form the basis for any liability on the part of the City, or its officers, employees or agents, for any injury or damage resulting from the failure of a building to conform to the provisions of this building code, or by reason or in consequence of any inspection, notice, order, certificate, permission or approval authorized or issued or done in connection with the implementation or enforcement of this building code, or by reason of any action or inaction on the part of the City related in any manner to the enforcement of this building code by its officers, employees or agents.

Neither the building official nor any employee charged with the enforcement of this code shall be personally liable for any damage that accrues to persons or property as a result of any act or omission committed in the discharge of their duties, provided that the building official or employee acted in good faith and without malice. Any suit brought against the building official or an employee because of an act or omission performed in the enforcement of any provisions of this code shall be defended by the City.

This code shall not be construed to relieve from or lessen the responsibility of any person owning, operating or controlling any building or structure for any damages to persons or property caused by defects, nor shall the Department of Construction and Land Use or the City of Seattle be held to have assumed any such liability by reason of the inspections authorized by this code or any permits or certificates issued under this code.

(g) **Duties of the Fire Chief.** The duties of the fire chief shall be as defined in the Fire Code.

(h) **Responsibilities.** 1. **Project Architect or Structural Engineer of Record.** It is the responsibility of the Project Architect or Structural Engineer of Record to ensure that the information on the contract documents submitted for a building permit is complete and to the best of his/her knowledge conforms with the requirements of this building code and other pertinent laws and ordinances.

2. **Structural Engineer of Record.** It is the responsibility of the Structural Engineer of Record to:

A. Design the primary structure;

B. Specify design loads, configurations, controlling dimensions, deflection limits and/or other criteria necessary for the design of secondary structural components and sub-systems and the selection of structurally qualified products;

C. Determine the adequacy and conformance of the application of the structurally qualified products with the design intent of the City approved contract documents;

D. Review for compatibility with the design intent of the City approved contract documents the shop drawings for the primary structural parts and design and shop drawings for secondary structural parts for the following structural elements:

Wood trusses	Glu-lam beams
Steel joists	Structural steel
Steel decking	Prefabricated stair systems
Precast concrete piles	Post-tensioned floor systems
Curtain wall systems	Precast prestress planks
Major skylight frames	Precast concrete/ masonry wall panels

The building official may approve additions to, or deletions from this list.

E. When required by the building official or Structural Engineer of Record, review the compatibility with the design intent of the City approved contract documents of the design and shop drawings for mechanical and electrical life safety equipment anchorage required by Section 1807(k), including generators, pressurization fans, fire pumps and elevator drive and suspension systems.

If there is no Structural Engineer of Record on the project, the Project Architect shall assume these responsibilities.

For the purpose of this section primary structure and secondary structural parts shall be defined as follows:

A. Primary Structure consists of the foundation(s), structural floor(s), roof and walls, bracing members, columns, all other structural components and all connections within and between these elements, which, acting together, provide a complete stable structural framework.

B. Secondary Structural Part (Component or Subsystem) is a structurally significant portion of the building that is supported by the primary structure, but which does not contribute to the strength or stability of the primary structure. Such a part must have internal structural integrity to perform its function and must have its interactions with, and its attachments to the primary structure analyzed and designed to assure its proper integration within the total structure.

3. **Contractor.** It is the responsibility of the Contractor to perform all the work in conformance with the City approved contract documents.

4. **Plans Examiner.** It is the responsibility of the plans examiner to verify that the description of the work in an application for permit and permit plans is substantially complete, and to require corrections where to the best of the plans examiner's knowledge the plans do not conform to this building code or other pertinent laws and ordinances.

5. **Field Inspector.** It is the responsibility of the field inspector to make called inspections to verify that the work in progress conforms with the approved plans and to require corrections where to the best of the field inspector's knowledge the work either does not conform to the plans or where the work is in violation of this building code or other pertinent laws and ordinances.

UNSAFE BUILDINGS, STRUCTURES AND PREMISES - EMERGENCY ORDERS

Sec. 203. (a) **Unsafe Buildings, Structures or Premises-Definition.** For the purpose of this section unsafe buildings, structures or premises shall be defined to include all buildings or structures, whether erected before or after the effective date of this building code, and all premises immediately surrounding buildings or structures, which are structurally unsound or not provided with adequate egress, or which constitute a fire hazard, or are otherwise dangerous to human life or which in relation to existing occupancy constitute a hazard to safety, health or public welfare by reason of inadequate maintenance, deterioration, instability, dilapidation, obsolescence, damage by fire or other causes or abandonment as specified in this building code or any other effective ordinance.

(b) **Emergency Orders.** Whenever the building official finds that any building, or structure or portion thereof is in such a dangerous and unsafe condition as to constitute an imminent hazard to life or limb, the building official may issue an emergency order directing that the building or structure, or portion thereof, be restored to a safe condition. The order shall specify the time for compliance. The order may also require that the building or structure, or portion thereof be vacated within a reasonable time, to be specified in the order. In the case of extreme danger, the order may specify immediate vacation of the building or structure, or may authorize disconnection of the utilities or energy source pursuant to Section 202(e). No person shall occupy the building or structure, or portion thereof after the date on which the building is required to be vacated until the building or structure, or portion thereof is restored to a safe condition as required by the order and this code. It shall be unlawful for any person to fail to comply with an emergency order issued by the building official.

(c) **Hazard Correction Order.** Whenever the building official finds that an unsafe building, structure or premises exists, the building official may issue a hazard correction order specifying the conditions causing the building, structure or premises to be unsafe and directing the owner or other person responsible for the unsafe building, structure or premises to correct the condition. In lieu of correction, the owner may submit a report or analysis to the building official analyzing said conditions and establishing that the building, structure or premises is, in fact, safe. The building official may require that the report or analysis be prepared by a licensed engineer. It shall be unlawful for any person to fail to comply with a hazard correction order as specified in this subsection.

APPEALS

Sec. 204. Appeals from decisions or actions pertaining to the administration and enforcement of this code shall be addressed to the building official. The appellant may request a review by three or more members of the Construction Codes Advisory Board, convened by the Chair. The issue of the appeal shall be taken into account by the Chair when selecting members to hear an appeal. The results of this appeal shall be advisory only.

VIOLATIONS AND PENALTIES

Sec. 205. (a) **Violations.** It shall be a violation of this code for any person, firm or corporation to erect, construct, enlarge,

repair, move, improve, remove, convert, demolish, equip, occupy, inspect or maintain any building or structure in the City, contrary to or in violation of any of the provisions of this building code.

It shall be a violation of this code for any person, firm or corporation to knowingly aid, abet, counsel, encourage, hire, commend, induce or otherwise procure another to violate or fail to comply with this code.

It shall be a violation of this code for any person, firm or corporation to use any material or to install any device, appliance or equipment which does not comply with applicable standards of this code or which has not been approved by the building official.

(b) **Notice of Violation.** If after investigation the building official determines that standards or requirements of this building code have been violated, the building official may serve a notice of violation upon the owner or other person responsible for the action or condition. The notice of violation shall state the standards or requirements violated, shall state what corrective action, if any, is necessary to comply with the standards or requirements, and shall set a reasonable time for compliance. The notice shall be served upon the owner or other responsible person by personal service, certified mail with return receipt requested or registered mail addressed to the last known address of such person. The notice of violation shall be considered an order of the building official. Nothing in this subsection shall be deemed to limit or preclude any action or proceeding pursuant to Sections 202 or 203 of this building code, and nothing in this section shall be deemed to obligate or require the building official to issue a notice of violation prior to the imposition of civil or criminal penalties in this section.

(c) **Civil Penalties.** Any person, firm or corporation failing to comply with the provisions of this building code shall be subject to a cumulative civil penalty in an amount not to exceed $500 per day for each violation from the date the violation occurs or begins until compliance is achieved. In cases where the building official has issued a notice of violation, the violation will be deemed to begin, for purposes of determining the number of days of violation, on the date compliance is required by the notice of violation.

(d) **Criminal Penalty.** 1. Anyone violating or failing to comply with any order issued by the building official pursuant to this code shall, upon conviction thereof, be punished by a fine of not more than $1,000 or by imprisonment for not more than 360 days, or by both such fine and imprisonment. Each day's violation or failure to comply shall constitute a separate offense.

2. Anyone violating or failing to comply with any of the provisions of this building code and who within the past five years has had a judgement against them pursuant to Sec. 205(c), shall upon conviction thereof, be fined in a sum not to exceed $500 or by imprisonment for not more than 180 days, or by both such fine and imprisonment. Each day's violation or failure to comply shall constitute a separate offense.

(e) **Additional Relief.** The building official may seek legal or equitable relief to enjoin any acts or practices and abate any condition which constitutes a violation of this building code when civil or criminal penalties are inadequate to effect compliance.

NOTICES

Sec. 206. It shall be unlawful for any person to remove, mutilate, destroy or conceal any lawful notice issued or posted by the building official pursuant to the provisions of this building code.

The building official may record a copy of any order or notice with the Department of Records and Elections of King County.

The building official may record with the Department of Records and Elections of King County a notification that a permit has expired without a final inspection after reasonable efforts have been made to provide a final inspection.

RULES OF THE BUILDING OFFICIAL

Sec. 207. (a) **Authority.** The building official shall have the power to render interpretations of this code and to adopt and enforce rules and regulations supplemental to this code as may be deemed necessary in order to clarify the application of the provisions of this code. Such interpretations, rules and regulations shall be in conformity with the intent and purpose of this code. The building official is authorized to promulgate, adopt and issue the following rules:

1. "Building Construction Standards" to promulgate standards which are acceptable as a method or as an alternative design for meeting code required performance criteria, to recognize new technical data affecting code requirements and to eliminate conflicts among code requirements.

2. "Code Interpretations" to interpret and clarify conditions or language expressed in this building code.

3. "Product Approvals" to approve a specific building construction material or product, or a particular component fabricator which has been found acceptable as meeting required performance criteria. See Section 306.

4. Any other rule necessary for the adminstration of the purpose and intent of this code.

(b) **Procedure for Adoption of Rules.** The building official shall promulgate, adopt and issue rules according to the procedures as specified in Chapter 3.02 of the Administrative Code, Seattle Municipal Code.

CONSTRUCTION CODES ADVISORY BOARD

Sec. 208. (a) **Establishment.** There is hereby created a "Construction Codes Advisory Board" ("Board") to consist of 13 voting members, appointed by the Mayor and subject to confirmation by the City Council. The Board membership shall consist of one representative of each of the following professions or organizations. The representative of a profession need not be of

the profession but may be a representative of an organization of such professionals.

1 architect;
1 structural engineer;
1 electrical engineer;
1 heating, refrigeration and air-conditioning engineer;
1 general contractor;
1 electrical contractor;
1 commercial building owner or operator;
1 apartment building owner or operator;
1 developer and/or contractor of residential projects;
1 member of organized labor; and
3 members of the general public.

A representative of each of the following departments shall be ex officio, non-voting members of the Board:

Seattle Fire Department;
Seattle City Light; and
Seattle King County Health Department.

(b) **Duties.** 1. **General.** The Board shall act in an advisory capacity for all of its duties. The Board shall meet on call either by the building official or the Board Chair, subject to timely notice.

2. **Code Adoption and Amendment.** The Board may examine proposed new editions and amendments to the following codes and regulations:

Seattle Building Code - Chapter 22.100 S.M.C.*
Seattle Mechanical Code - Chapter 22.400 S.M.C.
Seattle Energy Code - Chapter 22.700 S.M.C.
Seattle Electrical Code - Chapter 22.300 S.M.C.
Grading regulations contained in the Grading and Drainage Control Code - Chapter 22.800 through 22.806 S.M.C.
Building Code-related provisions of the Housing and Building Maintenance Code - Chapter 22.206.

* S.M.C. is the Seattle Municipal Code.

The Board may make recommendations to the building official and to the City Council for adoption and amendment of these codes.

3. **Rules.** The Board may examine proposed administrative rules relating to the codes and regulations listed above and make recommendations to the building official.

4. **Appeals.** The Board shall serve as an advisory hearing body for appeals sought under Section 204 of the Seattle Building Code, Section 204 of the Seattle Mechanical Code and Section 208 of the Seattle Electrical Code. The final decision on any appealable matter shall be made by the building official.

(c) **Organization.** The Board shall organize, elect a chair and any other officers as may be established by the Board. The Board shall adopt rules of procedure. There shall be a committee of the Board for each code assigned to its review. Committees shall consist of Board members and additional members including, but not limited to, the general public and professions not specifically represented on the Board. Non-Board members of committees

shall be appointed by the Chair and shall provide additional expertise to that found on the Board. The Chair may, from time to time, appoint special topic subcommittees.

(d) **Terms of Service.** Terms of Board members shall be three years dating from the day of expiration of the preceding term; provided, a member whose term has expired shall continue to serve until a successor is appointed and confirmed. Terms on the Board shall be staggered so that the terms of not more than 5 positions expire concurrently. Vacancies shall be filled for any unexpired term in the same manner as original appointment.

A member may be removed by the Mayor, subject to a vote of a majority of members of the City Council.

No member shall receive any compensation for service on the Board.

Chapter 3

PERMITS AND INSPECTIONS

BUILDING PERMIT REQUIREMENTS

Sec. 301. (a) **Permits Required.** It shall be unlawful to erect, construct, enlarge, alter, repair, move, improve, remove, change the occupancy of, or demolish any building or structure in the City, or allow the same to be done, without first obtaining a building permit for each such building or structure from the building official. All work shall comply with this building code, even where no permit is required.

(b) **Exempted Work.** A building permit shall not be required for the following:

1. Minor repairs or alterations which, as determined by the building official, cost the owner $2,500 or less in any 6-month period, provided that no structural changes are made and egress, light, air and ventilation are not reduced.

2. Miscellaneous minor work including the following: patio and concrete slabs on grade, painting a building, repointing a chimney unless structural changes are made, installing kitchen cabinets, paneling or other surface finishes over existing wall and ceiling systems applied in accordance with Chapter 42 and insulating existing buildings where no structural changes are made.

3. One-story detached accessory buildings used for greenhouse, tool or storage shed, or similar uses, provided:

   A. The projected roof area does not exceed 120 square feet; and

   B. The building is not placed on a concrete foundation other than a slab on grade.

4. Fences not over 6 feet high.

5. Cases, counters and partitions not over 5 feet 9 inches high.

6. Retaining walls and rockeries which are not over 4 feet in height measured from the bottom of the footing to the top of the wall, provided:

   A. There is no surcharge or impoundment of Class I, II or III-A liquids.

   B. Construction is not in a critical area or an environmentally sensitive area, nor supports soils in areas of geologic hazard, steep slope or having landslide potential as identified in the environmentally sensitive and critical area regulations contained in Chapters 25.05 and 25.09 of the Seattle Municipal Code.

   C. Possible failure would likely cause no damage to adjoining property or structures.

7. Platforms, walks and driveways not more than 18 inches above grade and not over any basement or story below.

8. Temporary motion picture, television and theater stage sets and scenery.

9. Window awnings supported by an exterior wall of Group R, Division 3, and Group M Occupancies when projecting not more than 54 inches.

10. Prefabricated swimming pools accessory to a Group R, Division 3 occupancy in which the pool walls are entirely above the adjacent grade and if the capacity does not exceed 5,000 gallons.

11. Replacement of roofing materials and siding. This shall not include structural changes, replacement of sheathing or alterations to doors and windows.

12. School, park or private playground equipment including playhouses and tree houses.

Unless otherwise exempted by this or other pertinent codes, separate master use, plumbing, electrical and mechanical permits shall be required for the above exempted items.

Exemption from the permit requirements of this building code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this building code or any other laws or ordinances of the City.

(c) **Flood Hazard Areas.** In addition to the permit required by this section, all work to be performed in areas of special flood hazard, as identified in the report entitled "Flood Insurance Study for King County, Washington and Incorporated Areas" and the accompanying Flood Insurance Rate Maps and filed in C.F. 295948, is subject to additional standards and requirements, including floodplain development approval or a Floodplain Development License, as set forth in Chapter 25.06, the Seattle Floodplain Development Ordinance.

APPLICATION FOR PERMIT

Sec. 302. (a) **Application.** To obtain a permit, the applicant shall first file an application in writing on a form furnished by the Department of Construction and Land Use for that purpose.

Every such application shall:

1. Identify and describe the work to be covered by the permit for which application is made.

2. Describe the land on which the proposed work is to be done by legal description, property address or similar description that will readily identify and definitely locate the proposed building or work.

3. Provide contractor's state license number (required if permit is to be issued to the contractor).

4. Be accompanied by plans, and other data as required in Subsections (b) and (c) of this section.

5. State the valuation of any new building or structure or any addition, remodeling or alteration to an existing building including cost breakdown between additions and alterations.

6. Be signed by the owner of the property or building, or his/her authorized agent who may be required to submit evidence to indicate such authority.

7. Give such other data and information as may be required by the building official, including, but not limited to, master use and shoreline permits and building identification plans.

8. Indicate the name of the owner and contractor and the name, address and phone number of a contact person.

9. Substantially conform with the Land Use Code, Zoning Ordinance, and building code regulations in effect on the date that the application is submitted.

(b) **Plans and Specifications.** 1. **General.** Plans, engineering calculations, diagrams and other data shall be submitted in two or more sets with each application for a permit.

EXCEPTION: The building official may waive the submission of plans, calculations, diagrams and other data, if he/she finds that the nature of the work applied for is such that reviewing of plans is not necessary to obtain compliance with this building code.

2. **Preparation by Licensed Professionals.** Plans, computations and specifications for all work shall be prepared and designed by or under the direct supervision of an architect or structural engineer licensed to practice under the laws of the State of Washington. Plans and specifications for work not involving structural design shall be prepared by a professional engineer or architect qualified in the proposed work. Each sheet of plans shall bear the seal and the signature of the licensee.

EXCEPTION: WHEN AUTHORIZED BY THE BUILDING OFFICIAL, plans and specifications need not be prepared by an engineer or architect licensed by the State of Washington for the following:

1. One- and two-family dwellings.

2. New buildings or structures, and additions, alterations or repairs of conventional light frame construction, having a total valuation of less than $25,000.

3. Nonstructural alterations and repairs having a total valuation of less than $25,000, excluding electrical and mechanical systems, fixtures, equipment, interior finish and millwork.

4. The building official may accept the design of a licensed professional engineer for assembly line products or designed specialty structural products.

3. **Clarity of plans.** Plans shall be drawn to a clearly indicated and commonly accepted scale upon substantial paper such as blueprint quality or standard drafting paper. Tissue paper, posterboard or cardboard will not be accepted. The plans shall be of microfilm quality and limited to a minimum size of 18 inches by 18 inches and a maximum size of 41 inches by 54 inches.

EXCEPTION: The plans for metal plate connected wood trusses may be not less than 8-1/2 inches by 11 inches for single family structures and no less than 11 inches by 17 inches for all other structures.

(c) **Information Required on Plans.** 1. **General.** Plans shall include the following, as applicable:

A. A plot plan showing the width of streets, alleys, yards and courts.

B. The location (and/or location within a building), floor area, story, height, type of construction and occupancy classification as defined by the building code and use as defined by the Zoning or Land Use Codes of the proposed building and of every existing building on the property.

C. Where there are more than two buildings located on a property, a building identification plan identifying the location of each building on the property and identifying each building by a numbering system unrelated to address. Such plan shall not be required where a plan for the site is already on file and no new buildings are being added to the site.

D. Types of heating and air conditioning systems.

E. Architectural plans, including floor plans, elevations and door and finish schedules showing location of all doors, windows, mechanical equipment, shafts, pipes, vents and ducts.

F. Structural plans, including foundation plan and framing plans.

G. Cross-sections and construction details for both architectural and structural plans including wall sections, foundation, floor and roof details, connections of structural members and types of construction material.

H. Topographic plans, including original and final contours, location of all buildings and structures on and, when required by the building official, adjacent to the site, and cubic yards of cut and fill.

A survey of the property prepared by a land surveyor licensed by the State of Washington shall be required for all new construction, and for additions or accessory buildings where the building official has reason to believe that there may be an intrusion into required open areas or over the property line.

I. Where any building or structure is to be erected or constructed on property abutting an unimproved or partially improved street or alley, such plans shall also include a profile showing the established or proposed grade of such street or alley, based upon information obtained from the Director of Engineering relating to the proposed finished elevations of the property and improvements thereon.

2. **Information on First Sheet.** The first or general note sheet of each set of plans shall specify the following, as applicable:

A. The building and street address of the work.

B. The name and address of the owner and person who prepared the plans.

C. Legal description of the property.

D. Type of occupancy of all parts of the building as defined in this building code including notation of fixed fire protection devices or systems.

E. Zoning classification of the property and existing and proposed uses of the structure as defined in the Zoning or Land Use Codes.

F. Indication of location within the fire district as defined in this building code, if applicable.

G. Type of construction as defined in this building code.

H. Number of stories and basements as defined in this building code.

I. Variances, conditional uses, special exceptions, including project numbers, approval and approval extension dates.

J. Where applicable, a description of the design selected and approved at a Section 901 hazardous occupancy pre-design conference, a Section 1807 highrise building pre-design conference, a Section 1716 atrium pre-design conference, a Section 2333 seismic design pre-design conference or a similar conference on a building subject to Fire Code Article 93.

3. **Structural Notes.** Plans submitted for buildings with an occupant load of 50 or more, buildings of more than two stories, buildings of more than 4,500 square feet total floor area or buildings or other structures that are determined by the building official to embody hazards or complex structural concepts shall include applicable information including, but not limited to, the following:

A. Design loads: Snow load, live loads and live load reductions and lateral loads.

When required by the building official, the structural notes for plans engineered to Part III, Earthquake Design, of Chapter 23 shall include the factors of the base shear formula used in the design;

B. Foundations: Foundation investigations, allowable bearing pressure for spread footings, allowable load capacity of piles, pile driving formulas, lateral earth pressure;

C. Soil fill and back fill: Type, compaction and drainage;

D. Masonry: Type and strength of units, strength or proportions of mortar and grout, type and strength of reinforcement;

E. Wood: Species or species groups, and grades of sawn lumber, glued-laminated lumber, plywood and assemblies, type of fasteners;

F. Concrete: Design strengths, mix designs, type and strength of reinforcing steel, welding of reinforcing steel, restrictions, if any;

G. Steel and aluminum: Specification types, grades and strengths, welding electrode types and strengths;

H. Assignment of responsibilities for inspection and testing during construction, and the degree of inspection and testing;

I. Computations, stress diagrams, shop and fabrication drawings and other data sufficient to show the adequacy of the plans shall be submitted when required by the building official.

In lieu of detailed structural notes the building official may approve minor references on the plans to a specific section or part of this building code or other ordinances or laws.

4. **Fire-Resistive Notes.** Plans for buildings more than two stories in height of other than Groups R, Division 3 and M Occupancies shall indicate how required structural and fire-resistive integrity will be maintained where a penetration will be made for electrical, mechanical, plumbing and communication conduits, pipes and similar systems.

When required for fire-resistive construction, the method of installation of wall and ceiling coverings and the protection of structural parts shall be specified on the plans unless the listing documenting the rating specifies a method no more restrictive than the minimum standards of Chapter 47.

5. **Construction Inspection Notes.** The engineer or architect of record shall include in the final permit documents the following:

A. Special inspections required by Section 306.

B. Other structural inspections required by the engineer or architect of record.

PERMIT ISSUANCE

Sec. 303. (a) **Issuance.** 1. **General.** The application, plans, specifications and other data filed by an applicant for permit shall be reviewed by the building official. Such plans may be

reviewed by other departments of the City to check compliance with the laws and ordinances under their jurisdiction. If the building official finds that the work as described in an application for permit and the plans, specifications and other data filed therewith substantially conforms to the requirements of this building code and other pertinent laws and ordinances and that the fees specified in the Permit Fee Ordinance have been paid, he/she shall issue a permit therefor to the applicant who becomes the permit holder or authorized agent.

EXCEPTIONS: 1. The building official may issue a permit for the construction of part of a building or structure before complete plans for the whole building or structure have been submitted or approved, provided that the proposed project complies with the State Environmental Policy Act as adopted by the City (Chapter 25.05 Seattle Municipal Code) and as amended and the Land Use and Zoning Ordinances, as amended; and provided further that adequate information and plans have been filed and checked to assure compliance with all pertinent requirements of this and other pertinent codes. The holder of such a permit shall proceed at his/her own risk without the assurance that the permit for the entire building or structure will be granted.

2. After approval of a Master Use Permit as required by the Land Use Code, a permit for excavation may be issued.

The building official may condition a permit where he/she determines that risks associated with development, construction, ownership and occupation in areas of the city, including, but not limited to potential slide areas, can be reduced to an acceptable level. The building official may deny such permit where he/she determines that the risks cannot be reduced to an acceptable level.

2. **Compliance with Approved Plans and Permit.** When the building official issues a permit, he/she shall endorse the permit in writing and endorse in writing or stamp the plans **APPROVED.** Such approved plans and permit shall not be changed, modified or altered without authorization from the building official, and all work shall be done in accordance with the approved plans and permit except as the building official may require during field inspection to correct errors or omissions.

3. **Amendments to the Permit.** When substitutions or changes are made during construction, approval shall be secured prior to execution, however, the building inspector may approve minor modifications to the plans for work not reducing the structural strength or fire and life safety of the structure. The building inspector shall determine if it is necessary to revise the approved plans. Substitutions or changes made during construction subject to special inspection required by Section 306(a) shall be approved by the building official. Substitutions, changes and clarifications shall be shown on two sets of plans which shall be submitted to and approved by the building official, accompanied by fees specified in the Permit Fee Ordinance prior to occupancy. These substitutions and changes shall conform to the requirements of this building code and other pertinent laws and ordinances.

4. **Cancellation of Permit Application.** An application shall be deemed abandoned and void if a permit is not issued after a period of sixty days from the date of written notice of approval

for issuance or if complete corrections are not received after a period of sixty days from the date of written notification of required corrections for compliance with this code; provided that the building official may extend the period for issuance or submission of corrections if it is determined that there are good reasons for the delay, which are satisfactory to the building official, or if a different schedule is agreed upon in writing before the end of the sixty day period. A request for the extension must be submitted in writing before the end of the sixty day period. If the permit application is cancelled, the site may be inspected to verify that no work has taken place. The application and any accompanying plans and specifications shall be destroyed. If the application is being reviewed concurrently with a Master Use Permit application, and it is for a project vested to prior Land Use Code or Zoning Ordinance provisions, and the project does not conform with the codes in effect while it is being reviewed for Master Use Permit approval, cancellation of the building permit application under the provisions of this section shall cause the concurrent cancellation of the Master Use Permit application.

(b) **Retention of Plans.** One set of approved plans, which may be on microfilm, shall be retained by the building official. One set of approved plans shall be returned to the applicant and shall be kept at the site of the building or work at all times during which the work authorized is in progress for use by the inspection personnel.

(c) **Validity of Permit.** The issuance or granting of a permit or approval of plans shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this building code or other pertinent laws and ordinances. No permit presuming to give authority to violate or cancel the provisions of this building code shall be valid, except insofar as the work or use which it authorizes is lawful.

The issuance of a permit based upon plans shall not prevent the building official from thereafter requiring the correction of errors in said plans or from preventing building operations being carried on thereunder when in violation of this building code or of other pertinent laws and ordinances of the City.

The issuance of a building permit shall not prevent the building official from requiring correction of conditions found to be in violation of this building code or other pertinent laws and ordinances of the City, nor shall the period of time for which any such permit is issued be construed to extend or otherwise affect any period of time for compliance specified in any notice or order issued by the building official or other administrative authority requiring the correction of any such conditions.

(d) **Expiration and Renewal.** 1. **Expiration.** Permits and renewed permits shall expire eighteen months from the date of issuance.

EXCEPTIONS: 1. Initial permits for major construction projects that require more than eighteen months to complete, according to a construction schedule submitted by the applicant, may be issued for a period that provides reasonable time to complete the work but in no case longer than three years.

2. Permits which expire in less than eighteen months may be issued where the building official determines a shorter period is appropriate.

3. For other than Group R, Division 3 and Group M, Division 1 occupancies, permits for construction of new structures which are vested to prior Land Use Code and Zoning Ordinance provisions and do not conform with the codes in effect at the time the building permit is issued shall expire 180 days after issuance unless the work authorized by the permit has been started and the permit holder has requested and is ready for an inspection required by Section 305(e). If the term of the permit is less than 180 days, the earlier expiration date shall apply. The building official may extend the life of a nonconforming permit when the work is delayed by litigation, appeals, strikes or other causes related to the work authorized by the permit, beyond the permit holder's control.

2. **Renewal.** Permits may be renewed and renewed permits may be further renewed by the building official provided the following conditions are met:

A. Application for renewal shall be made within the thirty-day period immediately preceding the date of expiration of the permit;

B. The work authorized by the permit has been started and is progressing at a rate approved by the building official. Progress justifying renewal of a permit, except as specified by Item C, may include, but is not limited to, requesting of a required inspection, the arranging of financing, selection of contractors and subcontractors, securing other necessary permits and licenses, site preparation such as demolition, clearing and excavation, soils investigation and work done to overcome unusual construction difficulties; and

C. If an application for renewal is made either more than eighteen months after the date of mandatory compliance with a new or revised edition of the building code or after the effective date of an amendment to applicable provisions of the Land Use or Zoning Codes, the permit shall not be renewed unless:

(i) The building official determines by plans examination that the permit complies, or is modified to comply, with the code or codes in effect on the date of application renewal; or

(ii) The work authorized by the permit is substantially underway and progressing at a rate approved by the building official. Progress justifying renewal of the permit shall be evidenced by notification by the permit holder that a construction step is ready for an inspection required by Section 305(e) of this code.

Permits may also be renewed where commencement or completion of the work authorized by the permit is delayed by litigation, appeals, strikes or other causes related to the work authorized by the permit, beyond the permit holder's control.

3. **Reestablishment.** A new permit shall be required to complete work where a permit has expired and was not renewed.

EXCEPTION: A permit which has been expired for less than one year may be reestablished upon approval of the building official provided it complies with Items B and C of Subsection 2, above.

(e) **Suspension or Revocation.** The building official may, by written order, suspend or revoke a permit issued under the provisions of this building code whenever the permit is issued in error or on the basis of incorrect information supplied, or in violation of any ordinance or regulation or any provisions of this building code.

FEES

Sec. 304. A fee for each building permit and for other activities related to the enforcement of this code shall be paid as set forth in the Permit Fee Ordinance.

INSPECTIONS

Sec. 305. (a) **General.** All construction or work for which a permit is required shall be subject to inspection by the building official, and certain types of construction shall have special inspections by registered special inspectors as specified in Section 306.

A survey of the lot may be required by the building official to verify compliance of the structure with approved plans.

(b) **Inspection Requests.** It shall be the duty of the owner of the property or his/her authorized agent, or the person designated by the owner/agent to do the work authorized by a permit, to notify the building official that work requiring inspection as specified in this section and Section 306, is ready for inspection.

It shall be the duty of the person requesting any inspections required by this code to provide access to and means for proper inspection of such work. It shall be the duty of the permit holder to cause the work to be accessible and exposed for inspection purposes until approved by the building official. Neither the building official nor the City shall be liable for expense entailed in the required removal or replacement of any material to allow inspection.

(c) **Inspection Record.** Work requiring a permit shall not be commenced until the permit holder or his/her agent has posted an inspection record in a conspicuous place on the premises and in a position which allows the building official to conveniently make the required entries thereon regarding inspection of the work. This record shall be maintained in such a position by the permit holder until final approval has been granted by the building official.

(d) **Approvals Required.** No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the building official. Such written approval shall be given only after an inspection has been made of each successive step in the construction as indicated by each of the inspections required in Subsection (e).

There shall be a final inspection and approval of all buildings when completed and ready for occupancy.

Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this code or of other pertinent laws and ordinances of the City. Inspections

presuming to give authority to violate or cancel the provisions of this code or of other pertinent laws and ordinances of the City shall not be valid.

(e) **Required Inspections.** No required reinforcing steel or structural framework of any part of any building or structure shall be covered or concealed in any manner whatsoever without first obtaining the approval of the building official.

> **EXCEPTION:** Modular homes and commercial coaches identified by State of Washington stickers as specified in Section 309(c) and placed upon a permanent foundation approved and inspected by the building official.

The building official, upon notification by the permit holder or his/her agent, of the property address and permit number, shall make the following inspections and shall either approve that portion of the construction as completed or shall notify the permit holder or his/her agent where the construction fails to comply with the law.

1. **FOUNDATION AND SITE INSPECTION:** To be made after trenches are excavated and forms erected and when all materials for the foundation are delivered on the job. Where concrete from a central mixing plant (commonly termed "ready mix") is to be used, materials need not be on the job.

2. **CONCRETE SLAB OR UNDER-FLOOR INSPECTION:** To be made after all in-slab or under-floor building service equipment, conduit, piping accessories and other ancillary equipment items are in place but before any concrete is poured or floor sheathing installed, including the subfloor.

3. **FRAME INSPECTION:** To be made after the roof, all framing, fire-blocking and bracing are in place and all pipes, chimneys and vents are complete and the rough electrical, plumbing, and heating wires, pipes and ducts are approved.

4. **INSULATION INSPECTION:** To be made after all insulation and vapor barriers are in place but before any gypsum board or plaster is applied.

5. **LATH AND/OR GYPSUM BOARD INSPECTION:** To be made after lathing and/or gypsum board, interior and exterior, is in place, but before any plastering is applied or before gypsum board joints and fasteners are taped and finished.

6. **FINAL INSPECTION:** To be made after finish grading and the building is completed and before occupancy.

(f) **Other Inspections.** In addition to the called inspections specified above, the building official may make or require any other inspections of any construction work to ascertain compliance with the provisions of this code and other pertinent laws and ordinances which are enforced by the building official.

Where work, for which any permit or approval is required, is commenced or performed prior to making formal application and receiving the building official's permission to proceed, the building official may make a special investigation inspection before a permit may be issued for such work. Where a special investigation is made, a special investigation fee may be assessed in accordance with the Permit Fee Ordinance.

(g) **Reinspections.** The building official may require a reinspection when work for which inspection is called is not complete, corrections called for are not made, the inspection record is not properly posted on the work site, the approved plans are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or when deviations from plans which require the approval of the building official have been made without proper approval.

For the purpose of determining compliance with Section 104(d) Maintenance, the building official or the fire chief may cause any structure to be reinspected.

The building official may assess a reinspection fee as set forth in the Permit Fee Ordinance for any action listed above for which reinspection may be required, whether or not a reinspection is actually performed. A reinspection fee shall not be assessed the first time the work subject to inspection is rejected for failure to comply with the requirements of this building code.

In instances where reinspection fees have been assessed, no additional inspection of the work shall be performed until the required fees have been paid.

SPECIAL INSPECTIONS

Sec 306. (a) **Types of Special Inspections.** In addition to inspections to be made as specified by Section 305, the owner shall employ an approved and registered special inspector to conduct inspections during construction on the following types of work:

1. **Concrete:** During the taking of test specimens and during the mixing and placing of all reinforced concrete. See Item 12 for shotcrete.

EXCEPTIONS: 1. Concrete for foundations conforming to minimum requirements of Table No. 29-A or for Group R, Division 3 or Group M, Division 1 Occupancies, provided the building official finds that a special hazard does not exist.

2. For concrete when the structural design as specified in Section 2626 is based on a f'_c no greater than 2,500 pounds per square inch and the concrete and reinforcing steel is stressed to no more than 75 percent of its allowable stresses provided the building official finds the work is of a minor nature and no special hazard exists.

3. Nonstructural concrete topping or nonstructural slabs on grade, including prestressed slabs on grade when effective prestress in concrete is less than 150 pounds per square inch.

4. Site work concrete fully supported on earth and concrete where no special hazard exists.

5. Inspection during the mixing of concrete shall not be required when the proportions of ingredients are established in accordance with the requirements of Table No. 26-A-7 or when a mix has been granted continuous approval by the building official.

2. **Bolts Installed in Concrete:** Prior to and during the placement of concrete around bolts when stress increases permitted by Footnote No. 5 of Table No. 26-E or Section 2624(b) are utilized.

3. **Special Moment-resisting Concrete Frames:** As required by Section 2625(j).

4. **Reinforcing Steel and Prestressing Tendons:**

A. During all stressing and grouting of tendons in prestressed concrete.

B. During placing of reinforcing steel and prestressing tendons for all concrete required to have special inspection by Item No. 1.

EXCEPTION: The special inspector need not be present continuously during placing of reinforcing steel and prestressing tendons, provided the special inspector has inspected for, and found in conformance with the approved plans prior to the closing of forms or the delivery of concrete to the job site.

5. **Structural Steel:** Fabrication and erection of structural steel members and assemblies.

EXCEPTION: The inspector need not be present during the entire fabrication and erection process provided:

1. Inspection of welding and bolting is in accordance with the exceptions to Items Nos. 5B and C of Section 306(a).

2. That upon completion of fabrication and erection of all members, sizes and grades of steel can be easily identified.

A. **Erection:** Verify grade of steel, size of members, location and plumbness of members and assemblies during erection.

B. **Welding:**

(i) Special moment-resisting steel frames. As required by Section 2722(k).

(ii) All structural welding, including welding of reinforcing steel.

EXCEPTION: When approved by the building official, single-pass fillet welds when stressed to less than 50 percent of allowable stresses and floor and roof deck welding and welded studs when used for structural diaphragm or composite systems may have periodic inspections as defined in Section 306(c). For periodic inspection, the inspector shall check qualifications of welders at the start of work and then make final inspection of all welds for compliance.

C. **High-strength Bolting:** As required by U.B.C. Standard No. 27-7.

EXCEPTIONS: 1. The special inspector need not be present during the entire installation and tightening operations provided the special inspector:

A. Has inspected the surfaces and bolt type for conformance to plans and specifications prior to the start of bolting, and

B. Will, upon completion of all bolting, verify the minimum specified bolt tension for 10 percent of the bolts for each connection, with a minimum of 2 bolts per connection.

2. In bearing type connections when threads are not required by design to be excluded from the shear plane. Inspection prior to or during installation will not be required.

6. **Aluminum:** Fabrication and erection of structural aluminum members and assemblies.

EXCEPTION: The special inspector need not be present during the entire fabrication and erection process provided inspection of welding and bolting is in accordance with the exceptions to Item Nos. B and C of Section 306(a)5.

7. **Structural Masonry:** During preparation of masonry wall prisms, sampling and placing of all masonry units, placement of reinforcement, inspection of grout space immediately prior to closing of cleanouts, and during all grouting operations. Where masonry prism tests are required, they shall be made in accordance with Section 2405(c). Number of mortar and grout test specimens required and frequency of testing shall be as determined by the building official.

EXCEPTIONS: 1. Periodic special inspection is allowed when design stresses are reduced by one-half. For the purpose of this exception, periodic special inspection includes verification of construction materials, placement of reinforcements, grout placement, and conformance with the approved design drawings.

2. For closed-end hollow-unit masonry where the f'_m is no more than 1,500 pounds per square inch for concrete units or 2,600 pounds per square inch for clay units, and cleanouts are provided at the bottom course of every grout pour at each vertical bar, special inspection for placing of units may be performed on a periodic basis in accordance with Section 306(c).

3. For open-end hollow-unit masonry where cleanouts are provided at the bottom course of every grout pour at each vertical bar, special inspection for placing units may be performed on a periodic basis in accordance with Section 306(c).

4. Other periodic special inspection may be allowed when approved by the building official.

8. **Reinforced Gypsum Concrete:** When cast-in-place Class B gypsum concrete is being mixed and placed.

9. **Insulating Concrete Fill:** During the application of insulating concrete fill when used as part of a structural system.

EXCEPTION: The special inspection may be limited to an initial inspection to check the deck surface and placement

of reinforcing. The special inspector shall supervise the preparation of compression test specimens during this initial inspection.

10. **Spray-Applied Fireproofing:** During application of sprayed-on fireproofing in accordance with U.B.C. Standard No. 43-8.

11. **Piling, Drilled Piers and Caissons:** During driving and testing of piles and construction of cast-in-place drilled piers or caissons. See Items 1 and 4 for concrete and reinforcing steel inspection.

12. **Shotcrete:** During the taking of test specimens and placing of all shotcrete and as required by Section 2621(j) and (k).

EXCEPTION: Shotcrete work fully supported on earth, minor repairs and when, in the opinion of the building official, no special hazard exists.

13. **Special Grading, Excavation and Filling:** During earth-work excavations, grading and filling operations inspection to satisfy requirements of Chapter 29 and Title 22, Subtitle VIII, of the Seattle Municipal Code, as amended, regulating grading and drainage control.

14. **Special Cases:** Work which, in the opinion of the building official, involves unusual hazards.

(b) **Waiver of Special Inspection Requirements.** The building official may waive the requirements for employing a registered special inspector under the following conditions:

1. **Minor Quantities.** Where minor quantities are involved, where no unusual hazards exist, or when the work is performed in approved fabricator shops.

2. **Approval of Non-Registered Special Inspectors.** Upon approval by the building official, a person other than a registered special inspector may provide the required inspection as specified in Section 306(a) in the following cases:

   A. Where the required inspection is to be performed by the architect or engineer responsible for the design of the work, as approved by the building official.

   B. Where, in the opinion of the building official, the nature of the work requires inspection by a person having certain technical knowledge and skill in a specialized type of work for which a registered special inspector may not be qualified or authorized to inspect. In such cases, the building official may designate the person to perform the special inspection required.

(c) **Periodic Special Inspections.** Inspections may be made on a periodic basis and satisfy the requirements of continuous inspection, provided this periodic scheduled inspection is performed as outlined in Section 306(a) or in the project plans and specifications and is approved by the building official.

(d) **Special Inspection Requests.** It shall be the duty of the person doing the work requiring special inspection to notify the special inspector that such work is ready for inspection. The

building official may require that every request for special inspection be filed at least one working day before such special inspection is desired. Such request may be in writing or by telephone at the option of the building official.

(e) **Access to Work.** It shall be the duty of the person requesting any special inspections required by this code to provide access to and means for proper inspection of such work.

(f) **Posting Special Inspection Record.** Work requiring special inspection shall not be commenced until the permit holder or his/her agent has posted an inspection record in a conspicuous place on the premises and in a position which allows the special inspector and building official to conveniently make the required entries regarding inspection of the work. This record shall be maintained in such position by the permit holder until final approval has been granted by the building official.

(g) **Additional Special Inspectors.** Where the magnitude or complexity of a specific job is sufficient to warrant, additional registered special inspectors may be required by the building official.

(h) **Preconstruction Conference.** When required by the building official, the owner's architect/engineer shall arrange a conference with the project contractor, the design team, the special inspection agency and the building official prior to commencing work on any portion of construction requiring special inspection. The intent of such a conference is to identify and clarify the special inspection requirements of the project.

(i) **Responsibility for Performance.** 1. **Responsibility of Architect/Engineer/Owner.** The licensed architect, structural engineer of record or owner shall be responsible for recommending, to the building official, registered special inspectors and approved inspection and/or testing agencies to conduct special inspections and tests required by Sec 306(a). The owner shall be responsible to employ approved special inspectors and testing agencies to conduct required special inspections and tests.

The owner, or an authorized agent, shall be responsible for notifying the special inspector employed to conduct special inspections when construction activity is scheduled which requires special inspection. Where the owner designates another person to provide notification to the special inspector, the owner retains the responsibility to assure that the special inspections are conducted and required reports submitted to the building official.

2. **Responsibility of the Building Official.** The employment of a registered special inspector on any work shall not be deemed to relieve the building official of responsibility for such inspection or of the periodic and called inspections listed in Section 305.

3. **Responsibility of the Special Inspector.** The special inspector shall be responsible for conducting all special inspections for which he/she was employed and notified and for carrying out the duties of a special inspector as specified in Section 306(l).

(j) **Approval of Special Inspectors and Testing Agencies.** Registered special inspectors and approved inspection and/or testing agencies recommended by the architect/engineer/owner shall be approved by the building official in writing prior to conducting any inspections or tests. No changes of special inspectors or inspection/testing agency approved by the building official shall be made without obtaining prior approval of the responsible architect/engineer/owner and the building official.

(k) **Registered Special Inspector.** 1. A registered special inspector shall be a person who has been examined as to his/her competence, to the satisfaction of the building official, for performing the special inspection of the type or types for which he/she has applied. The building official shall issue the applicant a Certificate of Registration as evidence of the examination.

2. The registered special inspector shall be employed only by an approved inspection and/or testing agency.

3. The registered special inspector shall not inspect work performed, or material supplied, by any contractor, subcontractor, or material vendor with whom such inspector is employed.

(l) **Duties of Registered Special Inspectors. 1. General.** Registered special inspectors are regularly authorized deputies of the building official and are subject to all duties imposed by the building official, in addition to the following:

The registered special inspector shall be present during the execution of all assigned work. The registered special inspector shall report to the job sufficiently in advance of construction to become familiar with the plans and to inspect all materials to be used or concealed within such work; and shall inspect the construction, erection, placing, or other use of such materials; and shall observe whether there is compliance with the approved design as to all of the foregoing. During the execution of all assigned work, the registered special inspector shall not undertake or engage in any other task or occupation which will interfere with the proper performance of his/her inspection duties.

The registered special inspector shall not approve the placing of foundation concrete or pile caps prior to the approval of the soil condition or pile driving reports by the architect or engineer who established the soil design properties of the site and subsequent review and approval by the building official.

If any registered special inspector is negligent in the performance of his/her duties, the work may be stopped.

2. **Notification.** A. The registered special inspector shall notify the building official and the architect, engineer or owner of his/her commencement of inspection of a job and shall specify the type of inspection for which he/she has been engaged. This notification shall be made no later than the last working day preceding such commencement of inspection.

B. The registered special inspector shall notify the building official prior to commencement of each day's inspection thereafter.

3. **Reports.** A. **Daily Reports.** The registered special inspector shall immediately report all irregularities, substitution of

materials or violations to the contractor for correction, then if uncorrected, to the architect or engineer of record and to the building official.

At the conclusion of each inspection, the registered special inspector shall submit a report to the architect, engineer and owner relative to the portion of the work inspected, stating whether the work requiring special inspection was, to the best of his/her knowledge, in conformance with the approved plans and specifications and the applicable workmanship provisions of this building code and related standards. The report shall be signed by the special inspector. One copy of the report shall be submitted to the building official no later than one week from the date of the inspection and shall be filed in the records of his/her office. One copy of the report shall be left at the job site by the special inspector. The special inspector shall also provide, as directed by the building official or by the architect, engineer or owner, such other information as may be required during his/her assigned employment.

B. **Final Report.** The inspection/testing agency shall submit a final signed report stating whether all work requiring special inspection was, to the best of the agency's knowledge, inspected and reported as specified on permit documents.

(m) **Registration of Special Inspectors. 1. Application for Registration.** Any person desiring registration as a registered special inspector for one or more types of special inspection shall make application to the building official on a form provided by the building official. Criteria for registration shall be established by the building official.

2. **Issuance of Certificate of Registration.** The building official shall require each applicant to be examined to determine if the applicant has the knowledge, experience and training to perform the type(s) of special inspection for which the application has been made. When the building official is satisfied that the applicant is qualified, a Certificate of Registration or a Limited Certificate of Registration shall be issued which shall specify the type(s) of inspection the applicant has been authorized to perform. The building official shall maintain a current list of inspectors and the types of work each has been authorized to inspect. The list is part of the Department of Construction and Land Use's public records and may be reviewed by the public upon request.

(n) **Renewal of Registered Special Inspector's Certificate.** A Certificate of Registration or Limited Certificate of Registration shall be valid for a period of time from the date of issuance to be determined by the building official. Upon application for renewal of a Certificate of Registration, the applicant may be re-examined to ascertain his/her fitness to perform the inspection of the type or types for which the application was made.

(o) **Revocation of Certificate.** The building official may revoke, suspend, or refuse to renew any Certificate of Registration or Limited Certificate of Registration upon evidence submitted to him/her of incompetence, of willful or negligent failure to observe or report violations of this building code, or of any other failure to perform properly and effectively the duties assumed by a registered special inspector.

The special inspector shall be notified in writing of the building official's decision to revoke, suspend or refuse to renew the Certificate of Registration or Limited Certificate of Registration. The inspector may request in writing a hearing before the building official for reconsideration of the decision to revoke, suspend or nonrenewal. The request shall be filed with the building official by five o'clock of the fifteenth working day following service of the notice. The hearing shall be held no later than 15 working days from receipt of a written request. After the hearing, the building official shall issue a final decision, in writing, sustaining, modifying or withdrawing the initial decision to revoke, suspend or refusal to renew the certificate of registration.

(p) **Fees.** Fees for examination and registration of registered special inspectors shall be as determined by the building official in accordance with provisions of the Permit Fee Ordinance.

(q) **Approved Fabricators.** Special inspections required by this section and elsewhere in this code shall not be required where the work is done on the premises of a fabricator certified by the building official to perform such work without special inspection.

1. **Application for Certification.** Application for certification as an approved fabricator may be made to the building official by plants engaged in the manufacture of:

A. Prestressed or precast concrete structural products, and premixed concrete.

B. Unit masonry products.

C. Engineered wood products.

D. Prefabricated or assembly-line produced metal products.

E. Such other prefabricated products as the building official may, from time to time, designate.

2. **Requirements for Certification.** The building official shall examine manufacturing plants which submit applications for certification and shall issue certification when such plants have complied with the following requirements:

A. Develop and submit a detailed fabrication procedural manual reflecting key quality control procedures which will provide a basis for inspection control of the fabricating process.

B. Have the fabricator's quality control capabilities, operation of equipment and personel as outlined in the fabrication procedural manual verified by an approved inspection or quality control agency.

C. Agree to have periodic plant inspections conducted by an approved inspection or quality control agency to monitor the effectiveness of the quality control program.

D. Agree to require the inspection or quality control agency to notify the building official in writing of any changes to the procedural manual.

E. Agree to submit a Certificate of Compliance that work was performed in accordance with the approved plans and specifications to the building official and to the engineer or architect of record.

F. Paid a certification fee as determined by the building official in accordance with provisions of the Permit Fee Ordinance.

3. **Renewal of Certification.** Certificates of approved fabricators shall be valid for one year from the date of issuance and shall be subject to renewal annually. A certificate may be renewed upon application, contingent on compliance with quality control procedures during the past year and payment of a fee in accordance with provisions of the Permit Fee Ordinance. The building official may revoke such certificates for cause.

(r) **Approved Inspection and/or Testing Agency.** 1. **Approval by the Building Official.** Whenever tests or certification of any material or fabricated assembly are required by this building code, such tests or certification shall be made by an agency approved by the building official to conduct such tests or provide such certification.

The building official shall establish rules and regulations setting forth conditions and provisions for approval and for the conduct of any agency so approved.

The building official may suspend or revoke approval of an agency upon evidence of failure of the agency so approved to properly conduct any test, certify any material, or to perform any inspection in a manner required by this building code.

2. **Employment of Special Inspectors.** It shall be the responsibility of an approved agency to employ only registered special inspectors on work required to be so inspected by this building code and such agency shall report, as directed by the building official, all special inspections performed by the agency.

(s) **Welder Qualifications.** All welders, tackers and welding operators performing work regulated by this building code shall be qualified by the building official. Criteria for qualification shall be established by the building official.

STRUCTURAL OBSERVATION

Sec. 307. Structural observation shall be provided when one of the following conditions exists:

1. The structure is defined in Table No. 23-K as Occupancy Category I, II or III; or

2. The structure is required to comply with Section 1807; or

3. Construction inspection as defined in Section 302(c), Item 5B, is required; or

4. The structure is designed according to Section 702(b) 1 and the building above the three-hour occupancy separation is 5 or more stories in height; or

5. When such observation is specifically required by the building official for unusual lateral force-resisting structures or irregular structures as defined in Section 2333.

The owner shall employ the engineer or architect of record, or another engineer or architect designated by the engineer or architect of record to perform structural observation as defined in Section 420. Any observed deficiencies that do not generally conform to the approved plans and specifications or to revised details approved by the building official shall be submitted in writing to the owner's representative who, in turn, shall notify the contractor and the building official. The engineer or architect shall submit a statement in writing to the building official stating that the site visits have been made.

CERTIFICATE OF OCCUPANCY

Sec. 308. (a) **Occupancy.** No new building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure, or portion thereof, shall be made until the building official has issued a Certificate of Occupancy therefor.

> **EXCEPTION:** Group R, Division 3, and Group M Occupancies provided buildings and structures of Group R, Division 3 shall not be used or occupied until approved for occupancy after final inspection.

Issuance of a Certificate of Occupancy shall not be construed as an approval of a violation of the provisions of this code or other pertinent laws and ordinances of the City. Certificates presuming to give authority to violate or cancel the provisions of this code or of other pertinent laws and ordinances of the City shall not be valid.

(b) **Change in Occupancy.** Changes in the occupancy of a building shall not be made except as specified in Section 502 of this building code.

(c) **Certificate Issued.** After satisfactory completion of inspections, when it is found that the building or structure requiring a Certificate of Occupancy complies with the provisions of this building code, the Fire Code and other pertinent laws and ordinances of the City, the building official shall issue a Certificate of Occupancy which shall contain the following information:

1. The building permit number;

2. The address of the building;

3. A description of that portion of the building for which the certificate is issued;

4. A statement that the described portion of the building complies with the requirements of this building code for group and division of occupancy and the activity for which the proposed occupancy is classified; and

5. The name of the building official.

(d) **Temporary Certificate.** A Temporary Certificate of Occupancy may be issued by the building official for the use of a portion,

or portions, of a building or structure prior to the completion of the entire building or structure provided all devices and safeguards for fire protection and life safety, as required by this building code, the Fire Code, and other pertinent laws and ordinances of the City, are maintained in a safe and usable condition.

(e) **Posting.** A Certificate of Occupancy shall be posted in a conspicuous place on the premises and shall not be removed except by the building official.

(f) **Revocation.** The building official may, in writing, suspend or revoke a Certificate of Occupancy issued under the provisions of this code whenever the certificate is issued in error, or on the basis of incorrect information supplied, or when it is determined that the building or structure or portion thereof is in violation of any pertinent laws or ordinances of the City or any of the provisions of this code.

TEMPORARY PERMITS

Sec. 309. (a) **Tents and Similar Facilities.** The building official may issue a nonrenewable permit to erect and maintain for a period not to exceed six weeks, a tent or other temporary structure to be used for religious services, conventions, circuses, carnivals, fairs, special sales or similar uses.

Such structures shall be removed before the expiration of the six week period specified on the permit and such removal shall be guaranteed by a cash deposit with the building official or by a surety bond, the amount of which, in either case, shall be fixed by the building official.

The conditions relative to the cash deposit or the bond shall be such that in case of failure of the occupant or owner to conform to any of the lawful requirements of the City relative to erection, maintenance or removal of said tent or other structure, the properly authorized officers of the City may enter the premises and take such steps as are necessary to conform to such lawful requirements, and shall recover the cost thereof from the cash deposit or bond.

The construction of the structure shall be subject to reasonable safeguards for the persons and property as the building official shall prescribe. The nature and extent of fire-extinguishing equipment and decorations shall be subject to the requirements of the fire chief, and the sanitary facilities shall meet the requirements of the Director of Public Health.

(b) **Temporary Structures.** Temporary structures such as reviewing stands and other miscellaneous structures conforming to the requirements of this building code, and sheds, canopies, or fences used for the protection of the public around and in conjunction with construction work may be erected by special permit from the building official for a limited period of time and such building or structure shall be subject to the bonding, removal and safety provisions noted in Section 309(a). Temporary buildings or structures in the right-of-way shall be regulated by the Director of Engineering.

(c) **Temporary Office Trailers.** The building official may issue a non-renewable building/use permit for eighteen months for the installation of a Commercial Coach or Modular Home as a temporary

office or other uses as may be determined by the building official, subject to the following:

1. The Commercial Coach shall be identified by a State of Washington black sticker located by the door. The structure may be placed on a temporary foundation and shall be anchored to resist wind and seismic lateral forces.

2. The Modular Home shall be identified by a State of Washington gold sticker located by the door. It will be accepted as long as no heavy storage is anticipated for the temporary office use. The structure may be placed on a temporary foundation and shall be anchored to resist wind and seismic lateral forces.

3. A plot plan shall be submitted to verify compliance with Zoning and Land Use Codes and to check exposure to other buildings.

4. The proposed use must be permitted outright under the Zoning and Land Use Codes and comply with all other pertinent laws and ordinances.

5. Construction offices shall be regulated by Section 309(d).

(d) **Construction Buildings.** The building official may issue a permit to erect and maintain construction offices, dry shacks and similar temporary buildings, including material and equipment storage, all for the purpose of constructing an improvement.

> **EXCEPTION:** Construction offices and similar temporary buildings located on the same premises for which a construction permit has been issued, do not require an additional temporary permit.

Such structures shall be removed within 14 days after the termination of the permit, and such removal shall be guaranteed by a cash deposit with the building official or by a surety bond, the amount of which, in either case, shall be fixed by the building official.

The conditions relative to the cash deposit or the bond shall be such that in case of failure of the occupant or owner to conform to any of the lawful requirements of the City relative to erection, maintenance or removal of said construction offices, dry shacks or similar temporary buildings, the properly authorized officers of the City may enter the premises and take such steps as are necessary to conform to such lawful requirements, and shall recover the cost thereof from the cash deposit or bond.

The construction of the structure shall be subject to reasonable safeguards for persons and property as the building official shall prescribe; the nature and extent of fire-extinguishing equipment shall be subject to the requirements of the fire chief, and the sanitary facilities shall meet the requirements of the Director of Public Health.

Section 3. Chapter 4 of the Uniform Building Code, 1991 Edition, is amended as follows:

Chapter 4

DEFINITIONS AND ABBREVIATIONS

DEFINITIONS

Sec. 401. (a) **General.** For the purpose of this code, certain terms, phrases, words and their derivatives shall be construed as specified in this chapter. Words used in the singular include the plural and the plural the singular. Words used in the masculine gender include the feminine and the feminine the masculine.

Where terms are not defined, they shall have their ordinary accepted meanings within the context with which they are used. *Webster's Third New International Dictionary of the English Language, Unabridged*, copyright 1986, shall be considered as providing ordinarily accepted meanings.

Certain terms defined in this chapter are denoted by an asterisk(*). These terms are based upon Washington State Department of Social and Health Services regulations for facilities licensed by that department. Certain terms used in these definitions are not defined. See Titles 212 and 388, Washington Administrative Code (WAC), for the following: adult, developmentally disabled; adult in need of protection; aged person; birth service; child or foster child; child placing agency; crisis residential center; drop-in care; evaluation and treatment facility; family abode; full-time care provider or facility; infant; infirmity; juvenile; licensee; licensing agency; nonambulatory; nonambulatory, mobile; premises; psychiatric impairment; secure detention facilities; sponsor.

(b) **Standards of Quality.** The standards listed below labeled a "U.B.C. Standard" are also listed in Chapter 60, Part II, and are part of this code. The other standards listed below are guideline standards and as such are not adopted as part of this code (see Sections 6002 and 6003).

1. **Noncombustible material**

A. U.B.C. Standards No. 4-1, Noncombustible Material Test

2. **Burning characteristics of building materials**

A. U.B.C. Standard No. 42-1, Test Method for Surface-burning Characteristics of Building Materials

B. U.B.C. Standard No. 25-28, Fire-retardant-treated Wood Tests on Durability and Hygroscopic Properties

3. **Corrosives and irritants**

A. Code of Federal Regulations 49, Part 173, Appendix A, Testing for Corrosiveness

B. Code of Federal Regulations 16, Sections 1500.41 and 1500.42, Methods of Testing Primary Irritant Substances and Test for Eye Irritants

4. **Ranking of hazardous materials**

A. U.F.C. Standard No. 79-3, Identification of the Health, Flammability and Reactivity of Hazardous Materials

5. **Classification of plastics**

A. ASTM D 635, Method of Test for Determining Classification of Approved Light-transmitting Plastics

A

Sec. 402. ACCESS FLOOR SYSTEM is an assembly consisting of panels mounted on pedestals to provide an under-floor space for the installations of mechanical, electrical, communication or similar systems or to serve as an air-supply or return-air plenum.

ACI is the Amercian Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219.

ADDITION is an extension or increase in floor area or height of a building or structure.

***ADULT RESIDENTIAL TREATMENT FACILITY** is a building or portion thereof designed and organized primarily to provide 24-hour residential care, crisis and short-term care and/or long-term individualized active treatment and rehabilitation for clients diagnosed or evaluated as pyschiatrically impaired or chronically mentally ill. (212-43 WAC)

AEROSOL is a product which is dispensed by a propellant from a metal can up to a maximum size of 33.8 fluid ounces or a glass or plastic bottle up to a size of 4 fluid ounces, other than a rim-vented container.

AGGREGATE for the purpose of emission control design is crushed stone, stone, or other inert material or combinations thereof having hard, strong, durable pieces.

AGRICULTURAL BUILDING is a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products. This structure shall not be a place of human habitation or a place of employment where agricultural products are processed, treated or packaged; nor shall it be a place used by the public.

AIR BARRIER is a continuous material or system of materials utilized for the purpose of minimizing the movement of air across a defined boundary, and capable of withstanding the maximum pressure developed across it, without failing by becoming significantly more leaky.

AIR, SUPPLY is that air delivered to the conditioned space and used for ventilation, heating, cooling, humidification or dehumidification.

AISC is the American Institute of Steel Construction, Inc., 400 North Michigan Avenue, Chicago, Illinois 60611.

***ALCOHOLISM TREATMENT FACILITY** is a facility operated primarily for the treatment of alcoholism including the following services: (212-40 WAC)

Alcohol detoxification services are those services required for the care and/or treatment of persons intoxicated or incapacitated by alcohol during the period in which the system is cleared of alcohol and the individual recovers from the transitory effects of intoxication. These include screening of intoxicated persons;

detoxification of intoxicated persons; counseling of alcoholics regarding their illness to stimulate motivation to obtain further treatment and referral of detoxicated alcoholics to other appropriate alcoholism treatment programs.

Alcoholism intensive inpatient treatment services are those services provided to the detoxified alcoholic in a residential setting which include, as a minimum, limited medical evaluation and health supervision, alcoholism education, organized individual and group counseling, discharged referral to necessary supportive services and a client follow-through program after discharge.

Alcoholism long-term treatment services is long term (ninety days or more) provision of a residential care setting with personal care services for alcoholics with impaired self-maintenance capabilities who need personal guidance and assistance to maintain sobriety and optimum health status.

Alcoholism recovery house services is the provision of an alcohol-free residential setting which provides social and recreational activities for detoxified alcoholics to aid their adjustment to normal patterns of living and their engagement in occupational training, gainful employment or other types of normal community activities.

ALLEY is any public space or thoroughfare ((~~less than~~)) 16 feet or less but not less than 10 feet in width which has been dedicated or deeded to the public for public use.

ALTER OR ALTERATION is any change, addition or modification in construction or occupancy.

AMUSEMENT BUILDING is a building or portion thereof((~~, temporary or permanent,~~)) used for entertainment or educational purposes and which contains a system which transports passengers or provides a walkway through a course so arranged that the required exits are not apparent due to theatrical distractions, are disguised or not readily available due to the method of transportation through the building or structure.

Permanent amusement building is any amusement building not otherwise classified as portable or temporary.

Portable amusement structure is an amusement building designed and constructed to be portable to be erected and used on a short term basis at each location.

Temporary amusement building is an amusement building used for that purpose for a period of 6 weeks or less in any given twelve months.

ANSI is the American National Standards Institute, 1430 Broadway, New York, New York 10018.

APARTMENT HOUSE is any building or portion thereof which contains three or more dwelling units and, for the purpose of this code, includes residential condominiums.

APPROVED, as to materials and types of construction, refers to approval by the building official as the result of investigation and tests conducted by the building official, or by reason of accepted principles or test by recognized authorities, technical or scientific organizations.

APPROVED AGENCY is an established and recognized agency regularly engaged in conducting tests or furnishing inspection services, when such agency has been approved.

APPROVED FABRICATOR is an established and qualified person, firm, or corporation approved by the building official pursuant to Section 306 (f) of this code.

ARCHITECT. See "Project Architect or Engineer."

AREA. See "Floor Area."

ASSEMBLY BUILDING is a building or a portion of a building used for the gathering together of 50 or more persons for such purposes as deliberation, education, instruction, worship, entertainment, amusement, drinking or dining or awaiting transportation.

ASTM is the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

ATRIUM is an opening through two or more floor levels other than enclosed stairways, elevators, hoistways, escalators, plumbing, electrical, air-conditioning or other equipment, which is closed at the top and not defined as a mall. Floor levels, as used in this definition, do not include balconies within assembly occupancies or mezzanies which comply with Section 1716.

AUTOMATIC, as applied to fire-protection devices, is a device or system providing an emergency function without the necessity of human intervention and activated as a result of a predetermined temperature rise, rate of rise of temperature or increase in the level of combustion products.

AWNING. See Section 4602.

AWNING SIGN. See Section 4602.

B

Sec. 403. BALCONY is that portion of the seating space of an assembly room, the lowest part of which is raised 4 feet or more above the level of the main floor and shall include the area providing access to the seating area or serving only as a foyer.

BALCONY, EXTERIOR EXIT. See Section 3301(b).

BASEMENT is any floor level below the first story in a building ((~~except that a floor level in a building having only one floor level shall be classified as a basement unless such floor level qualifies as a first story as defined herein.~~)) See "Story."

* **BOARDING HOME** is any building or portion thereof which provides board and domiciliary care to 3 or more aged persons not related by blood or marriage to the operator. (212-36 WAC)

BOAT YARD STRUCTURES are structures with areas in excess of three thousand square feet used for building or repairing of vessels of combustible construction, other than spray application of flammable plastic resin.

BOILER, HIGH-PRESSURE, is a boiler furnishing steam at pressures in excess of 15 pounds per square inch (psi) or hot water

at temperatures in excess of 250°F., or at pressures in excess of 160 psi.

BOILER ROOM is any room containing a steam or hot water boiler.

BUILDING is any structure used or intended for supporting or sheltering any ((~~use or~~)) occupancy.

BUILDING, EXISTING, is a building erected prior to the adoption of this code, or one for which a legal building permit has been issued, under the prior code, and construction has been started within eighteen months after adoption of this code.

BUILDING OFFICIAL is the ((~~officer or other designated authority charged with the administration and enforcement of this code, or the building official's duly authorized representative~~)) Director of the Department of Construction and Land Use. As used in this code, the term includes authorized representatives of the Director of the Department of Construction and Land Use.

BUILDING PERMIT APPLICATION, FULLY COMPLETE is an application which the building official has judged to meet the requirements of Section 302. (It shall be the application for all the architectural and structural parts of a building, except when the building official allows application for portions of buildings, the application shall be at least the complete structural frame.)

C

Sec. 404. CAST STONE is a precast building stone manufactured from portland cement concrete and used as a trim, veneer or facing on or in buildings or structures.

CENTRAL HEATING PLANT is environmental heating equipment which directly utilizes fuel to generate heat in a medium for distribution by means of ducts or pipes to areas other than the room or space in which the equipment is located.

C.F.R. is the Code of Federal Regulations, a regulation of the United States of America available from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

CHIEF OF THE FIRE DEPARTMENT or **FIRE CHIEF** is the head of the fire department or a regularly authorized deputy.

CHILD DAY CARE means the care of children during any period of a 24-hour day.

CHILD DAY CARE HOME, FAMILY is a child day care facility located in the family abode of the person or persons under whose direct care and supervision the child is placed, for the care of twelve or fewer children, including children who reside at the home.

CITY, as used in this code, is the City of Seattle, Washington.

COMBUSTIBLE LIQUID. See the Fire Code.

CONDOMINIUM, RESIDENTIAL. See "Apartment House."

CONGREGATE RESIDENCE is any building or portion thereof which contains facilities for living, sleeping and sanitation, as

required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate residence may be a shelter, convent, monastery, dormitory, fraternity or sorority house but does not include jails, hospitals, nursing homes, hotels or lodging houses.

CONTRACT DOCUMENTS are those design drawings, written specifications, letters, sketches and other documents that fully define the work to be constructed.

CONTROL AREA is a space bounded by not less than a one-hour fire-resistive occupancy separation within which the exempted amounts of hazardous materials may be stored, dispensed, handled or used.

CORROSIVE is a chemical that causes visible destruction of, or irreversible alterations in, living tissue by chemical action at the site of contact. A chemical is considered to be corrosive if, when tested on the intact skin of albino rabbits by the method described in the United States Department of Transportation in Appendix A to CFR 49 Part 173, it destroys or changes irreversibly the structure of the tissue at the site of contact following an exposure period of four hours. This term shall not refer to action on inanimate surfaces.

COURT is a space, open and unobstructed to the sky, located at or above grade level on a lot and bounded on three or more sides by walls of a building.

D

Sec. 405. ((~~DANGEROUS BUILDINGS CODE is the Uniform Code for the Abatement of Dangerous Buildings promulgated by the International Conference of Building Officials, as adopted by this jurisdiction.~~))

* **DAY CARE CENTER** is an agency which provides care for 13 or more children for periods of less than 24 hours. (388-73-014 WAC)

* **DAY TREATMENT CENTER** is an agency which provides care, supervision and appropriate therapeutic and educational services during part of the 24-hour day for children. (212-54 WAC)

DEPRESSURIZATION SYSTEM is a contaminated soil gas control technique that depressurizes the space below a concrete slab or other soil gas retarder relative to the space above it. The purpose of the depressurization system is to maintain a slightly lower pressure in the soil gas under the slab or other soil gas retarder, compared to the indoor pressure above it, to ensure that flows are from the indoors to the soil, thus preventing mass transport of contaminated soil gas to the indoor air.

DIRECTOR. See "Building Official."

DISPENSING is the pouring or transferring of any material from a container, tank or similar vessel, whereby vapors, dusts, fumes, mists or gases may be liberated to the atmosphere.

DISPERSAL AREA, SAFE. See Section 3322(b).

DRAFT STOP is a material, device or construction installed to restrict the movement of air within open spaces of concealed areas of building components such as crawl spaces, floor-ceiling assemblies, roof-ceiling assemblies and attics.

DWELLING is any building or any portion thereof which contains not more than two dwelling units.

DWELLING UNIT is any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and sanitation, as required by this code, for not more than one family, or a congregate residence for 10 or less persons.

E

Sec. 406. EFFICIENCY DWELLING UNIT is a dwelling unit containing only one habitable room.

ELECTRICAL CODE is the ((~~National Electrical Code promulgated by the National Fire Protection Association, as adopted by this jurisdiction.~~)) Seattle Electrical Code.

ELEVATOR CODE is the safety code for elevators, dumbwaiters, escalators and moving walks as adopted by this jurisdiction (see ((~~Appendix~~)) Chapter 51).

EMERGENCY CONTROL STATION is an approved location on the premises of a Group H, Division 6 Occupancy where signals from emergency equipment are received and which is continually staffed by trained personnel.

ENERGY CODE is the Seattle Energy Code.

ENGINEER. See "Project Architect or Engineer" and "Structural Engineer of Record."

EXISTING BUILDINGS. See "Building, Existing."

EXIT. See Section 3301(b).

EXIT COURT. See Section 3301(b).

EXIT ILLUMINATION. See Section 3301(b).

EXIT PASSAGEWAY. See Section 3301(b).

EXIT PLACARD. See Section 3301(b).

EXIT SIGN. See Section 3301(b).

EXTERIOR STAIRWAY. See Section 3301(b).

F

Sec. 407. FABRICATION AREA (fab area) is an area within a Group H, Division 6 Occupancy in which there are processes involving hazardous production materials and may include ancillary rooms or areas such as dressing rooms and offices that are directly related to the fab area processes.

FAMILY is ((~~an individual or two or more persons related by blood or marriage or a group of not more than five persons (excluding servants) who need not be related by blood or marriage living together in a dwelling unit.~~)) a non-profit housekeeping unit consisting of any number of related persons; eight or fewer non-related, non-transient persons; or eight or fewer related and

non-related, non-transient persons other than congregate residences, fraternities, sororities, or groups occupying dormitory buildings or residential clubs.

FAMILY ABODE is a single dwelling unit and accessory buildings occupied for living purposes by a family which provides permanent provisions for living, sleeping, eating, cooking and sanitation.

* **FAMILY DAY CARE HOME** is a foster family home which regularly provides care during part of a 24-hour day to 6 or fewer children including the licensee's own children and foster children under 12 years of age or 2 or fewer children under 2 years of age including the licensee's own children and foster children of such age. (388-73-014 WAC)

* **FAMILY HOME FOR ADULTS** is a foster family home which regularly provides care on a 24-hour basis for 4 or fewer developmentally disabled adults or adults in need of protection. (388-73-014 WAC)

FIRE ASSEMBLY. See Section 4306(b).

FIRE CODE is the ((~~Uniform Fire Code promulgated jointly by the Western Fire Chiefs Association and the International Conference of Building Officials, as adopted by this jurisdiction.~~)) Seattle Fire Code.

FIRE RESISTANCE or **FIRE-RESISTIVE CONSTRUCTION** is construction to resist the spread of fire, details of which are specified in this code.

FIRE RETARDANT COVERING. See Section 4602.

FIRE-RETARDANT TREATED WOOD is any wood product impregnated with chemicals by a pressure process or other means during manufacture, and which, when tested in accordance with U.B.C. Standard No. 42-1 for a period of 30 minutes, shall have a flame spread of not over 25 and show no evidence of progressive combustion. In addition, the flame front shall not progress more than 10-1/2 feet beyond the center line of the burner at any time during the test. Materials which may be exposed to the weather shall pass the accelerated weathering test and be identified as Exterior type, in accordance with U.B.C. Standard No. 25-28. Where material is not directly exposed to rainfall but exposed to high humidity conditions, it shall be subjected to the hygroscopic test and identified as Interior Type A in accordance with U.B.C. Standard No. 25-28.

All materials shall bear identification showing the fire performance rating thereof. Such identifications shall be issued by an approved agency having a service for inspection of material at the factory.

FLAMMABLE LIQUID. See the Fire Code.

FLOOR AREA is the area included within the surrounding exterior walls of a building or portion thereof, exclusive of vent shafts and courts. The floor area of a building, or portion thereof, not provided with surrounding exterior walls shall be the usable area under the horizontal projection of the roof or floor above.

FM is Factory Mutual Engineering and Research, 1151 Boston-Providence Turnpike, Norwood, Massachusetts 02062.

FOAM PLASTIC INSULATION is a plastic which is intentionally expanded by the use of a foaming agent to produce a reduced-density plastic containing voids consisting of hollow spheres or interconnected cells distributed throughout the plastic for thermal insulating or acoustical purposes and which has a density less than 20 pounds per cubic foot.

FOOTING is that portion of the foundation of a structure which spreads and transmits loads directly to the soil or the piles.

* **FOSTER FAMILY HOME** is an agency which regularly provides care during all or any part of the 24-hour day to one or more children, expectant mothers, developmentally disabled adults or other adults in need of protection in the family abode of the person or persons under whose direct care and supervision the child, expectant mother or adult is placed. It shall include and be limited to family homes for adults, foster family homes for children or expectant mothers and family day care homes. (388-73-014 WAC)

* **FOSTER FAMILY HOME FOR CHILDREN OR EXPECTANT MOTHERS** is a foster family home which regularly provides care on a 24-hour basis to 4 or fewer foster children, 3 or fewer expectant mothers, 6 or fewer children including the licensee's own children, or 2 or fewer children under 2 years of age including the licensee's own children of such age. (388-73-014 WAC)

FRONT OF LOT is the front boundary line of a lot bordering on the street and, in the case of a corner lot, may be either frontage.

G

Sec. 408. GARAGE is a building or portion thereof in which a motor vehicle containing flammable or combustible liquids or gas in its tank, is stored, repaired or kept.

GARAGE, PRIVATE, is a building or a portion of a building, not more than 1000 square feet in area, in which only motor vehicles used by the tenants of the building or buildings on the premises are stored or kept. (See Section 1101.)

GARAGE, PUBLIC, is any garage other than a private garage.

GRADE (Adjacent Ground Elevation) is the lowest point of elevation of the finished surface of the ground, paving or sidewalk within the area between the building and the property line or, when the property line is more than 5 feet from the building, between the building and a line 5 feet from the building.

For grade of structures built over water see Chapter 59.

GRADE (Lumber) is the classification of lumber in regard to strength and utility.

* **GROUP CARE FACILITY** is a facility which is maintained and operated for the care of a group of children on a 24-hour basis. (388-73-014 WAC)

GUARDRAIL is a system of building components located near the open sides of elevated walking surfaces for the purpose of minimizing the possibility of an accidental fall from the walking surface to the lower level.

GUEST is any person hiring or occupying a room for living or sleeping purposes.

GUEST ROOM is any room or rooms used, or intended to be used, by a guest for living or sleeping purposes. Every 100 square feet of superficial floor area in a dormitory shall be considered to be a guest room.

H

Sec. 409. HABITABLE SPACE (ROOM) is space in a structure for living, sleeping, eating or cooking. Bathrooms, toilet compartments, closets, halls, storage or utility space, and similar areas are not considered habitable space.

HANDLING is the deliberate transport of materials by any means to a point of storage or use.

HANDRAIL is a railing provided for grasping with the hand for support. See also Section 408, definition of "guardrail."

HAZARDOUS PRODUCTION MATERIAL (HPM) is a solid, liquid or gas that has a degree of hazard rating in health, flammability or reactivity of 3 or 4 and which is used directly in research, laboratory or production processes which have, as their end product, materials which are not hazardous.

HEALTH HAZARD is a classification of a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed persons. The term "health hazard" includes chemicals which are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, neurotoxins, agents which act on the hematopoietic system, and agents which damage the lungs, skin, eyes or mucous membranes.

HEIGHT OF BUILDING is the vertical distance above a reference datum measured to the highest point of the coping of a flat roof or to the deck line of a mansard roof or to the average height of the highest gable of a pitched or hipped roof. The reference datum shall be selected by either of the following, whichever yields a greater height of building:

1. The elevation of the highest adjoining sidewalk or ground surface within a 5-foot horizontal distance of the exterior wall of the building when such sidewalk or ground surface is not more than 10 feet above lowest grade.

2. An elevation 10 feet higher than the lowest grade when the sidewalk or ground surface described in Item 1 above is more than 10 feet above lowest grade.

The height of a stepped or terraced building is the maximum height of any segment of the building.

HELIPORT is an area of land or water or a structural surface which is used, or intended for use, for the landing and take-off of helicopters, and any appurtenant areas which are used, or intended for use, for heliport buildings and other heliport facilities.

HELISTOP is the same as a heliport, except that no refueling, maintenance, repairs or storage of helicopters is permitted.

HIGHLY TOXIC MATERIAL is a material which produces a lethal dose or a lethal concentration which falls within any of the following categories:

1. A chemical that has a median lethal dose (LD_{50}) of 50 milligrams or less per kilogram of body weight when administered orally to albino rats weighing between 200 and 300 grams each.

2. A chemical that has a median lethal dose (LD_{50}) of 200 milligrams or less per kilogram of body weight when administered by continuous contact for 24 hours (or less if death occurs within 24 hours) with the bare skin of albino rabbits weighing between 2 and 3 kilograms each.

3. A chemical that has a median lethal concentration (LC_{50}) in air of 200 parts per million by volume or less of gas or vapor, or 2 milligrams per liter or less of mist, fume or dust, when administered by continuous inhalation for one hour (or less if death occurs within one hour) to albino rats weighting between 200 and 300 grams each.

Mixtures of these materials with ordinary materials, such as water, may not warrant a classification of highly toxic. While this system is basically simple in application, any hazard evaluation which is required for the precise categorization of this type of material shall be performed by experienced, technically competent person.

HORIZONTAL EXIT. See Section 3301(b).

* **HOSPITAL** is any building or portion thereof which provides accommodations, facilities and services on a 24-hour basis for observation, diagnosis or care of 2 or more persons not related to the operator who are suffering from illness, injury, deformity or abnormality, or from any other condition for which obstetrical, medical or surgical services would be appropriate for care or diagnosis. (212-28 WAC)

HOTEL is any building containing six or more guest rooms intended or designed to be used, or which are used, rented or hired out to be occupied, or which are occupied for sleeping purposes by guests.

HOT-WATER HEATING BOILER is a boiler having volume exceeding 120 gallons, or a heat input exceeding 200,000 Btu/h, or an operating temperature exceeding 210°F that provides hot water to be used externally to itself.

HPM STORAGE ROOM is a room used for the storage or dispensing of hazardous production material (HPM) and which is classified as Group H, Division 2, 3 or 7 Occupancies.

HVAC means heating, ventilating and air conditioning.

I

Sec. 410. IRRITANT is a chemical which is not corrosive but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact. A chemical is a skin irritant if, when tested on the intact skin of albino rabbits by the methods of 16 CFR 1500.41 for four hours' exposure or by other appropriate techniques, it results in an empirical score of

5 or more. A chemical is an eye irritant if so determined under the procedure listed in 16 CFR 1500.42 or other appropriate techniques.

J

Sec. 411. JURISDICTION, as used in this code, is ((~~any political subdivision which adopts this code for administrative regulations within its sphere of authority.~~)) the City of Seattle.

K

Sec. 412. No definitions.

L

Sec. 413. LANDING. See Section 3301(b).

LAND USE CODE is the Land Use Code, Title 23 of the Seattle Municipal Code, as amended.

LINTEL is a structural member placed over an opening or a recess in a wall and supporting construction above.

LIQUID is any material which has a fluidity greater than that of 300 penetration asphalt when tested in accordance with the Uniform Fire Code Standards. When not otherwise identified, the term "liquid" is both flammable and combustible liquids.

LIQUID STORAGE ROOM is a room classified as a Group H, Division 3 Occupancy used only for the storage of flammable or combustible liquids in a closed condition. The quantities of flammable or combustible liquids in storage shall not exceed the limits set forth in the Fire Code.

LIQUID STORAGE WAREHOUSE is a Group H, Division 3 Occupancy used only for the storage of flammable or combustible liquids in an unopened condition. The quantities of flammable or combustible liquids stored are not limited.

LISTED and **LISTING** are terms referring to equipment and materials which are shown in a list published by an approved testing agency, qualified and equipped for experimental testing and maintaining an adequate periodic inspection of current productions and which listing states that the material or equipment complies with accepted national standards which are approved, or standards which have been evaluated for conformity with approved standards.

LOADS. See Chapter 23.

LODGING HOUSE is any building or portion thereof containing not more than five guest rooms where rent is paid in money, goods, labor or otherwise.

LOW-PRESSURE HOT-WATER-HEATING BOILER is a boiler furnishing hot water at pressures not exceeding 160 psi and at temperatures not exceeding 250°F.

LOW-PRESSURE STEAM-HEATING BOILER is a boiler furnishing steam at pressures not exceeding 15 psi.

M

Sec. 414. MARQUEE is ((~~a permanent roofed structure attached to and supported by the building and projecting over public property. Marquees are regulated in Chapter 45.~~))a rigid structure projecting from and supported by a building.

MASONRY is that form of construction composed of stone, brick, concrete, gypsum, hollow clay tile, concrete block or tile, glass block or other similar building units or materials or combination of these materials laid up unit by unit and set in mortar.

MASONRY, SOLID, is masonry of solid units built without hollow spaces.

* **MATERNITY HOME** is a building or portion thereof in which facilities are maintained for the care of 4 or more women not related by blood or marriage to the operator, during pregnancy or during or within 10 days after delivery. (212-44-005 WAC)

* **MATERNITY SERVICE** is an agency which provides or arranges for care or services to expectant mothers, regardless of age, before or during confinement, or which provides care as needed to mothers and their infants after confinement. (212-64 and 388-73-014 WAC)

MAY, as used in this code, is permissive for compliance.

MECHANICAL CODE is the ((~~Uniform Mechanical Code promulgated jointly by the International Conference of Building Officials and the International Association of Plumbing and Mechanical Officials, as adopted by this jurisdiction~~)) Seattle Mechanical Code.

MEMBRANE PENETRATION FIRE STOP is a material, device or construction installed to resist, for a prescribed time period, the passage of flame, heat and hot gases through openings in a protective membrane in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

MEZZANINE or **MEZZANINE FLOOR** is an intermediate floor placed within a room.

* **MINI-DAY CARE CENTER** is a day care center for the care of 12 or fewer children in a building other than the family abode of the person or persons under whose direct care and supervision the child is placed, or the care of from 7 through 12 children in the family abode of such person or persons. (388-73-014 WAC)

MOTEL shall mean hotel as defined in this code.

MOTOR VEHICLE FUEL DISPENSING STATION is that portion of a building where flammable or combustible liquids or gases used as motor fuels are stored and dispensed from fixed equipment into the fuel tanks of motor vehicles.

N

Sec. 415. NONCOMBUSTIBLE as applied to building construction material means a material which, in the form in which it is used, is either one of the following:

(a) Material of which no part will ignite and burn when subjected to fire. Any material conforming to U.B.C. Standard No. 4-1 shall be considered noncombustible within the meaning of this section.

(b) Material having a structural base of noncombustible material as defined in Item (a) above, with a surfacing material not over 1/8 inch thick which has a flame-spread rating of 50 or less.

"Noncombustible" does not apply to surface finish materials. Material required to be noncombustible for reduced clearances to flues, heating appliances or other sources of high temperature shall refer to material conforming to Item (a). No material shall be classed as noncombustible which is subject to increase in combustibility or flame-spread rating, beyond the limits herein established, through the effects of age, moisture or other atmospheric condition.

Flame-spread rating as used herein refers to rating obtained according to tests conducted as specified in U.B.C. Standard No. 42-1.

* **NURSING HOME** is a building or portion thereof in which operates or maintains facilities providing convalescent or chronic care, or both, on a 24-hour basis for 3 or more persons not related by blood or marriage to the operator, who by reason of illness or infirmity are unable to properly care for themselves. (212-32 WAC)

O

Sec. 416. OCCUPANCY is the purpose for which a building, or part thereof, is used or intended to be used.

ORIEL WINDOW is a window which projects from the main line of an enclosing wall of a building and is carried on brackets or corbels.

OWNER is any person, agent, firm or corporation having a legal or equitable interest in the property.

P

Sec. 417. PANIC HARDWARE. See Section 3301(b).

PEDESTRIAN WALKWAY is a walkway used exclusively as a pedestrian trafficway.

PENETRATION FIRE STOP is a through-penetration fire stop or a membrane-penetration fire stop.

PERMIT is an official document or certificate issued by the building official authorizing performance of a specified activity.

PERSON is a natural person, heirs, executors, administrators or assigns, and also includes a firm, partnership or corporation, its or their successors or assigns, or the agent of any of the aforesaid.

PLASTIC MATERIALS, APPROVED, other than foam plastics regulated under Sections 1705(e) and 1713, are those having a self-ignition

temperature of 650°F. or greater and a smoke-density rating not greater than 450 when tested in accordance with U.B.C. Standard No. 42-1, in the way intended for use, or a smoke-density rating no greater than 75 when tested in the thickness intended for use by U.B.C. Standard No. 52-2. Approved plastics shall be classified and shall meet the requirements for either CC1 or CC2 plastic.

PLATFORM. See Chapter 39.

PLUMBING CODE is the ((~~Uniform Plumbing Code promulgated by the International Association of Plumbing and Mechanical Officials as adopted by this jurisdiction~~)) Seattle Plumbing Code.

* **PRIVATE ADULT TREATMENT HOME** is any dwelling providing food, shelter, beds and care for 2 or fewer psychiatrically impaired clients, provided these clients are detained and the home is certified as an evaluation and treatment facility. (212-45 WAC)

PROJECT ARCHITECT OR ENGINEER is the licensed Architect or Engineer who has been commissioned as the prime consultant, having overall responsibility for the design and the coordination of the design work of other consultants and whose seal is on the contract documents.

PROTECTIVE MEMBRANE is a surface material which forms the required outer layer or layers of a fire-resistive assembly containing concealed spaces.

* **PSYCHIATRIC HOSPITAL** is a building or portion thereof receiving and/or caring for any insane, alleged insane, mentally ill or other incompetent person requiring psychiatric treatment. (212-40 WAC)

PUBLIC WAY. See Section 3301(b).

Q

Sec. 418. No definitions.

R

Sec. 419. REPAIR is the reconstruction or renewal of any part of an existing building for the purpose of its maintenance.

* **RESIDENTIAL TREATMENT FACILITY FOR PSYCHIATRICALLY IMPAIRED CHILDREN** is a building or portion thereof designed and organized to provide 24-hour residential care and long-term individualized active treatment for children who have been diagnosed or evaluated as psychiatrically impaired. (212-42 WAC)

S

Sec. 420. * **SEMISECURE FACILITY** is a facility, including but not limited to crisis residential centers or foster family homes licensed as crisis residential centers, operated in a manner to reasonably assure that children placed there will not run away. (388-73-012 WAC)

SENSITIZER is a chemical that causes a substantial proportion of exposed people or animals to develop an allergic reaction in normal tissue after repeated exposure to the chemical.

SERVICE CORRIDOR is a fully enclosed passage used for transporting hazardous production materials and for purposes other than required exiting.

SHAFT is an interior space, enclosed by walls or construction, extending through one or more stories or basements which connects openings in successive floors, or floors and roof, to accommodate elevators, dumbwaiters, mechanical equipment or similar devices or to transmit light or ventilation air.

SHAFT ENCLOSURE is the walls or construction forming the boundaries of a shaft.

SHALL, as used in this code, is mandatory.

SHIPYARD STRUCTURES are structures used for repair or building of vessels of noncombustible construction.

SIGN. See Section 4903.

SMOKE DETECTOR is an approved device that senses visible or invisible particles of combustion.

SOIL GAS RETARDER MEMBRANE is a flexible sheet material placed between the soil and the indoor air for the purpose of reducing the flow of soil gas into the building.

STAGE. See Chapter 39.

STORY is that portion of a building included between the upper surface of any floor and the upper surface of the floor next above, except that the topmost story shall be that portion of a building included between the upper surface of the topmost floor and the ceiling or roof above. If the finished floor level directly above a ((~~usable~~))basement or unused under-floor space is more than 6 feet above grade as defined herein for more than 50 percent of the total perimeter or is more than 12 feet above grade ((~~as defined herein at any point~~)) for more than 25 feet of the perimeter plus required driveways up to 22 feet, such ((~~usable~~)) basement or unused under-floor space shall be considered ((~~as~~)) a story; provided however that there is a 10-foot minimum width between the driveway and any portion of the 25-foot exemption.

STORY, BASEMENT-LIKE is a story which, because of topography, has exterior walls that are covered or partially covered by earth, where the building official determines that egress and emergency access are restricted and which is subject to special restrictions for occupancy, egress and sprinkler systems that apply to basements.

((~~STORY, FIRST, is the lowest story in a building which qualifies as a story, as defined herein, except that a floor level in a building having only one floor level shall be classified as a first story, provided such floor level is not more than 4 feet below grade, as defined herein, for more than 50 percent of the total perimeter, or not more than 8 feet below grade, as defined herein, at any point.~~))

STREET is any thoroughfare or public way ((~~not less than~~)) over 16 feet in width which has been dedicated or deeded to the public for public use.

STRUCTURAL ENGINEER OF RECORD is the Engineer who has been commissioned to design the primary structure of the building. The structural documents prepared by, or under the supervision of, this Engineer must contain his/her seal and are the structural contract documents used for the construction permit application.

STRUCTURALLY QUALIFIED PRODUCTS are products that have been pre-qualified by current acceptance and certification by an accepted authority such as International Conference of Building Officials (ICBO), American Society for Testing and Materials (ASTM), American Concrete Institute (ACI), American Institute of Steel Construction (AISC), or others widely accepted in the engineering field.

STRUCTURAL OBSERVATION means the visual observation of the structural system ((~~, including but not limited to, the elements and connections at significant construction stages, and the completed structure~~)) for general conformance to the approved plans and specifications. Structural observation does not include or waive the responsibility for the inspections required by Sections 305 and 306.

STRUCTURE is that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

SURGICAL AREA is the preoperating, operating, recovery and similar rooms housing patients uncapable of unassisted self-preservation within an outpatient health-care center.

T

Sec. 421. THROUGH-PENETRATION FIRE STOP is a material, device or construction installed to resist, for a prescribed time period, the passage of flame, heat and hot gases through openings which penetrate the entire fire-resistive assembly in order to accommodate cables, cable trays, conduit, tubing, pipes or similar items.

TOWNHOUSE is a form of ground-related housing in which individual dwelling units are attached along at least one common wall to at least one other dwelling unit. Each dwelling unit occupies space from the ground to the roof. For the purposes of this code a townhouse containing more than two dwelling units shall be considered an apartment house, and a townhouse containing only two dwelling units shall be considered a dwelling.

U

Sec. 422. U.B.C. STANDARDS is the Uniform Building Code Standards ((~~promulgated by the International Conference of Building Officials, as adopted by this jurisdiction. (See Chapter 60.)~~)) 1991 Edition.

UL is the Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, Illinois 60062.

USE with reference to flammable or combustible liquids is the placing in action or service flammable or combustible liquids whereby flammable vapors may be liberated to the atmosphere.

USE with reference to hazardous materials other than flammable or combustible liquids is the placing in action or making available for service by opening or connecting any container utilized for confinement of material whether a solid, liquid or gas.

USE, CLOSED SYSTEM, is use of a solid or liquid hazardous material in a closed vessel or system that remains closed during normal operations where vapors emitted by the product are not liberated outside of the vessel or system and the product is not exposed to the atmosphere during normal operations; and all uses of compressed gases. Examples of closed systems for solids and liquids include product conveyed through a piping system into a closed vessel, system or piece of equipment; reaction process operations.

USE, OPEN SYSTEM, is use of a solid or liquid hazardous material in a vessel or system that is continuously open to the atmosphere during normal operations and where vapors are liberated, or the product is exposed to the atmosphere during normal operations. Examples of open systems for solids and liquids include dispensing from or into open beakers or containers, dip tank and plating tank operations.

USE where otherwise mentioned in this code is equivalent to character of occupancy and not intended to be construed as the definition of USE in the Zoning or Land Use Codes.

V

Sec. 423. VALUE or VALUATION of a building shall be the estimated cost to replace the building and structure in kind, based on current replacement costs, as determined in ((~~Section 304(b)~~)) the Permit Fee Ordinance.

VENEER. See Section 3002.

VENTILATION EFFECTIVENESS is the fraction of the outdoor air delivered to the space that reaches the occupied zone.

W

Sec. 424. WALLS shall be defined as follows:

Bearing Wall is any wall meeting either of the following classifications:

(a) Any metal or wood stud wall which supports more than 100 pounds per lineal foot of superimposed load.

(b) Any masonry or concrete wall which supports more than 200 pounds per lineal foot superimposed load, or any such wall supporting its own weight for more than one story.

Exterior Wall is any wall or element of a wall or any member or group of members, which defines the exterior boundaries or courts of a building and which has a slope of 60 degrees or greater with the horizontal plane.

Faced Wall is a wall in which the masonry facing and backing are so bonded as to exert a common action under load.

Nonbearing Wall is any wall that is not a bearing wall.

Parapet Wall is that part of any wall entirely above the roof line.

Retaining Wall is a wall designed to resist the lateral displacement of soil or other materials.

WATER HEATER is an appliance designed primarily to supply hot water and is equipped with automatic controls limiting water temperature to a maximum of 210°F and which does not exceed pressure of 160 pounds per square inch, volume of 120 gallons and a heat input of 200,000 Btu/hr.

WEATHER-EXPOSED SURFACES are all surfaces of walls, ceilings, floors, roofs, soffits and similar surfaces exposed to the weather, excepting the following:

(a) Ceilings and roof soffits enclosed by walls or by beams which extend a minimum of 12 inches below such ceiling or roof soffits.

(b) Walls or portions of walls within an unenclosed roof area, when located a horizontal distance from an exterior opening equal to twice the height of the opening.

(c) Ceiling and roof soffits beyond a horizontal distance of 10 feet from the outer edge of the ceiling or roof soffits.

X

Sec. 425. No definitions.

Y

Sec. 426. YARD is an open, unoccupied space, other than a court, unobstructed from the ground to the sky, except where specifically provided by this code, on the lot on which a building is situated.

Z

Sec. 427. ((~~No definitions.~~)) **ZONING CODE** is the Zoning Code, Title 24, Seattle Municipal Code, as amended.

Section 4. Section 502 of the Uniform Building Code, 1991 Edition, is amended as follows:

CHANGE IN USE OR CHARACTER OF OCCUPANCY

Sec. 502. No change shall be made in the character of occupancies or use of any building which would place the building in a different division of, or subdivision of, the same group of occupancy or in a different group of occupancies, unless such building is made to comply with the requirements of this code for such division or group of occupancy. Change of tenants will be permitted so long as the character of the occupancy is not changed.

EXCEPTION: The character of the occupancy of existing buildings may be changed subject to the approval of the building official ((~~and the~~)) as set forth in Section 104. The building may be occupied for purposes in other groups

without conforming to all the requirements of this code for those groups, provided the new or proposed use is ((~~less~~)) not more hazardous, based on life and fire risk, than the existing use as set forth in Table 5-E.

No change in the character of occupancy of a building shall be made without a Certificate of Occupancy, as required in Section 308 of this code. The building official may issue a Certificate of Occupancy pursuant to the intent of the above exception without certifying that the building complies with all provisions of this code.

Section 5. Section 503 of the Uniform Building Code, 1991 Edition, is amended as follows:

MIXED OCCUPANCY

Sec. 503. (a) **General.** When a building is used for more than one occupancy purpose, each part of the building comprising a distinct "Occupancy," as described in Chapters 5 through 12, shall be separated from any other occupancy as specified in Section 503(d).

EXCEPTIONS: 1. Where an approved spray booth constructed in accordance with the Fire Code is installed, such booth need not be separated from other Group H Occupancies or from Group B Occupancies.

2. The following occupancies need not be separated from the uses to which they are accessory:

A. Assembly rooms having a floor area of not over 750 square feet.

B. Administrative and clerical offices and similar rooms which do not exceed 25 percent of the floor area of the major use when not related to Group H, Division 2 and Group H, Division 3 Occupancies.

C. Gift shops, administrative offices and similar rooms in Group R, Division 1 Occupancies not exceeding 10 percent of the floor area of the major use.

D. The kitchen serving the dining area of which it is a part.

E. Business, office or similar uses occurring within a dwelling unit, conducted primarily by the occupants of the dwelling, and which are secondary to the use of the unit for dwelling purposes.

3. An occupancy separation need not be provided between a Group R, Division 3 Occupancy and a carport having no enclosed uses above, provided the carport is entirely open on two or more sides.

4. A Group B, Division 1 Occupancy used exclusively for the parking or storage of private or pleasure-type motor vehicles need not be separated from a Group B, Division 3 Occupancy open parking garage as defined in Section 709.

5. A one-hour occupancy separation need not be provided between fuel-dispensing pumps covered with a canopy that is open on three or more sides, and a Group B, Division 2 Occupancy retail store having an area of less than 2,500 square feet when the following conditions exist:

A. The Group B, Division 2 Occupancy is provided with two exits separated as required by Section 3303(c) and not located in the same exterior wall.

B. Pump islands are not located within 20 feet of the Group B, Division 2 Occupancy retail store.

When a building houses more than one occupancy, each portion of the building shall conform to the requirements for the occupancy housed therein.

An occupancy shall not be located above the story or height set forth in Table No. 5-D, except as provided in Section 507. When a mixed occupancy building contains a Group H, Division 6 Occupancy, the portion containing the Group H, Division 6 Occupancy shall not exceed three stories or 55 feet in height.

(b) **Forms of Occupancy Separations.** Occupancy separations shall be vertical or horizontal or both or, when necessary, of such other form as may be required to afford a complete separation between the various occupancy divisions in the building.

Where the occupancy separation is horizontal, structural members supporting the separation shall be protected by equivalent fire-resistive construction.

(c) **Types of Occupancy Separations.** Occupancy separations shall be classed as "four-hour fire-resistive," "three-hour fire-resistive," "two-hour fire-resistive," and "one-hour fire-resistive."

1. A four-hour fire-resistive occupancy separation shall have no openings therein and shall not be of less than four-hour fire-resistive construction.

2. A three-hour fire-resistive occupancy separation shall not be of less than three-hour fire-resistive construction. All openings in walls forming such separation shall be protected by a fire assembly having a three-hour fire-protection rating. The total width of all openings in any three-hour fire-resistive occupancy separation wall in any one story shall not exceed 25 percent of the length of the wall in that story and no single opening shall have an area greater than 120 square feet.

All openings in floors forming a three-hour fire-resistive occupancy separation shall be protected by vertical enclosures extending above and below such openings. The walls of such vertical enclosures shall be of not less than two-hour fire-resistive construction and all openings therein shall be protected by a fire assembly having a one- and one-half-hour fire-protection rating.

EXCEPTION: The vertical enclosure walls above the floor openings may be of not less than one-hour fire-resistive construction and openings shall be protected by a fire assembly having a one-hour fire-protection rating provided that the vertical enclosure walls below such floor openings

shall be of not less than three-hour fire-resistive construction and openings shall be protected by a fire assembly having a three-hour fire-protection rating. Stair and elevator doors in the three-hour enclosure walls may be one and one-half hour fire assemblies if they open into vestibules which are separated from the remainder of the floor by walls of not less than one-hour fire-resistive construction. Openings in vestibule walls shall be protected by a tightfitting and draft control assembly conforming to Section 3305(h).

3. A two-hour fire-resistive occupancy separation shall not be of less than two-hour fire-resistive construction. All openings in such separation shall be protected by a fire assembly having a one- and one-half-hour fire-protection rating.

4. A one-hour fire-resistive occupancy separation shall not be of less than one-hour fire-resistive construction. All openings in such separation shall be protected by a fire assembly having a one-hour fire-protection rating.

(d) **Fire Ratings for Occupancy Separations.** Occupancy separations shall be provided between the various groups and divisions of occupancies as set forth in Table No. 5-B.

EXCEPTIONS: 1. A three-hour occupancy separation may be used between a Group A, Division 1 and a Group B, Division 1 Occupancy used exclusively for the parking or storage of private or pleasure-type motor vehicles and provided no repair or fueling is done. A two-hour occupancy separation may be used between a Group A, Division 2, 2.1, 3 or 4 or E or I Occupancy and a Group B, Division 1 Occupancy that is used exclusively for the parking or storage of private or pleasure-type motor vehicles and provided no repair or fueling is done.

2. Unless required by Section 702(b)1, the three-hour occupancy separation between a Group R, Division 1 Occupancy and a Group B, Division 1 Occupancy used only for the parking or storage of private or pleasure-type motor vehicles with no repair or fueling may be reduced to two hours. For an area exceeding 3,000 square feet and not exceeding 10,000 square feet, a one-hour occupancy separation is permitted provided such garage is equipped with an approved automatic sprinkler system. Such occupancy separation may be further reduced to one hour where the area of such Group B, Division 1 Occupancy does not exceed 3000 square feet.

3. In the one-hour occupancy separation between Group R, Division 3 and Group M Occupancies, the separation may be limited to the installation of ((~~materials approved for one-hour fire-resistive construction~~)) 1/2-inch gypsum wallboard on the garage side and a self-closing, tight-fitting solid wood door 1-3/8 inches in thickness, or a self-closing tight-fitting door having a fire-protection rating of not less than 20 minutes when tested in accordance with Part II of U.B.C. Standard No. 43-2, which is a part of this code, is permitted in lieu of a one-hour fire assembly. Such door may have glazing of 1/4-inch wire glass. Fire dampers need not be installed in air ducts passing through the wall, floor or ceiling separating a Group R, Division 3 occupancy from a Group M Occupancy, provided such ducts within the Group M Occupancy are constructed of steel having a thick-

ness not less than 0.019 inch (No. 26 galvanized sheet gauge) have no openings into the Group M Occupancy.

4. Group H, Division 2 and Group H, Division 3 Occupancies need not be separated from Group H, Division 7 Occupancies when such occupancies also comply with the requirements for a Group H, Division 7 Occupancy. Construction requirements of Chapter 9 for storage and mixing rooms are not waived.

5. No occupancy separation is required between Group A, Division 2.1 and Group B, Division 2 Occupancies when both are protected by an automatic sprinkler system.

6. Subject to the approval of the building official, opening protection in occupancy separation walls may be waived between Group B, Division 1 or 3 parking areas and enclosed poritions of buildings such as entry lobbies and similar areas provided:

A. The floors of the enclosed building, where the opening protection is waived, are protected by an automatic sprinkler system;

B. The openings are glazed with either tempered or laminated glazing materials;

C. When required by the building official, the glazing is protected on the parking side with a sprinkler system designed to wet the entire glazed surface; and

D. The Group B, Division 1 or 3 occupancy is used primarily for passenger loading and unloading and vehicle drive-through uses.

Section 6. Section 504 of the Uniform Building Code, 1991 Edition, is amended as follows:

LOCATION ON PROPERTY

Sec. 504. (a) **General.** Buildings shall adjoin or have access to a public way or yard on not less than one side. Required yards shall be permanently maintained.

For the purpose of this section, the ((~~center line~~)) opposite side of an adjoining public way shall be considered an adjacent property line.

Eaves over required windows shall not be less than 30 inches from the side and rear property lines. For eaves, see Section 1711.

(b) **Fire Resistance of Walls.** Exterior walls shall have fire resistance and opening protection as set forth in Table No. 5-A, Part III, and in accordance with such additional provisions as are set forth in Part IV and Part VII. Distance shall be measured at right angles from the property line. The above provisions shall not apply to walls at right angles to the property line.

Projections beyond the exterior wall shall not extend beyond the least restrictive of the following two provisions:

1. A point one-third the distance to the property line from an assumed vertical plane located where fire-resistive protection of openings is first required due to location on property; or

2. More than 12 inches into areas where openings are prohibited.

Where Table No. 5-A does not include a requirement for protected openings, Item 1, above, shall be a point one-third the distance to the property line from an assumed vertical plane located where openings are first prohibited.

When openings in exterior walls are required to be protected due to distance from property line, the sum of the area of such openings shall not exceed 50 percent of the total area of the wall in each story.

(c) **Buildings on Same Property and Buildings Containing Courts.** For the purposes of determining the required wall and opening protection and roof covering requirements, buildings on the same property and court walls of buildings over one story in height shall be assumed to have a property line between them.

EXCEPTION: In court walls where opening protection is required such protection may be omitted, provided (1) not more than two levels open into the court, (2) the aggregate area of the building including the court is within the allowable area and (3) the building is not classified as a Group I Occupancy.

When a new building is to be erected on the same property as an existing building, the location of the assumed property line with relation to the existing building shall be such that the exterior wall and opening protection of the existing building meet the criteria as set forth in Table No. 5-A and Part IV.

EXCEPTION: Two or more buildings on the same property may be considered as portions of one building if the aggregate area of such buildings is within the limits specified in Section 505 for a single building.

When the buildings so considered house different occupancies or are of different types of construction, the area shall be that allowed for the most restricted occupancy or construction.

Section 7. Subsection 505(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

ALLOWABLE FLOOR AREAS

Sec. 505. (a) **One-story areas.** The area of a one-story building shall not exceed the limits set forth in Table No. 5-C except as provided in Section 506, nor the limits in Chapter 16.

Section 8. Subsection 505(f) of the Uniform Building Code, 1991 Edition, is amended as follows:

(f) **Area Separation Walls.** 1. **General.** Each portion of a building separated by one or more area separation walls which comply with the provisions of this subsection may be considered a separate building, <u>except as provided in Section 3802(h).</u> The extent and location of such area separation walls shall provide a complete separation.

When an area separation wall also separates occupancies that are required to be separated by an occupancy separation, the most restrictive requirements of each separation shall apply.

2. **Fire-resistance.** Area separation walls shall be not less than four-hour fire-resistive construction in Types I, II-F.R., III and IV buildings and two-hour fire-resistive construction in Types II One-hour, II-N or V buildings. The total width of all openings in such walls shall not exceed 25 percent of the length of the wall in each story. All openings shall be protected by a fire assembly having a three-hour fire-protection rating in four-hour fire-resistive walls and one and one-half-hour fire-protection rating in two-hour fire-resistive walls.

3. **Extension beyond exterior walls.** Area separation walls shall extend to the outer edges of horizontal projecting elements such as balconies, roof overhangs, canopies, marquees or architectural projections.

EXCEPTION: When horizontal projecting elements do not contain concealed spaces, the area separation wall may terminate at the exterior wall.

When the horizontal projecting elements contain concealed spaces, the area separation wall need only extend through the concealed space to the outer edges of the projecting elements.

The exterior walls and the projecting elements above shall be of not less than one-hour fire-resistive construction for a distance not less than the depth of the projecting elements on both sides of the area separation wall. Openings within such widths shall be protected by fire assemblies having a fire-protection rating of not less than three-fourths hour.

4. **Terminating.** Area separation walls shall extend from the foundation to a point at least 30 inches above the roof.

EXCEPTIONS: 1. Area separation walls may terminate at the underside of the roof sheathing, deck or slab, provided the roof-ceiling assembly is of at least two-hour fire-resistive construction.

2. Two-hour area separation walls may terminate at the underside of the roof sheathing, deck or slab, provided:

A. Where the roof-ceiling framing elements are parallel to the walls, such framing and elements supporting such framing shall be of not less than one-hour fire-resistive construction for a width of not less than 5 feet on each side of the wall.

B. Where roof-ceiling framing elements are perpendicular to the wall, the entire span of such framing and elements supporting such framing shall be of not less than one-hour fire-resistive construction.

C. Openings in the roof shall not be located within 5 feet of the area separation wall.

D. The entire building shall be provided with not less than a Class B roofing.

3. Two-hour area separation walls may terminate at the underside of noncombustible roof sheathing, deck or slab of roofs of noncombustible construction provided:

A. Openings in the roof are not located within 5 feet of the area separation wall.

B. The entire building is provided with not less than a Class B roofing.

5. **Parapet faces.** Parapets of area separation walls shall have noncombustible faces for the uppermost 18 inches, including counterflashing and coping materials.

6. **Building of different heights.** Where an area separation wall separates portions of a building having different heights, such wall may terminate at a point 30 inches above the lower roof level, provided the exterior wall for a height of 10 feet above the lower roof is of one-hour fire-resistive construction with openings protected by assemblies having a three-fourths-hour fire-protection rating.

EXCEPTION: The area separation wall may terminate at the underside of the roof sheathing, deck or slab of the lower roof, provided:

A. Where the roof-ceiling framing elements are parallel to the wall, such framing and elements supporting such framing shall be of not less than one-hour fire-resistive construction for a width of 10 feet along the wall at the lower roof.

B. Where the lower roof-ceiling framing elements are perpendicular to the wall, the entire span of such framing and elements supporting such framing shall be of not less than one-hour fire-resistive construction.

C. Openings in the lower roof shall not be located within 10 feet of the area separation wall.

D. Where the building is not protected by an automatic sprinkler system designed to either NFPA 13 (UBC Standard No. 38-1) or NFPA 13R (UBC Standard 38-3), the exterior wall for a height of 10 feet above the lower roof, shall be of one-hour fire-resistive construction with openings protected by assemblies having a three-fourths-hour fire-protection rating.

7. Where a two hour area separation wall intersects an exterior wall at a point where the exterior wall forms an angle of less than 180° (an inside angle), a property line shall be assumed so as to regulate construction and opening protection per Table No. 5-A.

See Chapters 6 through 12 inclusive for special occupancy provisions.

Section 9. Section 507 of the Uniform Building Code, 1991 Edition, is amended as follows:

MAXIMUM HEIGHT OF BUILDINGS AND INCREASES

Sec. 507. The maximum height and number of stories of buildings shall be dependent on the character of the occupancy and the type of construction and shall not exceed the limits set forth in Table No. 5-D, except as provided in this section and as specified in Section 503(a) for mixed occupancy buildings.

EXCEPTIONS: 1. Towers, spires and steeples erected as part of a building and not used for habitation or storage are limited as to height only by structural design if completely of noncombustible materials, or may extend not to exceed 20 feet above the height limit in Table No. 5-D if of combustible materials.

2. The height of one-story aircraft hangars shall not be limited if the building is provided with automatic sprinkler systems throughout as specified in Chapter 38 and is entirely surrounded by public ways or yards not less in width than one and one-half times the height of the building.

3. An unenclosed and uncovered roof deck shall not be considered a story for the purpose of determining the number of stories in a building.

The story limits set forth in Table No. 5-D may be increased by one story if the building is provided with an approved automatic sprinkler system throughout. The increase in the number of stories for automatic sprinkler systems shall not apply when the automatic sprinkler systems throughout are installed under the following provisions:

1. Section 3802(f) for Group H, Divisions 1, 2, 3, 6 and 7 Occupancies.

2. Section 506 for an increase in allowable area.

3. Substitution for one-hour fire-resistive construction pursuant to Section 508.

4. Section 1716, Atria.

5. Section 3802(g) for Group I, Divisions 1.1 and 1.2 Occupancies used as hospitals, nursing homes or health-care centers in Type II One-hour, Type III One-hour, Type IV or Type V One-hour construction.

Filling above existing grade near the perimeter of a building shall not be allowed for the purpose of gaining a story count advantage under this code except when specifically approved by the building official.

See Chapters 6 through 12 for special occupancy provisions.

Section 10. Subsection 509(h) of the Uniform Building Code, 1991 Edition, is amended as follows:

PEDESTRIAN WALKWAYS

(h) **Pedestrian Walkways over Public Streets.** Pedestrian walkways over public streets shall be subject to the ((~~approval of local jurisdiction.~~)) Street Use Ordinance, Title 15, Seattle Municipal Code.

Section 11. Section 511 of the Uniform Building Code, 1991 Edition, is amended as follows:

ACCESSIBILITY TO TOILETS AND OTHER FEATURES

Sec. 511. (a) **Access to Water Closets.** The water closet stool shall be located in a clear space not less than 30 inches in width. The clear space in front of the water closet stool shall not be less than 24 inches.

See ((~~Chapter 31~~)) Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code for requirements for water closets on floors required to be accessible.

(b) **Access to Other Features.** Accessibility to other building features shall be provided in accordance with ((~~Chapter 31.~~)) Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Section 12. Section 513 of the Uniform Building Code, 1991 Edition, is amended as follows:

PREMISES IDENTIFICATION

Sec. 513. ((~~Approved numbers or addresses shall be provided for all new buildings in such a position as to be plainly visible and legible from the street or road fronting the property.~~)) For provisions concerning addresses see Chapter 57.

Section 13. Chapter 5 of the Uniform Building Code, 1991 Edition, is amended by adding Table No. 5-A as follows:

TABLE 5-A

Wall and Opening Protection Based on Location on Property for All Construction Types[1,2,3]

Legend = N/C = Noncombustible, NR = Non-rated, HR = Hour, HT = Heavy Timber, FR = Fire-resistive

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
A-1	I F.R. II F.R.	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR, N/C 40' or more	Not permitted less than 5' Protected less than 16'
	II 1 HR II N III 1 HR III N IV HT V 1 HR V N	ALL -- A-1 Occupancy is not allowed in these construction types			
A-2 A-2.1[7] A-3 A-4	I F.R. II F.R. III 1 HR IV HT	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR, N/C Elsewhere	Not permitted less than 5' Protected less than 16'
A-2 A-2.1[7]	II 1 HR	All	2 HR N/C less than 10' 1 HR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	II N III N V-N	All -- A-2, and 2.1 Occupancies are not allowed in these construction type.			
	V 1 HR	All	2 HR less than 10' 1 HR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
A-3	II 1 HR	All	2 HR N/C less than 5' 1 HR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	II N	All	2 HR N/C less than 5' 1 HR N/C less than 16' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	III N	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
	V 1 HR	All	2 HR less than 5' 1 HR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	V N	All[5]	2 HR less than 5' 1 HR less than 16' NR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
A-4	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Protected less than 10'
	II N	All	1 HR N/C less than 10' NR N/C Elsewhere	Same as Bearing	Protected less than 10'
	III N	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C 40' or more	Not permitted less than 5' Protected less than 16'
	V 1 HR	All	1 HR	Same as Bearing	Protected less than 10'
	V N	All[5]	1 HR less than 10' NR Elsewhere	Same as Bearing	Protected less than 10'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
B-1 B-2 B-3[8] except open parking garages	I FR II FR III 1 HR III N IV HT	All	4 HR N/C less than 5' 2 HR N/C Elsewhere	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
B-1[9] B-2	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 10'
	II N	All	1 HR N/C less than 16' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 5' Protected less than 10'
	V N[4]	All	1 HR less than 16' NR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
B-3[8,9] except open parking garages	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 16'
	II N	All	1 HR N/C less than 16' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 16'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 5' Protected less than 16'
	V N	All[5]	1 HR less than 16' NR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 16'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
B-4[9]	I FR II FR III 1 HR III N IV HT	All	4 HR N/C less than 3' 2 HR N/C Elsewhere	4 HR N/C less than 3' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 3' Protected less than 16'
	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5'
	II N	All	1 HR N/C less than 5' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 5'
	V-N	All[4]	1 HR less than 5' NR Elsewhere	Same as Bearing	Not permitted less than 5'
E-1[10] E-2 E-3	I FR II FR III 1 HR III N IV HT	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
	II 1 HR	All	2 HR N/C less than 5' 1 HR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	II N	All	2 HR N/C less than 5' 1 HR N/C less than 10' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	V 1 HR	All	2 HR less than 5' 1 HR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
	V N	All[5]	2 HR less than 5' 1 HR less than 10' NR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
H-1 H-2 H-5	All	Downtown - These occupancies are not permitted in the Downtown Fire District, See Section 1602(c).			
H-1[10]	I FR II FR	Outside	4 HR N/C	NR N/C	Not restricted[11]
	II 1 HR	Outside	1 HR N/C	NR N/C	Not restricted[11]
	II N	Outside	NR N/C	Same as Bearing	Not restricted[11]
	III 1 HR III N IV HT V 1 HR V N	All -- H-1 occupancy is not allowed in buildings of these construction types			
H-2[5,11,12] H-3[11,12] H-4[13] H-6 H-7	I FR II FR III 1 HR III N IV HT	All[5]	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 10' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
	II 1 HR	All[5]	4 HR N/C less than 5' 2 HR N/C less than10' 1 HR N/C Elsewhere	4 HR N/C less than 5' 2 HR N/C less than 10' 1 HR N/C less than 16' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
	II N	All[5]	4 HR N/C less than 5' 2 HR N/C less than 10' 1 HR N/C less than 16' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 16'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
H-2[5,11,12] H-3[11,12] H-4[13] H-6 H-7 (continued)	V 1 HR	All[5]	4 HR less than 5' 2 HR less than 10' 1 HR Elsewhere	4 HR less than 5' 2 HR less than 10' 1 HR less than 16' NR Elsewhere	Not permitted less than 5' Protected less than 16'
	V N	All[5]	4 HR less than 5' 2 HR less than 10' 1 HR less than 16' NR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 16'
H-5[5,11]	I FR II FR III 1 HR III N IV HT	Outside	4 HR N/C	4 HR N/C less than 40' 1 HR N/C less than 60' NR N/C Elsewhere	Protected less than 60'
	II 1 HR	Outside	1 HR N/C	Same as Bearing	Protected less than 60'
	II N	Outside	1 HR N/C less than 60' NR N/C Elsewhere	Same as Bearing	Protected less than 60'
	V 1 HR	Outside	1 HR	Same as Bearing	Protected less than 60'
	V N	Outside	1 HR less than 60' NR Elsewhere	Same as Bearing	Protected less than 60'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
I-1.1 I-1.2 I-2 I-3	I FR II FR	All	4 HR N/C	4 HR N/C less than 5' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 5' Protected less than 16'
I-1.1 I-1.2 I-3[14]	II 1 HR	All	2 HR N/C less than 5' 1 HR N/C Elsewhere	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 10'
	V 1 HR	All	2 HR less than 5' 1 HR Elsewhere	Same as Bearing	Not permitted less than 5' Protected less than 10'
I-1.1 I-1.2 I-2	II N III N V N	All -- These occupancies are not allowed in buildings of these construction types.			
I-3	II N III N IV HT V N	All -- This occupancy is not allowed in buildings of these construction types.			
I-1.1 I-1.2 I-2 I-3[14]	III 1 HR	All	4 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 16'
I-1.1 I-1.2 I-2	IV HT	All	4 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 16'

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
I-2	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5' Protected less than 10'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 5' Protected less than 10'
M-1	I FR II FR III 1 HR III N IV HT	All	4 HR N/C	4 HR N/C less than 3' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 3' Protected less than 16'
	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 3'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 3'
	II N[9]	All	1 HR less than 3'[15] NR N/C Elsewhere	Same as Bearing	Not permitted less than 3'
	V N	All[5]	1 HR less than 3'[15] NR Elsewhere	Same as Bearing	Not permitted less than 3'
M-2	All	All	Not regulated		

OCCUPANCY GROUP[4]	CONSTRUCTION TYPES[5]	FIRE DISTRICT	EXTERIOR WALLS		OPENINGS[6]
			BEARING	NON BEARING	
			DISTANCES ARE TO PROPERTY LINES		
R-1	I FR II FR III 1 HR III N IV HT	All	4 HR N/C less than 3' 2 HR N/C Elsewhere	4 HR N/C less than 3' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 3' Protected less than 16'
	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 5'
	II N	All	1 HR N/C less than 5' NR N/C Elsewhere	Same as Bearing	Not permitted less than 5'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 5'
	V N	All[5]	1 HR less than 5' NR Elsewhere	Same as Bearing	Not permitted less than 5'
R-3	I FR II FR III 1 HR III N IV	All	4 HR N/C	4 HR N/C less than 3' 2 HR N/C less than 16' 1 HR N/C less than 40' NR N/C Elsewhere	Not permitted less than 3' Protected less than 16'
	II 1 HR	All	1 HR N/C	Same as Bearing except NR, N/C 40' or more	Not permitted less than 3'
	II N	All	1 HR N/C less than 3' NR N/C Elsewhere	Same as Bearing	Not permitted less than 3'
	V 1 HR	All	1 HR	Same as Bearing	Not permitted less than 3'
	V N[4]	All[5]	1 HR less than 3' NR Elsewhere	Same as Bearing	Not permitted less than 3'

FOOTNOTES TO TABLE 5-A

1 See Section 504 for types of walls affected and requirements covering percentage of openings permitted in exterior walls. For walls facing streets, yards and public ways, see also Section 1705.

2 For additional restrictions, see chapters under Occupancy, Fire District and Types of Construction, particularly the "03" Sections of Chapter 18 through 22.

3 See Sections 1801, 1901, 2003 and 2103 for allowances of fire-retardant treated wood in walls which otherwise are required to be noncombustible.

4 See Table 5-A-1 for detailed discription of each Occupancy Group.

5 See Section 1602(a) for additional requirements for Types II-N, III, IV and V construction in the Downtown Fire District. Type V-N construction is prohibited in the Downtown Fire District [See Sec. 1602(b)]. Group H, Divisions 1 and 5 occupancies are prohibited in the Downtown Fire District [See Sec. 1602(c)].

6 Openings in exterior walls shall be protected by a fire assembly having a 3/4 hour fire protection rating.

7 See Section 602(c) for limitations on Group A-2.1 assembly occupancies with an occupant load in excess of 1000.

8 See Section 709 for limitations on Group B-3 open parking garages.

9 See Section 1903(a) for exceptions for Type II-N construction.

10 See Section 803(c) for exception for Types II-one hour, II-N and V construction.

11 For special provisions for Group H occupancies, see Table No. 9-C and Sections 902, 903 and 911. When a detached building is required for Group H-1, 2 or 3 occupancies, there are no requirements for wall and opening protection based on location.

12 No Group H-2 occupancy having a floor area exceeding 500 sq. ft. shall be permitted in the Downtown Fire District. No Group H-3 occupancy having a floor area exceeding 1,500 sq.ft. shall be permitted in the Downtown Fire District. [See Section 1602(c)]

13 Group H-4 occupancies having a floor area not exceeding 2,500 sq.ft. may have exterior bearing walls of not less than 2 hour fire-resistive construction when less than 5 feet from a property line and not less than 1 hour when not less than 16 feet to a property line.

14 See Section 1002(b) for limitations on Group I-3 occupancies.

15 The requirement for one hour fire-resistive construction may be limited to the installation of materials approved for such on the outside only. [See Section 503 and 504]

Section 14. Chapter 5 of the Uniform Building Code, 1991 Edition, is amended by adding Table No. 5-A-1 as follows:

GROUP	DESCRIPTION OF OCCUPANCY
A-1	Any assembly building or portion of a building with a legitimate stage and an occupant load of 1,000 or more.
A-2	Any building or portion of a building having an assembly room with an occupant load of less than 1,000 and a legitimate stage.
A-2.1	Any building or portion of a building having an assembly room with an occupant load of 300 or more without a legitimate stage, including such buildings used for educational purposes and not classed as a Group E or Group B, Division 2 Occupancy.
A-3	Any building or portion of a building having an assembly room with an occupant load of less than 300 without a legitimate stage, including such buildings used for educational purposes and not classed as a Group E or Group B, Division 2 Occupancy.
A-4	Stadiums, reviewing stands and amusement park structures not included within other Group A Occupancies.
B-1	Repair garages where work is limited to exchange of parts and maintenance requiring no open flame, welding or the use of Class I, II or III-A liquids, motor vehicle fuel-dispensing stations and parking garages not classified as Group B, Division 3 open parking garages or Group M, Division 1 private garages.
B-2	Drinking and dining establishments having an occupant load of less than 50, wholesale and retail stores including liquor stores, office buildings, printing plants, police and fire stations, factories and workshops using materials not highly flammable or combustible, woodworking establishments no greater than 3,000 square feet in area, storage and sales rooms for combustible goods including liquor warehouses, paint stores without bulk handling, buildings or portions of buildings having rooms used for educational purposes beyond the 12th grade with less than 50 occupants in any room.
B-3	Aircraft hangars where no repair work is done except exchange of parts and maintenance requiring no open flame, welding or the use of Class I or II liquids; boat moorage, open parking garages, helistops.
B-4	Ice plants; power plants; pumping plants; cold storage; creameries; factories, workshops and shipyard structures using noncombustible and nonexplosive materials; storage and sales rooms containing only noncombustible and nonexplosive materials that are not only packaged or crated in or supported by combustible material.
E-1	Any building used for educational purposes through the 12th grade by 50 or more persons for more than 12 hours per week or four hours in any one day.

TABLE NO. 5-A-1 (cont.)

GROUP	DESCRIPTION OF OCCUPANCY
E-2	Any building used for educational purposes through the 12th grade by less than 50 persons for more than 12 hours per week or four hours in any one day.
E-3	Day care centers, mini-day care centers not in a family abode, preschools, and day treatment centers.
H-1	Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a high explosion hazard as listed in Sec. 901(a).
H-2	Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a moderate explosion hazard or a hazard from accelerated burning as listed in Sec. 901(a).
H-3	Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a high fire or physical hazard as listed in Sec. 901(a).
H-4	Repair garages and body shops not classified as Group B, Division 1, warehouses where highly combustible materials are stores.
H-5	Aircraft repair hangars and heliports not classified as Group B, Division 3.
H-6	Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials are used and the aggregate quantity of materials are in excess of those listed in Table No. 9-A or 9-B.
H-7	Occupancies having quantities of materials in excess of those listed in Table No. 9-B that are health hazards as listed in Sec. 901(a).
I-1.1	Nurseries for the full-time care of children under the age of six (each accommodating more than five persons), residential treatment facilities for psychiatrically impaired children, alcohol detoxification services, hospitals, psychiatric hospitals, nursing homes with nonambulatory or mobile nonambulatory patients and similar buildings.
I-1.2	Health-care centers for ambulatory patients receiving outpatient medical care which may render the patient incapable of unassisted self-preservation (each tenant space accommodating more than 5 such patients).
I-2	Nursing homes for ambulatory patients.
I-3	Psychiatric hospitals, jails, prisons, reformatories and buildings where personal liberties of inmates or patients are similarly restrained.
M-1	Private garages, carports, sheds and agricultural buildings.

TABLE NO. 5-A-1 (cont.)

GROUP	DESCRIPTION OF OCCUPANCY
M-2	Fences over 6 feet high, tanks and towers.
R-1	Hotels and apartment houses, congregate residences (each accommodating more than 10 persons), one or two dwelling units located in a mixed occupancy building, alcoholism intensive inpatient treatment services, alcoholism recovery house services, alcoholism long term treatment services, adult residential treatment facilities, group care facilities and semi-secure facilities, boarding homes, maternity homes and buildings or portions thereof which provide a maternity service.
R-3	Lodging houses, detached one- and two-family dwellings, congregate residences (each accommodating 10 persons or less), foster family homes including and limited to family homes for adults, foster family homes for children or expectant mothers, family child day care homes, and private adult treatment homes.

Section 15. Table No. 5-B of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 5-B—REQUIRED SEPARATION IN BUILDINGS OF MIXED OCCUPANCY[1]
(In Hours)

	A-1	A-2	A-2.1	A-3	A-4	B-1	B-2	B-3[2]	B-4	E	H-1	H-2	H-3	H-4-5	H-6-7[3]	I	M[4]	R-1	R-3
A-1		N	N	N	N	4	3	3	3	N		4	4	4	4	3	1	1	1
A-2	N		N	N	N	3	1	1	1	N		4	4	4	4	3	1	1	1
A-2.1	N	N		N	N	3	1	1	1	N		4	4	4	4	3	1	1	1
A-3	N	N	N		N	3	N	1	1	N		4	4	4	3	2	1	1	1
A-4	N	N	N	N		3	1	1	1	N		4	4	4	4	3	1	1	1
B-1	4	3	3	3	3		1	1	1	3		2	1	1	1	4	1	3	1
B-2	3	1	1	N	1	1		1	1	1		2	1	1	1	2	1	1	1
B-3[4]	3	1	1	1	1	1	1		1	1		2	1	1	1	3	1	1	1
B-4	3	1	1	1	1	1	1	1		1		2	1	1	1	4	N	1	1
E	N	N	N	N	N	3	1	1	1			4	4	4	3	1	1	1	1
H-1	Not Permitted in Mixed Occupancies. See Chapter 9.																		
H-2	4	4	4	4	4	2	2	2	2	4			1	1	2	4	1	4	4
H-3	4	4	4	4	4	1	1	1	1	4		1		1	1	4	1	3	3
H-4-5	4	4	4	4	4	1	1	1	1	4		1	1		1	4	1	3	3
H-6-7[2]	4	4	4	3	4	1	1	1	1	3		2	1	1		4	3	4	4
I	3	3	3	2	3	4	2	3	4	1		4	4	4	4		1	1	1
M[3]	1	1	1	1	1	1	1	1	N	1		1	1	1	3	1		1	1
R-1	1	1	1	1	1	3	1	1	1	1		4	3	3	4	1	1		N
R-3	1	1	1	1	1	1	1	1	1	1		4	3	3	4	1	1	N	

[1]For detailed requirements and exceptions, see Section 503.

((~~[2]Open parking garages are excluded, except as provided in Section 702-(a).~~))

[2]Not Permitted in Mixed Occupancies. See Chapter 9.

[3]For special provisions on highly toxic materials, see Fire Code.

[4]For agricultural buildings, see also Appendix Chapter 11.

Section 16. Table No. 5-D of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 5-D -- MAXIMUM HEIGHT OF BUILDINGS

Occupancy	TYPES OF CONSTRUCTION								
	I	II			III		IV	V	
	F.R.	F.R.	One-Hour	N	One-Hour	N	H.T.	One-Hour	N
	MAXIMUM HEIGHT IN FEET								
	Unlimited	160	65	55	65	55	65	50	40
	MAXIMUM HEIGHT IN STORIES								
A-1	Unlimited	4	Not Permitted						
A-2-2.1	Unlimited	4	2	Not Permitted	2	Not Permitted	2	2	Not Permitted
A-3-4[1]	Unlimited	12	2	1	2	1	2	2	1
B-1-2-3[2]	Unlimited	12	4	2	4	2	4	((~~3~~)) 4	2
B-4	Unlimited	12	4	2	4	2	4	((~~3~~)) 4	2
E[3]	Unlimited	4	2	1	2	1	2	2	1
H-1	1	1	1	1	Not Permitted				
H-2[4]	Unlimited	2	1	1	1	1	1	1	1
H-3-4-5[4]	Unlimited	5	2	1	2	1	2	2	2
H-6-7[2]	3	3	3	2	3	2	3	3	1
I-1.1[5]-1.2	Unlimited	3	1	Not Permitted	1	Not Permitted	1	1	Not Permitted
I-2	Unlimited	3	2	Not Permitted	2	Not Permitted	2	2	Not Permitted
I-3	Unlimited	2	Not Permitted[6]						
M[7]	See Chapter 11								
R-1	Unlimited	12	4	2[8]	4	2[8]	4	((~~3~~)) 4	2[8]
R-3	Unlimited	((~~3~~)) 4	((~~3~~)) 4	((~~3~~)) 4	((~~3~~)) 4	3	((~~3~~)) 4	((~~3~~)) 4	3

FOOTNOTES FOR TABLE NO. 5-D -- MAXIMUM HEIGHT OF BUILDINGS

1 For limitations and exceptions, see Section 602(a).
2 For open parking garages, see Section 709.
3 See Section 802(c).
4 See Section 902.
5 See Section 1002(a) for exception to the number of stories in hospitals and nursing homes.
6 See Section 1002(b).
7 For agricultural buildings, see also Appendix Chapter 11.
8 For limitations and exceptions, see Section 1202(b).
9 Subject to the approval of the building official, buildings containing Group H, Division 7 occupancies may have increased height when fire and life safety systems are enhanced. A preapplication conference per Section 901(g) shall be required.

N -- No requirements for fire resistance
F.R. -- Fire resistive
H.T. -- Heavy timber

Section 17. Chapter 5 of the Uniform Building Code, 1991 Edition, is amended by adding Table No. 5-E as follows:

TABLE NO. 5-E - RATING OF OCCUPANCIES BY DEGREE OF HAZARD

This entire table is added by Seattle and is not underlined.

CLASSIFICATION OF HAZARDS

A. Life Hazard Based on Possible Mortality Due to Occupancy, if Fire Occurs:

Minimum Hazard	-1
Minor Hazard	-2
Average Hazard	-3
Serious Hazard	-4
Maximum Hazard	-5

B. Fire Hazard Based on Possible Generating Fire Due to Occupancy

Noncombustible	-1
Slow Burning	-2
Moderate Burning	-3
Free Burning	-4
Quick Burning	-5
Intense Burning	-6
Flash Burning or Explosive	-7

Occupancy	Occupancy Classification	Life Hazard Rating	Fire Hazard Rating	Combined Rating
Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a high explosion hazard. See Sec. 901(a).	H-1	5	7	35
Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a moderate explosion hazard or a hazard from accelerated burning See Sec. 901(a).	H-2	4	7	28
Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A which present a high fire or physical hazard. See Sec. 901(a).	H-3	4	5	20
Any assembly building or portion of a building with a legitimate stage and an occupant load of 1,000 or more	A-1	4	4	16
Any building or portion of a building having an assembly room with an occupant load of less than 1,000 and a legit. stage	A-2	4	4	16
Any building or portion of a building having an assembly room with an occupant load of 300 or more without a legitimate stage, including such buildings used for educational purposes and not classed as Group E or B-2	A-2.1	4	4	16
Psychiatric hospitals where personal liberties of patients are restrained	I-3	5	3	15
Boarding homes, maternity homes and buildings or portions thereof which provide a maternity service	R-1	5	3	15
Alcohol detoxification services	I-1.1	5	3	15

TABLE NO. 5-E - RATING OF OCCUPANCIES BY DEGREE OF HAZARD (continued)

Occupancy	Occupancy Classification	Life Hazard Rating	Fire Hazard Rating	Combined Rating
Nurseries for the full time care of children under the age of six (each accommodating more than five persons), hospitals, psychiatric hospitals, nursing homes with non-ambulatory or mobile nonambulatory patients	I-1.1	5	3	15
Woodworking establishments in excess of 3,000 square feet	H-3	3	5	15
Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials are used and the aggregate quantity of materials are in excess of those listed in Table No. 9-A or 9-B. See Sec. 901(a)	H-6	2	7	14
Warehouses where highly combustible materials are stores	H-4	2	7	14
Any building used for educational purposes through the 12th grade by 50 or more persons for more than 12 hours per week or four hours in any one day	E-1	4	3	12
Any building used for educational purposes through the 12th grade by less than 50 persons for more than 12 hours per week or 4 hours in any one day	E-2	4	3	12
Day care centers, mini-day care centers not in a family abode, preschools and day care treatment centers	E-3	4	3	12
Any building or portion of a building having an assembly room with an occupant load of less than 300 without a legitimate stage, including such buildings used for educational purposes and not classed as Group E or Group B, Division 2 Occupancy	A-3	3	4	12
Adult residential treatment facilities, group care facilities and semisecure facilities	R-1	4	3	12
Residential treatment facilities for psychiatrically impaired children	I-1.1	4	3	12
Nursing homes for ambulatory patients	I-2	4	3	12
Health-care centers for ambulatory patients receiving out-patient medical care which may render the patient incapable of unassisted self-preservation.	I-1.2	4	3	12
Wholesale and retail stores	B-2	3	4	12
Aircraft repair hangars	H-5	2	5	10

TABLE NO. 5-E - RATING OF OCCUPANCIES BY DEGREE OF HAZARD (continued)

Occupancy	Occupancy Classification	Life Hazard Rating	Fire Hazard Rating	Combined Rating
Drinking and dining establishments with an occupant load of less than 50; printing plants, factories and workshops using materials not highly flammable or combustible; wood-working establishments no greater than 3000 square feet	B-2	3	3	9
Hotels, congregate residences (each accommodating more than 10 persons) alcoholism intensive inpatient treatment services, alcoholism recovery house services, alcoholism long-term treatment services	R-1	3	3	9
Boatyard structures	H-3	2	4	8
Repair garages and body shops not classified as Group B, Division 1	H-4	2	4	8
Motor vehicle fuel-dispensing stations, garages where no repair work is done except exchange of parts and maintenance requiring no open flame, welding or the use of Class I, II or III-A liquids	B-1	2	4	8
Stadiums, reviewing stands and amusement park structures not included within other Group A occupancies	A-4	2	3	6
Occupancies having quantities of materials in excess of those listed in Table No. 9-B that are health hazards. See Sec. 901(a).	H-7	2	3	6
Jails, prisons, reformatories and buildings where personal liberties of inmates are similarly restrained	I-3	3	2	6
Aircraft hangars where no repair work is done except exchange of parts and maintenance requiring no open flame, welding or use of Class I or II liquids; open parking garages; helistops; boat moorages	B-3	2	3	6

TABLE NO. 5-E - RATING OF OCCUPANCIES BY DEGREE OF HAZARD (continued)

Occupancy	Occupancy Classification	Life Hazard Rating	Fire Hazard Rating	Combined Rating
Apartment houses, one or two dwelling units located in a mixed occupancy building	R-1	3	2	6
Lodging houses, detached one- and two-family dwellings, congregate residences (each accommodating 10 or fewer persons), foster family homes, private adult treatment homes, family child day care home	R-3	3	2	6
Storage and sales rooms for combustible goods, paint stores without bulk handling, liquor stores and warehouses	B-2	1	5	5
Power plants, pumping plants, ice plants	B-4	1	5	5
Factories and workshops using noncombustible and nonexplosive materials, shipyard structures	B-4	1	4	4
Fire and police stations, office buildings	B-2	2	2	4
Buildings, or portions of buildings, having rooms used for educational purposes beyond 12th grade with less than 50 occupants in any room	B-2	2	2	4
Private garages, carports, sheds and agricultural buildings	M-1	1	4	4
Cold storage, creameries, storage and sales rooms for noncombustible and nonexplosive materials	B-4	1	3	3
Fences over six feet high, tanks and towers	M-2	1	1	1

Section 18. Subsection 602(b) of the Uniform Building Code, 1991 Edition, is repealed.

Section 19. Subsection 602(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Division 3 Provisions.** Division 3 Occupancies located in a basement, a basement-like story, or above the first floor shall be of not less than one-hour fire-resistive construction.

Division 3 Occupancies with an occupant load of 50 or more which are located over usable space shall be separated from such space by not less than one-hour fire-resistive construction.

Section 20. Section 603 of the Uniform Building Code, 1991 Edition, is amended as follows:

LOCATION ON PROPERTY

Sec. 603. (a) **General.** Buildings housing Group A Occupancies shall front directly on or have access to a public street not less than ((~~20~~)) 40 feet in width. The access to the public street shall be a minimum ((~~20~~)) 40-foot-wide right-of-way, unobstructed and maintained only as access to the public street. The main entrance to the building shall be located on the public street or on the access way.

For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

Section 21. Section 604 of the Uniform Building Code, 1991 Edition, is amended as follows:

ACCESS AND EXIT FACILITIES

Sec. 604. (a) **General.** Exits shall be provided as specified in Chapter 33. (For special exiting requirements, see also Section 3317.) Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~))

the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

(b) **Amusement Structures.** Exits and exit signs for Division 4, Amusement Structures, shall be approved by the building official and, where practicable, shall comply with the requirements specified in Chapter 33.

Section 22. Section 605 of the Uniform Building Code, 1991 Edition, is amended as follows:

LIGHT, VENTILATION AND SANITATION

Sec. 605. All enclosed portions of Group A Occupancies customarily used by human beings and all dressing rooms shall be provided with natural light by means of exterior glazed openings with an area not less than one-tenth of the total floor area, and natural ventilation by means of openable exterior openings with an area of not less than one-twentieth of the total floor area or shall be provided with artificial light and a mechanically operated ventilating system. The mechanically operated ventilating system shall ((~~be capable of supplying a minimum of 5 cubic feet per minute of outside air per occupant with a total circulated of not less than 15 cubic feet per minute per occupant in all portions of the building~~)) comply with the requirements set forth in Chapter 10.1 and other applicable requirements of the Seattle Mechanical Code. Such system shall be kept continuously in operation during such time as that portion of the building is occupied. ((~~If the velocity of the air at the register exceeds 10 feet per second, the register shall be placed more than 8 feet above the floor directly beneath.~~))

Toilet rooms shall be provided with a fully openable exterior window at least 3 square feet in area; or a vertical duct not less than 100 square inches in area for the first toilet facility, with 50 additional square inches for each additional facility; or a mechanically operated exhaust system capable of providing a complete change of air every 15 minutes. Such systems shall be connected directly to the outside, and the point of discharge shall be at least 3 feet from any operable opening into the building.

There shall be provided in an approved location at least one lavatory for each two water closets for each sex and at least one drinking fountain for each floor level.

EXCEPTION: A drinking fountain need not be provided in a drinking or dining establishment.

For other requirements on water closets, see Sections 510 and 511.

Section 23. Section 607 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE DETECTION, ALARM, SPRINKLER AND STANDPIPE SYSTEMS

Sec. 607. When required by other provisions of this code, automatic sprinkler systems and standpipes shall be installed as

specified in Chapter 38. Fire detection and alarm systems shall be provided and installed as required by Article 14 of the Seattle Fire Code.

Section 24. Section 610 of the Uniform Building Code, 1991 Edition, is amended as follows:

AMUSEMENT BUILDING ALARM SYSTEM

Sec. 610. (a) **General.** An approved smoke-detection system installed in accordance with the Fire Code shall be provided in amusement buildings.

EXCEPTION: In areas where ambient conditions will cause a smoke-detector system to alarm, an approved alternate type of automatic detector shall be installed.

(b) **Alarm System.** Activation of any single smoke detector, the automatic sprinkler system or other automatic fire-detection device shall immediately sound an alarm in the building ((~~of~~))at a constantly supervised location from which the manual operation of systems noted in Section 610(c), Items 1, 2 and 3, may be initiated.

(c) **System Response.** In other than temporary amusement buildings, the activation of two or more smoke detectors, a single smoke detector monitored by an alarm verification zone, the automatic sprinkler system or other approved automatic fire-detection device shall automatically:

1. Stop ((~~confusing~~)) sounds and visual effects, and

2. Activate an approved directional exit marking, and

3. Cause illumination of the exit path with light of not less than one footcandle at the walking surface.

(d) **Public Address System.** A public address system which is audible throughout the amusement building shall be provided in all portable and permanent amusement buildings. The ((~~public address~~)) fire alarm system may also serve as ((~~an alarm~~)) a public address system.

Section 25. Section 701 of the Uniform Building Code, 1991 Edition, is amended as follows:

GROUP B OCCUPANCIES DEFINED

701. Group B Occupancies shall be:

Division 1. Repair garages where work is limited to exchange of parts and maintenance requiring no open flame, welding or use of Class I, II or III-A liquids, motor vehicle fuel-dispensing stations and parking garages not classified as Group B, Division 3 open parking garages or Group M, Division 1 private garages.

Division 2. Drinking and dining establishments having an occupant load of less than 50, wholesale and retail stores including liquor

stores, office buildings, printing plants, police and fire stations, factories and workshops using materials not highly flammable or combustible, woodworking establishments no greater than 3,000 square feet in area, storage and sales rooms for combustible goods including liquor warehouses, paint stores without bulk handling. (See Section 402 for definition of assembly buildings.)

Buildings or portions of buildings having rooms used for educational purposes beyond the 12th grade with less than 50 occupants in any room.

Division 3. Aircraft hangars where no repair work is done except exchange of parts and maintenance requiring no open flame, welding or the use of Class I or II liquids.

Boat moorage.

Open parking garages.

Helistops.

Division 4. Ice plants, power plants, pumping plants, cold storage and creameries.

Factories, ((~~and~~)) workshops and shipyard structures using noncombustible and nonexplosive materials.

Storage and sales rooms containing only noncombustible and nonexplosive materials that are not packaged or crated in or supported by combustible material.

For occupancy separations, see Table No. 5-B.

Section 26. Section 702 of the Uniform Building Code, 1991 Edition, is amended as follows:

CONSTRUCTION, HEIGHT AND ALLOWABLE AREA

Sec. 702. (a) **General.** Buildings or parts of buildings classed in Group B Occupancy because of the use or character of the occupancy shall be limited to the types of construction set forth in Tables Nos. 5-C and 5-D and shall not exceed, in area or height, the limits specified in Sections 505, 506 and 507.

(b) **Special Provisions.** 1. **Group B, Division 1 with Group A, Division 3; Group B, Division 2; or Group R, Division 1 Occupancy above.** Other provisions of this code notwithstanding, a basement or first story of a building may be considered as a separate and distinct building for the purposes of area limitations, limitation of number of stories and type of construction, when all of the following conditions are met:

A. The basement or first story is of Type I construction and is separated from the building above with a three-hour occupancy separation.

B. The building above the three-hour occupancy separation contains only Group A, Division 3; Group B, Division 2; or Group R, Division 1 Occupancies.

C. The building below the three-hour occupancy separation is used exclusively for the storage of private or pleasure-type motor vehicles.

EXCEPTIONS: 1. Entry lobbies, laundry rooms, mechanical rooms and similar uses incidental to the operation of the building.

2. Group A, Division 3 and Group B, Division 2 office and retail occupancies in addition to those incidental to the operation of the building (including storage areas) provided that the entire structure below the three-hour occupancy separation is protected throughout by an automatic sprinkler system.

D. The maximum building height in feet shall not exceed the limits set forth in Table No. 5-D for the least type of construction involved.

EXCEPTION: When the upper building is of Type V-One hour construction, the height may be measured from the three hour occupancy separation provided the building, above and below the separation, is protected throughout by an automatic sprinkler system designed to U.B.C. Standard No. 38-1 (NFPA 13).

2. **Group B, Division 1 with Group B, Division 3 Occupancy above.** Other provisions of this code notwithstanding, a Group B, Division 1 Occupancy, located in the basement or first story below a Group B, Division 3 open parking garage, as defined in Section 709, may be classified as a separate and distinct building for the purpose of determining the type of construction when all of the following conditions are met:

A. The allowable area of the structure shall be such that the sum of the ratios of the actual area divided by the allowable area for each separate occupancy shall not exceed 1.

B. The Group B, Division 1 Occupancy is of Type I or II construction and is at least equal to the fire resistance of the Group B, Division 3 Occupancy.

C. The height and the number of the tiers above the basement shall be limited as specified in Table No. 7-A or Section 709(e).

D. The floor-ceiling assembly separating the Group B, Division 1 and Group B, Division 3 Occupancies shall be protected as required for the floor-ceiling assembly of the Group B, Division 1 Occupancy. Openings between the Group B, Division 1 and Group B, Division 3 Occupancies, except exit openings, need not be protected.

E. The Group B, Division 1 Occupancy is used exclusively for the parking or storage for private or pleasure-type motor vehicles but may contain (a) mechanical equipment rooms incidental to the operation of the building and (b) an office, and waiting and toilet rooms having a total area of not more than 1,000 square feet.

(c) **Specific Use Provisions.** 1. **Group B, Divisions 1 and 3 Occupancies.** Marine or motor vehicle fuel-dispensing stations including canopies and supports over pumps shall be of noncombustible, fire-retardant-treated wood or of one-hour fire-resistive construction.

EXCEPTIONS: 1. Roofs of one-story fuel-dispensing stations may be of heavy-timber construction.

2. Canopies conforming to Section 5213 may be erected over pumps.

In areas where motor vehicles, boats or aircraft are stored, and in motor vehicle fuel dispensing stations and Division 1 repair garages, floor surfaces shall be of noncombustible, nonabsorbent materials. Floors shall drain to an approved oil separator or trap discharging to sewers in accordance with the Plumbing Code.

EXCEPTION: Floors may be surfaced or waterproofed with asphaltic paving materials in areas where motor vehicles or air((~~planes~~))craft are stored or operated.

Canopies under which fuels are dispensed shall have a clear, unobstructed height of not less than 13 feet 6 inches to the lowest projecting element in the vehicle drive-through area.

2. **Group B, Division 2 storage areas.** A. **Accessory to wholesale and retail sales.** Storage areas in connection with wholesale or retail sales in Division 2 Occupancies shall be separated from the public area by a one-hour fire-resistive occupancy separation.

EXCEPTION: Occupancy separation need not be provided when any one of the following conditions exists:

A. The storage area does not exceed 1000 square feet, or

B. The storage area is sprinklered and does not exceed 3,000 square feet, or

C. The building is provided with an approved automatic sprinkler system throughout. Area increases as specified in Section 506(c) are permitted.

B. **Mini-storage warehouses and storage accessory to Group R, Division 1.** In Group B, Division 2 accessory storage areas and in mini-storage warehouse buildings, individual storage lockers shall be separated from each other with one-hour fire-resistive construction and shall have one-hour protection for openings in the separation.

EXCEPTION: The separation between individual storage lockers may be non-rated in rooms 500 square feet or less in area and in sprinklered rooms of any size.

See Section 3802 (h) for additional requirements.

See Table No. 5-B for separation required between occupancies.

3. **Laboratories and Vocational Shop Construction.** Laboratories or groups of laboratories under the same management and vocational shops in buildings used for educational purposes and similar areas containing hazardous materials shall be separated from each other and other portions of the building by not less than a one-hour fire-resistive occupancy separation. Laboratories or groups of laboratories may include accessory support areas such as offices. When the quantities of hazardous materials in such uses do not exceed those listed in Table No.

9-A or 9-B, the requirements of Sections 905 and 908 shall apply. When the quantities of hazardous materials in such uses exceed those allowed by Table No. 9-A or 9-B, the use shall be classified as the appropriate Group H Occupancy.

((~~Occupancies in 1~~))Laboratories having an ((~~area in excess of 200 square feet~~)) occupant load in excess of 10 shall have access to at least two exits from the room and all portions of the room shall be within 75 feet of an exit.

4. **Medical gas systems.** Medical gas systems shall be installed and maintained in accordance with the Fire Code. When nonflammable supply cylinders for such systems are located inside buildings they shall be in a separate room or enclosure separated from the rest of the building by not less than one-hour fire-resistive construction. Openings between the room or enclosure and interior spaces shall be protected by self-closing smoke- and draft-control assemblies having a fire-protection rating of not less than one hour. Rooms shall have at least one exterior wall in which there are not less than two vents of not less than 36 square inches in area. One vent shall be within 6 inches of the floor and one shall be within 6 inches of the ceiling.

> **EXCEPTION:** When an exterior wall cannot be provided for the room, automatic sprinklers shall be installed within the room and the room shall be vented to the exterior through ducting contained within a one-hour-rated shaft enclosure. Approved mechanical ventilation shall provide six air changes per hour for the room.

5. **Parking garage headroom.** Parking garages shall have an unobstructed headroom clearance of not less than ((~~7~~))6 feet 6 inches above the finish floor to any ceiling, beam, pipe or similar construction, except for wall-mounted shelves, storage surfaces, racks or cabinets.

6. **Group B, Division 4 roof framing.** In Division 4 Occupancies, fire protection of the underside of roof framing may be omitted in all types of construction.

7. **Amusement buildings.** Amusement buildings with an occupant load of less than 50 shall comply with Sections 610, 3314(f) and 3802(c).

> **EXCEPTION:** Amusement buildings or portions thereof which are without walls or a roof and constructed to prevent the accumulation of smoke in assembly areas.

For flammable decorative materials, see the Fire Code.

Section 27. Section 703 of the Uniform Building Code, 1991 Edition, is amended as follows:

LOCATION ON PROPERTY

Sec. 703. (a) **General.** For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street, shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

Section 28. Section 704 of the Uniform Building Code, 1991 Edition, is amended as follows:

ACCESS AND EXIT FACILITIES

Sec. 704. Exits shall be provided as specified in Chapter 33. [For special requirements see Section 3317. See also Section 702(b) for exits from laboratories.]

Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Section 29. Section 705 of the Uniform Building Code, 1991 Edition, is amended as follows:

Light, Ventilation and Sanitation

Sec. 705 (a) **Light.** In Group B Occupancy buildings, enclosed portions customarily occupied by human beings, other than rooms and areas for which requirements are specified elsewhere in this section, shall be provided with natural light by means of exterior glazed openings with an area equal to one-tenth of the total floor area of such portions, or shall be provided with artificial light.

(b) **Ventilation.** 1. **General.** In Group B Occupancy buildings, enclosed portions customarily occupied by human beings, other than rooms and areas for which requirements are specified elsewhere in this section, shall be provided with natural ventilation by means of exterior openings with an openable area not less than 1/20 of the total floor area of such portions, or shall be provided with a mechanically operated ventilating system. The mechanically operated ventilating system shall ((~~be capable of supplying a minimum of five cubic feet per minute of outside air per occupant in all occupied portions of the building.~~)) comply with the requirements set forth in Chapter 10.1 and other applicable requirements of the Seattle Mechanical Code.

EXCEPTION: In Group B, Division 1 repair garages and motor vehicle fuel-dispensing stations without lubrication

pits, storage garages and aircraft hangars, such ventilating system may be omitted when, in the building official's opinion, the building is supplied with unobstructed openings to the outer air which are sufficient to provide the necessary ventilation.

In all buildings or portions thereof where Class I, II or III-A liquids are used, exhaust ventilation shall be provided sufficient to produce six air changes per hour. Such exhaust ventilation shall be taken from a point at or near the floor level.

Toilet rooms shall be provided with a fully openable exterior window at least 3 square feet in area; or a vertical duct not less than 100 square inches in area for the first toilet facility, with 50 additional square inches for each additional facility; or a mechanically operated exhaust system capable of providing a complete change of air every 15 minutes. Such systems shall be connected directly to the outside, and the point of discharge shall be at least 3 feet from operable openings into the building.

2. **Parking Garages.** In parking garages, other than open parking garages as defined in Section 709(b), used for storing or handling of automobiles operating under their own power and on all loading platforms in bus terminals, ventilation ((~~shall be provided capable of exhausting a minimum of 1.5 cubic feet per minute per square foot of gross floor area.~~)) shall comply with the requirements set forth in Chapter 10.1 and other applicable requirements of the Seattle Mechanical Code. The building official may approve an alternate ventilation system designed to exhaust a minimum of 14,000 cubic feet per minute for each operating vehicle. Such system shall be based upon the anticipated instantaneous movement rate of vehicles, but not less than 2.5 percent (or one vehicle) of the garage capacity. Automatic carbon monoxide sensing devices may be employed to modulate the ventilation system to maintain a maximum average concentration of carbon monoxide of 50 parts per million during any eight-hour period, with a maximum concentration not greater than 200 parts per million for a period not exceeding one hour. Connecting offices, waiting rooms, ticket booths and similar uses shall be supplied with conditioned air under positive pressure.

EXCEPTION: Mechanical ventilation need not be provided within a Group B, Division 1 parking garage when openings complying with Item 2 of Section 709(b) are provided.

(c) **Sanitation.** Every building or portion thereof where persons are employed shall be provided with at least one water closet. Separate facilities shall be provided for each sex when the number of employees exceeds four. Such toilet facilities shall be located either in such building or conveniently in a building adjacent thereto on the same property.

Such water closet rooms in connection with food establishments where food is prepared, stored or served shall have a nonabsorbent interior finish as specified in Section 510(b), shall have hand washing facilities therein or adjacent thereto, and shall be separated from food preparation or storage rooms as specified in Section 510(a).

For other requirements on water closets, see Section 511.

Section 30. Section 707 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE DETECTION, ALARM, SPRINKLER AND STANDPIPE SYSTEMS

Sec. 707. When required by other provisions of this code, automatic sprinkler systems and standpipes shall be installed as specified in Chapter 38. Fire detection and alarm systems shall be provided and installed as required by Article 14 of the Seattle Fire Code.

Section 31. Section 708 of the Uniform Building Code, 1991 Edition, is amended as follows:

SPECIAL HAZARDS

Sec. 708. Chimneys and heating apparatus shall conform to the requirements of Chapter 37 of this Code and the Mechanical Code.

Storage and use of flammable and combustible liquids shall be in accordance with NFPA Standard No. 31 and the Fire Code.

Devices generating a glow, spark or flame capable of igniting ((~~gasoline~~)) flammable vapors shall not be installed ((~~or used~~)) with pilots and burners or heating elements within 18 inches of the floor in any room in which Class I flammable liquids or gas are used or stored. See also Section 508 of the Mechanical Code.

Every room containing a boiler, central heating plant or hot-water supply boiler shall be separated from the rest of the building by not less than a one-hour fire-resistive occupancy separation.

> **EXCEPTION:** Boilers, central heating plants or hot-water supply boilers where the largest piece of fuel equipment does not exceed 400,000 Btu per hour input.

Buildings erected or converted to house high-piled combustible storage or aerosols shall comply with the Fire Code.

Section 32. Subsection 709(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Area and height.** Area and height of open parking garages shall be limited as set forth in Table No. 7-A except for increases allowed by Subsection (e).

In structures having a spiral or sloping floor, the horizontal projection of the structure at any cross section shall not exceed the allowable area per parking tier. In the case of a structure having a continuous spiral floor, each 9 feet 6 inches of height or portion therof shall be considered as a tier.

The clear height of a parking tier shall not be less than ((~~7~~))6 feet 6 inches, except that a lesser clear height may be permitted in mechanical-access open parking garages when approved by the building official.

Section 33. Section 801 of the Uniform Building Code, 1991 Edition, is amended as follows:

GROUP E OCCUPANCIES DEFINED

Sec. 801. Group E Occupancies shall be:

Division 1. Any building used for educational purposes through the 12th grade by 50 or more persons for more than 12 hours per week or four hours in any one day.

Division 2. Any building used for educational purposes through the 12th grade by less than 50 persons for more than 12 hours per week or four hours in any one day.

Division 3. ((~~Any building or portion thereof used for day care purposes for more than six persons.~~)) Day care centers, mini-day care centers not in a family abode, preschools, and day treatment centers.

EXCEPTION: Family child day-care homes shall be considered Group R, Division 3 occupancies.

For occupancy separations, see Table No. 5-B.

Section 34. Subsection 802(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Special Provisions.** Rooms in Divisions 1 and 2 Occupancies used for kindergarten, first- or second-grade pupils and Division 3 Occupancies shall not be located above or below the first story((~~, except for basements that have required exits at grade level~~)).

EXCEPTION: 1. Basements or stories having floor levels located within four feet, measured vertically, from adjacent ground level at the point of exit, provided the basement or story has exits directly to the exterior at that level.

((~~1~~))2. In buildings equipped with an automatic sprinkler system throughout, rooms used for kindergarten, first- and second-grade children or for day-care purposes may be located on the second story, provided there are at least two exits directly ((~~to the exterior for the exclusive use of such occupants~~))into separate exiting systems as defined in Section 3318 (a).

((~~2. In buildings equipped with an automatic sprinkler system throughout and of Type I or Type II fire-resistive construction, day-care facilities are permitted to be located above the first story when:~~

~~A. The entire story on which the day-care facility is located is equipped with an approved fire alarm and smoke-detection system as set forth in the Fire Code. Actuation of the system shall sound an audible alarm throughout the day-care facility; and~~

~~B. The day-care facility is divided into not less than two areas of approximately the same size, separated from each other by not less than one-hour fire-resistive construction. Openings between the two areas shall be protected by automatic-closing fire assemblies, having a fire-protection rating of not less than 20 minutes, which will close automatically on actuation of the fire alarm or detection systems; and~~

~~C. Each area is provided with air-moving equipment independent of that serving the other; and~~

~~D. Each area has not less than two exits, one of which is permitted to be through the adjoining area.~~))

3. Division 3 Occupancies located above the second story, shall be in buildings equipped with an automatic sprinkler system throughout and of Type I or Type II fire-resistive construction when:

A. Division 3 Occupancies above the fourth floor shall not have more than 12 children per floor; and

B. The entire story on which the day-care facility is located is equipped with an approved fire alarm and smoke detection system as set forth in the Fire Code. Actuation of the system shall sound an alarm audible throughout the entire story; and

C. The day-care facility is divided into not less than two areas of approximately the same size, separated from each other by not less than one-hour fire-resistive construction. Openings between the two areas shall be protected by automatic-closing smoke and draft control assemblies, having a fire-protection rating of not less than 20 minutes, which will close automatically upon actuation of the fire alarm or detection systems; and

D. Each separated area is provided with air-moving equipment independent of that serving the other; and

E. Each separated area has not less than two exits, one of which is permitted to be through the adjoining separated area; and

F. The exits from the Division 3 Occupancy shall be into separate exiting systems as defined in Section 3318.

Stages and platforms shall be constructed in accordance with Chapter 39. For attic space partitions and draft stops, see Section 2516(f).

Section 35. Section 803 of the Uniform Building Code, 1991 Edition, is amended as follows:

LOCATION ON PROPERTY

Sec. 803. (a) **General.** All buildings housing Group E Occupancies shall front directly upon or have access to a public street not less than ((~~20~~)) 40 feet in width. The access to the public street shall be a minimum ((~~20~~)) 40-foot-wide right-of-way, unobstructed and maintained only as access to the public street. The access to the public street may be reduced to a minimum 20-foot-wide right-of-way for Division 2 and 3 Occupancies. At least one required exit shall be located on the public street or on the access way.

> **EXCEPTION:** Subject to the approval of the building official, one of the required exits from a Group E, Division 2 or 3 Occupancy may have access to a public street or alley with a right-of-way of less than 20 feet, provided the total occupant load of the E Occupancies is less than 50 and provided further that the access complies with either Section 3312, Exit Passageways, or Section 3311, Exit Courts.

For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

EXCEPTION: Group E, Divisions 2 and 3 Occupancies, in buildings of Types II One-hour, II-N or V construction having an occupant load of not more than 20, may have exterior wall and opening protection as required for Group R, Division 3 Occupancies.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street, shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

Section 36. Section 804 of the Uniform Building Code, 1991 Edition, is amended as follows:

ACCESS AND EXIT FACILITIES

Sec. 804. Exits shall be provided as specified in Chapter 33. [For special provisions see Sections 3317 and 3318. See Section 802(d) for exits from laboratories.]

Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Section 37. Section 809 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE ALARMS

Sec. 809. An approved fire alarm system shall be provided for Group E Occupancies with an occupant load of 50 or more persons. Fire detection and fire alarm systems shall also be provided and installed as specified in Article 14 of the Seattle Fire Code. In Group E Occupancies provided with an automatic sprinkler or detection system, the operation of such system shall automatically activate the school fire alarm system, which shall include an alarm mounted on the exterior of the building. See Chapter 33 for smoke-detection requirements. For installation requirements, see the Fire Code.

Section 38. Subsection 901(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

Group H Occupancies Defined

Sec. 901. (a) **General.** For definitions, identification and control of hazardous materials, display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in Group B, Division 2 Occupancies see the Fire Code. For restrictions of H Group Occupancies in the Downtown Fire District, see Chapter 16.

Division 1. Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A, which present a high explosion hazard, including but not limited to:

1. Explosives, blasting agents, fireworks and black powder.

   EXCEPTION: Storage and the use of pyrotechnic special effect materials in motion picture, television, theatrical and group entertainment production when under permit as required in the Fire Code. The time period for storage shall not exceed 90 days.

2. Unclassified detonatable organic peroxides.

3. Class 4 oxidizers.

4. Class 4 or Class 3 detonatable unstable (reactive) materials.

Division 2. Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A, which present a moderate explosion hazard or a hazard from accelerated burning, including, but not limited to:

1. Class I organic peroxides.

2. Class 3 nondetonatable unstable (reactive) materials.

3. Pyrophoric gases.

4. Flammable or oxidizing gases.

5. Class I, II or III-A flammable or combustible liquids which are used in normally open containers or systems or in closed containers pressurized at more than 15-pounds-per-square-inch gauge.

   EXCEPTION: Aerosols.

6. Combustible dusts in suspension or capable of being put into suspension in the atmosphere of the room or area.

   EXCEPTIONS: 1. Rooms or areas used for woodworking((~~, where no more than three woodworking appliances having an aggregate exhaust requirement of less than 1,000 cubic feet per minute are utilized,~~)) which are not greater than 3,000 square feet in area may be classified as a Group B, Division 2 Occupancy((~~, provided the appliances are equipped with dust collectors sufficient to remove dust generated by the appliances~~)).

2. Lumberyards and similar retail stores utilizing only power saws may be classified as Group B, Division 2 Occupancies.

The building official may revoke the use of these exceptions for due cause.

7. Class 3 oxidizers.

Division 3. Occupancies with a quantity of material in the building in excess of those listed in Table No. 9-A, which present a high fire or physical hazard, including, but not limited to:

1. Class II, III or IV organic peroxides.

2. Class 1 or 2 oxidizers.

3. Class I, II or III-A flammable liquids or combustible liquids which are utilized or stored in normally closed containers or systems and containers pressurized at 15-pounds-per-square-inch gauge or less and aerosols.

4. Class III-B combustible liquids.

5. Pyrophoric liquids or solids.

6. Water reactives.

7. Flammable solids, including combustible fibers or dusts, except for dusts included in Division 2 Occupancies.

8. Flammable or oxidizing cryogenic fluids (other than inert).

9. Class 1 unstable (reactive) gas or Class 2 unstable (reactive) materials.

10. Boatyard structures.

Division 4. Repair garages and body shops not classified as Group B, Division 1 Occupancies.

Warehouses where highly combustible materials are stores.

Division 5. Aircraft repair hangars and heliports not classified as Group B, Division 3 Occupancies.

Division 6. Semiconductor fabrication facilities and comparable research and development areas ((~~when the facilities~~)) in which hazardous production materials (HPM) are used and the aggregate quantity of materials are in excess of those listed in Table No. 9-A or 9-B. Such facilities and areas shall be designed and constructed in accordance with Section 911.

Division 7. Occupancies having quantities of materials in excess of those listed in Table No. 9-B that are health hazards, including:

1. Corrosives.

2. Toxic and highly toxic materials.

3. Irritants.

((~~4. Sensitizers.~~

~~5. Other health hazards.~~))

Section 39. Section 901 of the Uniform Building Code, 1991 Edition, is further amended by adding a new Subsection 901(g) as follows:

(g) **Pre-design Conference.** Prior to application for permit for a Division 6 Occupancy, the applicant shall arrange a pre-design conference with the design team, the building official and fire chief to review proposed emergency life safety systems for the building and the appropriate protection of the life safety systems. For Division 7 occupancies, a pre-design conference is recommended (See also Table No. 5-D). It is the purpose of the meeting to obtain conceptual approval from the building official and the fire chief of the proposed systems and to allow for design based upon the latest state-of-the-art.

Applicants shall bring to the conference preliminary building plans and a draft of the Hazardous Materials Management Plan. The building official and fire chief may require sufficient documentation, based upon appropriate analyses, that the proposal meets the intent of nationally recognized good practices. The building permit shall not be issued until the building official and fire chief have approved, in writing, the emergency life safety systems for the building and the appropriate protection of the life safety systems. The documentation of the pre-design meeting shall be reflected on the plans for the building and become a permanent part of the Department of Construction and Land Use's records.

Section 40. Section 903 of the Uniform Building Code, 1991 Edition, is amended as follows:

Location on Property

Sec. 903. (a) **General.** Group H Occupancies shall be located on property in accordance with Section 504, Tables Nos. 9-C and 9-D and other provisions of this chapter. In Group H, Division 2 or Division 3 Occupancies, not less than 25 percent of the perimeter wall of the occupancy shall be an exterior wall.

EXCEPTIONS: 1. Liquid use, dispensing and mixing rooms having a floor area of not more than 500 square feet need not be located on the outer perimeter of the building when they are in accordance with Section 901(c).

2. Liquid storage rooms having a floor area of not more than 1,000 square feet need not be located on the outer perimeter when they are in accordance with Section 901(d).

3. Spray paint booths which comply with the Fire Code need not be located on the outer perimeter.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street, shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow

required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

Section 41. Section 904 of the Uniform Building Code, 1991 Edition, is amended as follows:

Access and Exit Facilities

Sec. 904. Exits shall be provided as specified in Chapter 33. (For special provisions see Section 3317 and 3319.)

Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Section 42. Subsection 905(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

Light, Ventilation and Sanitation

Sec. 905 (a) **General Ventilation.** In Group H Occupancy buildings, all enclosed portions customarily occupied by human beings, other than rooms and areas for which requirements are specified elsewhere in this section, shall be provided with natural light by means of exterior glazed openings with an area equal to one-tenth of the total floor area of such portions, and natural ventilation by means of exterior openings with an openable area not less than one-twentieth of the total floor area of such portions, or shall be provided with artificial light and a mechanically operated ventilation system. The mechanically operated ventilation system shall comply with the requirements set forth in Chapter 10.1 and other applicable requirements of the Seattle Mechanical Code. ((~~be capable of supplying a minimum of 5 cubic feet per minute of outside air per occupant, with a total circulated of not less than 15 cubic feet per minute per occupant in all occupied portions of the building.~~)) When recirculation of air is not permitted, the ventilation system shall be capable of providing not less than 15 cubic feet per minute of outside air per occupant.

Section 43. Subsection 905(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Sanitation.** Every building or portion thereof where persons are employed shall be provided with at least one water closet. Such toilet facilities shall be located in such building or conveniently in a building adjacent thereto on the same property.

Toilet rooms shall be provided with a fully openable exterior window at least 3 square feet in area; or a vertical duct not less than 100 square inches in area for the first water closet, with 50 additional square inches for each additional fixture; or a mechanically operated exhaust system capable of providing a complete change of air every 15 minutes. Such systems shall be connected directly to the outside, and the point of discharge shall be at least 3 feet from any operable opening into the building.

For other requirements on water closets, see Sections 510 and 511.

Section 44. Section 908 of the Uniform Building Code, 1991 Edition, is amended as follows:

Special Hazards

Sec. 908. Chimneys and heating apparatus shall conform to the requirements of Chapter 37 of this code and the Mechanical Code.

Every boiler, central heating plant or hot-water supply boiler shall be separated from the rest of the building by not less than a two-hour fire-resistive occupancy separation. In Divisions 1, 2, and 3, there shall be no openings in such occupancy separations except for necessary ducts and piping.

In Division 4 Occupancies, device which generate a spark, flame or glow capable of igniting ((~~gasoline~~)) flammable vapors shall not be installed ((~~or used~~))with pilots and burners or heating elements within 18 inches of the floor. See also Section 508 of the Mechanical Code.

Equipment or machinery which generates or emits combustible or explosive dust or fibers shall be provided with an adequate dust-collecting and exhaust system installed in conformance with the Mechanical Code. Equipment or systems that are used to collect, process or convey combustible dusts or fibers shall be provided with an approved explosion venting or containment system.

Combustible fiber storage rooms with a fiber storage capacity not exceeding 500 cubic feet, shall be separated from the remainder of the building by a one-hour fire-resistive occupancy separation. Combustible fiber storage vaults having a fiber storage capacity of more than 500 cubic feet, shall be separated from the remainder of the building by a two-hour fire-resistive occupancy separation.

Cellulose nitrate film storage and handling shall be in accordance with Chapter 48.

Section 45. Section 909 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE ALARMS

Sec. 909. An approved manual fire alarm system shall be provided in Group H Occupancies used for the manufacturing of organic coatings. Approved automatic fire detection, fire alarm

Section 46. Table Nos. 9-A and 9-B of the Uniform Building Code, 1991 Edition, are amended as follows:

TABLE NO. 9-A -- EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A PHYSICAL HAZARD

BASIC QUANTITIES PER CONTROL AREA[1]

When two units are given, values within parentheses are in cubic feet (Cu. Ft.) or pounds (Lbs.)

CONDITION		STORAGE[2]			USE[2] - CLOSED SYSTEMS			USE[2] - OPEN SYSTEMS	
MATERIAL	CLASS	Solid Lbs.[3] (Cu. Ft.)	Liquid Gallons[3] (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)
1.1 Combustible liquid[4,5,6,8,9,10]	II	N.A.	120[7]	N.A.	N.A.	120	N.A.	N.A.	30
	III-A	N.A.	330[7]	N.A.	N.A.	330	N.A.	N.A.	80
	III-B	N.A.	13,200[7,11]	N.A.	N.A.	13,200[11]	N.A.	N.A.	3,300[11]
1.2 Combustible dust lbs./1000 cu. ft.[12]		1	N.A.	N.A.	1	N.A.	N.A.	1	N.A.
1.3 Combustible fiber (loose)		(100)	N.A.	N.A.	(100)	N.A.	N.A.	(20)	N.A.
(baled)		(1,000)	N.A.	N.A.	(1,000)	N.A.	N.A.	(200)	N.A.
1.4 Cyogenic, flammable or oxidizing			45	N.A.	N.A.	45	N.A.	N.A.	10
2.1 Explosives[13]		1[7,14]	(1)[7,14]	N.A.	1\4	(1\4)	N.A.	1\4	(1\4)
3.1 Flammable solid		125[6,7]	N.A.	N.A.	25[6]	N.A.	N.A.	25[6]	N.A.
3.2 Flammable gas (gaseous)		N.A.	N.A.	750[6,7]	N.A.	N.A.	750[6,7]	N.A.	N.A.
(liquefied)		N.A.	15[7]	N.A.	N.A.	15[6,7]	N.A.	N.A.	N.A.
3.3 Flammable liquid[4,5,6,8,9,10]	I-A	N.A.	30[7]	N.A.	N.A.	30	N.A.	N.A.	10
	I-B	N.A.	60[7]	N.A.	N.A.	60	N.A.	N.A.	15
	I-C	N.A.	90[7]	N.A.	N.A.	90	N.A.	N.A.	20
Combination I-A, I-B, I-C		N.A.	120[7]	N.A.	N.A.	120	N.A.	N.A.	30

TABLE NO. 9-A -- EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A PHYSICAL HAZARD
(continued)

CONDITION		STORAGE[2]			USE[2] - CLOSED SYSTEMS			USE[2] - OPEN SYSTEMS	
MATERIAL	CLASS	Solid Lbs.[3] (Cu. Ft.)	Liquid Gallons[3] (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)
4.1 Organic peroxide, unclassified detonatable		1[7,13]	(1)[7,13]	N.A.	1/4[13]	(1/4)[13]	N.A.	1/4[13]	(1/4)[13]
4.2 Organic peroxide	I	5[6,7]	(5)[6,7]	N.A.	(1)[6]	(1)[6]	N.A.	1[6]	1[6]
	II	50[6,7]	(50)[6,7]	N.A.	50[6]	(50)[6]	N.A.	10[6]	(10)[6]
	III	125[6,7]	(125)[6,7]	N.A.	125[6]	(125)[6]	N.A.	25[6]	(25)[6]
	IV	500	(500)	N.A.	500[6]	(500)	N.A.	100	(100)
	V	N.L.	N.L.	N.A.	N.L.	N.L.	N.A.	N.L.	N.L.
4.3 Oxidizer	4	1[7,13]	(1)[7,13]	N.A.	1/4[13]	(1/4)[13]	N.A.	1/4[13]	(1/4)[13]
	3[16]	10[6,7]	(10)[6,7]	N.A.	2[6]	(2)[6]	N.A.	2[6]	(2)[6]
	2	250[6,7]	(250)[6,7]	N.A.	250[6]	(250)[6]	N.A.	50[6]	(50)[6]
	1	4,000[6,7]	(4,000)[6,7]	N.A.	4,000[6]	(4,000)[6]	N.A.	1,000[6]	(1,000)[6]
4.4 Oxidizer -- Gas (gaseous)[6,7]		N.A.	N.A.	1,500	N.A.	N.A.	1,500	N.A.	N.A.
(liquefied)[6,7]		N.A.	15	N.A.	N.A.	15	N.A.	N.A.	N.A.
5.1 Pyrophoric		4[7,13]	(4)[7,13]	50[7,13]	1[13]	(1)[13]	10[7,13]	0	0
6.1 Unstable (reactive)	4	1[7,13]	(1)[7,13]	10[7,13]	1/4[13]	(1/4)[13]	2[7,13]	1/4[13]	(1/4)[13]
	3	5[6,7]	(5)[6,7]	50[6,7]	1[6]	(1)[6]	10[4,5]	1[6]	(1)[6]
	2	50[6,7]	(50)[6,7]	250[6,7]	50[6]	(50)[6]	250[4,5]	10[6]	(10)[6]
	1	*N.L.*	*N.L.*	750[6,7]	N.L.	N.L.	N.L.	N.L.	(25)[6]

TABLE NO. 9-A -- EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A PHYSICAL HAZARD
(continued)

CONDITION		STORAGE[2]			USE[2] - CLOSED SYSTEMS			USE[2] - OPEN SYSTEMS	
MATERIAL	CLASS	Solid Lbs.[3] (Cu. Ft.)	Liquid Gallons[3] (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)	Gas Cu. Ft.	Solid Lbs. (Cu. Ft.)	Liquid Gallons (Lbs.)
7.1 Water (reactive)	3	5[6,7]	(5)[6,7]	N.A.	5[6]	(5)[6]	N.A.	1[6]	(1)[6]
	2	50[6,7]	(50)[6,7]	N.A.	50[6]	(50)[6]	N.A.	10[6]	(10)[6]
	1	125[7,11]	(125)[7,11]	N.A.	125[11]	(125)[7,11]	N.A.	25[11]	(25)[11]

N.A. = Not Applicable.
N.L. = Not limited.

[1] Control area is a space bounded by not less than a one-hour fire-resistive occupancy separation within which the exempted amounts of hazardous materials may be stored, dispensed, handled or used. The number of control areas within a building used for retail and wholesale stores shall not exceed two. The number of control areas in buildings with other uses shall not exceed four.

[2] The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

[3] The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials within a single control area of Group B, Division 2 Occupancies used for retail sales may exceed the exempt amounts when such areas are in compliance with the Fire Code.

[4] The quantities of alcoholic beverages in retail sales uses are unlimited provided the liquids are packaged in individual containers not exceeding four liters. The quantities of medicines, foodstuffs and cosmetics containing not more than 50 percent of volume of water-miscible liquids and with the remainder of the solutions not being flammable in retail sales or storage occupancies are unlimited when packaged in individual containers not exceeding four liters.

[5] For aerosols, see the Fire Code.

[6] Quantities may be increased 100 percent in sprinklered buildings. When Footnote No. 7 also applies, the increase for both footnotes may be applied.

[7] Quantities may be increased 100 percent when stored in approved storage cabinets, gas cabinets, fume hoods, exhausted enclosures safety cans or when under Fire Department Permit as specified in the Fire Code. When footnote 6 also applies, the increase for both footnotes may be applied.

TABLE NO. 9-A -- EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A PHYSICAL HAZARD
(continued)

[8] For storage and use of flammable and combustible liquids in Groups A, B, E, I, M and R Occupancies, see Sections 608, 708, 808, 1008, 1104 and 1213.
[9] For wholesale and retail sales use, also see the Fire Code.
[10] Spray application of any quantity of flammable or combustible liquids shall be conducted as set forth in the Fire Code.
[11] The quantities permitted in a sprinklered building are not limited.
[12] A dust explosion potential is considered to exist if 1 pound or more of combustible dust per 1,000 cubic feet of volume is normally in suspension or could be put into suspension in all or a portion of an enclosure or inside pieces of equipment. This also includes combustible dust which accumulates on horizontal surfaces inside buildings or equipment and which could be put into suspension by an accident, sudden force or small explosion.
[13] Permitted in sprinklered buildings only. None is allowed in unsprinklered buildings.
[14] One pound of black sporting powder and 20 pounds of smokeless powder are permitted in sprinklered or unsprinklered buildings.
[15] Containing not more than the exempt amounts of Class I-A, Class I-B or Class I-C flammable liquids.
[16] A maximum quantity of 200 pounds of solid or 20 gallons of liquid Class 3 oxidizers may be permitted in Groups I, M and R Occupancies when such materials are necessary for maintenance purposes or operation of equipment as set forth in the Fire Code.

TABLE NO. 9-B - EXEMPT AMOUNTS OF HAZARDOUS MATERIALS, LIQUIDS AND CHEMICALS PRESENTING A HEALTH HAZARD

MAXIMUM QUANTITIES PER CONTROL AREA[1]

When two units are given, values within parentheses are in pounds (Lbs.)

	STORAGE			USE[3] - CLOSED SYSTEMS			USE[3] - OPEN SYSTEMS	
MATERIAL[4]	Solid (Lbs.)[5,6,9]	Liquid Gallons (Lbs.)[5,6,9]	Gas (Cu.Ft.)[5]	Solid (Lbs.)[5]	Liquid Gallons (Lbs.)[5,9]	Gas (Cu.Ft.)	Solid (Lbs.)[5,9]	Liquid Gallons (Lbs)[5,9]
1. Corrosives	5,000	500	650[6]	5,000	500	650[5,6]	1,000	100
2. Highly Toxics[8]	1	(1)	20[7]	1	(1)	20[7]	1/4	(1/4)
3. Irritants	5,000	500	650[6]	5,000	500	650[5,6]	1,000	100
((~~4. Sensitizers~~	~~5,000~~	~~500~~	~~650[6]~~	~~5,000~~	~~500~~	~~650[5,6]~~	~~1,000~~	~~100~~
~~5. Other Health Hazards~~	~~5,000~~	~~500~~	~~650[6]~~	~~5,000~~	~~500~~	~~650[5,6]~~	~~1,000~~	~~100~~))
6. Toxics	500	(500)	650[6]	500	(500)	((~~20~~)) 650[5,7]	125	(125)

1 Control area is a space bounded by not less than one-hour fire-resistive occupancy separation within which the exempted amounts of hazardous materials may be stored, dispensed, handled or used. The number of control areas within retail and wholesale stores shall not exceed two and the number of control areas in other uses shall not exceed four.

2 Deleted.

3 The aggregate quantity in use and storage shall not exceed the quantity listed for storage.

4 For carcinogenic and radioactive materials, see the Fire Code.

5 Quantities may be increased 100 percent in sprinklered buildings. When Footnote 6 also applies, in increase for both footnotes may be applied.

6 Quantities may be increased 100 percent when stories in approved storage cabinet, *gas cabinets, fume hoods, exhausted enclosures,* safety cans or when under Fire Department Permit as specified in the fire code. When Footnote 5 also applies, the increase for both footnotes may be applied.

7 Permitted only when stored in approved exhausted gas cabinets, exhausted enclosures or fume hoods.

8 For special provisions, see the Fire Code.

9 *The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid health hazard materials within a single control area of a Group B, Division 2 Occupancies used for retail sales may exceed the exempt amounts when such areas are in compliance with the Fire Code.*

Section 47. Section 1001 of the Uniform Building Code, 1991 Edition, is amended as follows:

GROUP I OCCUPANCIES DEFINED

Sec. 1001. Group I Occupancies shall be:

Division 1.1: Nurseries for the full-time care of children under the age of six (each accommodating more than five persons). Residential treatment facilities for psychiatrically impaired children.

Hospitals, psychiatric hospitals, ((~~sanitariums,~~)) nursing homes with nonambulatory or mobile nonambulatory patients and similar buildings ((~~(each accommodating more than five persons)~~)).

Alcoholism treatment facilities providing alcohol detoxification services (for the purposes of this code these facilities shall be regulated the same as hospitals).

Division 1.2: Health-care centers for ambulatory patients receiving outpatient medical care which may render the patient incapable of unassisted self-preservation. (Each tenant space accommodating more than five such patients.)

Division 2: Nursing homes for ambulatory patients. ((~~homes for children six years of age or over (each accommodating more than five persons)~~)).

Division 3: ((~~Mental~~)) Psychiatric hospitals, ((~~mental sanitariums,~~)) jails, prisons, reformatories and buildings where personal liberties of inmates or patients are similarly restrained.

For occupancy separations see Table No. 5-B.

EXCEPTIONS: 1. Group I Occupancies shall not include buildings used only for private residential purposes for a family group.

2. One-story nursing homes accommodating 15 or fewer ambulatory or mobile ambulatory developmentally disabled persons shall be classified as a Group R, Division 1 Occupancy.

Section 48. Section 1003 of the Uniform Building Code, 1991 Edition, is amended as follows:

LOCATION ON PROPERTY

Sec. 1003. (a) **General.** All buildings housing Group I Occupancies shall front directly upon, or have access to, a public street not less than 40 feet in width. The access to the public street shall be a minimum 40-foot wide right-of-way for an occupant load of 50 or more persons and a minimum 20-foot right-of-way for an occupant load of less than 50 persons, and such access right-of-way shall be unobstructed and maintained only as access to the public street. At least one required exit shall be located on the public street or on the access way.

For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street, shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection, and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

Section 49. Section 1004 of the Uniform Building Code, 1991 Edition, is amended as follows:

ACCESS AND EXIT FACILITIES

Sec. 1004. Exits shall be provided as specified in Chapter 33. (For special provisions see Sections 3317 and 3320.)

Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Section 50. Section 1009 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE ALARMS

Sec. 1009. An approved manual and automatic fire alarm system shall be provided for all Group I Occupancies. Fire detection and fire alarm systems shall also be provided as specified in Article 14 of the Seattle Fire Code. Audible alarm devices shall be used in nonpatient areas. Visible alarm devices may be used in lieu of audible devices in patient-occupied areas. For installation requirements see Article 14 of the Fire Code.

Section 51. Subsection 1102(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Headroom Clearance.** Garages in connection with Group R, Division 1 Occupancies shall have an unobstructed headroom clearance of not less than ((~~7~~))6 feet 6 inches above the finish floor to any ceiling, beam, pipe or similar construction except for wall-mounted shelves, storage surfaces, racks or cabinets.

Section 52. Chapter 12 of the Uniform Building Code, 1991 Edition, is amended as follows:

Chapter 12

REQUIREMENTS FOR GROUP R OCCUPANCIES

GROUP R OCCUPANCIES DEFINED

Sec. 1201. Group R Occupancies shall be:

Division 1. Hotels and apartment houses.

Congregate residences (each accommodating more than 10 persons).

One or two dwelling units located in a mixed occupancy building except where the only other occupancy is Group M, Division 1. (For the purposes of this code, these dwellings shall be regulated the same as apartment houses.)

Alcoholism treatment facilities which provide intensive inpatient services, recovery house services, or long term treatment services. (For the purposes of this code, these facilities shall be regulated the same as hotels.)

Boarding homes, adult residential treatment facilities, group care facilities and semisecure facilities.

Maternity homes and buildings or portions thereof which provide a maternity service.

Division 2. Not used.

Division 3. ((~~Dwellings and~~)) Lodging houses, detached one- and two-family dwellings.

Congregate residences (each accommodating 10 persons or less).

Foster family homes including and limited to family homes for adults, foster family homes for children or expectant mothers.

Family child day care homes.

Private adult treatment homes.

For occupancy separations, see Table No. 5-B.

((~~A complete code for construction of detached one- and two-family dwellings is in Appendix Chapter 12 of this code. When adopted, as set forth in Section 103, it will take precedence over the requirements set forth in Parts I through X and Chapter 60 of this code.~~))

CONSTRUCTION, HEIGHT AND ALLOWABLE AREA

Sec. 1202. (a) **General.** Buildings or parts of buildings classed in Group R because of the use or character of the occupancy shall be limited to the types of construction set forth in Tables Nos. 5-C and 5-D and shall not exceed, in area or height, the limits specified in Sections 505, 506 and 507.

For radon resistive construction standards, see Section 1720. For formaldehyde reduction requirements, see Section 1721.

(b) **Special Provisions.** Walls and floors separating individual dwelling units in the same building, separating individual guest rooms in hotels and walls separating dwelling units and guest rooms from corridors shall not be of less than one-hour fire-resistive construction. Roof-ceiling soffits shall be provided with a minimum of 1/2-inch gypsum wallboard in buildings of Types II-N, III-N and V-N construction.

Group R, Division 1 Occupancies more than two stories in height or having more than 3,000 square feet of floor area above the first story shall not be less than one-hour fire-resistive construction throughout except as provided in Section 1705(b)2.

Storage or laundry rooms that are within Group R, Division 1 Occupancies that are used in common by tenants shall be separated from the rest of the building by not less than one-hour fire-resistive occupancy separation.

For Group R, Division 1 Occupancies with a Group B, Division 1 parking garage in the basement or first floor, see Section 702(b)1.

For attic space partitions and draft stops, see Section 2516(f).

LOCATION ON PROPERTY

Sec. 1203. (a) **General.** For fire-resistive protection of exterior walls and openings, as determined by location on property, see Section 504 and Part IV.

(b) **Fire Protection Facilities.** All premises, where buildings or portions of buildings are constructed more than 150 feet from a public street, shall be provided with approved fire hydrants connected to a water system capable of supplying the fire flow required by the fire chief. Paved access to fire hydrants shall be provided and maintained to accommodate fire-fighting apparatus. Access driveways shall have a vertical clearance of not less than 14 feet above the finished driveway surface. The fire chief may modify or waive the requirements of this subsection and may approve alternate means of access for fire protection.

When fire protection facilities are to be installed by the developer, such facilities, including all surface access roads, shall be installed and made serviceable prior to and maintained during the time of construction.

ACCESS AND EXIT FACILITIES AND EMERGENCY ESCAPES

Sec. 1204. Exits shall be provided as specified in Chapter 33. (See also Section 3317 for special requirements and Section 3314 for exit markings.)

> **EXCEPTION:** Only one exit door from a family child day care home need comply with the requirements of Section 3304 (b).

Exit requirements for boarding homes shall be as specified for a Group I, Division 2 Occupancy.

Access to, and egress from, buildings required to be accessible shall be provided as specified in ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

Basements in dwelling units and every sleeping room below the fourth story shall have at least one operable window or door approved for emergency escape or rescue which shall open directly into a public street, public alley, yard or exit court. The ((~~units~~)) window or door shall be operable from the inside to provide a full clear opening without the use of separate tools.

All escape or rescue windows shall have a minimum net clear openable area of 5.7 square feet. The minimum net clear openable height dimension shall be 24 inches. The minimum net clear openable width dimension shall be 20 inches. When windows are provided as a means of escape or rescue they shall have a finished sill height not more than 44 inches above the floor.

Bars, grilles, grates or similar devices may be installed on emergency escape or rescue windows or doors, provided:

1. The devices are equipped with approved release mechanisms which are openable from the inside without the use of a key or special knowledge or effort; and

2. The building is equipped with smoke detectors installed in accordance with Section 1210.

LIGHT, VENTILATION AND SANITATION

Sec. 1205. (a.) **General.** For the purpose of determining the light or ventilation required by this section, any room may be considered as a portion of an adjoining room when one-half of the area of the common wall is open and unobstructed and provides an opening of not less than one-tenth of the floor area of the interior room or 25 square feet, whichever is greater.

Exterior openings for natural light or ventilation required by this section shall open directly onto a public way or a yard or court located on the same lot as the building.

EXCEPTIONS: 1. Required windows may open into a roofed porch where the porch:

A. Abuts a public way, yard or court; and
B. Has a ceiling height of not less than 7 feet; and
C. Has a longer side at least 65 percent open and unobstructed.

2. Skylights.

(b) **Light.** Guest rooms and habitable rooms except kitchens within a dwelling unit or congregate residence shall be provided with natural light by means of exterior glazed openings with an area not less than one-tenth of the floor area of such rooms with a minimum of 10 square feet.

(c) **Ventilation.** Guest rooms and habitable rooms within a dwelling unit or congregate residence shall be provided with natural ventilation by means of openable exterior openings with an area of not less than one-twentieth of the floor area of such rooms with a minimum of 5 square feet.

Mechanical ventilation shall be provided as required by Seattle Mechanical Code Chapter 10.1. This system may serve in lieu of required exterior operable openings for natural ventilation. ((~~a mechanical ventilating system may be provided.~~)) If mechanical

ventilation serves in lieu of natural ventilation in a public corridor, such system shall be capable of providing two air changes per hour. ((~~in all guest rooms, dormitories, habitable rooms and in public corridors.~~)) One-fifth of the air supply for public corridors shall be taken from the outside.

Bathrooms, water closet compartments, laundry rooms and similar rooms shall be provided with natural ventilation by means of openable exterior openings with an area not less than one-twentieth of the floor area of such rooms with a minimum of 1-1/2 square feet.

Mechanical ventilation complying with Seattle Mechanical Code Chapter 10.1 may serve in lieu of required exterior openings for natural ventilation in bathrooms containing a bathtub or shower or combination thereof, laundry rooms, and similar rooms. ((~~, a mechanical ventilation system connected directly to the outside capable of providing five air changes per hour shall be provided.~~)) The point of discharge of exhaust air shall be at least 3 feet from any operable opening into the building. ((~~Bathrooms which contain only a water closet or lavatory or combination thereof, and similar rooms may be ventilated with an approved mechanical recirculating fan or similar device designed to remove odors from the air.~~))

(d) **Sanitation.** ((~~Every building shall be provided with at least one water closet. Hotels or subdivisions thereof where both sexes are accommodated shall contain at least two separate toilet facilities which are conspicuously identified for male or female use, each of which contains at least one water closet.~~

~~**EXCEPTION:** Hotel guest rooms may have one unidentified toilet facility. Additional water closets shall be provided on each floor for each sex at the rate of one for every additional 10 guests, or fractional part thereof, in excess of 10.~~

~~Dwelling units shall be provided with a kitchen equipped with a kitchen sink. Dwelling units, congregate residences and lodging houses shall be provided with a bathroom equipped with facilities consisting of a water closet, lavatory and either a bathtub or shower. Each sink, lavatory and either a bathtub or shower shall be equipped with hot and cold running water necessary for its normal operation.~~))

1. **Dwelling Units.** Dwelling units and congregate residences shall contain within a separate room(s), accessible from inside the dwelling unit or residence, a water closet, a lavatory, and a bathtub or shower. In no dwelling unit or congregate residence shall the only access from a bedroom to a bathroom be through another bedroom. No water closet shall be housed in any room or space used for the preparation of food nor shall a water closet compartment open directly, without a door, into any such room or space.

2. **Hotels and Other Buildings Containing Guest Rooms.** In hotels and other buildings containing guest rooms, where private water closets, lavatories and baths are not provided, there shall be provided on each floor at least one water closet and lavatory and one bathtub or shower accessible from a public hallway. Additional water closets, lavatories, and bathtubs or showers shall be provided on each floor at the rate of one for every additional 8 guests or occupants, or fractional number thereof in excess of 8.

On floors with fewer than 8 occupants, the required sanitary facilities may be provided on an adjacent floor if the floor on which the facilities are provided is directly and readily accessible to such occupants and if such use does not cause the facilities to be used by a total of more than 8 persons.

3. **Kitchens.** Dwelling units and congregate residences shall be provided with a kitchen. Kitchens shall be provided with a kitchen sink, hot and cold running water, counter work space, cabinets for storage of cooking utensils and dishes, and stove and refrigerator or adequate space for the installation of the stove and refrigerator. Splash backs and counter tops shall have impervious surfaces.

4. **Fixtures.** All plumbing fixtures shall be trapped and vented and connected to a sanitary sewer or to an approved private sewage disposal system. There shall be an approved system of water supply, providing both hot and cold running water at a rate of not less than one gallon per minute. All water closets shall be flush type in good working order.

For other requirements on water closets, see Sections 510 and 511.

YARDS AND COURTS

Sec. 1206. (a) **Scope.** This section shall apply to yards and courts having required windows opening therein.

(b) **Yards.** Every yard shall not be less than 3 feet in width for one-story and two-story buildings. For buildings more than two stories in height, the minimum width of the yard shall be increased at the rate of 1 foot for each additional story. For buildings exceeding 14 stories in height, the required width of yard shall be computed on the basis of 14 stories.

(c) **Courts.** Courts shall not be less than 3 feet in width. Courts having windows opening on opposite sides shall not be less than 6 feet in width. Courts bounded on three or more sides by the walls of the building shall not be less than 10 feet in length unless bounded on one end by a public way or yard. For buildings more than two stories in height, the court shall be increased 1 foot in width and 2 feet in length for each additional story. For buildings exceeding 14 stories in height, the required dimensions shall be computed on the basis of 14 stories.

Adequate access shall be provided to the bottom of all courts for cleaning purposes. Every court more than two stories in height shall be provided with a horizontal air intake at the bottom not less than 10 square feet in area and leading to the exterior of the building unless abutting a yard or public way. The construction of the air intake shall be as required for the court walls of the building, but in no case shall be less than one-hour fire resistive.

ROOM DIMENSIONS

Sec. 1207. (a) **Ceiling Heights.** Habitable space shall have a ceiling height of not less than 7 feet 6 inches except as otherwise permitted in this section. Kitchens, halls, bathrooms and toilet compartments may have a ceiling height of not less than 7 feet measured to the lowest projection from the ceiling. Where

exposed beam ceiling members are spaced at less than 48 inches on center, ceiling height shall be measured to the bottom of these members. Where exposed beam ceiling members are spaced at 48 inches or more on center, ceiling height shall be measured to the bottom of the deck supported by these members, provided that the bottom of the members is not less than 7 feet above the floor.

If any room in a building has a sloping ceiling, the prescribed ceiling height for the room is required in only one-half the area thereof. No portion of the room measuring less than 5 feet from the finished floor to the finished ceiling shall be included in any computation of the minimum area thereof.

If any room has a furred ceiling, the prescribed ceiling height is required in two-thirds the area thereof, but in no case shall the height of the furred ceiling be less than 7 feet.

(b) **Floor Area.** Dwelling units and congregate residences shall have at least one room which shall have not less than 120 square feet of floor area. Every room which is used for both cooking and living or both living and sleeping quarters shall have a floor area of not less than 130 square feet if used or intended to be used by only one occupant, or of not less than 150 square feet if used or intended to be used by more than one occupant. Where more than two persons occupy a room used for sleeping purposes, the required floor area shall be increased at the rate of 50 square feet for each occupant in excess of two. In a dormitory, minimum floor area shall be 60 square feet per single or double bunk and aisles not less than 3 feet in width shall be provided between the sides of bunks and from every bunk to an exit. Other habitable rooms except kitchens shall have an area of not less than 70 square feet. Efficiency dwelling units shall comply with the requirements of Section 1208.

(c) **Width.** Habitable rooms other than a kitchen shall not be less than 7 feet in any dimension.

EFFICIENCY DWELLING UNITS.

Sec. 1208. An efficiency dwelling unit shall conform to the requirements of the code except as herein provided:

1. The unit shall have a living room of not less than 220 square feet of superficial floor area. An additional 100 square feet of superficial floor area shall be provided for each occupant of such unit in excess of two. The required square footage may not include built-in equipment which extends from floor to ceiling such as wardrobes, cabinets, kitchen units or fixtures.

2. The unit shall be provided with a separate closet.

3. The unit shall be provided with a kitchen sink, cooking appliance and refrigeration facilities, each having a clear working space of not less than 30 inches in front. Light and ventilation conforming to this code shall be provided.

4. ((~~The~~)) An efficiency dwelling unit shall be provided with a separate bathroom containing a water closet, lavatory and bathtub or shower.

SHAFT AND EXIT ENCLOSURES

Sec. 1209. Exits shall be enclosed as specified in Chapter 33.

Elevator shafts, vent shafts, dumbwaiter shafts, clothes chutes and other vertical openings shall be enclosed and the enclosure shall be as specified in Section 1706.

In nonsprinklered Group R, Division 1 Occupancies, corridors serving an occupant load of 10 or more shall be separated from corridors and other areas on adjacent floors by not less than approved fixed wired glass set in steel frames or by 20-minute smoke- and draft-control assemblies which are automatic closing by smoke detection.

SMOKE DETECTORS AND SPRINKLER SYSTEMS

Sec. 1210. (a) **Smoke Detectors.** 1. **General.** Dwelling units, congregate residences and hotel or lodging house guest rooms that are used for sleeping purposes shall be provided with operable smoke detectors. Detectors shall be installed in accordance with the approved manufacturer's instructions.

2. **Additions, alterations or repairs to Group R Occupancies.** When the valuation of an addition, alteration or repair to a Group R Occupancy exceeds ((~~$1,000.00~~)) $2,500 and a permit is required, or when one or more sleeping rooms are added or created in existing Group R Occupancies, smoke detectors shall be installed in accordance with Subsections 3, 4 and 5 of this section.

3. **Power source.** In new construction required smoke detectors shall receive their primary power from the building wiring when such wiring is served from a commercial source and shall be equipped with a battery back-up. The detector shall emit a signal when the batteries are low. Wiring shall be permanent and without a disconnecting switch other than those required for overcurrent protection. Smoke detectors may be solely battery operated when installed in existing buildings; or in buildings without commercial power; or in buildings which undergo alterations, repairs or additions regulated by Subsection 2 of this section.

4. **Location within dwelling units and congregate residences.** In dwelling units and congregate residences, a detector shall be installed in each sleeping room and at a point centrally located in the corridor or area giving access to each separate sleeping area. When the dwelling unit or congregate residence has more than one story and in dwellings or congregate residence with basements, a detector shall be installed on each story and in the basement. In dwelling units or congregate residences where a story or basement is split into two or more levels, the smoke detector shall be installed on the upper level, except that when the lower level contains a sleeping area, a detector shall be installed on each level. When sleeping rooms are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. In dwelling units and congregate residences where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by 24 inches or more, smoke detectors shall be installed in the hallway and in the adjacent room. Detectors shall sound an alarm audible in all sleeping areas of the dwelling unit or congregate residence in which they are located.

5. **Location in efficiency dwelling units, ((~~congregate residences~~)) and hotels.** In efficiency dwelling units, hotel suites and in hotel ((~~and congregate residence~~)) sleeping rooms,

detectors shall be located on the ceiling or wall of the main room or ((~~each~~)) hotel sleeping room. When sleeping rooms within an efficiency dwelling unit or hotel suite are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. When actuated, the detector shall sound an alarm audible within the sleeping area of the dwelling unit, hotel suite or sleeping room in which it is located.

6. **Location within family child day care homes.** In family child day care homes operable detectors shall be located in all sleeping and napping areas. When the family child day care home has more than one story, and in family child day care homes with basements, an operable detector shall be installed on each story and in the basement. In family child day care homes where a story or basement is split into two or more levels, the smoke detector shall be installed in the upper level, except that when the lower level contains a sleeping or napping area, an operable detector shall be located on each level. When sleeping rooms are on an upper level, the detector shall be placed at the ceiling of the upper level in close proximity to the stairway. In family child day care homes where the ceiling height of a room open to the hallway serving the bedrooms exceeds that of the hallway by 24 inches or more, smoke detectors shall be installed in the hallway and the adjacent room. Detectors shall sound an alarm audible in all areas of the building.

(b) **Sprinkler and Standpipe Systems.** When required by other provisions of this code, automatic sprinkler systems and standpipes shall be installed as specified in Chapter 38.

FIRE ALARM SYSTEMS

Sec. 1211. Group R, Division 1 Occupancies shall be provided with an approved manual and automatic fire alarm system in apartment houses three or more stories in height or containing 16 or more dwelling units, in hotels three or more stories in height or containing 20 or more guest rooms and in congregate residences three or more stories in height or having an occupant load of 20 or more. A fire alarm and communication system shall be provided in Group R, Division 1 Occupancies located in a high-rise building. Fire detection and fire alarm systems shall also be provided and installed as specified in Article 14 of the Seattle Fire Code.

EXCEPTIONS: 1. A manual fire alarm system need not be provided in buildings 2 stories or less ((~~not over two stories~~)) in height when all individual dwelling units and continguous attic and crawl spaces are separated from each other and public or common areas by at least one-hour fire-resistive occupancy separations and each individual dwelling unit or guest room has an exit directly to a public way, exit court or yard. A fire alarm system need not be installed in buildings of 3 stories or less, where units are separated as above, where each unit has exits direct to the public way which are not shared by another unit and where no unit is located above another unit.

2. A separate fire alarm system need not be installed in buildings which are protected throughout by an approved supervised fire sprinkler system installed in accordance with U.B.C. Standard No. 38-1 and having a local alarm to notify all occupants.

HEATING

Sec. 1212. Dwelling units, guest rooms and congregate residences shall be provided with heating facilities capable of maintaining ((a)) an average room temperature of 70°F. at a point 3 feet above the floor in all habitable rooms, baths and toilet rooms when the outside temperature is 24°F. See also the Seattle Energy Code and the Seattle Mechanical Code for further requirements concerning heating systems.

SPECIAL HAZARDS

Sec. 1213. Chimneys and heating apparatus shall conform to the requirements of Chapter 37 and the Mechanical Code.

The storage, use and handling of flammable and combustible liquids in Division 1 Occupancies shall be in accordance with the Fire Code.

In Division 1 Occupancies, doors leading into rooms in which Class I flammable liquids are stored or used shall be protected by a fire assembly having a one-hour fire-protection rating. Such fire assembly shall be self-closing and shall be posted with a sign on each side of the door in 1-inch block letters stating: FIRE DOOR--KEEP CLOSED.

Every room containing a boiler, central heating plant or hot-water supply boiler in Division 1 Occupancies shall be separated from the rest of the building by not less than a one-hour fire-resistive occupancy separation.

> **EXCEPTION:** A separation shall not be required for such rooms with equipment serving only one dwelling unit or within a Group R, Division 3 congregate residence.

FAMILY CHILD DAY CARE HOMES

Sec. 1214. For family child day care homes with more than six children, each floor level used for family child day care purposes shall be served by two remote exits. Outside exit doors shall be operable from the inside without the use of keys or any special knowledge or effort.

Basements with exit discharge located more than four feet below grade level shall not be used for family child day care homes unless one of the following conditions exist:

A. Exit stairways from the basement open directly to the exterior of the building without entering the first floor; or

B. One of the two required exits discharges directly to the exterior from the basement level, and a self-closing door is installed at the top or bottom of the interior stair leading to the floor above; or

C. One operable window or door, approved for emergency escape or rescue, that opens directly to a public street, public alley, yard or exit court is provided; or

D. A residential sprinkler system is provided in accordance with National Fire Protection Association Standard 13D.

Floors with exit discharge located more than four feet above grade level shall not be occupied by children in family child day care homes.

EXCEPTIONS: 1. Use of toilet facilities while under supervision of an adult staff person.

2. Family child day care homes may be allowed on the second story if one of the following conditions exist:

A. Exit stairways from the second story open directly to the exterior of the building without entering the first floor; or

B. One of the two required exits discharges directly to the exterior from the second story level, and a self-closing door is installed at the top or bottom of the interior stair leading to the floor below; or

C. A residential sprinkler system is provided throughout the entire building in accordance with National Fire Protection Association Standard 13D.

Every sleeping or napping room in a family child day care home shall have at least one operable window for emergency rescue.

EXCEPTION: Sleeping or napping rooms having doors leading to two separate exit ways, or a door leading directly to the exterior of the building.

Rooms or spaces containing a commercial-type cooking kitchen, boiler, maintenance shop, janitor closet, laundry, woodworking shop, flammable or combustible storage, or painting operation shall be separated from the family child day care area by at least one-hour fire-resistive construction.

EXCEPTION: A fire-resistive separation shall not be required where the food preparation kitchen contains only a domestic cooking range, and the preparation of food does not result in the production of smoke or grease ladened vapors.

For restrictions on the installation of warm-air furnaces in bedrooms, bathrooms or closets, see Section 704 of the Mechanical Code.

UNFINISHED ROOMS

Sec. 1215. Any portion of a building containing unfinished rooms which cannot be developed in conformance with the requirements of this chapter shall be permanently barred from human access except by means of an access door not exceeding 24 inches by 48 inches in size, and such space shall not be allowed to be used for any human habitation. Such spaces may be used as heating and water heating appliance locations when installation is in accordance with the Seattle Mechanical Code.

SECURITY FROM CRIMINAL ACTIVITY

Sec. 1216 (a) **Group R Occupancies other than Detached One-Family Dwellings.** 1. **General.** This section applies to all housing units except detached one-family dwellings.

2. **Definition.** For the purposes of this section, **HOUSING UNIT** is any dwelling unit, guest room or congregate residence.

3. **Building entrance doors and locks.** Building entrance doors shall be without openings and shall be as capable of resisting forcible entry as a flush solid core wood door 1-3/8 inches thick.

EXCEPTIONS: 1. Building entrance doors may have visitor-observation ports which do not impair the fire resistance of the door.

2. Main entrance doors may be framed or unframed non-shattering glass, framed 1/4-inch plate glass or other security glazing.

3. Building entrance doors other than main entrance doors may have glazed openings. Glazed openings shall have wire or grilles to prevent operation of the door latch from outside by hand or instrument.

Building entrance doors shall be self-closing, self-locking and equipped with a dead-locking latch bolt with at least a 1/2-inch throw which shall penetrate the striker at least 1/4 inch.

EXCEPTIONS: 1. Building entrance doors that open directly into a housing unit shall comply with Subsection (a) 5 below.

2. Garage-to-building doors need not be self-locking when the garage-to-exterior door is equipped with an electrically-operated remote control device for opening and authomatically closing.

3. When either the garage-to-exterior doors or garage-to-building doors are equipped for self-closing and self-locking, the other need not be so equipped.

4. **Locks.** All exit doors, including those from individual housing units, shall be openable from the interior without use of keys or special knowledge or effort.

5. **Housing unit doors and locks.** Doors from interior corridors to individual housing units shall not have glass openings and shall be as capable of resisting forcible entry as a flush solid core wood door 1-3/8 inches thick.

Every entrance door to a housing unit shall have a dead bolt or dead-locking latch bolt with at least a 1/2-inch throw which penetrates the striker not less than 1/4 inch. In hotels and other multi-unit buildings that provide housing for rent on a daily or weekly basis, every entrance door to a housing unit shall also be provided with a chain door guard or barrel bolt on the inside.

6. **Observation ports.** Every entrance door to a housing unit, other than transparent doors, shall have a visitor-observation port. The port shall not impair the fire resistance of the door. Observation ports shall be installed not less than 54 inches and not more than 66 inches above the floor.

7. **Non-exit doors.** Doors to storage, maintenance and building service rooms shall be self-closing and self-locking.

8. **Sliding doors.** Dead bolts or other approved locking devices shall be provided on all sliding doors. These locks shall be installed so that the mounting screws for the lock cases are inaccessible from the outside.

9. **Windows.** Openable windows shall have operable inside latching devices.

> **EXCEPTION:** Windows whose sills are located 10 feet or more above grade, or 10 feet or more above a deck, balcony or porch that is not readily accessible from grade except through a housing unit need not have operable inside latching devices.

10. **Alternate security devices.** Subject to the approval of the building official, alternate security devices may be substituted for those required by this section if they have equal capability to resist illegal entry. The installation of the device must not conflict with other requirements of this code and other ordinances regulating the safety of exiting.

(b) **Detached One-Family Dwellings.** 1. **Building entrance locks.** Building entrance doors, including garage doors, shall be capable of locking. They shall be equipped with a dead-locking latch bolt with at least a 1/2-inch throw which penetrates the striker not less than 1/4 inch. Building entrance doors shall be openable from the inside without use of a key or special knowledge or effort.

> **EXCEPTION:** Garage-to-exterior doors may be equipped with an electronically-operated remote control device for opening and closing in lieu of a dead-locking latch bolt. When garage-to-exterior doors are equipped with remote control devices, garage-to-building doors need not be capable of locking.

2. **Observation Ports.** Every building entrance door, other than garage doors, shall have a visitor observation port or glass side light. Observation ports shall be installed at a height of not less than 54 inches and not more than 66 inches from the floor.

3. **Windows and Sliding Doors.** Dead bolts or other approved locking devices shall be provided on all sliding doors and openable windows. The lock shall be installed so that the mounting screws for the lock case are inaccessible from the outside.

> **EXCEPTION:** Windows whose sills are located 10 feet or more above grade, or 10 feet or more above a deck, balcony or porch that is not readily accessible from grade except through a housing unit need not have operable inside latching devices.

4. **Alternate security devices.** Subject to the approval of the building official, alternate security devices may be substituted for those required by this section. Alternate devices must have equal capability to resist illegal entry. The installation of the device must not conflict with other requirements of this code and other ordinances regulating the safety of exiting.

Section 53. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 16 as follows:

NO REQUIREMENTS

Chapter 16

RESTRICTIONS IN THE FIRE DISTRICT

FIRE DISTRICT DEFINED

Sec. 1601. (a) **General.** The provisions of this chapter apply only to the Downtown Fire District. All areas of the city lying outside the boundaries described here shall be considered to be outside of the fire district for the purpose of applying this code.

Downtown Fire District - Boundaries. The Downtown Fire District shall consist of that part of the city within the boundary described as follows:

Beginning at the intersection of the center line of Alaskan Way and Clay Street; thence northeasterly along the center line of Clay Street to an intersection with the center line of Denny Way; thence easterly along the center line of Denny Way to an intersection with the center line of Yale Avenue; thence southeasterly along the center line of Yale Avenue to an intersection with the center line of Interstate Highway 5; thence southerly and southeasterly along the centerline of Interstate 5 to an intersection with the center line of 7th Avenue South; thence southerly along the center line of 7th Avenue South to an intersection with the center line of Dearborn Street; thence westerly along the center line of Dearborn Street to an intersection with the center line of Airport Way; thence northwesterly along the center line of Airport Way to an intersection with the center line of 4th Avenue South; thence southerly along the center line of 4th Avenue South to an intersection with the center line of South Royal Brougham Way; thence westerly along said center line of South Royal Brougham Way to an intersection with the center line of South Alaskan Way; thence southerly along the center line of South Alaskan Way to an intersection with the center line of South Massachusetts Street, thence westerly along the center line of South Massachusetts Street to the Outer Harbor Line in Elliott Bay, thence northerly and northwesterly along said Outer Harbor Line to an intersection with the center line of West Harrison Street, thence easterly along the center line of West Harrison Street to an intersection with the center line of Alaskan Way, then southeasterly along the center line of Alaskan Way to the point of beginning.

(b) **Buildings Located Partially in the Fire District.** A building or structure which is located partially within and partially outside of the fire district, shall be considered to be located in the fire district.

(c) **Opposite Lines of Street.** For the purpose of this chapter, the opposite line of an adjoining street or alley may be considered an adjacent property line. Distances shall be measured at right angles to the street or alley.

RESTRICTIONS IN THE DOWNTOWN FIRE DISTRICT

Sec. 1602. (a) **General.** Buildings or structures erected, constructed, moved within or into the Downtown Fire District may be of any construction type permitted within the code, other than Type V-N, provided that:

1. Roof coverings shall be as specified in Table No. 32-A, but in no case less than Class B.

2. Buildings of Types II-N, III-N, and V One-hour shall be protected throughout by an automatic sprinkler system.

EXCEPTIONS: 1. Type II-N buildings not exceeding one story in height or 2,500 square feet in area containing either Group B or M occupancies need not be sprinklered.

2. Parking garages shall be protected by an automatic sprinkler system when required by Chapter 38.

3. Where a building is occupied by Group R, Division 1 apartments, the automatic sprinkler system shall be equipped with fast response sprinkler heads within the living spaces of each dwelling unit.

(b) **Construction Prohibited.** No building of Type V-N construction may be erected, constructed or moved within or into the Downtown Fire District.

(c) **Occupancies Prohibited.** No Group H, Divisions 1 or 5 Occupancy shall be permitted in the Downtown Fire District. No Group H, Division 2 Occupancy having a floor area in excess of 500 square feet shall be permitted in the Downtown Fire District. No Group H, Division 3 Occupancy having a floor area in excess of 1,500 square feet shall be permitted in the Downtown Fire District.

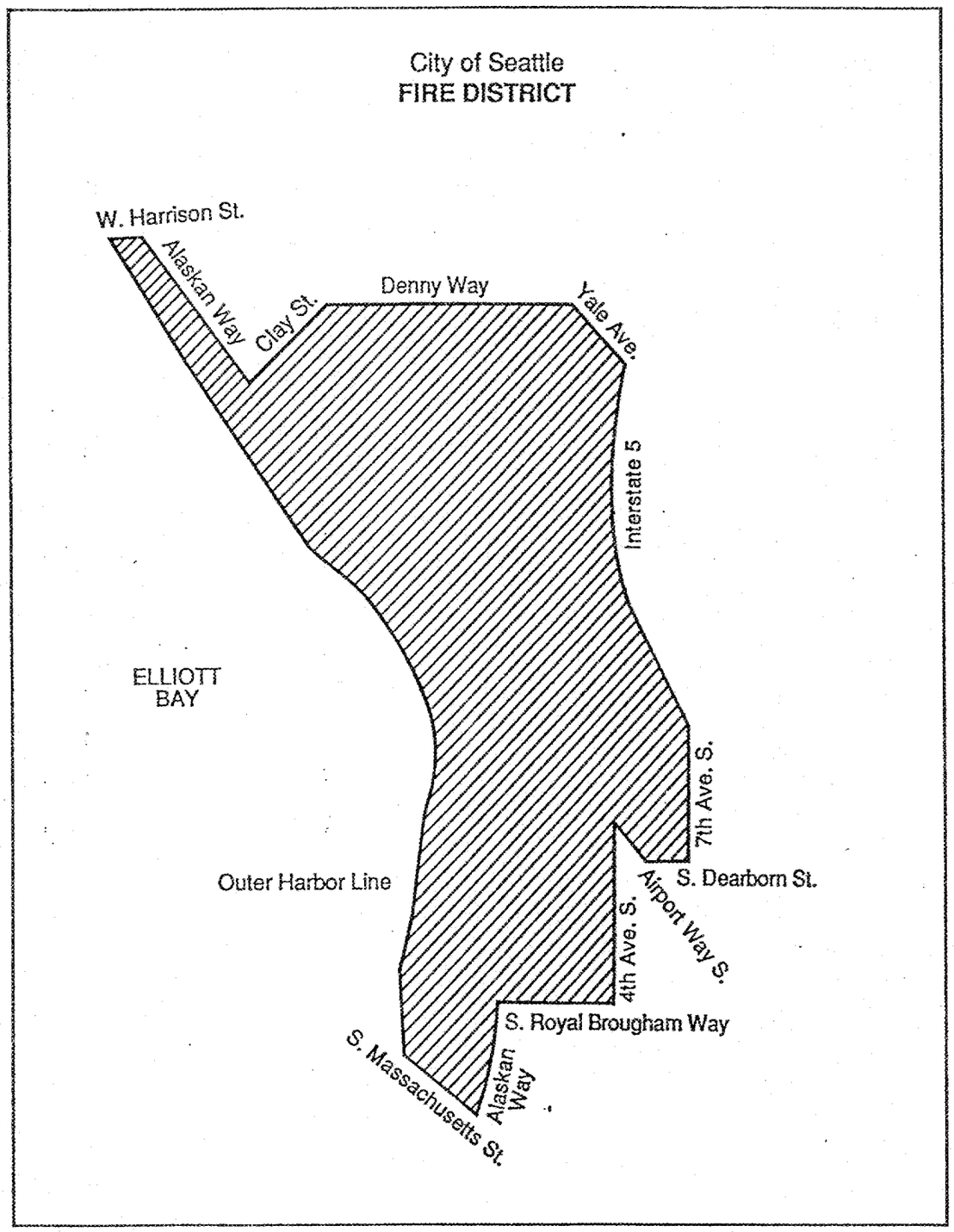

Figure 16-1

CS 19.2

Section 54. Subsection 1701(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

GENERAL

Sec. 1701. (a) **Classification of Buildings.** The requirements of Part IV are for the various types of construction and represent varying degrees of public safety and resistance to fire. Every building shall be classified by the building official into one of the types of construction set forth in Table No. 17-A. Any building which does not entirely conform to a type of construction set forth in Table No. 17-A shall be classified by the building official into a type having an equal or lesser degree of fire resistance.

A building or portion thereof shall not be required to conform to the details of a type of construction higher than that type which meets the minimum requirements based on occupancy (Part III) <u>or Chapter 16, Restrictions in the Fire District,</u> even though certain features of such building actually conform to a higher type of construction.

Where specific materials, types of construction or fire-resistive protection are required, such requirements shall be the minimum requirements, and any materials, types of construction or fire-resistive protection which will afford equal or greater public safety or resistance to fire, as specified in this code, may be used.

Portions of buildings separated as specified in Section 505(f) may be considered a separate building for classification of types of construction. When there is no such separation, the area of the entire building shall not exceed the least area permitted for the types of construction involved.

Section 55. Section 1702 of the Uniform Building Code, 1991 Edition, is amended as follows:

STRUCTURAL FRAME

Sec. 1702. The structural frame shall be considered to be the columns and the girders, beams, trusses and spandrels having direct connections to the columns<u>, structural elements supporting tributary areas exceeding 500 square feet,</u> and all other members which are essential to the stability of the building as a whole. The members of floor or roof panels which have no connection to the columns <u>and are not supporting tributary areas exceeding 500 square feet</u> shall be considered secondary members and not a part of the structural frame.

Section 56. Section 1705 of the Uniform Building Code, 1991 Edition, is amended as follows:

EXCEPTIONS TO TABLE NO. 17-A

Sec. 1705. (a) **General.** The provisions of this section are exceptions to the construction requirements of Table No. 17-A, Chapters 5 through 12<u>, 16</u> and 18 through 22.

(b) **Fixed Partitions.** 1. **Stores and offices.** Interior nonload-bearing partitions dividing portions of stores, offices or similar places occupied by one tenant only ((~~and which do not establish a corridor serving an occupant load that would require it to be of fire-resistive construction under the provisions of Section 3305(g)~~)), and where one-hour fire-resistive corridors are not otherwise required may be constructed of:

A. Noncombustible materials.

B. Fire-retardant treated wood.

C. One-hour fire-resistive construction.

D. Wood panels or similar light construction up to three fourths the height of the room in which placed; when more than three fourths the height of the room, such partitions shall have not less than the upper one fourth of the partition constructed of glass.

2. **Hotels and apartments.** Interior nonload-bearing partitions within individual dwelling units in apartment houses and guest rooms or suites in hotels when such dwelling units, guest rooms or suites are separated from each other and from corridors by not less than one-hour fire-resistive construction may be constructed of:

A. Noncombustible materials. ((~~or fire-retardant treated wood in buildings of any type of construction; or~~

~~B. Combustible framing with noncombustible materials applied to the framing in buildings of Type III or V construction.~~))

B. Fire-retardant-treated wood covered with materials complying with Item D.

C. Combustible framing within a one-hour fire-resistive assembly.

D. Combustible framing with noncombustible materials having an approved thermal barrier with an index of 15 in accordance with U.B.C. Standard No. 17-3 applied to the framing in buildings of Type III or V construction. One-half-inch thick gypsum wallboard is acceptable as a thermal barrier.

Openings to such corridors shall be equipped with doors conforming to Section 3305(h) regardless of the occupant load served.

For use of plastics in partitions, see Section 5210.

(c) **Other Partitions, Freestanding Fixtures, and Storage Partitions.** 1. **Folding, Portable or Movable Partitions.** Approved folding, portable or movable partitions need not have a fire-resistive rating, provided:

((~~1~~))A. They do not block required exits (without providing alternative conforming exits) and they do not establish an exit corridor.

((~~2~~))B. Their location is restricted by means of permanent tracks, guides or other approved methods.

((~~3~~))C. Flammability shall be limited to materials having flame-spread classification as set forth in ((~~Table No. 42-B for rooms or areas.~~)) Chapter 42.

2. **Freestanding Fixtures.** Freestanding book shelves, decorative screens, clothes cabinets, closets, office furniture and similar freestanding fixtures more than three-fourths of the height of the room in which they are located may be used to subdivide portions of stores, offices or similar places occupied by one tenant only, provided:

A. They do not block required exits (without providing alternative conforming exits) and they do not establish an exit corridor as defined in Section 3305(g).

B. Their location is approved by the building official.

C. Flammability shall be limited to materials having a flame-spread classification as set forth in Chapter 42.

3. **Storage Locker, Mini-warehouse Partitions.** Nonbearing partitions separating individual storage lockers in Group B, Division 2 accessory storage areas and in mini-storage warehouse buildings need not have one hour partitions provided that the storage lockers comply with the provisions of Section 702(c)2.

(d) **Walls Fronting on Streets or Yards.** Regardless of fire-resistive requirements for exterior walls, certain elements of the walls fronting on streets or yards having a width of 40 feet may be constructed as follows:

1. Bulkheads below show windows, show-window frames, aprons and showcases may be of combustible materials, provided the height of such construction does not exceed 15 feet above grade.

2. Wood veneer of boards not less than 1-inch nominal thickness or exterior-type panels not less than 3/8-inch nominal thickness may be applied to walls, provided the veneer does not exceed 15 feet above grade, and further provided such veneer shall be placed either directly against noncombustible surfaces or furred out from such surfaces not to exceed 1-5/8 inches with all concealed spaces fire blocked as provided in Section 2516(f). Where boards, panels and furring as described above comply with Section 407 as fire-retardant treated wood suitable for exterior exposure, the height above grade may be increased to 35 feet.

(e) **Trim.** Trim, picture molds, chair rails, baseboards, handrails and show-window backing may be of wood. Unprotected wood doors and windows may be used except where openings are required to be fire protected.

Foam plastic trim covering not more more than 10 percent of the wall or ceiling area may be used in other than I Occupancies, provided such trim (1) has a density of no less than 20 pounds per cubic foot, (2) has a maximum thickness of 1/2 inch and a maximum width of 4 inches and (3) has a flame-spread rating no greater than 75.

Materials used for interior finish of walls and ceilings, including wainscoting, shall be as specified in Chapter 42.

(f) **Loading Platforms.** Exterior loading platforms may be of noncombustible construction or heavy-timber construction with wood floors not less than 2-inch nominal thickness. Such wood construction shall not be carried through the exterior walls.

(g) **Insulating Boards.** Combustible insulating boards may be used under finished flooring.

Section 57. Section 1706 of the Uniform Building Code, 1991 Edition, is amended as follows:

SHAFT ENCLOSURES

Sec. 1706. (a) **General.** Openings through floors shall be enclosed in a shaft enclosure of fire-resistive construction having the time period set forth in Table No. 17-A for "Shaft Enclosures" except as permitted in Sections 1706 (c), (e), (f) and (g). See occupancy chapters for special provisions.

(b) **Extent of Enclosures.** Shaft enclosures shall extend from the lowest floor opening through successive floor openings and shall be enclosed at the top and bottom.

EXCEPTIONS: 1. Shafts extending through or to the underside of the roof sheathing, deck or slab need not be enclosed at the top.

2. Noncombustible ducts, vents or chimneys used to convey vapors, dusts or combustion products may penetrate the enclosure at the bottom.

3. Shafts need not be enclosed at the bottom when protected by fire dampers conforming to U.B.C. Standard No. 43-7, installed at the lowest floor level within the shaft enclosure.

Shaft enclosures shall be constructed to continuously maintain the required fire-resistive integrity.

(c) **Special Provisions.** In other than Group I Occupancies, openings which penetrate only one floor and are not connected with openings communicating with other stories or basements and which are not concealed within building construction assemblies need not be enclosed. See also Section 1209.

Shafts in Group R, Division 3 Occupancies and within individual dwelling units within Group R, Division 1 Occupancies need not comply with Table No. 17-A provided such shafts are effectively draft stopped at each floor or ceiling.

An enclosure shall not be required for automobile ramps in Group B, Division 1 parking garages. An enclosure shall not be required for openings through floors in a Group B, Division 1 parking garage when the occupancy is provided with an approved automatic sprinkler system throughout.

Exit enclosures shall conform to the applicable provisions of Sections 3309 and 3310.

In one- and two-story buildings other than Group I Occupancies, gas vents, ducts, piping and factory-built chimneys which extend through not more than two floors need not be enclosed, provided the openings around the penetrations are fire stopped at each floor.

EXCEPTION: BW gas vents installed in accordance with their listing.

Gas vents and factory-built chimneys shall be protected as required by the Mechanical Code.

Walls containing gas vents or noncombustible piping which pass through three floors or less (<u>four floors if the building is protected with an automatic sprinkler system)</u> need not provide the fire-resistance rating specified in Table No. 17-A for "Shaft Enclosures," provided the annular space around the vents or piping is filled at each floor or ceiling with noncombustible materials.

EXCEPTION: BW gas vents installed in accordance with their listing.

Openings made through a floor for penetrations such as cables, cable trays, conduit, pipes or tubing which are protected with approved through-penetration fire stops to provide the same degree of fire resistance as the floor construction need not be enclosed. For floor-ceiling assemblies, see Section 4305.

(d) **Protection of Openings.** Openings into a shaft enclosure shall be protected by a self-closing or an automatic-closing fire assembly conforming to Section 4306 and having a fire-protection rating of one hour for openings through one-hour fire-resistive walls and one and one-half hours for openings through two-hour fire-resistive walls.

EXCEPTIONS: 1. Openings to the exterior may be unprotected when permitted by Table No. 5-A or 9-C or Sections 1803(b), 1903(b), 2003(b) and 2103(b).

2. Openings protected by through-penetration fire stops to provide the same degree of fire resistance as the shaft enclosure. See Sections 4304 and 4305. <u>Air ducts passing through exit enclosures shall be separated from the enclosure by fire-resistive construction at least equal to the exit enclosure walls.</u>

(e) **Rubbish and Linen Chute Termination Rooms.** In other than Group R, Division 3 Occupancies, rubbish and linen chutes shall terminate in rooms separated from the remainder of the building by an occupancy separation having the same fire resistance as required for the shaft enclosure, but not less than one hour. Openings into chutes and chute termination rooms shall not be located in exit corridors or stairways. For sprinklers, see Section 3802(b).

(f) **Chute and Dumbwaiter Shafts.** In buildings of Type V construction, chutes and dumbwaiter shafts with a cross-sectional area of not more than 9 square feet may be either of approved fire-resistive wall construction or may have the inside layers of the approved fire-resistive assembly replaced by a lining of not less than 0.019-inch (26-gage) galvanized sheet metal with all joints locklapped. The outside layers of the wall shall be as

required for the approved construction. All openings into any such enclosure shall be protected by not less than a self-closing solid wood door 1 3/8 inches thick or equivalent.

EXCEPTION: Dumbwaiter shafts containing cars with enclosed sides need not be covered with sheet metal.

(g) **Elevator and Stairway Shafts.** 1. **Application.** Shafts containing elevators which serve 4 or more floors and located in buildings which meet all of the following conditions shall comply with either Item 2 or 3.

A. Buildings occupied by Group B, Division 2 offices; and

B. Buildings, other than highrise, of Types I or II- F.R. construction; and

C. Buildings which have an occupant load of 30 or more per floor.

Item 3 shall also apply to shafts containing either elevators or stairways in other buildings when referenced by other provisions of this code.

2. **Lobbies.** Elevators on all floors shall open into elevator lobbies which are separated from the remainder of the building by walls of not less than one-hour fire-resistive construction. Openings through such walls shall conform to Section 3305(h).

3. **Emergency Shaft Pressurization.** Shafts shall be protected by an emergency shaft pressurization system complying with the following:

A. Shafts shall be pressurized to 0.15 inch of water column relative to atmospheric pressure, with all doors closed.

EXCEPTION: In buildings protected throughout with an automatic sprinkler system, elevator shafts may be pressurized to not less than 0.10 inch of water column.

B. The emergency shaft pressurization shall be activated by a fire alarm system which shall include smoke detectors in the corridors located near the shaft on each floor in a manner approved by the building official and the fire chief. If the building has a fire alarm panel, smoke detectors shall be connected to, with power supplied by, the fire alarm panel.

C. Emergency pressurization equipment and its duct work located within the building shall be separated from other portions of the building by construction equal to that required for the shaft.

D. Shaft pressurization air intakes shall be located at the exterior of the building.

EXCEPTION: Intakes for elevator shaft pressurization may be located within the building provided they shall be located no more than 20 feet from major openings in the building exterior such as loading docks and vehicular entrances. Such intake shall be provided with smoke detectors which shall deactivate the pressurization system for that shaft.

E. An emergency source of power shall be provided for the fire alarm system and emergency pressurization system. One power source shall be permitted if it conforms to Seattle Electrical Code Section 280.82, Exception 5; otherwise two sources of power shall be provided conforming to Electrical Code Section 700.12 (a) through (f).

F. Other measures to prevent loss of pressurization shall be provided in the design and construction of shafts, such as quality of workmanship and caulking of penetrations and joints.

Section 58. Section 1708 of the Uniform Building Code, 1991 Edition, is amended as follows:

WEATHER PROTECTION

Sec. 1708. (a) Weather-resistive Barriers. All weather-exposed surfaces shall have a weather-resistive barrier to protect the ((~~interior~~)) insulation, internal wall structural members and the wall covering. Such barrier shall be equal to that provided for in U.B.C. Standard No. 17-1 for kraft waterproof building paper or asphalt-saturated rag felt. Building paper and felt shall be free from holes and breaks other than those created by fasteners and construction system due to attaching of the building paper, and shall be applied over studs or sheathing of all exterior walls. Such felt or paper shall be applied horizontally, with the upper layer lapped over the lower layer not less than 2 inches. Where vertical joints occur, felt or paper shall be lapped not less than 6 inches.

Weather-protective barrier may be omitted in the following cases:

1. When exterior covering is of approved weatherproof panels.
2. In back-plastered construction.
3. When there is no human occupancy.
4. Over water-repellent panel sheathing.
5. Under approved paperbacked metal or wire fabric lath.
6. Behind lath and portland cement plaster applied to the underside of roof and eave projections.

(b) **Flashing and Counterflashing.** Exterior openings exposed to the weather shall be flashed in such a manner as to make them weatherproof.

All parapets shall be provided with coping of approved materials. All flashing, counterflashing and coping, when of metal, shall not be of less than No. 26 U.S. gauge corrosion-resistant metal.

(c) **Waterproofing Weather-exposed Areas.** Balconies, landings, exterior stairways and similar surfaces exposed to the weather and sealed underneath shall be waterproofed.

(d) **Dampproofing Foundation Walls.** Unless otherwise approved by the building official, foundation walls enclosing a basement below finished grade shall be dampproofed. ((~~outside by approved methods and materials.~~))

Section 59. Section 1711 of the Uniform Building Code, 1991 Edition, is amended as follows:

PROJECTIONS

Sec. 1711. Cornices, eave overhangs, exterior balconies and similar architectural appendages extending beyond the floor area as defined in Section 407 shall conform to the requirements of this section. (See Sections 3305 and 3306 for additional requirements applicable to exterior exit balconies and stairways.)

Projections from walls of Type I or II construction shall be of noncombustible materials.

Projections from walls of Type III, IV or V construction may be of noncombustible or combustible materials.

EXCEPTIONS: 1. Exterior balconies of Group B and Group R, Division 1 Occupancies shall be constructed of noncombustible materials, heavy-timber construction conforming to Section 2106, or of combustible one-hour fire-resistive construction. If vents are provided, they shall be protected with No. 16 mesh or finer metal screen. See also Section 3205(c).

2. Eave overhangs from walls of Type III One-Hour, IV or V One-hour construction shall be one-hour fire-resistive or heavy-timber construction conforming to Section 2106. If vents are provided, they shall be protected with No. 16 mesh or finer metal screen.

Combustible projections from walls located where openings are not permitted or where protection of openings is required shall be of one-hour fire-resistive or heavy-timber construction conforming to Section 2106.

For projections extending over public property, see Chapter 45.

For combustible ornamentation, see Section 1705(d).

For fire-resistive requirements, see Section 504(b).

Section 60. Subsection 1712(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

GUARDRAILS AND VEHICLE BARRIERS

Sec. 1712. (a) **Guardrails.** Unenclosed floor and roof openings, open and glazed sides of stairways, landings and ramps, and balconies or porches, which are more than 30 inches above the adjacent grade or floor below, and roofs used for other than service of the building shall be protected by a guardrail.

EXCEPTION: Guardrails need not be provided at the following locations:

A. On the loading side of loading docks.

B. On the auditorium side of a stage or enclosed platform.

C. Along vehicle service pits not accessible to the public.

The top of guardrails shall be not less than 42 inches in height.

EXCEPTIONS: 1. The top of guardrails for Group R, Division 3 and Group M, Division 1 Occupancies and interior guardrails within individual dwelling units, Group R, Division 3 congregate residences and guest rooms of Group R, Division 1 Occupancies may be 36 inches in height.

2. The top of guardrails on a balcony immediately in front of the first row of fixed seats and which are not at the end of an aisle may be 26 inches in height.

3. The top of guardrails for stairways, exclusive of their landings, may have a height as specified in Section 3306(i) for handrails.

Open guardrails shall have intermediate rails or an ornamental pattern such that a sphere 4 inches in diameter cannot pass through.

EXCEPTIONS: 1. The open space between the intermediate rails or ornamental pattern of guardrails in areas of commercial and industrial-type occupancies which are not accessible to the public may be such that a sphere 12 inches in diameter cannot pass through.

2. The triangular openings formed by the riser, tread and bottom element of a guardrail at the open side of a stairway may be of such size that a sphere 6 inches in diameter cannot pass through.

3. Intermediate rails need not be provided at the glazed sides of stairs, ramps and landings provided the glazing complies with Section 5406(f).

Section 61. Subsection 1713(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Thermal Barrier.** The interior of the building shall be separated from the foam plasic insulation by an approved thermal barrier having an index of 15 when tested in accordance with U.B.C. Standard No. 17-3. The thermal barrier shall be installed in such a manner that it will remain in place for the time of its index classification based upon approved diversified tests. For the purposes of this section, 1/2 inch thick gypsum wallboard is acceptable as an approved thermal barrier.

EXCEPTION: The thermal barrier is not required:

A. For siding backer board, provided the foam plastic insulation is not of more than 2,000 Btu per square foot as determined by U.B.C. Standard No. 17-2 and when it is separated from the interior of the building by not less than 2 inches of mineral fiber insulation or equivalent, or applied as re-siding over existing wall construction.

B. For walk-in coolers and freezer units having an aggregate floor area less than 400 square feet.

C. In a masonry or concrete wall, floor or roof system when the foam plastic insulation is covered by a minimum of 1-inch thickness of masonry or concrete. Loose-fill type foam plastic insulation shall be tested as board stock for flame spread and smoke development as described above.

D. Within an attic or crawl space where entry is made only for service of utilities, and when foam plastic insulation covered with a material such as 1 1/2-inch-thick mineral fiber insulation, 1/4-inch-thick plywood, hardboard or gypsum wallboard, corrosion-resistant sheet metal having a base metal thickness not less than 0.0160 inch at any point, or other approved material installed in such a manner that the foam plastic insulation is not exposed.

E. In cooler and freezer walls when:

(i) The foam plastic insulation has a flame-spread rating of 25 or less when tested in a minimum 4-inch thickness;

(ii) Has flash and self-ignition temperatures of not less than 600°F. and 800°F., respectively;

(iii) Is covered by not less than 0.032-inch aluminum or corrosion-resistant steel having a base metal thickness not less than 0.0160 inch at any point; and

(iv) Is protected by an automatic sprinkler system. When the cooler or freezer is within a building, both the cooler or freezer and that part of the building in which it is located shall be sprinklered.

Section 62. Subsection 1714(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

INSULATION

Sec. 1714. (a) **General.** Thermal and acoustical insulation located on or within floor-ceiling and roof-ceiling assemblies, crawl spaces, walls, partitions and insulation on pipes and tubing shall comply with this section. Duct insulation and insulation in plenums shall conform to the requirements of the Mechanical Code. <u>In addition, thermal insulation shall conform to the requirements of the Seattle Energy Code.</u>

EXCEPTION: Roof insulation shall comply with Section 3208(d).

Section 63. Section 1716 of the Uniform Building Code, 1991 Edition, is amended as follows:

ATRIA

Sec. 1716. (a) **General.** 1. **Sprinklers and Size of Openings.** Buildings of other than Group H Occupancy, with automatic sprinkler protection throughout may have atria complying with the provisions of this section. No increases for building area or height are allowed for the sprinkler protection. Such atria shall have a minimum opening area and dimension as set forth in Table No. 17-B.

2. **Predesign Conference.** At least 60 days prior to application, the applicant shall arrange a predesign conference with the design team, the building official and the fire chief, to review the proposed smoke control and life safety systems for the building. It is the purpose of the meeting to obtain conceptual approval from the building official and the fire chief of the proposed systems and to allow for a design based upon the latest state-of-the-art.

The building official and fire chief may require sufficient documentation, based upon appropriate analyses, that the concept meets the intent of nationally recognized good practices. The building permit shall not be issued until the building official and fire chief have approved, in writing, the smoke control and life safety systems for the building. The documentation of the predesign meeting shall be reflected on the plans for the building and become a permanent part of the Department of Construction and Land Use's records.

(b) **Smoke-control System.** 1. **General.** A mechanically operated air-handling system shall be installed that will exhaust smoke either entering or developed within the atrium. In addition to the mechanical smoke control system, atria shall have a gravity smoke exhaust system conforming to Section 3206. The gravity system shall include make-up air openings in the lower portion of the atrium.

2. **Exhaust openings.** Exhaust openings shall be located in the ceiling or in a smoke trap area immediately adjacent to the ceiling of the atrium. The lowest level of the exhaust openings shall be located above the top of the highest portion of door openings into the atrium.

3. **Supply openings.** Supply openings sized to provide a minimum of 50 percent of the exhaust volume shall be located at the lowest level of the atrium. When the height of the atrium is 55 feet or less, supply air may be introduced by gravity, provided smoke control is accomplished. When the height of the atrium is more than 55 feet, supply air shall be introduced mechanically from the floor of the atrium and be directed vertically toward the exhaust outlets. In atria over six stories in height or where tenant spaces above the second story are open to the atrium, supplemental supply air may be introduced at upper levels.

4. **Automatic operation.** The smoke-control system for the atrium shall operate automatically upon the actuation of the automatic sprinkler system within the atrium or areas open to the atrium. The smoke-control system for the atrium shall also oper-

ate automatically upon the activation of two or more smoke detectors required by this section. Actuation of the smoke-control system shall follow immediately after the actuation of the second smoke detector. When projected beam-type smoke detection is used in lieu of open area smoke-detection devices, the smoke-control system shall operate upon actuation of any one beam detector.

5. **Manual operation.** The smoke-control system shall also be manually operable by controls designed for fire department use. The smoke-control system may be separate or integrated with other air-handling systems. When the smoke-control mode is actuated, air-handling systems which would interfere with the smoke-control system shall be automatically shut down.

6. **Separated tenant spaces.** Tenant spaces that are adjacent to but separated from the atrium by walls or glazing as specified in Section 1716(c) shall be provided with a smoke-control system complying with the requirements of a sprinklered building in Section 1807(g).

7. **Exhaust quantities.** The atrium smoke control system shall exhaust not less than the following quantities of air:

A. For atria having a volume of not more than 600,000 cubic feet, including the volume of any levels not physically separated from the atrium, not less than six air changes per hour or less than 40,000 cubic feet per minute (cfm). A lesser cfm is acceptable if it can be shown by test that smoke will not migrate beyond the perimeter of the atrium.

B. For atria having a volume of more than 600,000 cubic feet, including the volume of any levels not physically separated from the atrium, not less than four air changes per hour.

8. **Smoke detector location.** Smoke detectors which will automatically operate the atrium smoke-control system shall be accessible for maintenance, testing and servicing and shall be installed in the following locations:

A. When integral-type detectors are used they shall be installed:

(i) At the atrium ceiling, spaced in accordance with their listing.

(ii) On the underside of projections into the atrium, spaced in accordance with their listing.

(iii) Around the perimeter of the atrium opening on all floors open to the atrium. These detectors shall be spaced no more than 30 feet on center and be located within 15 feet of the atrium opening.

B. When projected beam-type smoke detection is used, it shall be installed and spaced in accordance with its listing.

(c) **Enclosure of Atria.** Atria shall be separated from adjacent spaces by not less than one-hour fire-resistive construction.

((~~EXCEPTIONS: 1. The separation between atria and tenant spaces that are not guest rooms, congregate residences or dwelling units may be omitted at three floor levels.~~))

EXCEPTION: ((~~2.~~)) Open exit balconies are permitted within ((~~the~~)) atria of 600,000 cubic feet or more, for one of the required exits.

Openings in the atrium enclosure other than fixed glazing shall be protected by smoke- and draft-control assemblies conforming to Section 3305(h).

EXCEPTION: Other tight-fitting doors which are maintained automatic closing, in accordance with Section 4306(b), by actuation of a smoke detector, or self-closing may be used when protected as required for glazed openings in Exception 2 below.

Fixed glazed openings in the atrium enclosure shall be equipped with fire windows having a fire-resistive rating of not less than three-fourths hour, and the total area of such openings shall not exceed 25 percent of the area of the common wall between the atrium and the room into which the opening is provided.

EXCEPTIONS: ((~~1. In Group R, Division 1 Occupancies, openings may be unprotected when the floor area of each guest room, congregate residence or dwelling unit does not exceed 1,000 square feet and each room or unit has an approved exit not entering the atrium.~~))

((~~2~~)) 1. Guest rooms, dwelling units, congregate residences and tenant spaces may be separated from the atrium by approved fixed wired glass set in steel frames. In lieu thereof, tempered or laminated glass or listed glass block may be used, subject to the following:

A. The glass shall be protected by a sprinkler system equipped with listed quick-response sprinklers. The sprinkler system shall completely wet the entire surface of the glass wall when actuated. Where there are walking surfaces on both sides of the glass, both sides of the glass shall be so protected.

B. The tempered or laminated glass shall be in a gasketed frame so installed that the glazing system may deflect without breaking (loading) the glass before the sprinkler system operates.

C. The glass block wall assembly shall be installed in accordance with its listing for a three-fourths-hour fire-resistive rating and Section 2407(j)5.

D. Obstructions such as curtain rods, drapery traverse rods, curtains, drapes or similar materials shall not be installed between the sprinkler and the glass.

E. The building is equipped with automatic smoke detection on all floors served by the atrium except for tenant spaces separated from the atrium by one-hour fire-resistive construction.

2. The separation between an atrium and Group A, Division 3 or Group B, Division 2 tenant spaces may be omitted on a maximum of three floors when:

A. The perimeter of the opening is protected by draft curtains and a row of automatic sprinkler heads not more than six feet on center as required for escalator protection;

B. The building is equipped with automatic smoke detection on all floors served by the atrium except for tenant spaces separated from the atrium by one-hour fire-resistive construction; and

C. Tenant spaces have access to two enclosed exits separated by one-half the building diagonal with one exit located so that occupants can exit in a direction away from the atrium.

3. The separation between an atrium and Group A, Division 3 or Group B, Division 2 tenant spaces may be omitted on four floors when:

A. The conditions of Exception 2 above are met; and

B. The building must be of Types I or II-F.R. construction and all occupied areas on the floors open to the atrium must have all required exits from those areas located so that the occupants can exit in a direction away from the atrium.

(d) **Travel Distance.** When a required exit enters the atrium space, the travel distance from the doorway of the tenant space to an enclosed stairway, horizontal exit, exterior door or exit passageway shall not exceed 100 feet.

(e) **Group I Occupancy Exit.** In Group I Occupancies, other than jails, prisons and reformatories, sleeping rooms shall not be permitted to have required exits through the atrium.

(f) **Occupancy Separation Exceptions.** The vertical portion of the occupancy separation which is adjacent to the atrium may be omitted between a Group B, Division 2 Occupancy office or sales area or Group A, Division 3 Occupancy and Group R, Division 1 apartment, congregate residence or guest room located on another level.

(g) **Standby Power.** The smoke-control system for the atrium and the smoke-control system for the tenant space are to be provided with standby power as required in Section 1807(i) except for buildings that have at least two exits and atria with a total volume of less than 40,000 cubic feet.

(h) **Interior Finish.** The interior finish of walls and ceilings of the atrium and all unseparated tenant spaces ((~~allowed under the last paragraph of Subsection (c) above~~)) shall be Class ~~I~~ II with no reduction in class for sprinkler protection.

(i) **Acceptance of the Smoke-control System.** Before the Certificate of Occupancy is issued, the smoke-control systems shall be tested in an approved manner and shall show compliance with the requirements of this section.

(j) **Combustible Furnishings in Atria.** The quantity of combustible furnishings in atria shall not exceed that specified in the Fire Code.

(k) **Inspection of the Smoke-control System.** All operating parts of the smoke-control systems shall be routinely tested according to requirements of the Fire Code.

Section 64. Section 1717 of the Uniform Building Code, 1991 Edition, is amended as follows:

MEZZANINES

Sec. 1717. A mezzanine need not be counted as a story for determining the allowable number of stories when constructed in accordance with the following:

1. The construction of a mezzanine shall be consistent with the requirements for the type of construction in which the mezzanine is located, but the fire-resistive time period need not exceed one hour for unenclosed mezzanines. The clear height above and below the mezzanine floor construction shall be not less than 7 feet. Only such main floor area having sufficient ceiling height to produce a proper mezzanine floor shall be used in calculating the size of the mezzanine floor.

EXCEPTION: In buildings of Types I and II construction, where the floor in question is protected throughout by an automatic sprinkler system, mezzanines not exceeding 900 square feet in area or one-half of the area of the room in which the mezzanine is located, whichever is more restrictive, may have fire retardant treated wood included in the one-hour fire-resistive construction.

2. There shall be not more than two levels of mezzanines in a room. However, there is no limitation on the number of mezzanines within a room.

3. The aggregate area of mezzanines within a room shall not exceed one-half ((~~one-third~~)) the area of the room in which they are located.

EXCEPTION: The area of the mezzanine floor within a dwelling unit shall not exceed one-half of the area of the main floor of the dwelling unit.

4. All portions of a mezzanine shall be open and unobstructed to the room in which they are located, except for columns and posts and protective walls or railings not more than 44 inches in height.

EXCEPTIONS: 1. Partitioning may be installed if either of the following conditions exist:

A. The aggregate floor area of the enclosed space does not exceed 10 percent of the mezzanine area.

B. The occupant load of the enclosed area of the mezzanine does not exceed 10.

2. A mezzanine having two or more exits need not be open into the room in which it is located, provided at least one of the exits gives direct access to a protected exit corridor, an exit court, enclosed exit stairway, exterior exit, exterior exit balcony or exit passageway.

3. In industrial facilities, mezzanines used for control equipment may be glazed on all sides.

5. Two exits shall be provided from a mezzanine when two exits are required by Table No. 33-A.

6. If any required exit enters the room below, the occupant load of the mezzanine shall be added to the occupant load of the room in which it is located.

7. Mezzanines within individual dwelling units shall not be located above other dwelling units, corridors, or other common space.

Section 65. Chapter 17 of the Uniform Building Code, 1991 Edition, is amended by adding Section 1718 as follows:

RAISED FLOORS

Sec. 1718. (a) **General.** A raised floor is flooring system constructed above the structural floor by more than the equivalent height of 2 inch nominal thickness wood sleepers, and which has unusable space between the flooring and the structural floor.

Walls required to have fire-resistive construction by either Chapter 5 or 33 shall be fire stopped to the structural floor with construction of the same fire resistance as the wall.

(b) **Buildings of Type I and II Construction.** In Types I and II buildings, raised floors shall be constructed of noncombustible materials or fire retardant treated wood. If fire retardant treated wood is used, one of the following measures shall be taken:

1. In a fully sprinklered building, the sprinkler system shall be extended into each void space; or

2. All void spaces shall be filled with noncombustible material; or

3. Fire stopping shall be constructed so that no void space under the raised floor exceeds 100 square feet in area. In sprinklered buildings, the walls and soffits of the void space shall be protected on the inside as required for one-hour fire resistive construction.

See Sections 1804 and 1904 for floors in which wood sleepers of 2 inch or less are used.

(c) **Buildings of Type III, IV and V Construction.** Raised floors in Group A, Division 1, 2 or 2.1 occupancies shall conform with the provisions of Section 1718(b). In all other occupancies located in buildings of Types III, IV and V construction, raised floors may be constructed of untreated wood, provided that draft and fire stopping are provided as specified in Section 2516(f), Item 4.

In buildings protected by an automatic sprinkler system, the system shall extend into each void space. In non-sprinklered buildings each void space shall either be filled with non-

combustible material or shall be protected on the inside as required for one-hour fire-resistive construction.

Section 66. Chapter 17 of the Uniform Building Code, 1991 Edition, is amended by adding Section 1719 as follows:

ELECTRICAL WIRING, PIPES, DUCTS AND EQUIPMENT IN ELEVATOR HOISTWAYS AND MACHINE ROOMS

Sec. 1719. (a) **Wiring.** Electrical wiring and equipment installed in a hoistway, elevator machine room or elevator machinery space shall be installed in accordance with the Seattle Electrical Code.

Unless installed to serve that space only, electrical wiring and equipment shall not be installed in any hoistway, elevator machine room or machinery space. See also Sections 5122 and 5125.

(b) **Pipes, Ducts and Mechanical Equipment.** Unless installed to serve that space only, pipes, ducts or mechanical equipment shall not be installed in hoistways, elevator machine rooms or machinery spaces.

EXCEPTIONS: 1. Ducts used for heating, cooling, ventilating or pressurization; pipes used for heating, cooling or sprinkler protection; or equipment used for heating of hoistways, elevator machine rooms or machinery spaces may be installed in accordance with Section 5122.

2. Ducts and pipes may pass through an elevator machine room or machinery space provided they are separated from the room or space by construction equal to the rated construction of the room or space and so located that all required clearances are maintained.

Section 67. Chapter 17 of the Uniform Building Code, 1991 Edition, is amended by adding Section 1720 as follows:

RADON RESISTIVE CONSTRUCTION STANDARDS

Sec. 1720 (a) **General.** The criteria of this section establish minimum radon resistive construction requirements for all Group R Occupancies.

(b) **Radon Monitoring.** A three month etched track radon monitor, installation instructions, and radon information sheets shall be provided by the builder at the final inspection to all single family residences and to all first floor dwelling units in multi-unit residential structures. It is not the responsibility of the builder to administer the radon test.

(c) **Crawl Spaces.** All crawl spaces shall be ventilated as specified in Section 2516 (c).

If the ventilation openings in a crawl space are less than 1 square foot for each 300 square feet of crawl space area, or if the crawl space vents are equipped with operable louvers, a radon vent shall be installed from a point between the ground cover and

soil. The radon vent shall be installed in accordance with Section 1720(d) 5.

(d) **Crawl Space Plenum Systems.** 1. **General.** In crawlspace plenum systems used for providing supply or return air for an HVAC system, aggregate, sealings, a soil gas retarder membrane and a radon vent pipe shall be installed in accordance with this section.

In addition, a radon vent fan shall be installed and activated. The fan shall be located as specified in this section. The fan shall be capable of providing at least 100 CFM at one-inch water column static pressure.

2. **Aggregate.** A layer of aggregate of 4-inch-minimum thickness shall be placed beneath the concrete slab. The aggregate shall be continuous to the extent practical. Aggregate shall:

A. Comply with U.B.C. Standard No. 26-2 and shall be No. 67 or larger size aggregate as listed in Table No. 26-2-A, Grading Requirements for Concrete Aggregates; or

B. Meet the 1988 Washington State Department of Transportation specification 9-03.1 (3) "Coarse Aggregate for Portland Cement Concrete", or any equivalent standards approved by the building official. Aggregate size shall be of Grade 5 or larger as listed in section 9-03.1 (3) C, "Grading"; or

C. Be screened, washed and free of deleterious substances in a manner consistent with U.B.C. Standard No. 26-2 with 100 percent of the gravel passing a one inch sieve and less than 2 percent passing a 4-inch sieve. Sieve characteristics shall conform to those acceptable under U.B.C. Standard No. 26-2.

EXCEPTION: Aggregate shall not be required if a substitute material or system, with sufficient load bearing characteristics, and having approved capability to provide equal or superior air flow, is installed.

3. **Soil-Gas Retarder Membrane.** A soil-gas retarder membrane, consisting of at least one layer of virgin polyethylene with a thickness of at least 6 mil, or equivalent flexible sheet material, shall be placed directly under the concrete slab. The flexible sheet shall extend to the foundation wall or to the outside edge of the monolithic slab. Seams shall overlap at least 12 inches.

4. **Sealing of Penetrations and Joints.** All penetrations and joints in concrete slabs or other floor systems and walls below grade that will not be accessible at the time the Certificate of Occupancy is granted shall be sealed by an approved sealant to create an air barrier to limit the movement of soil gas into the indoor air.

Sealants shall be approved by the manufacturer for the intended purpose. Sealant joints shall conform to manufacturer's specifications. The sealant shall be placed and tooled in accordance with manufacturer's specifications. There shall be no gaps or voids after the sealant has cured.

Concrete block walls connected to below grade areas shall be considered unsealed surfaces. All openings in concrete block walls that will not remain accessible upon completion of the building shall be sealed at both vertical and horizontal surfaces, in order to create a continuous air barrier to limit the transport of soil gas into the indoor air.

5. **Radon Vent.** One continuous sealed pipe shall run from a point within the aggregate under each concrete slab to a point outside the building. Joints and connections shall be gas tight.

The continuous sealed pipe shall terminate no less than 12 inches above the eave, and more than 10 horizontal feet from a woodstove or fireplace chimney, or operable window. The continuous sealed pipe shall be labeled **"Radon Vent"**. The label shall be placed so as to remain visible to an occupant.

The minimum pipe diameter shall be 3 inches unless otherwise approved. Acceptable sealed plastic pipe shall be smooth walled, and may include either PVC schedule 40 or ABS schedule of equivalent wall thickness.

The entire sealed pipe system shall be sloped to drain. The exterior pipe opening shall be protected from blockage by snow accumulation.

The sealed pipe system may pass through an unconditioned attic before exiting the building; but to the extent practicable, the sealed pipe shall be located inside the thermal envelope of the building in order to enhance passive stack venting.

EXCEPTION: A radon vent shall not be required if a fan-forced sub-slab depressurization system is installed. A fan-forced sub-slab depressurization system includes:

1. Soil-gas retarder membrane as specified in Section (d) 3;

2. Sealing of penetrations and joints as specified in Section (d) 4;

3. A 3 inch continuous sealed radon pipe which shall run from a point within the aggregate under each concrete slab to a point outside the building;

4. Joints and connections which shall be gas tight, and may be of either PVC schedule 40 or ABS schedule of equivalent wall thickness;

5. A label of "Radon Vent" which shall be placed on the pipe so as to remain visible to the occupant; and

6. Fan circuit and wiring as specified in Section (d) 6 and a fan.

If the sub-slab depressurization system is exhausted through the concrete foundation wall or rim joist, the exhaust terminus shall be a minimum of six feet from operable windows and outdoor air intake vents and shall be directed away from operable windows and outdoor air intake vents to prevent radon re-entrainment.

6. **Fan Circuit and Wiring and Location.** An area for location of an in-line fan shall be provided. The location shall be as close as practicable to the radon vent pipe's point of exit from the building, or shall be outside the building shell. It shall be located so that the fan and all downstream piping is isolated from the indoor air.

Provisions shall be made to allow future activation of an in-line fan on the radon vent pipe without the need to place new wiring. A 110 volt power supply shall be provided at a junction box near the fan location.

7. **Separate Aggregate Areas.** If the 4 inch aggregate area underneath the concrete slab is not continuous, but is separated into distinct isolated aggregate areas by a footing or other barrier, a minimum of one radon vent pipe shall be installed into each separate aggregate area.

> **EXCEPTION:** Separate aggregate areas may be considered a single area if a minimum 3 inch diameter connection joining the separate areas is provided for every 30 feet of barrier separating those areas.

Section 68. Chapter 17 of the Uniform Building Code, 1991 Edition, is amended by adding Section 1721 as follows:

Sec. 1721. Formaldehyde Reduction Measures. In all Group R Occupancies all structural panel components of the structure such as softwood plywood, particle board, wafer board, and oriented strand board shall be identified as "EXPOSURE 1", "EXTERIOR" or "HUD APPROVED".

Section 69. Table No. 17-A of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 17-A - TYPES OF CONSTRUCTION - FIRE-RESISTIVE REQUIREMENTS
(in Hours)
For Details see Chapters under Occupancy and Types of Construction and for Exceptions see Section 1705.

BUILDING ELEMENT	TYPE I	TYPE II			TYPE III		TYPE IV	TYPE V	
	NONCOMBUSTIBLE				COMBUSTIBLE				
	Fire-Resistive	Fire-Resistive	1-Hr.	N	1-Hr.	N	H.T.	1-Hr.	N
1. Exterior Bearing Walls	4 Sec. 1803(a)	4 1903(a)	1	N	4 2003(a)	4 2003(a)	4 2103(a)	1	N
2. Interior Bearing Walls	3	2	1	N	1	N	1	1	N
3. Exterior Nonbearing Walls	4 Sec. 1803(a)	4 1903(a)	1 1903(a)	N	4 2003(a)	4 2003(a)	4 2103(a)	1	N
4. Structural Frame[1]	3	2	1	N	1 or H.T.	N	1 or H.T.	1 or H.T.	N
5. Partitions - Permanent	1[2]	1[2]	1[2]	N	1	N	1 or H.T.	1	N
6. Shaft Enclosures[3]	2	2	1	1	1	1	1	1	1
7. Floors-Ceilings/Floors	2	2	1	N	1 2001	N	1 or H.T.	1 2201	N
8. Roofs-Ceilings/Roofs	2 Sec. 1806	1 1906	1 1906	N	1 2001	N	1 or H.T.	1 2201	N
9. Exterior Doors and Windows	Sec. 1803(b)	1903(b)	1903(b)	1903(b)	2003(b)	2003(b)	2103(b)	2203	2203
10. Stairway Construction	Sec. 1805	1905	1905	1905	2004	2004	2104	2204	2204

FOOTNOTES TO TABLE NO. 17-A

N - No general requirements for fire resistance. H.T. - Heavy Timber.

[1] Structural frame elements in an exterior wall that is located where openings are not permitted or where protection of openings is required, shall be protected against external fire exposure as required for exterior bearing walls or the structural frame, whichever is greater.

[2] Fire-retardant-treated wood (see Section 407) may be used in the assembly, provided fire-resistance requirements are maintained. See Sections 1801 and 1901, respectively.

[3] For special provisions, see Sections 1706, 706 and 906.

Section 70. Section 1803 of the Uniform Building Code, 1991 Edition, is amended as follows:

EXTERIOR WALLS AND OPENINGS

Sec. 1803. (a) **Exterior Walls.** Exterior walls and all structural members shall comply with the requirements specified in Section 504 and the fire-resistive provisions set forth in Table No. 17-A and Table No. 5-A. For Group H Occupancies see also Table No. 9-C.

EXCEPTIONS: 1. Nonbearing walls fronting on public ways or yards having a width of at least 40 feet may be of unprotected noncombustible construction.

2. In Group R, Division 1 and Group B Occupancies, exterior bearing walls may be of two-hour fire-resistive noncombustible construction where openings are permitted.

3. In other than Group H Occupancies, exterior nonbearing walls may be of one-hour fire-resistive noncombustible construction where unprotected openings are permitted and two-hour fire-resistive noncombustible construction where fire protection of openings is required.

(b) **Openings in Walls.** All openings in exterior walls shall conform to the requirements of Section 504(b) and shall be protected by a fire assembly having a three-fourths-hour fire-protection rating when they are less than ((~~20~~)) 16 feet from an adjacent property line or the ((~~center~~)) opposite line of a public way.

No openings shall be permitted in exterior walls of Groups A, E, I and B, Divisions 1, 2 and 3 Occupancies less than 5 feet from the property line, and no openings in Groups B, Division 4, R and M Occupancies less than 3 feet from the property line.

For Group H Occupancies, See Chapter 9; Table No. 9-C.

Section 71. Section 1804 of the Uniform Building Code, 1991 Edition, is amended as follows:

FLOORS

Sec. 1804. Where wood sleepers of 2-inch nominal thickness or less are used for laying wood flooring on masonry or concrete fire-resistive floors, the space between the floor slab and the underside of the wood flooring shall be filled with noncombustible material or fire blocked in such a manner that there will be no open spaces under the flooring which will exceed 100 square feet in area and such space shall be filled solidly under all permanent partitions so that there is no communication under the flooring between adjoining rooms. For raised floors see Section 1718.

EXCEPTIONS: 1. Fire blocking need not be provided in such floors when at or below grade level in gymnasiums.

2. Fire blocking need be provided only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.

Section 72. Section 1805 of the Uniform Building Code, 1991 Edition, is amended as follows:

STAIRWAY CONSTRUCTION

Sec. 1805. Stairways shall be constructed of reinforced concrete, iron or steel with treads and risers of concrete, iron or steel. ((~~Brick, marble, tile or other hard noncombustible materials may be used for the finish of such treads and risers.~~)) See Chapter 42 for regulation of interior finishes.

EXCEPTION: Stairways within individual dwelling units and stairways within a single tenant space may be of fire-retardant-treated wood or heavy-timber construction. In other than Group R occupancies, such stairways shall not serve as a required exit.

Stairways shall comply with the requirements of Chapter 33.

Section 73. Section 1807 of the Uniform Building Code, 1991 Edition, is amended as follows:

SPECIAL PROVISIONS FOR ((~~GROUP B, DIVISION 2 OFFICE BUILDINGS AND GROUP R, DIVISION 1 OCCUPANCIES~~)) HIGH RISE BUILDINGS

Sec. 1807. ((~~(a) **Scope.** This section applies to all Group B, Division 2 office and Group R, Division 1 Occupancies, each having floors used for human occupancy located more than 75 feet above the lowest level of fire department access. Such buildings shall be provided with an approved automatic sprinkler system in accordance with Section 1807(c).~~))

(a) **Scope.** 1. **General.** These requirements shall apply to buildings having floors used for human occupancy located more than 75 feet above the lowest level of fire department vehicle access, or buildings having floors used for human occupancy more than 35 feet above grade, which lack fire department vehicle access to at least one side.

For the purpose of this section, occupied roof decks shall be considered floors used for human occupancy where the occupant load of the deck is 10 or more on the roof of an unsprinklered building or where the occupant load is 50 or more on the roof of a sprinklered building.

EXCEPTIONS: 1. Group B, Division 3 open parking garage occupancies.

2. Subject to the approval of the building official:

A. Group A, Division 4 Occupancies.

B. Other occupancies where the occupant load above 75 feet is very low.

2. **Design Alternatives - Predesign Conference.** At least 60 days prior to application, the applicant shall arrange a predesign conference with the design team, the building official and the fire chief, to review the proposed emergency life safety systems for the

building and the protection of the life safety systems. It is the purpose of the meeting to obtain conceptual approval from the building official and the fire chief of the proposed systems and to allow for design based upon the latest state-of-the-art.

The building official and fire chief may require sufficient documentation, based upon appropriate analyses, that the proposal meets the intent of nationally recognized good practices. The building permit shall not be issued until the building official and fire chief have approved, in writing, the emergency life safety systems for the building and the protection of the life safety systems. The documentation of the predesign meeting shall be reflected on the plans for the building and become a permanent part of the Department of Construction and Land Use's records.

((~~(b) **Certificate of Occupancy.** All mechanical and electrical equipment and other required life safety systems shall be approved and installed in accordance with approved plans and specifications pursuant to this section and shall be tested and proved to be in proper working condition to the satisfaction of the building official before issuance of the Certificate of Occupancy. Such system shall be maintained in accordance with the Fire Code.~~))

(b) **Testing.** All mechanical and electrical equipment installed per approved plans and specifications pursuant to this section shall be tested and proven to be in proper working condition to the satisfaction of the fire chief before issuance of the Certificate of Occupancy. Such system shall be maintained in accordance with the Fire Code.

(c) **Automatic Sprinkler System. 1. System Design.** The automatic sprinkler system shall be provided throughout the building. The sprinkler system shall be designed using the parameters set forth in U.B.C. Standard No. 38-1 and the following:

A. Shutoff valves and a water-flow device shall be provided for each floor. The sprinkler riser may be combined with the standpipe riser. In addition to actuating a local alarm on the floor upon which the water flow is detected, such valves shall be supervised by a continuously manned emergency control center or by an approved central station service.

B. ((~~In Seismic Zones Nos. 2, 3 and 4, in addition to the main water supply, a secondary on-site supply of water equal to the hydraulically calculated sprinkler design demand plus 100 gallons per minute additional for the total standpipe system shall be provided.~~)) An on-site supply of water equal to a 20-minute demand or 15,000 gallons on a combined sprinkler and standpipe, whichever is the smaller, shall be provided. This supply shall be automatically available if the principal supply fails ((~~and shall have a duration of 30 minutes.~~))

EXCEPTION: Subject to the approval of the fire chief, the on-site water supply may be waived when water is supplied to the property from two different water mains which are separated by a sectional valve.

C. The sprinkler system shall be looped between standpipe risers at the bottom, top and mid-height of all buildings with a maximum of 20 stories served by any loop. The installation of check valves shall be approved by the fire chief.

D. Piping may be copper or steel with no minimum size of pipe required.

E. Pitching of lines is not required.

F. A minimum of two fire pumps independently driven shall be provided and sized for the sprinkler demand and for standpipe operations.

2. **Modifications.** The following modifications of code requirements are permitted:

A. The fire-resistive time periods set forth in Table No. 17-A may be reduced by one hour for interior bearing walls, exterior bearing and nonbearing walls, roofs and the beams supporting roofs, provided they do not frame into columns or support tributary areas exceeding 500 square feet. Vertical shafts other than stairway enclosures and elevator shafts may be reduced to one hour when sprinklers are installed within the shafts at alternate floors. The fire-resistive time period reduction as specified herein shall not apply to exterior bearing and non bearing walls whose fire-resistive rating has already been reduced under the exceptions contained within Section 1803(a) or 1903(a).

B. Except ((~~for~~))where corridors are required by Section 3305(g) ((~~in Group B, Division 2 and Group R, Division 1 Occupancies~~)) and partitions separating dwelling units or guest rooms, all interior nonbearing partitions required to be one-hour fire-resistive construction by Table No. 17-A may be of noncombustible construction without a fire-resistive time period.

C. Travel distance from the most remote point in the floor area to a horizontal exit or to an enclosed stairway may be 300 feet.

D. ((~~Fire dampers, other than those needed to protect floor-ceiling assemblies to maintain the fire resistance of the assembly, are not required.~~)) See exceptions for sprinklered buildings in Section 1704.

E. Emergency windows required by Section 1204 are not required.

F. A manually operated fire alarm system is not required on floors occupied by Group B, Division 2 offices.

(d) **Smoke and Heat Detection Systems.** 1. **Smoke Detection.** At least one approved smoke detector suitable for the intended use shall be installed:

1. In every unsprinklered mechanical equipment, electrical, ((~~transformer,~~)) telephone equipment, elevator machine or similar room.

2. In the main return- and exhaust-air plenum of each air-conditioning system and located in a serviceable area downstream of the last duct inlet.

3. At each connection to a vertical duct or riser serving two or more stories from a return-air duct or plenum of an air-

conditioning system. In Group R, Division 1 Occupancies, an approved smoke detector may be used in each return-air riser carrying not more than 5,000 cfm and serving not more than 10 air inlet openings.

The actuation of any detector required by this section shall operate the voice alarm system and shall place into operation all equipment necessary to prevent the recirculation of smoke.

2. **Heat Detection.** At least one approved heat detector suitable for the intended use shall be installed in transformer vaults.

3. **Sequence of Operation.** The sequence and/or timing of operation of smoke and heat detection systems shall be determined at the predesign conference.

(e) **Alarm and Communication Systems.** The alarm and communication systems shall be designed and installed so that damage to any terminal unit or speaker will not render more than one zone of the system inoperative.

The voice alarm and public address system may be a combined system. When approved by the fire department, a communications system may be combined with the voice alarm system and the public address system and designed such that failure of a single component does not impair the operation of other components.

Three communication systems which may be combined as set forth above shall be provided as follows:

1. **Voice alarm system.** The operation of any smoke detector, sprinkler, water-flow device or manual fire alarm station shall automatically sound ((~~an alert signal~~)) a warning signal which conforms to fire department standards to the desired areas ((~~followed by voice instructions giving appropriate information and direction to the occupants~~)).

The central control station shall contain controls for the voice alarm system so that a selective or general voice alarm may be manually initiated.

The system shall be supervised to cause the activation of an audible trouble signal in the central control station upon interruption or failure of the audiopath including amplifiers, speaker wiring, switches and electrical contacts and shall detect opens, shorts and grounds which might impair the function of the system.

The alarm shall be designed to be heard clearly by all occupants within the building or designated portions thereof as is required for the public address system. For Group B, Division 2 office occupancies alarm sound levels shall not be less than 55 dBa. Audibility tests shall be performed with the doors open to offices of 300 square feet or less and all other doors closed.

2. **Public address system.** A public address communication system designed to be clearly heard by all occupants of the building shall operate from the central control station. It shall be established on a selective or general basis to the following terminal areas:

A. Elevators.
B. Elevator lobbies.

C. Corridors.
D. Exit stairways.
E. Rooms and tenant spaces exceeding 1000 square feet in area.
F. Dwelling units in apartment houses.
G. Hotel guest rooms or suites.

3. **Fire department communication system.** A two-way fire department communication system shall be provided for fire department use. It shall operate between the central control station and elevators, ((~~elevator lobbies~~)) emergency and standby power rooms and at a location adjacent to the hose connection outside of stairway [See Section 1807(m)], or alternative location determined at the predesign conference and on the stairway side of every entry door at entries into enclosed stairways. The stairway phones or phone jacks shall be a part of this system.

(f) **Central Control Station.** A central control station for fire department operations shall be provided. The location and size of the central control station shall be approved by the fire department. ((~~The central control station room shall have a minimum of 96 square feet with a minimum dimension of 8 feet.~~)) It shall contain the following as a minimum:

1. The voice alarm and public address system panels.
2. The fire department communications panel.
3. Fire-detection and alarm system annunciator panels.
4. Annunciator visually indicating the location of the elevators and whether they are operational.
5. Status indicators and controls for air-handling systems.
6. Controls for unlocking all stairway doors simultaneously.
7. Sprinkler valve and water-flow detector display panels.
8. Emergency and standby power controls and status indicators.
9. A telephone for fire department use with controlled access to the public telephone system.
10. Fire pump status indicators.
11. Schematic building plans indicating the typical floor plan and detailing the building core, exit facilities, fire-protection systems, fire-fighting equipment and fire department access.
12. Work table or counter.
13. Status indicator and controls for elevators.

All control panels in the central control station shall be permanently identified as to function.

Alarm, supervisory and trouble signals as required by Items 3 and 7 above shall be annunciated in compliance with the Fire Code in the central control station by means of an audible and visual indicator. For purposes of annunciation, zoning shall be in accordance with the following:

1. When the system serves more than one building, each building shall be considered separately.

2. Each floor shall be considered a separate zone. When one or more sprinkler risers serve the same floor, each riser shall be considered a separate zone.

EXCEPTION: When more than one riser serves the same system on the floor.

(g) **Smoke Control.** 1. **Building Ventilation.** Natural or mechanical ventilation for the removal of products of combustion shall be provided in every story and basement and shall consist of one of the following:

A. Easily identifiable, manually operable windows or panels shall be distributed around the perimeter of the building at not more than 50-foot intervals. The area of operable windows or panels shall not be less than 20 square feet per 50 linear feet of perimeter.

EXCEPTIONS: 1. In Group R, Division 1 hotel occupancies, each guest room or suite having an exterior wall may be provided with 2 square feet of venting area in lieu of the area specified above.

2. Windows may be of fixed tempered glass provided that no coating or film is applied which will modify the natural breaking characteristics of the glass.

((~~2~~))B. ((~~When a complete and approved automatic sprinkler system is installed,~~)) The mechanical air-handling equipment may be designed to accomplish smoke removal in lieu of the requirements of Item A above. Under fire conditions, the return and exhaust air shall be moved directly to the outside without recirculation to other sections of the building. The air-handling system shall provide a minimum of one exhaust air change each 10 minutes for the area involved.

((~~3~~))C. Any other approved design which will produce equivalent results.

2. **Emergency Shaft Pressurization.** Shafts shall be protected by an emergency shaft pressurization system complying with following:

A. All elevator shafts shall be pressurized as provided in Section 3310(b) to 0.10 inch of water column. Enclosed stairways shall be pressurized as provided in Section 3310(b) to 0.15 inch of water column. Other vertical shafts may be required to be pressurized as determined by the building official at the predesign conference.

EXCEPTION: Subject to the approval of the building official, pressurization may be omitted for enclosed stairways less than 75 feet in height.

B. The emergency shaft pressurization shall be activated by a fire alarm system on each floor located in a manner approved by the building official and the fire chief.

C. Areas separated by two-hour enclosure walls served by common ventilation equipment shall have automatic-closing dampers to prevent loss of pressurization.

D. Emergency pressurization equipment and its duct work located within the building shall be separated from other portions of the building by a minimum of two-hour fire-resistive construction. Duct work shall be constructed of noncombustible materials conforming to the requirements of the Seattle Mechanical Code.

E. Shaft pressurization air intakes shall be located at the exterior of the building.

EXCEPTION: Intakes for elevator shaft pressurization may be located within the building provided they shall be located no more than 20 feet from major openings in the building exterior such as loading docks and vehicular entrances. Such intake shall be provided with smoke detectors which shall deactivate the pressurization system for that shaft.

F. Whenever emergency shaft pressurization is activated, all horizontal exit doors which have hold-open devices shall be automatically released to close.

G. Other measures to prevent loss of pressurization shall be provided in the design and construction of shafts, such as quality of workmanship and caulking of penetrations and joints.

(h) **Elevators.** Elevators and elevator lobbies shall comply with the provisions of Chapter 51. ((~~and~~)) Elevators traveling more than 75 feet shall comply with the requirements of Subsection (i) of this section and the following:

NOTE: A bank of elevators is a group of elevators or a single elevator controlled by a common operating system; that is, all those elevators which respond to a single call button constitute a bank of elevators. There is no limit on the number of cars which may be in a bank or group but there may not be more than four cars within a common hoistway.

In buildings with stories which are located more than 160 feet above the lowest point of fire department access, access to each floor shall be provided by not less than two elevators located in separate hoistways. The machine rooms for the separate hoistways shall also be separated.

EXCEPTION: Subject to the approval of the building official, floors may be served by one elevator.

1. Elevators on all floors shall open into elevator lobbies which are separated from the remainder of the building, including corridors and other exits, by walls extending from the floor to the underside of the fire-resistive floor or roof above. Such walls shall not be of less than one-hour fire-resistive construction. Openings through such walls shall conform to Section 3305(h).

EXCEPTIONS: 1. The main entrance level elevator lobby in office buildings.

2. Elevator lobbies located within an atrium complying with the provisions of Section 1715.

3. In ((~~fully sprinklered~~)) office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one required exit without passing through the elevator lobby.

4. Elevator lobbies need not be provided where elevator hoistways are pressurized to a minimum of 0.10 inch of water column relative to atmospheric pressure with all doors closed.

2. Each elevator lobby shall be provided with ((~~an approved listed~~)) smoke ((~~detector~~)) detection located on the lobby ceiling. When the detector is activated, elevator doors shall not open and all cars serving that lobby are to return to the main floor and be under manual control only. If the main floor detector or a transfer floor detector is activated, all cars serving the main floor or transfer floor shall return to a location approved by the fire department and building official and be under manual control only. The detector may serve to close the lobby doors, and additional doors at the hoistway opening allowed in Section ((~~5106~~))5116(i).

3. Elevator hoistways shall not be vented through an elevator machine room. ((~~Cable slots entering the machine room shall be sleeved beneath the machine room floor and extend to not less than 12 inches below the shaft vent to inhibit the passage of smoke into the machine room.~~))

(i) **Standby Power, Light and Emergency Systems.** 1. **Standby Power.** Standby power-generating system conforming to U.B.C. Standard No. 18-1 which is a part of this code (See Chapter 60, Part II), shall be provided. The system shall be equipped with suitable means for automatically starting the generator set upon failure of the normal electrical supply systems and for automatic transfer of all functions required by this section at full power within 60 seconds of such normal service failure. System supervision with manual start and transfer override features shall be provided at the central control station.

An on-premises fuel supply sufficient for not less than two hours' full-demand operation of the system shall be provided.

The standby system shall have a capacity and rating that would supply all equipment required to be operational at the same time including a selected elevator in each bank, as defined in Subsection (h) above. The generating capacity need not be sized to operate all the connected electrical equipment simultaneously.

All power((~~,~~)) and control wiring for lighting, signal ((~~and~~)) communication and emergency facilities specified in Subsection (d), (e), (f), (g), (h), (i) and (j) of this section, as applicable; fire pumps required to maintain pressure, standby lighting and normal circuits supplying exit signs and exit illumination shall be transferable to the standby source. Each elevator shall be transferable to the standby power source. Other than the selected car(s), the elevators need not run simultaneously and the switching may be either manual or automatic.

2. **Standby Lighting.** Standby lighting shall be provided as follows:

A. Separate lighting circuits and fixtures sufficient to provide light ((~~with an intensity of not less than one footcandle measured at floor level~~)) at the rate of 1/4 watt of incandescent illumination per square foot of floor area in all exit corridors, stairways, smokeproof enclosures, elevator cars and lobbies and other areas which are clearly a part of the escape route. Installations using fluorescent lamps shall have a minimum wattage of at least 1/3 of the incandescent requirements.

B. All circuits supplying lighting for the central control station and mechanical equipment rooms.

3. **Emergency Systems.** The following are classified as emergency systems and shall operate within 10 seconds of failure of the normal power supply:

A. Exit sign and exit illumination as required by Sections 3313 and 3314.
B. Elevator car lighting.
C. Fire alarm system.

(j) **Exits.** Exits shall comply with other requirements of this code and the following:

1. All stairway doors which are locked from the stairway side shall have the capability of being unlocked simultaneously without unlatching upon a signal from the central control station.

2. Re-entry shall be provided at approximately 5-story intervals at all times the building is occupied.

EXCEPTION: A telephone or other two-way communications system connected to an approved emergency service which operates continuously shall be provided at not less than every fifth floor in each required stairway where other provisions of this code permit the doors to be locked.

3. All required exit stairways shall terminate at the roof in a penthouse with a door complying with Section 3304(b) and (f). The building official may approve an alternate design for rescue purposes at the pre-design conference.

(k) **Seismic Considerations.** ((~~In Seismic Zones Nos. 2, 3 and 4,~~)) The anchorage of mechanical and electrical equipment required for life-safety systems, including fire pumps and elevator drive and suspension systems, shall be designed in accordance with the requirements of Section 2330.

(l) **Emergency Operational Plan.** Prior to the issuance of a Certificate of Occupancy, the owner-occupant of the building shall assign a responsible person as the building's Fire Safety Director to work with the fire chief in establishing an operational plan for the building. Such operational plan shall contain the guideline procedures to be followed and responsibilities of the fire department, building employees, and tenants under emergency conditions including special provisions for persons with disabilities. The plan shall also include procedures for operation, maintenance and testing of the life safety systems and the allowable use and occupancy of each portion of the building. One copy of the operational plan shall be filed with the fire chief, and one shall be posted in the central control station, prior to issuance of the Certificate of Occupancy.

(m) **Location of Standpipes and Hose Connections.** Standpipes shall be provided as specified in Section 3805. Such standpipes shall be located in required stairways. In buildings without vestibules each standpipe shall have two firefighter's hose connections on each floor. One connection shall be located in each required stair shaft. The second connection shall be located within 10 feet of the corridor or room side of the stair enclosure door. In sprinklered buildings the fire chief may allow only one standpipe connection at the room or corridor side of the stair enclosure at each floor when the distance from that standpipe connection to any part of that floor is within 150 feet of hose travel distance.

(n) **Signs** 1. **Elevator Lobbies.** A sign shall be posted in every lobby above each call switch noting that the elevators will be recalled to the building lobby on fire alarm. This sign shall warn persons not to use the elevator in the event of fire and shall direct them to use the stairway or give other appropriate directions for exiting.

2. **Main Floor Lobbies.** A sign indicating the number of each elevator shall be posted and maintained at each main floor elevator lobby and at alternate floors of recall, when provided.

3. **Stair Re-entry Signs.** A sign shall be posted on each floor landing within a stairway indicating where re-entry is provided into the building or indicating the location of telephones or other means of two-way communication.

4. **Other Signs.** Other signs required by this code, including, but not limited to, stairway identification signs required by Section 3306(p) and exit signs required by Section 3314, shall be provided.

Section 74. Chapter 19 of the Uniform Building Code, 1991 Edition, is amended as follows:

Chapter 19

TYPE II BUILDINGS

DEFINITION

Sec. 1901. The structural elements in Type II fire-resistive buildings shall be of steel, iron, concrete or masonry.

The structural elements of Type II One-hour or II-N buildings shall be of noncombustible materials.

Walls and permanent partitions of Type II-F.R. buildings shall be of noncombustible fire-resistive construction, except that permanent nonbearing partitions of one-hour or two-hour fire-resistive construction, which are not part of a shaft enclosure, may have fire-retardant-treated wood (see Section 407) within the assembly.

Type II One-hour buildings shall be of noncombustible construction and one-hour fire resistive throughout except that permanent nonbearing partitions may use fire-retardant-treated wood (see Section 407) within the assembly, provided fire-resistive requirements are maintained.

Walls and permanent partitions of Type II-N buildings shall be of noncombustible materials.

Materials of construction and fire-resistive requirements shall be as specified in Chapter 17.

For requirements due to occupancy, see Chapters 6 through 12.

For requirements in the fire district, see Chapter 16.

STRUCTURAL FRAMEWORK

Sec. 1902. Structural framework shall be as specified in Chapter 27 for iron and steel, Chapter 26 for concrete and Chapter 24 for masonry.

EXTERIOR WALLS AND OPENINGS

Sec. 1903. (a) **Exterior Walls.** Exterior walls and all structural members shall comply with the requirements specified in Section 504 and the fire-resistive provisions set forth in Table No. 17-A and Table No. 5-A. For Group H Occupancies, see Table No. 9-C.

EXCEPTIONS: 1. Nonbearing walls fronting on public ways or yards having a width of at least 40 feet may be of unprotected noncombustible construction.

2. In Group R, Division 1 and Group B Occupancies, exterior bearing walls of Type II-F.R. buildings may be of two-hour fire-resistive noncombustible construction where openings are permitted.

3. In other than Group H Occupancies, exterior nonbearing walls of Type II-F.R. buildings may be of one-hour fire-resistive noncombustible construction where unprotected openings are permitted and two-hour fire-resistive noncombustible construction where fire protection of openings is required.

4. In a Group B or M Occupancy, a fire-resistive time period will not be required for an exterior wall of a one-story Type II-N building, provided the floor area of the building does not exceed 1,000 square feet and such wall is located not less than 5 feet from a property line.

(b) **Openings in Walls.** All openings in exterior walls of Type II-F.R. buildings shall conform to the requirements of Section 504(b) and shall be protected by a fire assembly having a three-fourths-hour fire-protection rating when they are less than ((~~20~~)) 16 feet from an adjacent property line or the ((~~center~~)) opposite line of a public way.

No openings shall be permitted in exterior walls of Type II-F.R. buildings housing Groups A, E, I and B, Divisions 1, 2 and 3 Occupancies less than 5 feet from the property line, and no openings in Groups B, Division 4, R, and M Occupancies less than 3 feet from the property line.

Openings in exterior walls located where protected openings are required by Table No. 5-A shall be protected by fixed fire windows or automatic-closing fire windows or self-closing doors having a fire-protection rating of at least three-fourths hour and shall comply with Section 504.

For Group H Occupancies, See Chapter 9; Table No. 9-C.

FLOORS

Sec. 1904. Where wood sleepers of 2-inch nominal thickness or less are used for laying wood flooring on masonry or concrete fire-resistive floors, the space between the floor slab and the

underside of the wood flooring shall be filled with noncombustible material or fire blocked in such a manner that there will be no open spaces under the flooring which will exceed 100 square feet in area and such space shall be filled solidly under all permanent partitions so that there is no communication under the flooring between adjoining rooms.

EXCEPTIONS: 1. Fire blocking need not be provided in such floors when at or below grade level in gymnasiums.

2. Fire blocking need be provided only at the juncture of each alternate lane and at the ends of each lane in a bowling facility.

Floor construction of Type II One-hour and Type II-N buildings shall be of noncombustible material, provided, however, that a wood surface or finish may be applied over such noncombustible material.

For raised floors see Section 1718.

STAIRWAY CONSTRUCTION

Sec. 1905. Stairways of Type II-F.R. buildings shall be constructed of reinforced concrete, iron or steel with treads and risers of concrete, iron or steel. Brick, marble, tile or other hard noncombustible materials may be used for the finish of such treads and risers. Stairways of Type II One-hour and Type II-N buildings shall be of noncombustible construction.

EXCEPTION: Stairways within individual dwellings units and stairways serving a single tenant space may be of fire-retardant-treated wood or heavy-timber construction. In other than Group R occupancies, such stairways shall not serve as a required exit.

Stairways shall comply with requirements of Chapter 33.

ROOFS

Sec. 1906. Roofs shall be of noncombustible construction, except that in Type II-F.R. and Type II One-hour buildings, roofs may be as specified in Section 1806.

Roof coverings shall not be less than a Class B as specified in Table No. 32-A.

SPECIAL PROVISIONS FOR ((~~GROUP B, DIVISION 2 OFFICE BUILDINGS AND GROUP R, DIVISION 1 OCCUPANCIES~~)) HIGH RISE BUILDINGS

Sec. 1907. ((~~Group B, Division 2 office~~)) Buildings ((~~and Group R, Division 1 Occupancies~~)) of Type II-F.R. construction, having floors used for human occupancy located more than 75 feet above the lowest level of fire department vehicle access, shall comply with the special provisions on high-rise buildings in Section 1807; unless exempted by Section 1807.

EXCEPTION: The reduction provisions for roofs in Section 1807(c), Item 2A, are not permitted.

Section 75. Chapter 20 of the Uniform Building Code, 1991 Edition, is amended as follows:

Chapter 20

TYPE III BUILDINGS

DEFINITION

Sec. 2001. Structural elements in Type III buildings may be of any materials permitted by this code.

Type III One-hour buildings shall be of one-hour fire-resistive construction throughout and may include exposed heavy-timber construction for columns, beams, girders, arches, trusses, floors and roof decks except for fire-resistive construction required by Section 1706 and Chapters 5 and 33. See also Sections 1710 and 2106.

For requirements in the fire district, see Chapter 16.

STRUCTURAL FRAMEWORK

Sec. 2002. Structural framework shall be of steel or iron as specified in Chapter 27, concrete as in Chapter 26, masonry as in Chapter 24, or wood as in Chapter 25 and this chapter.

EXTERIOR WALLS, OPENINGS AND PARTITIONS

Sec. 2003. (a) **Exterior Walls.** Exterior walls shall be constructed of noncombustible materials and shall comply with the fire-resistive requirements set forth in Section 504, Table No. 5-A and Table No. 17-A. For Group H Occupancies, see Table No. 9-C.

EXCEPTIONS: 1. Nonbearing walls fronting on public ways, or yards having a width of at least 40 feet may be unprotected when entirely of noncombustible material.

2. In other than Groups H and I Occupancies, exterior nonbearing walls may be noncombustible one-hour fire resistive where unprotected openings are permitted and noncombustible two-hour fire resistive where protection of openings is required.

3. In Group R, Division 1, and Group B Occupancies, exterior noncombustible bearing walls may be two-hour fire resistive where openings are permitted.

4. Approved fire-retardant-treated wood framing may be used within the assembly of exterior walls as permitted by Exceptions 1, 2 and 3, provided the required fire resistance is maintained and the exposed outer and inner faces of such walls are noncombustible.

5. Wood columns and arches conforming to heavy timber sizes may be used externally where exterior walls are permitted to be of unprotected, noncombustible construction or where one-hour fire-resistive noncombustible exterior walls are permitted.

(b) **Openings in Walls.** Openings in exterior walls shall conform to the requirements of Section 504(b) and shall be protected by a fire assembly having a three-fourths-hour fire-resistive rating when they are less than ((~~20~~))16 feet from an adjacent property line or the ((~~center~~))opposite line of a public way.

No openings shall be permitted in exterior walls of Groups A, E, I and B, Divisions 1, 2 and 3 Occupancies less than 5 feet from the property line, and no openings in Groups B, Division 4, R and M Occupancies less than 3 feet from the property line.

For Group H Occupancies, see also Chapter 9.

(c) **Partitions.** Bearing partitions, when constructed of wood, shall comply with Section 2516(d).

STAIRWAY CONSTRUCTION

Sec. 2004. (a) **General.** Stairways shall comply with the requirements of Chapter 33.

(b) **Interior.** Interior stairways serving buildings not exceeding three stories in height may be constructed of any material permitted by this code.

In buildings more than three stories in height, interior stairways shall be constructed as required for Type I buildings.

(c) **Exterior.** Exterior stairways shall be of noncombustible material except that on buildings not exceeding two stories in height, they may be of wood not less than 2 inches in nominal thickness.

ROOFS

Sec. 2005. Roof coverings shall be as specified in Chapter 32.

Except in retail sales and storage areas classified as Group B, Division 2 Occupancies and in Group H Occupancies, roofs and their members other than the structural frame may be of unprotected noncombustible materials when every part of the roof framing, including the structural frame, is 25 feet or more above the floor, balcony or gallery immediately below. Heavy-timber members in accordance with Section 2106 may be used for such unprotected members in one-story buildings.

Section 76. Section 2101 of the Uniform Building Code, 1991 Edition, is amended as follows:

DEFINITION

Sec. 2101. Structural elements of Type IV buildings may be of any materials permitted by this code.

Type IV construction shall conform to Section 2106 except that permanent partitions and members of the structural frame may be of other materials, provided they have a fire resistance of not less than one hour.

For requirements in the fire district, see Chapter 16.

Section 77. Section 2103 of the Uniform Building Code, 1991 Edition, is amended as follows:

EXTERIOR WALLS, OPENINGS AND PARTITIONS

Sec. 2103. (a) **Exterior Walls.** Exterior walls shall be constructed of noncombustible materials and shall comply with the fire-resistive requirements set forth in Section 504, Table No. 5-A and Table 17-A. For Group H Occupancies, see also Table No.9-C.

EXCEPTIONS: 1. Nonbearing walls fronting on public ways, or yards having a width of at least 40 feet may be unprotected when entirely of noncombustible material.

2. In other than Groups H and I Occupancies, exterior nonbearing walls may be noncombustible one-hour fire resistive where unprotected openings are permitted and noncombustible two-hour fire resistive where protection of openings is required.

3. In Group R, Division 1 and Group B Occupancies, exterior noncombustible bearing walls may be two-hour fire resistive where openings are permitted.

4. Approved fire-retardant-treated wood framing may be used within the assembly of exterior walls as permitted by Exceptions 1, 2 and 3, provided the required fire resistance is maintained and the exposed outer and inner faces of such walls are noncombustible.

5. Wood columns and arches conforming to heavy-timber sizes may be used externally where exterior walls are permitted to be unprotected noncombustible construction or where one-hour fire-resistive noncombustible exterior walls are permitted.

(b) **Openings in Walls.** Openings in exterior walls shall conform to the requirements of Section 504(b) and shall be protected by a fire assembly having a three-fourths-hour fire-resistive rating when they are less than ((~~20~~))16 feet from an adjacent property line or the ((~~center~~)) opposite line of a public way.

No openings shall be permitted in exterior walls of Groups A, E, I and B, Divisions 1, 2 and 3 Occupancies less than 5 feet from the property line and no openings in Groups B, Division 4, R and M Occupancies less than 3 feet from the property line.

For Group H Occupancies, See Chapter 9, Table No.9-C.

(c) **Partitions.** Bearing partitions, when constructed of wood, shall comply with Section 2516(d).

Section 78. Chapter 22 of the Uniform Building Code, 1991 Edition, is amended as follows:

Chapter 22

TYPE V BUILDINGS

DEFINITION

Sec. 2201. Type V buildings may be of any materials allowed by this code.

Type V One-hour buildings shall be of one-hour fire-resistive construction throughout and may include exposed heavy-timber construction for columns, beams, girders, arches, trusses, floors and roof decks except for fire-resistive construction required by Section 1706 and Chapters 5 and 33. See also Sections 1710 and 2106.

Materials of construction and fire-resistive requirements shall be as specified in Chapter 17.

For requirements due to occupancy, see Chapters 6 through 12.

For requirements in the fire district, see Chapter 16.

STRUCTURAL FRAMEWORK

Sec. 2202. Structural framework shall be of steel or iron as specified in Chapter 27, concrete as in Chapter 26, masonry as in Chapter 24, or wood as in Chapter 25 and this chapter.

EXTERIOR WALLS AND OPENINGS

Sec. 2203. Exterior walls shall comply with the fire-resistive requirements set forth in Section 504, ((~~and~~)) Table No. 5-A and Table No. 17-A. Openings in exterior walls located where protected openings are required by Table No. 17-A shall be protected by fixed fire windows or automatic-closing fire windows or self-closing doors having a fire-protection rating of at least three-fourths hour and shall comply with Section 504.

For Group H Occupancies, see Table No. 9-C.

STAIRWAY CONTRUCTION

Sec. 2204. (a) **General.** Stairways shall comply with the requirements of Chapter 33.

(b) **Interior.** Interior stairways may be constructed of any materials permitted by this code.

(c) **Exterior.** Exterior stairways shall be constructed of wood not less than 2 inches in norminal thickness, or may be of noncombustible materials.

ROOFS

Sec. 2205. Roof coverings shall be as specified in Chapter 32.

Except in retail sales and storage areas classified as Group B, Division 2 Occupancies and in Group H Occupancies, roofs and their members other than the structural frame may be of unprotected noncombustible materials when every part of the roof framing, including the structural frame, is 25 feet or more above the floor, balcony or gallery immediately below. Heavy-timber members in accordance with Section 2106 may be used for such unprotected members in one-story buildings.

Section 79. Section 2302 of the Uniform Building Code, 1991 Edition, is amended as follows:

DEFINITIONS

Sec. 2302. The following definitions give the meaning of certain terms used in this chapter:

DEAD LOAD is the vertical load due to the weight of all permanent structural and nonstructural components of a building, such as walls, floors, roofs and fixed service equipment.

LATERAL EARTH PRESSURE is the lateral pressure the retained earth exerts against foundation walls, basement walls, retaining walls and other earth retention structures.

LIVE LOAD is the load superimposed by the use and occupancy of the building not including the wind load, earthquake load, lateral earth pressure, snow load or dead load. See Section 2304(e) for posting of live loads.

LOAD DURATION is the period of continuous application of a given load, or the aggregate of periods of intermittent application of the same load.

Section 80. Subsection 2303(f) of the Uniform Building Code, 1991 Edition, is amended as follows:

(f) **Load Combinations.** Every building component shall be provided with strength adequate to resist the most critical effect resulting from the following combination of loads (floor live load shall not be included where its inclusion results in lower stresses in the member under investigation):[1]

1. Dead plus floor live plus ((~~roof live or~~)) snow.[2]

2. Dead plus floor live plus wind[2] (or seismic).

3. Dead plus floor live plus wind plus snow/2.[2]

4. Dead plus floor live plus snow plus wind/2.[2]

((~~5. Dead plus floor live plus snow[3] plus seismic.~~))

[1]Lateral earth pressure shall be included in the design where it will result in a more critical combination.

[2]Crane hook loads need not be combined with roof live load or with more than three-fourths of the snow load or one-half of the wind load.

((~~[3]Snow loads over 30 pounds per square foot (psf) may be reduced 75 percent upon approval of the Building official, and snow loads 30 psf or less need not be combined with seismic.~~))

Section 81. Subsection 2304(e) of the Uniform Building Code, 1991 Edition, is amended as follows:

(e) **Live Loads Posted.** ((~~The live loads for which~~)) Each floor or part thereof of a commercial or industrial building ((~~is or has been designed~~)) with a design live load of more than 125 psf, and for warehouse and storage areas for any established live load, shall have such designed live loads conspicuously posted by the owner in that part of each story in which they apply, using durable metal signs, and it shall be unlawful to remove or deface such notices. The occupant of the building shall be responsible for keeping the actual load below the allowable limits.

Section 82. Section 2305 of the Uniform Building Code, 1991 Edition, is amended as follows:

ROOF DESIGN

Sec. 2305. (a) **General.** Roofs shall sustain, within the stress limitations of this code, all "dead loads" plus ((~~unit "live loads" as set forth in Table No. 23-C~~)) a minimum 25 pounds per square foot snow load. The ((~~live~~)) snow loads shall be assumed to act vertically upon the area projected upon a horizontal plane. For greenhouses and lathhouses, see Section 2305(e).

((~~(b) **Distribution of Loads.** Where uniform roof loads are involved in the design of structural members arranged so as to create continuity, consideration may be limited to full dead loads on all spans in combination with full live loads on adjacent spans and on alternate spans.~~

~~**EXCEPTION:** Alternate span loading need not be considered where the uniform roof live load is 20 pounds per square foot or more or the provisions of Section 2305(d) are met.~~))

(c) **Unbalanced Loading.** Unbalanced loads shall be used where such loading will result in larger members or connections. Trusses and arches shall be designed to resist the stresses caused by unit ((~~live~~)) snow loads on one-half of the span in combination with wind loads as specified in subsection 2303(f) if such loading results in reverse stresses, or stresses greater in any portion than the stresses produced by the required unit ((~~live~~)) snow load upon the entire span. ((~~For roofs whose structures are composed of a stressed shell, framed or solid, wherein stresses caused by any point loading are distributed throughout the area of the shell, the requirements for unbalanced unit live load design may be reduced 50 percent.~~))

The following additional load combinations shall be considered:

1. One half of the snow load on one half of the span shall be substituted for snow/2 in Combination No. 3.

2. One half of the snow load on one half of the span plus full snow load on the other half shall be substituted for snow in Combination No. 4.

(d) **Snow Loads.** Snow loads full or unbalanced shall be considered ((~~in place of loads set forth in Table No. 23-C,~~)) where such loading will result in larger members or connections.

Potential accumulation of snow at valleys, parapets, roof structures and offsets in roofs of uneven configuration shall be considered. ((~~Where snow loads occur, the snow loads shall be determined by the building official.~~))

Snow loads in excess of 20 pounds per square foot may be reduced for each degree of pitch over 20 degrees by R_S as determined by the following formula:

$$R_S = \frac{S}{40} - \frac{1}{2}$$

WHERE:

R_S = Snow load reduction in pounds per square foot per degree of pitch over 20 degrees.

S = Total snow load in pounds per square foot.

For alternate design procedure see Appendix Chapter 23, Division I.

(e) **Special Roof Loadings.** Roofs to be used for special purposes shall be designed for appropriate loads as approved by the building official.

Greenhouses and lathhouses not used as a place of human habitation may be designed for a 10 pound per square foot snow load. Greenhouse roof bars, purlins and rafters shall be designed to carry a 100-pound-minimum concentrated load in addition to the ((~~live~~)) snow load.

(f) **Water Accumulation.** All roofs shall be designed with sufficient slope or camber to assure adequate drainage after the long-time deflection from dead load or shall be designed to support maximum loads, including possible ponding of water from any source, including snow, due to deflection. See Section 2307 for deflection criteria.

Section 83. Section 2313 of the Uniform Building Code, 1991 Edition, is amended as follows:

SYMBOLS AND NOTATIONS

Sec. 2313. The following symbols and notations apply to the provisions of this part.

P = design wind pressure.

C_e = combined height, exposure and gust factor coefficient as given in Table No. 23-G.

C_q = pressure coefficient for the structure or portion of structure under consideration as given in Table No. 23-H.

q_s = wind stagnation pressure at the standard height of 30 feet as set forth in Table No. 23-F.

I = importance factor as set forth in Table No. 23-L.

The minimum basic wind speed at any site shall not be less than ((~~70~~))80 miles per hour.

Section 84. Section 2314 of the Uniform Building Code, 1991 Edition, is amended as follows:

BASIC WIND SPEED

Sec. 2314. The minimum basic wind speed for determining design wind pressure shall be ((~~taken from Figure No. 23-1. For those areas designated in Figure No.23-1 as special wind regions and other areas where local records or terrain indicate higher 50-year (mean recurrence interval) fastest-mile wind speeds, these higher values shall be the minimum basic wind speeds~~)) 80 miles per hour.

Section 85. Section 2315 of the Uniform Building Code, 1991 Edition, is amended as follows:

EXPOSURE

Sec. 2315. An exposure shall be assigned at each site for which a building or structure is to be designed. An exposure B may be assigned to any site within the City regardless of individual site characteristics.

Section 86. Subsection 2333(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

CRITERIA SELECTION

Sec. 2333. (a) **Basis for Design.** 1. General The procedures and limitations for the design of structures shall be determined considering zoning, site characteristics, occupancy, configuration, structural system and height in accordance with this section. The minimum design seismic forces shall be those determined in accordance with the static lateral force procedure of Section 2334 except as modified by Section 2335(e)3. One- and two-family dwellings in Seismic Zone No.1 need not conform to the provisions of this section.

2. **Predesign Conference.** At least 60 days prior to application, the applicant shall arrange a predesign conference with the structural engineer of record and the building official to review the proposed building structural system when it is undefined as described in Section 2333(i)2 or when an alternate procedure is used as allowed in Section 2333(j). It is the purpose of the meeting to obtain conceptual approval from the building official of the proposed structural system and to allow for design based upon the latest state-of-the-art.

The building official may require sufficient documentation, based upon appropriate analyses, that the proposal meets the intent of nationally recognized good practices. The building permit shall not be issued until the building official has approved, in writing, the earthquake design concept for the building. The documentation of the predesign meeting shall be reflected on the plans for the building and become a permanent part of the Department of Construction and Land Use records.

Section 87. Subsection 2333(b) of the Uniform Building Code, 1991 Edition, is amended as follows:

(b) **Seismic zones.** ((~~Each site shall be assigned to a seismic zone in accordance with Figure No. 23-2. Each structure shall be assigned a zone factor, Z, in accordance with Table No. 23-I.~~)) Seattle is located in Seismic Zone 3 (Figure 23-2), for which Table No. 23-I assigns a zone factor Z equal to 0.30. All buildings and structures shall be designed according to the provisions of this code for Seismic Zone 3.

Section 88. Section 2339 and Table No. 23-C of the Uniform Building Code, 1991 Edition, are repealed.

Concrete proportioned by ((~~water-cement ratio~~)) minimum cement content limits prescribed in Table No. 26-A-7 shall also conform to special exposure requirements of Section 2604(f) and to compressive strength test criteria of Section 2604(h).

Section 95. Subsection 2621(h) of the Uniform Building Code, 1991 Edition, is amended as follows:

(h) **Damage.** Any in-place shotcrete which exhibits sags or sloughs, segregation, honeycombing, sand pockets or other obvious defects shall be removed and replaced. All plastic shotcrete above sags and sloughs shall be removed and replaced.

Section 96. Subsection 2621(k) of the Uniform Building Code, 1991 Edition, is amended as follows:

(k) **Inspections.** 1. **During placement.** When shotcrete is used for ((~~columns and beams~~)) structural members, a special inspector is required by Section 306 (a) 12. The special inspector shall provide continuous inspection of the placement of the reinforcement and shotcreting and shall submit a statement indicating compliance with the plans and specifications.

2. **Visual examination for structural soundness of in-place shotcrete.** Completed shotcrete work shall be checked visually for reinforcing bar embedment, voids, rock pockets, sand streaks and similar deficiencies by examining a minimum of three 3-inch cores taken from three areas chosen by the design engineer which represent the worst congestion of reinforcing bars occurring in project. Extra reinforcing bars may be added to noncongested areas and cores may be taken from these areas. The cores shall be examined by the special inspector and a report submitted to the building official prior to final approval of the shotcrete.

EXCEPTION: Shotcrete work fully supported on earth, minor repairs, and when, in the opinion of the building official, no special hazard exists.

Section 97. Subsection 2622(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

PLAIN CONCRETE

Sec. 2622. (a) **General.** Plain concrete, other than fill, shall have a minimum ultimate compressive strength at 28 days of 2,000 pounds per square inch, and material proportioning and placing shall conform to the requirements of this chapter. Concrete made with lightweight aggregates may be used with strengths less than 2,000 pounds per square inch if it has been shown by tests or experience to have sufficient strength and durability.

Provisions shall be made to care for temperature and shrinkage stresses either by use of reinforcement or by means of joints.

Plain concrete construction shall conform to the detailed minimum requirements specified in this chapter.

Plain concrete shall not be used in Seismic Zone No. 2, 3 or 4.

EXCEPTION: ((~~Plain concrete may be used for footings of Group R, Division 3 Occupancies constructed in accordance with Section 2517.~~)) Foundation walls for the support of structures of Type V-N construction for Group R, Division 3 and Group M Occupancies on sites other than those with questionable conditions per Section 2905 and as determined by the building official may use plain concrete. Foundation walls shall also comply with Table No. 29-A. There shall not be less than 2 No. 4 reinforcing bars at the top and bottom of all foundation walls and all window and door openings. Such bars shall extend at least 24 inches beyond the corner of the openings and into all intersecting walls.

Section 98. Chapter 26 of the Uniform Building Code, 1991 Edition, is amended by adding a new Table 26-A-7 as follows:

TABLE NO. 26-A-7

MINIMUM PERMISSIBLE CEMENT CONTENT FOR CONCRETE (WHEN STRENGTH DATA FROM TRIAL BATCHES OR FIELD EXPERIENCE ARE NOT AVAILABLE)

Specified 28-day Compressive Strength in P.S.I. ($f'c$)	Minimum Permissible Cement Content in Pounds/cu. yd.	Minimum Permissible Cement Content in Std. 94-lb. Sacks/cu. yd.
2000	423	4-1/2 [1]
2500	470	5 [1]
3000	517	5-1/2
4000[2]	611	6-1/2

MIXES SHALL BE PROPORTIONED TO PRODUCE A FIVE INCH SLUMP OR LESS. NO MORE THAN A ONE INCH PLUS TOLERANCE SHALL BE ALLOWED.

1. Where special inspection is not required under Section 306(a)1, the minimum permissible cement content shall be increased 1/2 sack per cubic yard of concrete.

2. For strengths above 4000 p.s.i., proportions shall be established by the methods specified in Subsections 2605(d) or (e).

Section 99. Section 2708 of the Uniform Building Code, 1991 Edition, is amended as follows:

WELDING

Sec. 2708. Welding procedures ((~~, welder qualification requirements~~)) and welding electrodes for structural steel shall be in accordance with the requirements of U.B.C. Standard No. 27-6. Welding procedures ((~~, welder qualification requirements~~)) and

welding electrodes for sheet steel shall be in accordance with the requirements of U.B.C. Standard No. 27-13.

Welds which are continuously inspected by a registered special inspector shall have stresses which comply with U.B.C. Standard No. 27-15. Where welds are not continuously inspected, the design shall be based upon not more than 50 percent of the allowable stresses, except for floor and roof deck welding and welded studs as specified in Section 306(a)4B.

All welders, welding operators and tackers performing work regulated by this code shall be qualified by the building official. Criteria for qualifications shall be established by the building official.

Section 100. Subsection 2710(g)5 of the Uniform Building Code, 1991 Edition, is amended as follows:

5. **Strength ratio.** At any moment frame joint, the following relationships shall be satisfied:

$$\Sigma Z_c\ (F_{yc} - f_a)/\Sigma Z_b F_{yb} > 1.0 \qquad \text{(10-3a)}$$

or

$$\Sigma Z_c\ (F_{yc} - f_a)/1.25\Sigma M_{pz} > 1.0 \qquad \text{(10-3b)}$$

WHERE:

$f_a > 0$

M_{pz} = the sum of beam moments when panel zone shear strength reaches the value specified in Formula (10-1).

EXCEPTION: Columns meeting the compactness limitations for beams given in Section 2710(g)3 need not comply with this requirement provided they conform to one of the following conditions:

A. Columns with f_a less than $0.4F_y$ for all load combinations other than loads specified in Section 2710(e)1; and such columns shall have allowable stresses reduced 25 percent when one end frames into a joint not complying with Formula 10-3a, and 50 percent when both ends frame into joints not complying with Formula 10-3a; and

(i) Which are used in the top story of a multistory building with building period greater than 0.7 second; or

(ii) Which are used in single-story buildings; or

(iii) Where the sum of their resistance is less than 20 percent of the shear in a story, and is less than 33 percent of the shear on each of the column lines within that story. A column line is defined for the purpose of this exception as a single line of columns, or parallel lines of columns located within 10 percent of the plan dimension perpendicular to the line of columns; or

(iv) When the design for combined axial compression and bending is proportioned to satisfy U.B.C. Standard No. 27-15 without the one-third permissible stress increase.

B. Columns in any story which have lateral shear strength 50 percent greater than that of the story above.

C. Columns which lateral shear strengths are not included in the design to resist code-required shears.

Section 101. Subsection 2804(f) of the Uniform Building Code, 1991 Edition, is amended as follows:

((~~(f) Welder Qualification. All welds of structural members shall be performed by welders qualified in accordance with the procedures of U.B.C. Standard No. 28-1.~~))

(f) **Qualifications of Welding Procedure and Welding Operators.** The welding process and welding operators shall both meet a qualification test. Criteria for qualification shall be established by the building official.

Section 102. Subsection 2901(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

SCOPE

Sec. 2901. (a) **General.** This chapter sets forth requirements for excavation and fills for any building or structure and for foundations and retaining structures. See also Seattle Grading and Drainage Control Code - Title 22 of the Seattle Municipal Code.

((~~Reference is made to Appendix Chapter 70 for requirements governing excavation, grading and earthwork construction, including fills and embankments.~~))

Section 103. Section 2903 of the Uniform Building Code, 1991 Edition, is amended as follows:

EXCAVATIONS AND FILLS

Sec. 2903. (a) **General.** Excavation or fills for buildings or structures shall be so constructed or protected that they do not endanger life or property.

Slopes for permanent fills shall not be steeper than 2 horizontal to 1 vertical. Cut slopes for permanent excavations shall not be steeper than 2 horizontal to 1 vertical ((~~unless substantiating data justifying steeper cut slopes are submitted~~)). Deviation from the foregoing limitations ((~~for cut slopes~~)) shall be permitted only upon the presentation of a soil investigation report acceptable to the building official.

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 may be affected by any excavation shall be underpinned adequately or otherwise protected against settlement and shall be protected against lateral movement.

Fills to be used to support the foundations of any building or structure shall be placed in accordance with accepted engineering practice. A soil investigation report and a report of satisfactory placement of fill, both acceptable to the building official, shall be submitted.

((~~(b) Protection of Adjoining Property. The requirements for protection of adjacent property and depth to which protection is required shall be as defined by prevailing law. Where not defined by law, the following shall apply: Any person making or causing an excavation to be made to a depth of 12 feet or less below the grade shall protect the excavation so that the soil of adjoining property will not cave in or settle, but shall not be liable for the expense of underpinning or extending the foundation of buildings on adjoining properties when the excavation is not in excess of 12 feet in depth. Before commencing the excavation, the person making or causing the excavation to be made shall notify in writing the owners of adjoining buildings not less than 10 days before such excavation is to be made that the excavation is to be made and that the adjoining buildings should be protected.~~

~~The owners of the adjoining properties shall be given access to the excavation for the purpose of protecting such adjoining buildings.~~

~~Any person making or causing an excavation to be made exceeding 12 feet in depth below the grade shall protect the excavation so that the adjoining soil will not cave in or settle and shall extend the foundation of any adjoining buildings below the depth of 12 feet below grade at the expense of the person causing or making the excavation. The owner of the adjoining buildings shall extend the foundation of these buildings to a depth of 12 feet below grade at such owner's expense, as provided in the preceding paragraph.~~))

(b) **Protection of Adjoining Property.** When the owner of a lot raises or lowers the level of the lot by a fill or excavation, he/she shall at his/her own expense protect all adjoining property from encroachment by such fill or excavation, or from danger of collapse due to excavation either by the erection of a retaining wall or by sloping the sides of the fill or excavation entirely within the confines of the lot in a manner found safe by the building official.

Section 104. Section 2910 of the Uniform Building Code, 1991 Edition, is amended by adding a new Subsection 2910(f) as follows:

(f) **Group R-3 and M Foundations.** See Section 2622(a).

Section 105. Table No. 29-A of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 29-A -- FOUNDATIONS FOR STUD BEARING WALLS --

MINIMUM REQUIREMENTS[1,2]

Number of Floors Supported by the Foundation[3]	THICKNESS OF FOUNDATION WALL (Inches)		Width of Footing (Inches)	Thickness of Footing (Inches)	Depth Below Undisturbed Ground Surface (Inches)
	Concrete	Unit Masonry			
1	6		12	6	12
2	((~~8~~))6	8	((~~15~~)) 12	((~~7~~)) 6	((~~18~~)) 12
3	((~~10~~))8	((~~10~~))8	((~~18~~)) 15	8	((~~24~~)) 12

[1] Where unusual conditions or frost conditions are found, footings and foundations shall be as required in Section 2907(a).

[2] The ground under the floor may be excavated to the elevation of the top of the footing. Footings beneath floors may rest on grade when the space beneath the floor is surrounded on all sides by footings supporting exterior walls which conform to the depth requirements of this Section.

[3] Foundations may support a roof in addition to the stipulated number of floors. Foundations supporting roofs only shall be as required for supporting one floor.

Section 106. Table No. 29-B of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 29-B -- ALLOWABLE FOUNDATION AND LATERAL PRESSURE

Class of Materials[2]	Allowable Foundation Pressure Lbs/Sq.Ft.[3]	Lateral Bearing Lbs/Sq.Ft.of Depth Below Natural Grade[4]	Lateral Sliding[1] (Coefficients do not include a factor of safety)	
			Coefficient[5]	Resistance Lbs/Sq.Ft.[6]
1. Massive Crystalline Bedrock	4,000	1,200	.70	
2. Sedimentary and Foliated Rock	2,000	400	.35	
3. Sandy Gravel and/or Gravel (GW and GP)	2,000	200	.35	
4. Sand, Silty Sand, Clayey Sand, Silty Gravel and Clayey Gravel (SW, SP, SM, SC, GM and GC)	1,500	150	.25	
5. Clay, Sandy Clay, Silty Clay and Clayey Silt (CL, ML, MH and CH)	1,000[7]	100		130

FOOTNOTES FOR TABLE NO. 29-B

[1] Lateral bearing and lateral sliding resistance may be combined.

[2] For soil classifications OL, OH and PT (i.e., organic clays and peat), a foundation investigation shall be required.

[3] All values of allowable foundation pressure are for footings having a minimum width of 12 inches and a minimum depth of 12 inches into natural grade. Except as in Footnote No. 7 below, increase of 20 percent allowed for each additional foot of width or depth to a maximum value of three times the designated value.

[4] May be increased the amount of the designated value for each additional foot of depth to a maximum of 15 times the designated value. Isolated poles for uses such as flagpoles or signs and poles used to support buildings which are not adversely affected by a 1/2-inch motion at ground surface due to short-term lateral loads may be designed using lateral bearing values equal to two times the tabulated values.

[5] Coefficient to be multiplied by the dead load.

[6] Lateral sliding resistance value to be multiplied by the contact area. In no case shall the lateral sliding resistance exceed one half the dead load.

[7] No increase for width is allowed.

Section 107. Subsection 3006(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Application.** In lieu of the design required by Section 3004(a) and (c), anchored veneer may be applied in accordance with the following:

1. **Masonry and stone units (5 inches maximum in thickness).** Masonry and stone veneer not exceeding 5 inches in thickness may be anchored directly to structural masonry, concrete or studs in one of the following manners:

(i) Anchor ties shall be corrosion resistant, and if made of sheet metal, shall have a minimum size of No. 22 gauge by 3/4 inch or, if of wire, shall be a minimum of No. 9 gauge. Anchor ties shall be spaced so as to support not more than 2 square feet of wall area but not more than 24 inches on center horizontally. ((~~In Seismic Zones Nos. 3 and~~ 4)) In buildings over 4 stories in height, anchor ties shall have a lip or hook on the extended leg that will engage or enclose a horizontal joint reinforcement wire of No. 9 gauge or equivalent. The joint reinforcement shall be continuous with butt splices between ties permitted.

When applied over stud construction, the studs shall be spaced a maximum of 16 inches on centers and approved paper shall first be applied over the sheathing or wires between studs except as otherwise provided in Section 1707, and mortar shall be slushed into the 1-inch space between facing and paper.

As an alternate, an air space of at least 1 inch may be maintained between the backing and the veneer in which case spot bedding at all ties shall be of cement mortar.

(ii) Veneer may be applied with 1-inch-minimum grouted backing space which is reinforced by not less than 2-inch by 2-inch No. 16 gauge galvanized wire mesh placed over waterproof paper backing and anchored directly to stud construction.

The stud spacing shall not exceed 16 inches on center. The galvanized wire mesh shall be anchored to wood studs by galvanized steel wire furring nails at 4 inches on center or by barbed galvanized nails at 6 inches on center with a 1-1/8-inch minimum penetration. The galvanized wire mesh may be attached to steel studs by equivalent wire ties. If this method is applied over solid sheathing the mesh must be furred for embedment in grout. The wire mesh must be attached at the top and bottom with not less than 8-penny common wire nails. The grout fill shall be placed to fill the space intimately around the mesh and veneer facing.

2. **Stone units (10 inches maximum in thickness).** Stone veneer units not exceeding 10 inches in thickness may be anchored directly to structural masonry, concrete or to studs:

(i) **With concrete or masonry backing.** Anchor ties shall not be less than No. 12 gauge galvanized wire, or approved equal, formed as an exposed eye and extending not less than 1/2 inch beyond the face of the backing. The legs of the loops shall not be less than 6 inches in length bent at right angles and laid in the masonry mortar joint and spaced so that the eyes or loops are 12 inches maximum on center in both directions. There shall be provided not less than a No. 12 gauge galvanized wire tie, or approved equal, threaded through the exposed loops for every 2 square feet of stone veneer. This tie shall be a loop having legs not less than 15 inches in length so bent that it will lie in the stone veneer mortar joint. The last 2 inches of each wire leg shall have a right angle bend. One inch of cement grout shall be placed between the backing and the stone veneer.

(ii) **With stud backing.** A 2-inch by 2-inch No. 16 gauge galvanized wire mesh with two layers of waterproof paper backing shall be applied directly to wood studs spaced a maximum of 16 inches on center. On studs the mesh shall be attached with 2-inch-long galvanized steel wire furring nails at 4 inches on center providing a minimum 1-1/8-inch penetration into each stud and with 8-penny common nails at 8 inches on center into top and bottom plates. The galvanized wire mesh may be attached to steel studs with equivalent wire ties. There shall be not less than a No. 12 gauge galvanized wire, or approved equal, looped through the mesh for every 2 square feet of stone veneer. This tie shall be a loop having legs not less than 15 inches in length, so bent that it will lie in the stone veneer mortar joint.

The last 2 inches of each wire leg shall have a right angle bend. One-inch minimum thickness of cement grout shall be placed between the backing and the stone veneer.

3. **Slab-type units (2 inches maximum in thickness).** For veneer units of marble, travertine, granite or other stone units of slab form, ties of corrosion-resistant dowels shall engage drilled holes located in the middle third of the edge of the units spaced a maximum of 24 inches apart around the periphery of each unit with not less than four ties per veneer unit. Units shall not exceed 20 square feet in area.

If the dowels are not tight fitting, the holes may be drilled not more than 1/16 inch larger in diameter than the dowel with the hole countersunk to a diameter and depth equal to twice the diameter of the dowel in order to provide a tight-fitting key of cement mortar at the dowel locations when the mortar in the joint has set.

All veneer ties shall be corrosion-resistant metal capable of resisting in tension or compression a force equal to two times the weight of the attached veneer.

If made of sheet metal, veneer ties shall not be smaller in area than No. 22 gauge by 1 inch or, if made of wire, not smaller in diameter than No. 9 gauge wire.

4. **Terra cotta or ceramic units.** Tied terra cotta or ceramic veneer units shall not be less than 1-1/4 inches in thickness with projecting dovetail webs on the back surface spaced approximately 8 inches on centers. The facing shall be tied to the backing wall with noncorrosive metal anchors of not less than No. 8 gauge wire installed at the top of each piece in horizontal bed joints not less than 12 inches or more than 18 inches on centers; these anchors shall be secured to 1/4-inch galvanized pencil rods which pass through the vertical aligned loop anchors in the backing wall. The veneer ties shall have sufficient strength to support the full weight of the veneer in tension. The facing shall be set with not less than a 2-inch space from the backing wall and the space shall be filled solidly with portland cement grout and pea gravel. Immediately prior to setting, the backing wall and the facing shall be drenched with clean water and shall be distinctly damp when the grout is poured.

Section 108. Section 3007 of the Uniform Building Code, 1991 Edition, is amended as follows:

Plastic Veneer

Sec. 3007. When used within a building, plastic veneer shall comply with the interior finish requirements of Chapter 42. Exterior plastic veneer shall be of approved plastics materials as defined in Chapter 4 and shall comply with the following:

(a) Plastic veneer shall not be attached to any exterior wall to a height greater than 50 feet above grade.

(b) Sections of plastic veneer shall not exceed 300 square feet in area and shall be separated by a minimum of 4 feet vertically.

EXCEPTIONS: 1. The area and separation requirements and the smoke-density limitation are not applicable to plastic veneer applied to Type V-N buildings, provided the walls are not required to have a fire-resistive rating.

2. The area and separation requirements are not applicable to veneer of approved plastic materials (vinyl siding) meeting the ASTM Standard No. D3679-81a when applied to exterior surfaces that have a one-hour fire-resistive rating before the application of the veneer.

Section 109. Subsection 3205(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Ventilation.** ((~~Where determined necessary by the building official due to atmospheric or climatic conditions,~~)) Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating openings protected against the entrance of rain and snow. The net free ventilating area shall not be less than 1/150 of the area of the space ventilated.

EXCEPTIONS: 1. The area may be 1/300 of the area of the space ventilated provided 50 percent of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated at least three feet above eave or cornice vents with the balance of the required ventilation provided by eave or cornice vents.

2. The area may be 1/300 of the area of the space ventilated provided a vapor retarder having a transmission rate not exceeding 1 perm is installed on the warm side of the attic insulation.

The openings shall be covered with corrosion-resistant metal mesh with mesh openings of 1/4 inch in dimension. See also Section 1711.

Section 110. Subsection 3206(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Types of Vents.** Vents shall be fixed in the open position or vents shall be activated by temperature and shall open automatically in the event of fire.

Fixed openings may consist of skylights or other openings which provide venting directly to exterior above the plane of the main roof in which they are located. Vents shall meet the design criteria of this subsection regarding elevation, and Subsection (e) of this section regarding venting area, dimensions, spacing and venting ratios. The building official may require documentation of the design to assure proper performance of required venting.

Temperature activation of vents shall be at or near the highest elevation of the ceiling and in no case lower than the upper one third of the smoke curtain. Where tempered or plain glass is used, provisions shall be made to protect the occupants from glass breakage. In no case shall vents be located closer than 20 feet to an adjacent property line.

Section 111. Subsection 3207(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Overflow Drains and Scuppers.** Where roof drains are required, overflow drains having the same size as the roof drains shall be installed with the inlet flow line located 2 inches above the low point of the roof, or overflow scuppers having three times the size of the roof drains may be installed in adjacent parapet walls with the inlet flow line located 2 inches above the low point of the adjacent roof and having a minimum opening height of 4 inches.

Overflow drains shall be connected to the storm drain riser with drain lines independent from the roof drain lines.

EXCEPTION: Overflow leaders need not be independent from storm drain risers when the storm drain riser is sized in accordance with Table No. 4-4 of the Seattle Plumbing Code.

All roof drains and overflow drains shall be provided with strainers.

Section 112. Subsection 3207(e) of the Uniform Building Code, 1991 Edition, is amended as follows:

(e) **Over Public Property.** Roof drainage water from a building shall not be permitted to flow over public property.

((~~**EXCEPTION:** Group R, Division 3 and M Occupancies.~~))

Section 113. Table No. 32-A of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 32-A -- MINIMUM ROOF CLASSES

OCCUPANCY	TYPES OF CONSTRUCTION								
	I	II			III		IV	V	
	F.R.	F.R.	1-HR	N	1-HR	N	H.T	1-HR	N
A-1	B	B	--	--	--	--	--	--	--
A) 2-2.1	B	B	B	--	B	--	B	B	--
A-3	B	B	B	B	B[3]	C[4]	B[3]	B[3]	C[4]
A-4	B	B	B	B	B	B	B	B	B[3]
B) 1-2	B	B	B	B	B[3]	C[4]	B[3]	B[3]	C[4]
B) 3-4	B	B	B	B	B	B	B	B	B[3]
E	B	B	B	B	B	B	B	B	B[3]
H-1	A	A	A	A	--	--	--	--	--
H) 2-3-4-5-6-7	A	B	B	B	B	B	B	B	B
I) 1.1 - 1.2-2	A	B	B	--	B	--	B	B	--
I-3	A	B	B[1]	--	B[1]	--	--	B[2]	--
M	B	B	B	B	NR[5]	NR[5]	NR[5]	NR[4,5]	NR[4,5]
R-1	B	B	B	B	B[2,3]	C[2,4]	B[2,3]	B[2,3]	C[2,4]
R-3	B	B	B	B	NR	NR	NR	NR	NR

[1] See Section 1002(b)

[2] Outside of the fire district nonrated roof coverings may be used on buildings which are not more than two stories in height and have not more than 3,000 square feet of projected roof area and there is a minimum of 10 feet from the extremity of the roof to the property line on all sides except for street fronts.

[3] Outside of the fire district buildings which are not more than two stories in height and have not more than 6,000 square feet of projected roof area and there is a minimum of 10 feet from the extremity of the roof to the property line or assumed property line on all sides except for street fronts may have Class C roof coverings which comply with U.B.C. Standard No. 32-7 and roofs of cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 3204(e), Special-purpose Roofs.

A--Class A roofing
B--Class B roofing
C--Class C roofing
NR--Nonrated roof coverings
N--No requirements for fire resistance
F.R.--Fire Resistive
H.T.--Heavy Timber

[4] Buildings which are not more than two stories in height and have not more than 6,000 square feet of projected roof area and where there is a minimum of 10 feet from the extremity of the roof to the property line or assumed property line on all sides, except for street fronts, may have roofs of No. 1 cedar or redwood shakes and No. 1 shingles constructed in accordance with Section 3204(e).

[5] Unless otherwise required because of location as specified in Parts IV and V of this code, Group M, Division 1 roof coverings shall consist of not less than one layer of cap sheet, or built-up roofing consisting of two layers of felt and a surfacing material as specified in Section 3204(d)1.

Section 114. Table No. 32-E of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 32-E—BUILT-UP ROOF-COVERING APPLICATION

	MECHANICALLY FASTENED SYSTEMS	ADHESIVELY FASTENED SYSTEMS
1. Deck conditions	Decks shall be firm, broom-clean, smooth and dry. Insulated decks shall have wood insulation stops at all edges of the deck, unless an alternative suitable curbing is provided. Insulated decks with slopes greater than 2:12 shall have wood insulation stops at not more than 8 feet face to face. Wood nailers shall be provided where nailing is required for roofing plies.	
	Solid wood sheathing shall conform to Sections 2516 (i) and 2517 (h) 8.	Provide wood nailers where nailing is required for roofing plies (see below).
2. Underlayment	One layer of sheathing paper, Type 15 felt or other approved underlayment nailed sufficiently to hold in place, is required over board decks where openings between boards would allow bitumen to drip through. No underlayment requirements for plywood decks. Underlayment on other decks shall be in accordance with deck manufacturer's recommendations.	Not required.
3. Base ply requirements Over noninsulated decks	Over approved decks, the base ply shall be nailed using not less than one fastener for each $1^1/_3$ square feet.	Decks shall be primed in accordance with the roofing manufacturer's instructions. The base play shall be solidly cemented or spot mopped as required by the type of deck material using adhesive application rates shown in Table No. 32-F.

4. Mechanical fasteners	Fasteners shall be long enough to penetrate $^3/_4$ inch into the sheathing or through the thickness of the sheathing, whichever is less. Built-up roofing nails for wood board decks shall be minimum No. 12 gauge $^7/_{16}$-inch head driven through tin caps or approved nails with integral caps. For plywood, No. 11 gauge ring-shank nails driven through tin caps or approved nails with integral caps shall be used. For gypsum, insulating concrete, cementitious wood fiber and other decks, fasteners recommended by the manufacturer shall be used.	When mechanical fasteners are required for attachment of roofing plies to wood nailers or insulation stops (see below), they shall be as required for wood board decks.
5. Vapor retarder Over insulated decks	A vapor retarder shall be installed ~~(where the average January temperature is below 45°F, or where excessive moisture conditions are anticipated within the building)~~ It shall be applied as for a base ply.	
6. Insulation	When no vapor retarder is required, roof insulation shall be fastened in an approved manner. When a vapor retarder is required, roof insulation is to be solidly mopped to the vapor retarder using the adhesive application rate specified in Table No. 32-F. See manufacturer's instructions for the attachment of insulation over steel decks.	When no vapor retarder is required, roof insulation shall be solid mopped to the deck using the adhesive application rate specified in Table No. 32-F. When a vapor retarder is required, roof insulation is to be solidly mopped to the vapor retarder, using the adhesive application rate specified in Table No. 32-F. See manufacturer's installation instructions for attachment of insulation over steel decks.
7. Roofing plies	Successive layers shall be solidly cemented together and to the base ply or the insulation using the adhesive rates shown in Table No. 32-F. On slopes greater than 1:12 for aggregate-surfaced, or 2:12 for smooth-surfaced or cap sheet surfaced roofs, mechanical fasteners are required. Roofing plies shall be blind-nailed to the deck, wood nailers or wood insulation stops in accordance with the roofing manufacturer's recommendations. On slopes exceeding 3:12, plies shall be laid parallel to the slope of the deck (strapping method).	
8. Cementing materials	See Table No. 32-G.	
9. Curbs and walls	Suitable cant strips shall be used at all vertical intersections. Adequate attachment shall be provided for both base flashing and counterflashing on all vertical surfaces. Reglets shall be provided in wall or parapets receiving metal counterflashing.	
10. Surfacing	Mineral aggregate surfaced roofs shall comply with the requirements of U.B.C. Standard No. 32-5 and Table No. 32-F. Cap sheets shall be cemented to the roofing plies as set forth in Table No. 32-F.	

Section 115. Chapter 33 of the Uniform Building Code, 1991 Edition, is amended as follows:

CHAPTER 33

EXITS

GENERAL

Sec. 3301. (a) **Scope and Standards of Quality.** Every building or portion thereof shall be provided with exits as required by this chapter.

The standards listed below labeled a "U.B.C. standard" are also listed in Chapter 60, Part II, and are part of this code. The other standards listed below are guideline standards and as such are not adopted as part of this code (see Sections 6002 and 6003).

1. **Power doors**

A. U.B.C. Standard No. 33-1, Power-operated Exit Doors

B. U.B.C. Standard No. 43-13, Horizontal Sliding Fire Doors Used in an Exit

2. **Stairway numbering system**

A. U.B.C. Standard No. 33-2, Stairway Identification

3. **Hardware**

A. U.B.C. Standard No. 33-4, Panic Hardware

(b) **Definitions.** For the purpose of this chapter, certain terms are defined as follows:

BALCONY, EXTERIOR EXIT, is a landing or porch projecting from the wall of a building, and which serves as a required exit. The long side shall be at least 50 percent open, and the open area above the guardrail shall be so distributed as to prevent the accumulation of smoke or toxic gases.

CONTINENTAL SEATING is the configuration of fixed seating where the number of seats per row exceeds 14 and required exits from the seating area are side exits.

EXIT is a continuous and unobstructed means of egress to a public way and shall include intervening aisles, doors, doorways, gates, corridors, exterior exit balconies, ramps, stairways, smokeproof enclosures, horizontal exits, exit passageways, exit courts and yards.

EXIT COURT is a yard or court providing access to a public way for one or more required exits.

EXIT ILLUMINATION is illumination provided to enable persons to easily find and safely travel the means of egress during an emergency and to preclude a space being left in total darkness in the event of a power failure.

EXIT PASSAGEWAY is an enclosed exit connecting a required exit or exit court with a public way.

EXIT PLACARD is a non-illuminated sign or a sign painted on a wall indicating the direction of egress.

EXIT SIGN is an illuminated sign indicating the direction of egress.

EXTERIOR STAIRWAY is a stairway at least 50 percent open on one side or end and the open area shall be a minimum of 28 square feet per floor and so distributed as to prevent accumulation of smoke or toxic gases.

HORIZONTAL EXIT is an exit from one building into another building on approximately the same level, or through or around a wall constructed as required for a two-hour occupancy separation and which completely divides a floor into two or more separate areas so as to establish an area of refuge affording safety from fire or smoke coming from the area from which escape is made.

LANDING is an area with a slope not steeper than 1 vertical to 48 horizontal, within, or at the terminus of, a door, stair or ramp.

MULTITHEATER COMPLEX is a building or portion thereof containing two or more motion picture auditoriums which are served by a common lobby.

PANIC HARDWARE is a door-latching assembly incorporating an unlatching device, the activating portion of which extends across at least one half the width of the door leaf on which it is installed.

PRIVATE STAIRWAY is a stairway serving one tenant only.

PUBLIC WAY is any street, alley or similar parcel of land essentially unobstructed from the ground to the sky which is deeded, dedicated or otherwise permanently appropriated to the public for public use and having a clear width of not less than 10 feet.

SPIRAL STAIRWAY is a stairway having a closed circular form in its plan view with uniform section shaped treads attached to and radiating about a minimum diameter supporting column. The effective tread is delineated by the nosing radius line, the exterior arc (center line of railing) and the overlap radius line (nosing radius line of tread above). Effective tread dimensions are taken along a line perpendicular to the center line of the tread.

(c) **Exit Obstruction.** Obstructions shall not be placed in the required width of an exit except projections permitted by this chapter.

(d) **Changes in Elevation.** Within a building, changes in elevation of less than 12 inches along any exit serving an occupant load of 10 or more shall be by ramps.

EXCEPTION: Group R, Division 3 Occupancies and along aisles adjoining seating areas.

((~~(e) **Yards, Patios and Courts.** Yards, patios, courts and similar outdoor areas accessible to and usable by the building occupants shall be provided with exits as required by this chapter. The occupant load of such outdoor areas shall be assigned by the building official in accordance with their anticipated use. When outdoor areas are to be used by persons in addition to the occupants of the building, and exits from the outdoor areas pass through the building, exit requirements for the building shall be based on the sum of the occupant loads of the building plus the outdoor areas.~~

~~**EXCEPTIONS:** 1. Outdoor areas used exclusively for service of the building may have only one exit.~~

~~2. Outdoor areas associated with Group R, Division 3 Occupancies.~~))

(f) **Building Accessibility.** In addition to provisions of this chapter, exits which provide access to, or egress from, buildings for persons with disabilities shall also comply with ((~~Chapter 31.~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code.

(g) **Elevators or Escalators.** Elevators or escalators shall not be used as a required exit, unless otherwise approved by the building official.

OCCUPANT LOAD

Sec. 3302. (a) **Determination of Occupant Load.** In determining the occupant load, all portions of a building shall be presumed to be occupied at the same time.

EXCEPTIONS: 1. Accessory ((~~use~~)) areas including foyers, corridors, halls, toilet facilities, file rooms, storage rooms, stairways, elevator enclosures and other service facilities which ordinarily are used only by persons who occupy the main areas of an occupancy shall be provided with exits as though they are completely occupied, but their occupant load need not be included in computing the total occupant load of the building.

2. In places of worship containing social halls, occupant load for the purpose of determining occupancy group may be computed as the sum of the areas reasonably expected to be occupied at one time, including principal worship area and classrooms or instructional areas, and principal worship area and social hall, and social hall and classrooms or instructional areas. Exits shall be computed on total capacity.

The occupant load for a building shall be determined in accordance with the following:

1. **General.** For areas without fixed seats, the occupant load shall not be less than the number determined by dividing the floor area assigned to that use by the occupant load factor set forth in Table No. 33-A. Where an intended use is not listed in Table No. 33-A, the building official shall establish an occupant load factor based on a listed use which most nearly resembles the intended use.

For a building or portion thereof which has more than one use, the occupant load shall be determined by the use which gives the largest number of persons.

The occupant load for buildings or areas containing two or more occupancies shall be determined by adding the occupant loads of the various use areas as computed in accordance with the applicable provisions of this section.

2. **Fixed seating.** For areas having fixed seats and aisles, the occupant load shall be determined by the number of fixed seats installed therein. The required width of aisles serving fixed seats shall not be used for any other purpose.

For areas having fixed benches or pews, the occupant load shall not be less than the number of seats based on one person for each 18 inches of length of pew or bench.

Where booths are used in dining areas, the occupant load shall be based on one person for each 24 inches of booth length or major portion thereof.

3. **Reviewing stands, grandstands and bleachers.** The occupant load for reviewing stands, grandstands and bleachers shall be calculated in accordance with this section and the specific requirements contained in Section 3322.

(b) **Maximum Occupant Load.** The maximum occupant load for other than an assembly use shall not exceed the capacity of exits as determined in accordance with this chapter.

The maximum occupant load for an assembly use shall not exceed the occupant load as determined in accordance with Section 3302(a).

> **EXCEPTION:** The occupant load for an assembly building or portion thereof may be increased, when approved by the building official, if all the requirements of this code are met for such increased number of persons. The building official may require an approved aisle, seating or fixed equipment diagram to substantiate such an increase, and may require that such diagram be posted.

(c) **Posting of Room Capacity.** Any room having an occupant load of 50 or more where fixed seats are not installed, and which is used for classroom, assembly or similar purpose, shall have the capacity of the room posted in a conspicuous place on an approved sign near the main exit from the room. Such signs shall be maintained legible by the owner or the owner's authorized agent and shall indicate the number of occupants permitted for each room use.

(d) **Revised Occupant Load.** After a building is occupied, any change in use or increase in occupant load shall comply with this chapter. See Section 502.

EXITS REQUIRED

Sec. 3303. (a) **Number of Exits.** Every building or usable portion thereof shall have at least one exit, not less than two exits where required by Table No. 33-A and additional exits as required by this subsection.

For purposes of this section, basements and occupied roofs shall be provided with exits as required for stories.

((~~EXCEPTIONS: Occupied roofs on Group R, Division 3 Occupancies may have one exit if such occupied areas are less than 500 square feet and are located no higher than immediately above the second story.~~))

Floors complying with the provisions for mezzanines as specified in Section 1717 shall be provided with exits as specified therein.

The second story shall be provided with not less than two exits when the occupant load is 10 or more. Occupants on floors above the second story and in basements and floors at basement-like stories shall have access to not less than two separate exits from the floor or basement.

EXCEPTIONS: 1. Two or more dwelling units on the second story or in a basement may have access to only one common exit when the total occupant load served by that exit does not exceed ten.

2. Except as provided in Table No. 33-A, only one exit need be provided ((~~from the second floor or a basement~~)) within and from an individual dwelling unit or a Group R, Division 3 congregate residence.

3. ((~~When the third floor within an individual dwelling unit or a Group R, Division 3 congregate residence does not exceed 500 square feet, only one exit need be provided from that floor.~~))

4. Floors and basements used exclusively for service of the building may have one exit. For the purposes of this exception, storage rooms, laundry rooms, maintenance offices and similar uses shall not be considered as providing service to the building.

5. Storage rooms, laundry rooms and maintenance offices in basements not exceeding ((~~300~~)) 900 square feet in floor area and a travel distance of less than 50 feet may be provided with only one exit.

6. Elevator lobbies may have one exit provided the use of such exit does not require keys, tools, special knowledge or effort.

7. Any dwelling unit which has an exit directly to the street or yard at ground level or by way of an exterior stairway or an enclosed stairway with fire-resistance rating of one hour or more serving that dwelling unit only and not communicating with any floor below the floor of exit discharge or other area not a part of the dwelling unit served may have a single exit.

8. Any Group R Occupancy building having not more than four stories of residential use may have a single exit under the following conditions:

A. There are no more than four dwelling units on any floor.

B. The building shall be of not less than one-hour fire-resistive construction and shall also be protected throughout by an automatic sprinkler system. The sprinkler system shall conform to U.B.C. Standard No. 38-1. In addition to other sprinkler heads, one head shall be located within each dwelling unit immediately adjacent to the unit entry/exit door. Residential type sprinkler heads shall be used in all habitable spaces in each dwelling unit.

C. There shall be no more than two single exit conditions on the same property.

D. A smokeproof stairway enclosure, a stairway pressurized in accordance with Sec. 1706(g) 3, or an exterior stairway shall be provided. Stairway enclosures deemed smokeproof by mechanical pressurization (Sec. 1706(g) 3) shall have approved doors. Stairway doors shall swing into the stairway regardless of the occupant load served provided that the door from the stairway to the building exterior may swing in the direction of exit travel.

E. A corridor shall separate each dwelling unit entry/exit door from the stairway door on each floor. Dwelling unit doors shall not open directly into the stairway.

F. There shall be no more than 20 feet of travel distance to the exit stairway from the entry/exit door of any dwelling unit.

G. The exit shall not terminate in an exit court where the court depth exceeds the court width unless it is possible to exit in either direction to the public way.

H. Elevators shall be pressurized in accordance with Section 1706(g) or shall open into elevator lobbies. Elevator lobbies shall be separated from the remainder of the building and from the exit stairway with construction as required for corridors in Section 3305(g). Doors shall be automatic closing actuated by smoke detector. Where approved by the building official, natural ventilation may be substituted for pressurization where the ventilation would prevent the accumulation of smoke or toxic gases.

I. Other occupancies may be permitted in the same building provided they comply with all the requirements of this code. Except for parking garages accessory to the Group R Occupancy, other occupancies shall not communicate with the Group R occupancy portion of the building.

9. Group B, Division 2 Occupancy office buildings not exceeding two stories in height and not exceeding 3,500 square feet per floor.

10. Where a floor or areas thereof has grade or exit conditions similar to those of a ground floor, egress may be based on the requirements of the first floor. For this condition only, a floor at the exit level shall not be more than 4 feet above or below finished grade.

11. Occupied roofs with a occupant load of 10 or less may have one exit.

For special requirements see the following sections: Group A, Section 3317; Group E, Section 3318; Group H, Section 3319; Group I, Section 3320; Rooms Containing Fuel-fired Equipment and Cellulose Nitrate Handling Rooms, Section 3321; Reviewing Stands, Grandstands and Bleachers, Section 3322; Laboratories, Sections 702(c) and 802(d); and Open Parking Garages, Section 709(g). For stage exits, see Section 3903(f).

Every story or portion thereof having an occupant load of 501 to 1,000 shall not have less than three exits.

Every story or portion thereof having an occupant load of 1,001 or more shall not have less than four exits.

The number of exits required from any story or floor of a building shall be determined by using the occupant load of that story or floor plus the percentages of the occupant loads of floors which exit into the level under consideration as follows:

1. Fifty percent of the occupant load in the first adjacent story or floor above and the first adjacent story or floor below, when a story below exits through the level under consideration.

2. Twenty-five percent of the occupant load in the story or floor immediately beyond the first adjacent story or floor.

The maximum number of exits required for any story or floor shall be maintained until egress is provided from the structure (See Section 3311).

(b) **Width.** The total width of exits in inches shall not be less than the total occupant load served by an exit multiplied by 0.3 for stairways and 0.2 for other exits nor less than specified elsewhere in this code. Such width of exits shall be divided approximately equally among the separate exits.

The maximum exit width required from any story or floor of a building shall be maintained.

(c) **Arrangement of Exits.** If only two exits are required, they shall be placed a distance apart equal to not less than ((~~one-half~~)) 40 percent of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between the centerline of the exit doors.

EXCEPTIONS: 1. Exit separations may be measured along a direct line of travel within the exit corridor when exit enclosures are provided as a portion of the required exit and are interconnected by a ((~~one-hour fire-resistive~~)) corridor conforming to the requirements of Section 3305. Stair enclosure walls shall not be less than ((~~30~~)) 15 feet apart at any point in a direct line of measurement.

2. Where buildings are constructed in accordance with Section 1807, vertical exits may be placed a distance apart equal to not less than 30 percent of the length of the maximum overall diagonal dimension of the building. Exception 1 may be used concurrently.

3. For retail and office tenant spaces in Group B, Division 2 Occupancies, exits from the tenant space shall be as far apart as reasonably practicable.

Where three or more exits are required, at least two exits shall be placed a distance apart equal to not less than one half of the length of the maximum overall diagonal dimension of the building or area to be served measured in a straight line between the exits, and the additional exits shall be arranged a reasonable distance apart so that if one becomes blocked the other will be available.

(d) **Distance to Exits.** The maximum distance of travel from any point to an exterior exit door, horizontal exit, exit passageway or an enclosed stairway in a building not equipped with an automatic sprinkler system throughout shall not exceed 150 feet, or 200 feet in a building equipped with an automatic sprinkler system throughout. These distances may be increased a maximum of 100 feet when the increased travel distance is the last portion of the travel distance and is entirely within a one-hour fire-resistive corridor complying with Section 3305. See Section 3318 for Group E Occupancy and Section 3319 for Group H Occupancy travel distances.

In a one-story Group B, Division 4 Occupancy classified as a factory or warehouse and in one-story airplane or helicopter hangars, the exit travel distance may be increased to 400 feet if the building is equipped with an automatic sprinkler system throughout and provided with smoke and heat ventilation as specified in Section 3206.

In an open parking garage, as defined in Section 709, and in a Group B, Division 1 garage, or individual floors thereof, which provide openings which comply with the standards of Section 709(b)2, the exit travel distance may be increased to 250 feet which may be measured to open stairways which are permitted in accordance with Section 3309(a). When standpipes are required by Chapter 38, additional standpipe connections may be required where the hose travel distance exceeds 150 feet.

(e) **Exits Through Enclosures or Adjoining Rooms.** Rooms may have one exit through an adjoining or intervening room which provides a direct, obvious and unobstructed means of travel to an exit corridor, exit enclosure or until egress is provided from the building, provided the total distance of travel does not exceed that permitted by other provisions of this code. In other than dwelling units, exits shall not pass through kitchens, store rooms, rest rooms, closets or spaces used for similar purposes.

EXCEPTIONS: 1. Rooms within dwelling units may exit through more than one intervening room.

2. Rooms with a cumulative occupant load of 10 or less may exit through more than one intervening room.

Foyers, lobbies and reception rooms constructed as required for corridors shall not be construed as intervening rooms.

Where two or more exits are required, exit travel shall not be required to pass through one exit enclosure in order to reach a second exit.

DOORS

Sec. 3304. (a) **General.** This section shall apply to every exit door serving an area having an occupant load of 10 or more, or serving hazardous rooms or areas, except that Subsections (c), (i), (j) and (k) shall apply to all exit doors regardless of occupant load. Buildings or structures used for human occupancy shall have at least one exterior exit door that meets the requirements of Subsection (f). Doors and landings at doors which are located within an accessible route of travel shall also comply with ((~~Chapter 31.~~)) Washington State Regulations for Barrier-Free Facilites, Chapter 51-10, Washington Administrative Code.

(b) **Swing and Opening Force.** Exit doors shall be of the pivoted or side-hinged swinging type. Exit doors shall swing in the direction of exit travel when serving any hazardous area or when serving an occupant load of 50 or more. The door latch shall release when subjected to a 15-pound force, and the door shall be set in motion when subjected to a 30-pound force. The door shall swing to full-open position when subjected to a 15-pound force. Forces shall be applied to the latch side. ((~~See Section 4507 for doors swinging over public property.~~))

EXCEPTIONS: 1. Group I, Division 3 Occupancy used as a place of detention.

2. Doors within or serving an individual dwelling unit.

3. Special door conforming with Subsection (h).

Double-acting doors shall not be used as exits when any of the following conditions exist:

1. The occupant load served by the door is 100 or more.
2. The door is part of a fire assembly.
3. The door is part of a smoke- and draft-control assembly.
4. Panic hardware is required or provided on the door.

A double-acting door shall be provided with a view panel of not less than 200 square inches.

(c) **Type of Lock or Latch.** Exit doors shall be openable from the inside without the use of a key or any special knowledge or effort. Manually operated bolts are prohibited on required exit doors, the unlatching of which requires more than one operation.

EXCEPTIONS: 1. In Group B Occupancies, key-locking hardware may be used on the main exit when the main exit consists of a single door or pair of doors if there is a readily visible, durable sign on or adjacent to the door stating THIS DOOR TO REMAIN UNLOCKED DURING BUSINESS HOURS.

The sign shall be in letters of not less than 1 inch high on a contrasting background. When unlocked, the single door or both leaves of a pair of doors must be free to swing without operation of any latching device. Single-cylinder, manually operated bolts are permitted provided they are manually operable on the inside. The use of this exception may be revoked by the building official for due cause.

2. Exit doors from individual dwelling units; Group R, Division 3 congregate residences; and guest rooms of Group R Occupancies having an occupant load of 10 or less may be provided with a night latch, dead bolt or security chain, provided such devices are openable from the inside without the use of a key or tool and mounted at a height not to exceed 48 inches above the finished floor.

3. When doors are used in pairs the added door leaf, if not required for exit purposes by other provisions of this code, may have manually operated bolts provided the door leaf having the bolts shall have no dummy trim on the exit side, thus rendering it readily distinguishable from the required door leaf.

((~~Manually operated edge- or surface-mounted flush bolts and surface bolts are prohibited.~~)) When exit doors are used in pairs and approved automatic flush bolts are used, the door leaf having the automatic flush bolts shall have no door knob or surface-mounted hardware. The unlatching of any leaf shall not require more than one operation.

EXCEPTIONS: 1. Group R, Division 3 Occupancies.

2. When a pair of doors serving a room not normally occupied are needed for the movement of equipment, manually operated edge or surface bolts may be used and a door closer need not be provided on the inactive leaf.

(d) **Panic Hardware.** Panic hardware, when installed, shall comply with the requirements of U.B.C. Standard No. 33-4. The activating member shall be mounted at a height of not less than 30 inches or more than 44 inches above the floor. The unlatching force shall not exceed 15 pounds when applied in the direction of exit travel.

When balanced doors are used and panic hardware is required, panic hardware shall be of the push-pad type and the pad shall not extend across more than one half of the width of the door measured from the latch side.

(e) **Special Egress-control Devices.** When approved by the building official, exit doors in Group B, Division 2 Occupancies may be equipped with approved listed special egress-control devices of the time-delay type, provided the building is protected throughout by an approved automatic sprinkler system and an approved automatic smoke-detection system. Such devices shall conform to all of the following:

1. Automatically deactivate the egress-control device upon activation of either the sprinkler system or the detection system.

2. Automatically deactivate the egress-control device upon loss of electrical power to any one of the following:

   A. The egress-control device.

   B. The smoke-detection system.

   C. Exit illumination as required by Section 3313.

3. Be capable of being deactivated by a signal from a switch located in an approved location.

4. Initiate an irreversible process which will deactivate the egress-control device whenever a manual force of not more than 15 pounds is applied for two seconds to the panic bar or other door-latching hardware. The egress-control device shall deactivate within an approved time period not to exceed a total of 15 seconds. The time delay established for each egress-control device shall not be field adjustable.

5. Actuation of the panic bar or other door-latching hardware shall activate an audible signal at the door.

6. The unlatching shall not require more than one operation.

A sign shall be provided on the door located above and within 12 inches of the panic bar or other door-latching hardware reading:

KEEP PUSHING. THIS DOOR WILL OPEN IN _____ SECONDS. ALARM WILL SOUND.

Sign letter shall be at least 1 inch in height and shall have a stroke of not less than 1/8 inch.

Regardless of the means of deactivation, relocking of the egress-control device shall be by manual means only at the door.

(f) **Width and Height.** Every required exit doorway shall be of a size as to permit the installation of a door not less than 3 feet in width and not less than 6 feet 8 inches in height. When installed, exit doors shall be capable of opening so that the clear width of the exit is not less than 32 inches. In computing the exit width required by Section 3303(b), the net dimension of the exitway shall be used.

(g) **Door Leaf Width.** A single leaf of an exit door shall not exceed 4 feet in width.

(h) **Special Doors.** Revolving, sliding and overhead doors shall not be used as required exits.

EXCEPTION: Horizontal sliding doors complying with U.B.C. Standard No. 43-13 may be used in:

A. Elevator lobbies.

B. Smoke barriers of Group I, Division 1.1 Occupancies.

C. In uses serving an occupant load of less than 50.

Power-operated doors complying with U.B.C. Standard No. 33-1 may be used for exit purposes. Such doors when swinging shall have two guide rails installed on the swing side projecting out from the face of the door jambs for a distance not less than the widest door leaf. Guide rails shall not be less than 30 inches in height with solid or mesh panels to prevent penetration into door swing and shall be capable of resisting a horizontal load at top of rail of not less than 50 pounds per lineal foot.

EXCEPTIONS: 1. Walls or other type separators may be used in lieu of the above guide rail, provided all the criteria are met.

2. Guide rails in industrial or commercial occupancies not accessible to the public may conform with the exception to the third paragraph of Section 1712.

3. Doors swinging toward flow of traffic shall not be permitted for use by untrained pedestrian traffic unless actuating devices start to function at least 8 feet 11 inches beyond the door in an open position and guide rails extend 6 feet 5 inches beyond the door in an open position.

Clearances for guide rails shall be as follows:

1. Six inches maximum between rails and leading edge of door at the closest point in its arc of travel.

2. Six inches maximum between rails and the door in an open position.

3. Two inches minimum between rail at hinge side and door in an open position.

4. Two inches maximum between freestanding rails and jamb or other adjacent surface.

(i) **Floor Level at Doors.** Regardless of the occupant load, there shall be a floor or landing on each side of a door. When access for persons with disabilities is required by ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code, the floor or landing shall not be more than 1/2 inch lower than the threshold of the doorway. When such access is not required, such dimension shall not exceed one inch. Landings shall be level except for exterior landings, which may have a slope not to exceed 1/4 inch per foot.

EXCEPTIONS: 1. In Group R, Division 3 and Group M Occupancies and within individual units of Group R, Division 1 Occupancies:

A. A door may open at the top step of an interior flight of stairs, provided the door does not swing over the top step.

B. A door may open at a landing that is not more than 8 inches lower than the floor level, provided the door does not swing over the landing.

C. Screen doors and storm doors may swing over stairs, steps or landings.

2. Doors serving building equipment rooms which are not normally occupied.

(j) **Landings at Doors.** Landings shall have a width not less than the width of the stairway or the width of the door, whichever is the greater. Doors in the fully open position shall not reduce a required dimension by more than 7 inches. Doors in any position shall not encroach on the required stairway width by more than 12 inches. ((~~When a landing serves an occupant load of 50 or more, doors in any position shall not reduce the landing dimension to less than one half its required width.~~))

Landings shall have a length measured in the direction of travel of not less than 44 inches. When doors open over landings, doors in any position shall not reduce the landing length to less than 12 inches.

EXCEPTION: In Group R, Division 3 and Group M Occupancies and within individual units of Group R, Division 1 Occupancies, such length need not exceed 36 inches.

Landing length and width shall be measured as specified in Section 3306(g).

A landing which has no adjoining door, or where the door does not swing over the landing, shall comply with Section 3306(g).

See Figure No. 33-1 for illustration of the requirements of this section.

(k) **Door Identification.** Glass doors shall conform to the requirements specified in Section 5406.

Exit doors shall be marked so that they are readily distinguishable from the adjacent construction.

(l) **Additional Doors.** When additional doors are provided for egress purposes, they shall conform to all provisions of this chapter.

EXCEPTION: Approved revolving doors having leaves which will collapse under opposing pressures may be used in exit situations, provided:

A. Such doors have a minimum width of 6 feet 6 inches.

B. At least one conforming exit door is located adjacent to each revolving door.

C. The revolving door shall not be considered to provide any exit width.

CORRIDORS AND EXTERIOR EXIT BALCONIES

Sec. 3305. (a) **General.** This section shall apply to every corridor serving as a required exit for an occupant load of 10 or more except that Subsection (b) shall apply to all corridors and except as provided in Subsection (g) for Group R, Division 1.

For the purposes of the section, the term "corridor" shall include "exterior exit balconies" and any covered or enclosed exit passageway, including walkways, tunnels and malls. Partitions, rails, counters and similar space dividers not over 5 feet 9 inches in height above the floor shall not be construed to form corridors.

Exit corridors shall not be interrupted by intervening rooms.

> **EXCEPTION:** Foyers, lobbies or reception rooms constructed as required for corridors shall not be construed as intervening rooms.

Corridors which are located within an accessible route of travel shall also comply with ((~~Chapter 31.~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code.

For Group I Occupancies see Section 3320(c).

(b) **Width.** The minimum corridor width shall be determined as specified in Section 3303(b), but shall not be less than 44 inches, except as specified herein. Corridors serving an occupant load of 49 or less shall not be less than 36 inches in width. For special requirements for Groups E and I Occupancies, see Sections 3318 and 3320.

(c) **Height.** Corridors and exterior exit balconies shall have a clear height of not less than 7 feet measured to the lowest projection from the ceiling.

(d) **Projections.** The required width of corridors shall be unobstructed.

> **EXCEPTION:** Handrails and doors, when fully opened, shall not reduce the required width by more than 7 inches. Doors in any position shall not reduce the required width by more than one half. Other nonstructural projections such as trim and similar decorative features may project into the required width 1-1/2 inches on each side.

(e) **Access to Exits.** When more than one exit is required, they shall be so arranged that it is possible to go in either direction from any point in a corridor to a separate exit. In other than Group B, Division 2 office occupancies in Type I and II-F.R. construction ((~~except~~)) dead-end corridors shall not exceed ((~~20~~)) 25 feet in length. In buildings of Type I and II-F.R. construction areas containing Group B, Division 2 offices may have dead-end corridors not exceeding 75 feet in length, provided the cumulative occupant load shall not exceed 50 for all areas for which the dead-end corridor serves as the only exit.

In areas open to the public, no person shall be more than 25 feet from an aisle, or 50 feet from an aisle or corridor providing two directions of travel.

(f) **Changes in Elevation.** When a corridor or exterior exit balcony is accessible to the handicapped, changes in elevation of the floor shall be made by means of a ramp, except as provided for doors by Section 3304(i).

(g) **Construction.** Walls of corridors serving a Group R, Division 1 Occupancy, ((~~or~~)) a Group I Occupancy having an occupant load of 10 or more and walls of corridors serving other occupancies having an occupant load of 30 or more shall be of not less than one-hour fire-resistive construction and the ceilings shall not be less than that required for a one-hour fire-resistive floor or roof system.

EXCEPTIONS: 1. One-story buildings housing Group B, Division 4 Occupancies.

2. Corridors more than 30 feet in width where occupancies served by such corridors have at least one exit independent from the corridor. (See Chapter 56 for covered malls.)

3. Exterior sides of exterior exit balconies.

4. In Group I, Division 3 Occupancies such as jails, prisons, reformatories and similar buildings with open-barred cells forming corridor walls, the corridors and cell doors need not be fire resistive.

5. In buildings of other than Type I and II-F.R. construction, ((~~corridor~~)) walls and ceilings of corridors serving Group B, Division 2 office occupancies having an occupant load of 100 or less need not be of fire-resistive construction ((~~within office spaces having an occupant load of 100 or less~~)) when the entire story in which the ((~~space~~)) occupancy is located is equipped with an automatic sprinkler system throughout and smoke detectors are installed within the corridor in accordance with their listing.

6. In office areas located in buildings of Types I or II-F.R. construction, corridor walls need not be of fire resistive construction provided that the corridor side of the corridor walls shall be constructed with finish materials with a maximum flame-spread of Class II as specified in Chapter 42. Finish materials in corridors outside of tenant spaces shall not be reduced to Class III as a result of the provision of sprinklers.

7. ((~~6~~)) In other than Type I or II construction, exterior exit balcony roof assemblies may be of heavy-timber construction without concealed spaces.

8. ((~~7.~~)) Within office spaces occupied by a single tenant, partial height partitions which form corridors and which do not exceed 6 feet in height need not be fire resistive, provided they are constructed in accordance with Section 1705 and are not more than three fourths of the floor-to-ceiling height.

9. Wholesale and retail stores, when the floor in question is protected by an automatic sprinkler system throughout.

When the ceiling of the entire story is an element of a one-hour fire-resistive floor or roof system, the corridor walls may terminate at the ceiling. When the room-side fire-resistive membrane of the corridor wall is carried through to the underside of a fire-resistive floor or roof above, the corridor side of the ceiling may be protected by the use of ceiling materials as required for one-hour floor or roof system construction or the corridor ceiling may be of the same construction as the corridor walls.

Ceilings of noncombustible construction may be suspended below the fire-resistive ceiling.

For wall and ceiling finish requirements, see Table No. 42-B.

For restrictions on the use of corridors to convey air, see Chapter 10 of the Mechanical Code.

(h) **Openings.** 1. **Doors.** Where corridor walls are required to be of one-hour fire-resistive construction by Section 3305(g), every interior door opening shall be protected by a tight-fitting smoke-and draft-control assembly having a fire-protection rating of not less than 20 minutes when tested in accordance with U.B.C. Standard No. 43-2. Said doors shall not have louvers. The door and frame shall bear an approved label or other identification showing the rating thereof, the name of the manufacturer and the identification of the service conducting the inspection of materials and workmanship at the factory during fabrication and assembly. Doors shall be maintained self-closing or shall be automatic closing by actuation of a smoke detector in accordance with Section 4306(b). Smoke- and draft-control door assemblies shall be provided with a gasket so installed as to provide a seal where the door meets the stop on both sides and across the top.

EXCEPTIONS: 1. Viewports may be installed if they require a hole not larger than 1 inch in diameter through the door, have at least a 1/4-inch-thick glass disc and the holder is of metal which will not melt out when subject to temperatures of 1,700°F.

2. Protection of openings in the interior walls of exterior exit balconies is not required when it is possible to exit in two directions.

3. Doors in one-hour fire-resistive corridors of Group I, Division 1.1 hospitals need not be maintained self- or automatic-closing provided the corridors and all rooms opening into the corridors are protected by an automatic sprinkler system.

4. Unlisted door frames, in walls of other than noncombustible construction, may be used in conjunction with labelled doors without bearing a label, provided they are fabricated and installed according to the requirements specified in Figure No. 33-2.

2. **Openings other than doors.** Where corridor walls are required to be of one-hour fire-resistive construction by Section 3305(g), interior openings for other than doors or ducts shall be protected by fixed, approved 1/4-inch thick wired glass installed in steel frames ((~~glazing listed and labeled for a fire protection rating of at least three-fourths hour in accordance with Section 4306(i)~~)). The total area of all openings, other than doors, in any portion of an interior corridor shall not exceed 25 percent of the area of the corridor wall of the room which it is separating from the corridor. For duct openings, see Section 4306.

EXCEPTION: Protection of openings in the interior walls of exterior exit balconies is not required when it is possible to exit in two directions.

(i) **Location on Property.** Exterior exit balconies shall not be located in areas where openings are not permitted or where openings are required to be protected due to location on the property.

(j) **Elevators.** Elevators opening into a corridor serving a Group R, Division 1 or Group I Occupancy having an occupant load of ten or more, or a corridor serving other occupancies having an occupant load of 30 or more shall be provided with an elevator lobby at each floor containing such a corridor. The lobby shall completely separate the elevators from the corridor by construction conforming to Section 3305(g) and all openings into the lobby wall contiguous with the corridor shall be protected as required by Section 3305(h).

EXCEPTIONS: 1. In office buildings classed as a Group B, Division 2 Occupancy, separations need not be provided from a street floor lobby, provided the entire street floor is protected with an automatic sprinkler system.

2. Elevators not required to meet the shaft enclosure requirements of Section 1706.

3. When additional doors are provided in accordance with Section ((~~5106~~)) 5116(i).

4. Where elevator shafts are pressurized in accordance with Section 1706(g), elevator lobbies need not be provided.

Elevator lobbies shall comply with Section ((~~5106~~)) 5116(i).

In fully sprinklered office buildings, corridors may lead through enclosed elevator lobbies if all areas of the building have access to at least one required exit without passing through the elevator lobby.

STAIRWAYS

Sec. 3306. (a) **General.** Every stairway having two or more risers serving any building or portion thereof shall conform to the requirements of this section. When aisles in assembly rooms have steps, they shall conform with the provisions in Section 3315.

EXCEPTIONS: 1. Stairs or ladders used only to attend equipment are exempt from the requirements of this section.

2. Stairs or ladders within an individual dwelling unit used to gain access to areas of less than 200 square feet and not containing the primary bathroom or kitchen are exempt from the requirements of this section.

(b) **Width.** The minimum stairway width shall be determined as specified in Section 3303(b), but shall not be less than 44 inches except as specified herein. Stairways serving an occupant load of 49 or less shall be not less than 36 inches in width.

Handrails may project into the required width a distance of 3-1/2 inches from each side of a stairway. Stringers and other projections such as trim and similar decorative features may project into the required width 1-1/2 inches on each side.

(c) **Rise and Run.** For residential buildings that consist of four or fewer units, that do not exceed two stories in height and that are less than five thousand square feet in area, ~~T~~ the rise of every step in a stairway shall not be less than 4 inches or greater than 7 inches. Except as permitted in Subsections (d) and (f), the run shall not be less than 11 inches as measured horizontally between the vertical planes of the furthermost projection of adjacent treads. For all other buildings, the rise of every step in a stairway shall not be less than 4 inches or greater than 7-1/2 inches. Except as permitted in Subsections (d) and (f), the run shall not be less than 10 inches as measured horizontally between the vertical planes of the furthermost projection of adjacent treads. Except as permitted in Subsections (d), (e) and (f), the largest tread run within any flight of stairs shall not exceed the smallest by more than 3/8 inch. The greatest riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch.

EXCEPTIONS: 1. Private stairways serving an occupant load of less than 10 and stairways to unoccupied roofs may be constructed with an 8-inch-maximum rise and 9-inch-minimum run.

2. Where the bottom or top riser adjoins a sloping public way, walk or driveway having an established grade and serving as a landing, the bottom or top riser may be reduced along the slope ((~~to less than 4 inches in height with the variation in height of the bottom or top riser not to exceed 3 inches in every 3 feet of stairway width~~)).

(d) **Winding Stairways.** In Group R, Division 3 Occupancies and in private stairways in Group R, Division 1 Occupancies, winders may be used if the required width of run is provided at a point not more than 12 inches from the side of the stairway where the treads are narrower, but in no case shall any width of run be less than 6 inches at any point.

(e) **Circular Stairways.** Circular stairways may be used as an exit, provided the minimum width of run is not less than 10 inches and the smaller radius is not less than twice the width of the stairway. The largest tread width or riser height within any flight of stairs shall not exceed the smallest by more than 3/8 inch.

(f) **Spiral Stairways.** In Group R, Division 3 and M Occupancies and in private stairways within individual units of Group R, Division 1 Occupancies, spiral stairways may be installed. Such stairways may be used ((~~for required exits when the area served is limited to 400 square feet~~)) as an exit for not more than one floor, balcony or mezzanine; and in Group B, Division 2 Occupancies serving areas of not more than 400 square feet which are not open to the public. Spiral stairways may also be used as a convenience stairway in Group B Occupancies when such stairways are not open to the public and are not required for exits.

The tread must provide a clear walking area measuring at least 26 inches from the outer edge of the supporting column to the inner edge of the handrail. A run of at least 7-1/2 inches is to be provided at a point 12 inches from where the tread is the narrowest. The rise must be sufficient to provide 6-foot 6-inch headroom. The rise shall not exceed 9-1/2 inches.

(g) **Landings.** Every landing shall have a dimension measured in the direction of travel not less than the width of the stairway. Such dimension need not exceed 44 inches when the stair has a straight run. There shall not be more than 12 feet vertically between landings. For landings with adjoining doors which open over landings, see Section 3304(j).

EXCEPTION: Stairs serving an unoccupied roof are exempt from these provisions.

The width of a landing is the dimension of the landing measured parallel to the stair width. The length of a landing is the dimension measured perpendicular to the required width of the stairway. Required width of a landing for a stairway shall be a radius equal to the stair width inscribed as an arc across the landing.

See Figure No. 33-1 for illustration of the requirements in this Section.

(h) ((~~Basement~~)) **Stairways Below Exit Termination.** When a ((~~basement~~)) stairway to a basement or lower story and a stairway to an upper story terminate in the same exit enclosure, an approved barrier shall be provided to prevent persons from continuing on into the basement or lower story. Directional exit signs shall be provided as specified in Section 3314.

(i) **Handrails.** Stairways shall have handrails on each side, and every stairway required to be more than 88 inches in width shall be provided with not less than one intermediate handrail for each 88 inches of required width. Intermediate handrails shall be spaced approximately equally across with the entire width of the stairway.

EXCEPTIONS: 1. Stairways less than 44 inches in width or stairways serving one individual dwelling unit in Group R, Division 1 or 3 Occupancies or a Group R, Division 3 congregate residence may have one handrail.

2. Private stairways 30 inches or less in height may have handrails on one side only.

3. Stairways having less than four risers and serving one individual dwelling unit in Group R, Division 1 or 3, or a Group R, Division 3 congregate residence or serving Group M Occupancies need not have handrails.

4. Stairways in stadiums and similar occupancies may use segmented center handrails when approved by the building official.

The top of handrails and handrail extensions shall be placed not less than 34 inches or more than 38 inches above the nosing of treads and landings. Handrails shall be continuous the full length of the stairs and, except for private stairways, at least one handrail shall extend in the direction of the stair run not less than 12 inches beyond the top riser or less than 12 inches beyond the bottom riser. Ends shall be returned or shall terminate in newel posts or safety terminals.

The handgrip portion of handrails shall ((~~not~~)) be of such design as to be easily grasped by the hand and shall not be less than 1-1/2 inches or more than 2 inches in cross-sectional dimen-

sion or the shape shall provide an equivalent gripping surface. The handgrip portion of handrails shall have a smooth surface with no sharp corners.

Handrails projecting from a wall shall have a space of not less than 1-1/2 inches between the wall and the handrail.

See Table No. 23-B for required lateral loading for handrails.

Handrails in buildings required to be accessible for persons with disabilities shall comply with the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code.

(j) **Guardrails.** Stairways open on one or both sides shall have guardrails as required by Section 1712.

(k) **Exterior Stairway Protection.** Except in Group R, Division 3 Occupancies, all openings in the exterior wall below and within 10 feet, measured horizontally, of an exterior exit stairway serving a building ((~~over two stories in height~~)) or a floor level having such openings in two or more floors below shall be protected by a self-closing fire assembly having a three-fourths-hour fire-protection rating. Exterior stairways enclosed on three or more sides shall comply with the flame-spread requirements for interior stairways.

EXCEPTIONS: 1. Openings may be unprotected when two separated exterior stairways serve an exterior exit balcony.

2. Protection of openings is not required for open parking garages conforming to Section 709.

Buildings using an exterior stairway as the single means of egress under the provisions of Section 3303(a), Exceptions 7 or 8 shall have no openings within 10 feet of the stairway other than required exit doors having a one-hour fire-resistive rating. The maximum flame-spread classification of finish materials, as specified in Chapter 42, shall not be reduced in exterior stairways as a result of the provision of sprinklers.

(l) **Interior Stairway Construction.** Interior stairways shall be constructed as specified in Part IV of this code.

Except when enclosed usable space under stairs is prohibited by Section 3309(f), the walls and soffits of the enclosed space shall be protected on the enclosed side as required for one-hour fire-resistive construction.

EXCEPTION: Gypsum wallboard 1/2-inch thick may be used in Group R, Division 3 Occupancies and within individual dwelling units of Group R, Division 1 Occupancies where one-hour fire-resistive construction is not otherwise required throughout.

All required interior stairways which extend to the top floor in any building four or more stories in height shall have, at the highest point of the stair shaft, an approved ladder and roof hatch openable to the exterior not less than ((~~16~~)) 11 square feet in area with a minimum dimension of 2 feet, 6 inches.

EXCEPTION: The hatch need not be provided on smokeproof enclosures or on stairways that extend to the roof with an opening onto that roof.

Stairways exiting directly to the exterior of a building four or more stories in height shall be provided with means for emergency entry for fire department access as provided in the Seattle Fire Code, Section 10.302.

(m) **Exterior Stairway Construction.** Exterior stairways shall be constructed as specified in Part IV of this code.

Exterior stairways shall not project into yards where openings are not permitted or protection of openings is required.

Enclosed usable space under stairs shall have the walls and soffits protected on the enclosed side as required for one-hour fire-resistive construction.

EXCEPTION: Group R, Division 3 and Group M Occupancies may use gypsum wallboard 1/2-inch thick.

Stairways exiting directly to the exterior of a building four or more stories in height shall be provided with means for emergency entry for fire department access as provided in the Seattle Fire Code, Section 10.302.

(n) **Stairway to Roof.** In buildings, other than Group R, Division 3 occupancies, four or more stories in height, one stairway shall extend to the roof surface, unless the roof has a slope greater than 4 in 12. See Subsection 3306(l) for roof hatch requirements for other stairways.

(o) **Headroom.** Every stairway shall have a headroom clearance of not less than 6 feet 8 inches. Such clearances shall be measured vertically from a plane parallel and tangent to the stairway tread nosings to the soffit above at all points.

(p) **Stairway Identification.** Approved stairway identification signs shall be located at each floor level in all enclosed stairways in buildings four or more stories in height. The sign shall identify the stairway, indicate whether there is roof access, roof hatch or no roof access, the floor level, and the upper and lower terminus of the stairway. The sign shall be located approximately 5 feet above the floor landing in a position which is readily visible when the door is in the open or closed position. Signs shall comply with requirements of U.B.C. Standard No. 33-2.

RAMPS

Sec. 3307. (a) **General.** Except for ramped aisles in assembly rooms, ramps used as exits shall conform to the provisions of this section. Ramped aisles within assembly rooms shall conform with the provisions in Section 3315. Ramps which are located within an accessible route of travel shall also comply with ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code.

(b) **Width.** The width of ramps shall be determined as specified in Section 3303(b), but shall not be less than 44 inches, except as specified herein. Ramps serving an occupant load of 49 or less shall not be less than 36 inches in width.

Handrails may project into the required width a distance of 3-1/2 inches from each side of a ramp. Other projections, such as trim and similar decorative features, may project into the required width 1-1/2 inches on each side.

(c) **Slope.** The slope of ramps required by ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code which are located within an accessible route of travel shall not be steeper than 1 vertical to 12 horizontal. The slope of other ramps shall not be steeper than 1 vertical to 8 horizontal.

(d) **Landings.** Ramps having slopes steeper than 1 vertical to 15 horizontal shall have landings at the top and bottom, and at least one intermediate landing shall be provided for each 5 feet of rise. Top landings and intermediate landings shall have a dimension measured in the direction of ramp run of not less than 5 feet. Landings at the bottom of ramps shall have a dimension in the direction of ramp run of not less than 6 feet.

Doors in any position shall not reduce the minimum dimension of the landing to less than 42 inches and shall not reduce the required width by more than 3-1/2 inches when fully open.

When ramp access is provided to comply with ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code and a door swings over a landing, the landing shall extend at least 24 inches beyond the latch edge of the door, measured parallel to the door in the closed position, and shall have a length parallel to the direction of travel through the doorway of not less than 5 feet.

(e) **Handrails.** Ramps having slopes steeper than 1 vertical to 15 horizontal shall have handrails as required for stairways, except that intermediate handrails shall not be required. Ramped aisles need not have handrails on sides serving fixed seating.

(f) **Construction.** Ramps shall be constructed as required for stairways.

(g) **Surface.** The surface of ramps shall be roughened or shall be of slip-resistant materials.

(h) **Guardrails.** Ramps open on one or both sides shall have guardrails as required by Section 1712.

HORIZONTAL EXIT

Sec. 3308. (a) **Used as a Required Exit.** A horizontal exit may be considered as a required exit when conforming to the provisions of this chapter. A horizontal exit shall not serve as the only exit from a portion of a building, and when two or more exits are required, not more than one-half of the total number of exits or total exit width may be horizontal exits.

(b) **Openings.** All openings in the two-hour fire-resistive wall which provide a horizontal exit shall be protected by a fire assembly having a fire-protection rating of not less than one and one-half hours.

(c) **Discharge Areas.** A horizontal exit shall lead into a floor area having capacity for an occupant load not less than the occupant load served by such exit. The capacity shall be determined by allowing 3 square feet of net clear floor area for each occupant to be accommodated therein, not including areas of stairs, elevators and other shafts or courts. In Group I, Division 1.1 Occupancies the capacity shall be determined by allowing 15 square feet of net clear floor area per ambulatory occupant and 30 square feet

per nonambulatory occupant. The area into which a horizontal exit leads shall be provided with exits adequate to meet the requirements of this chapter but need not include the added capacity imposed by persons entering it through horizontal exits.

STAIRWAY, RAMP AND ESCALATOR ENCLOSURES

Sec. 3309. (a) **General.** Interior stairways, ramps or escalators shall be enclosed as specified in this section.

EXCEPTIONS: 1. In other than Groups H and I Occupancies, an enclosure need not be provided for a stairway, ramp or escalator serving only one adjacent floor and not connected with corridors or stairways serving other floors. For enclosure of escalators serving Group B Occupancies, see Section 706.

2. Stairs in Group R, Division 3 Occupancies and stairs within individual dwelling units in Group R, Division 1 Occupancies need not be enclosed.

3. Stairs in open parking garages, as defined in Section 709, need not be enclosed.

4. In Group B, Division 1 garages which provide openings which comply with the standards of Section 709(b)2, stairways serving only the garage need not be enclosed.

(b) **Enclosure Construction.** Enclosure walls shall not be of less than two-hour fire-resistive construction in buildings more than four ((~~or more~~)) stories in height or of Types I and II fire-resistive construction and shall not be of less than one-hour fire-resistive construction elsewhere.

EXCEPTION: In sprinkler-protected parking garages restricted to the storage of private or pleasure-type motor vehicles, stairway enclosures of one- or two-hour fire-resistive construction may be enclosed with glazing meeting the requirements of Section 4306(g), (h), and (i).

(c) **Openings into Enclosures.** Openings into exit enclosures other than permitted exterior openings shall be limited to those necessary for exiting from a normally occupied space into the enclosure and exiting from the enclosure. Elevators and accessory rooms such as restrooms, storage closets and laundry rooms shall not open into an exit enclosure. Other penetrations into and opening through the exit enclosure are prohibited except for ductwork and equipment necessary for independent stair pressurization, sprinkler piping, standpipes and electrical conduit serving the stairway and terminating in a listed box not exceeding 16 square inches in area. Piping used exclusively for the drainage of rainfall runoff from roof areas provided the roof shall not be used for a helistop or heliport. Penetrations and communicating openings between adjacent exit enclosures are not permitted regardless of whether the opening is protected.

All exit doors in an exit enclosure shall be protected by a fire assembly having a fire-protection rating of not less than one hour where one-hour shaft construction is permitted and one and one-half hours where two-hour shaft construction is required. Doors shall be maintained self-closing or shall be automatic closing by actuation of a smoke detector as provided for in Section 4306(b). The maximum transmitted temperature end point

shall not exceed 450°F. above ambient at the end of 30 minutes of the fire exposure specified in U.B.C. Standard No. 43-2. See also Section 1706(b).

(d) **Extent of Enclosure.** Stairway and ramp enclosures shall include landings and parts of floors connecting stairway flights and shall also include a corridor on the ground floor leading from the stairway to the exterior of the building. Enclosed corridors or passageways are not required from unenclosed stairways. Every opening into the corridor shall comply with the requirements of Section 3309(c).

EXCEPTIONS: 1. In office buildings classed as a Group B, Division 2 Occupancy, a maximum of 50 percent of the exits may discharge through a street-floor lobby, provided the required exit width is free, ((~~and~~)) unobstructed and provides direct and obvious access to the exterior, and the entire street floor and any floor which is open to it are ((~~is~~)) protected with an automatic sprinkler system, and Exception 2 is not used concurrently. The street floor lobby shall be limited to the following criteria:

A. Group B, Division 2 office, retail and restaurant occupancies and restaurants of either Group A, Division 2.1 or 3 occupancy may open into the street floor lobby. Cooking areas of restaurants requiring Type I commercial kitchen hoods as provided by Section 2003(a) of the Seattle Mechanical Code shall be separated from the lobby with construction for enclosures as specified in Section 3309(b) and Exception 4 of Section 503(d) is not used concurrently.

B. The street floor lobby may be open above to one adjacent floor.

C. The street floor lobby shall not be open to a floor below.

D. Atria and escalators open to more than one adjacent floor shall be separated from the street floor lobby as required by Section 3309(b).

2. A maximum of 50 percent of the required exit enclosures may terminate in a parking garage level provided the following criteria are met:

A. The parking garage level contains exterior exit doors within 4 feet of grade.

B. The exit pathway from the enclosures to the exterior is free, unobstructed and provides a direct and obvious access to the exterior door. The required exit width shall be maintained. The exit pathway shall be equipped with illumination as required by Section 3313.

C. The level used for an exit pathway from an exit enclosure and all levels of the parking garage open to such level are protected by an automatic sprinkler system.

(e) **Barrier.** A stairway in an exit enclosure shall not continue below the ((~~grade level~~)) exit level nearest grade unless an approved barrier is provided at the ((~~ground-floor~~)) exit level to prevent persons from accidentally continuing ((~~into the basement~~)) below the exit level.

(f) **Use of Space Under Stair and Ramp.** There shall be no enclosed usable space under stairways or ramps in an exit enclosure, nor shall the open space under such stairways be used for any purpose.

SMOKEPROOF ENCLOSURES

Sec. 3310. (a) **General.** A smokeproof enclosure shall consist of a vestibule and continuous stairway enclosed from the highest point to the lowest point by walls ((~~of two-hour~~)) with fire-resistive construction as required in Section 3309(b). There shall be no openings into the stairway portion of the smokeproof enclosure other than those permitted by the first paragraph of Section 3309(c). The supporting frame shall be protected as set forth in Table No. 17-A.

In buildings with air-conditioning systems or pressure air supply serving more than one story, an approved smoke detector shall be placed in the return-air duct or plenum prior to exhausting from the building or being diluted by outside air. Upon activation, the detector shall cause the return air to exhaust completely from the building without any recirculation through the building. Such devices may be installed in each room or space served by a return-air duct.

(b) **When Required.** In a building having a floor used for human occupancy which is located more than 75 feet above the lowest level of fire department vehicle access, all of the required exits shall be smokeproof enclosures and extend to the roof.

EXCEPTIONS: 1. For buildings equipped with an automatic sprinkler system throughout in accordance with Section 1807(c), smokeproof enclosures may be omitted, provided all enclosed exit stairways are equipped with a barometric dampered relief opening at the top and the stairway supplied mechanically with sufficient air to discharge a minimum of 2,500 cubic feet per minute through the relief opening while maintaining a minimum positive pressure of 0.15-inch water column in the shaft relative to atmospheric pressure with all doors closed. Supply air ducts shall be enclosed in construction at least equivalent to that of the stair enclosure between the exterior of the building and the stair enclosure. Activation of the mechanical equipment shall be initiated by a smoke detector installed outside the stair enclosure and within 5 feet of the enclosure door or in accordance with Section 1807(g)2. Such equipment shall also be activated by actuation of the automatic sprinkler system. Stair enclosures designed to this exception need only conform to Subsections (c) and (d), and Items 7, 8 and 9 of Subsection (g) of this section.

2. Enclosures need not be provided in open parking garages as defined in Section 709.

(c) **Outlet.** A smokeproof enclosure shall exit into a public way or into an exit passageway leading to a public way. The exit passageway shall be without other openings and shall have walls, floors and ceiling of two-hour fire-resistive construction.

EXCEPTIONS: 1. A maximum of 50 percent of the exits may discharge through a street-floor lobby, provided the required exit width is free, unobstructed and provides direct and obvious access to the exterior; and further

provided the entire street floor and any floor which is open to it are protected with an automatic sprinkler system, and Exception 2 is not used concurrently. The street-floor lobby shall be limited by the following criteria:

A. Group B, Division 2 office, retail and restaurant occupancies and restaurants of either Group A, Division 2.1 or 3 occupancies may open into the street-floor lobby. Cooking areas of restaurants requiring Type I commercial kitchen hoods as provided by Section 2003(a) of the Seattle Mechanical Code shall be separated from the lobby with construction for enclosures as specified in Section 3309(b) and Exception 4 of Section 503(d) is not used concurrently.

B. The street floor lobby may be open above to one adjacent floor.

C. The street floor lobby shall not be open to a floor below.

D. Atria and escalators open to more than one adjacent floor shall be separated from the street floor lobby as required by Section 3309(b).

2. A maximum of 50 percent of the required exit enclosures may terminate in a parking garage level provided the following criteria are met:

A. The parking garage level contains exterior exit doors within 4 feet of grade.

B. The exit pathway from the enclosures to the exterior is free, unobstructed and provides a direct and obvious access to the exterior door. The required exit width shall be maintained. The exit pathway shall be equipped with illumination as required by Section 3313.

C. The level used for an exit pathway from an exit enclosure and all levels of the parking garage open to such level are protected by an automatic sprinkler system.

(d) **Barrier.** A stairway in a smokeproof enclosure shall not continue below the ((~~grade~~)) exit level nearest grade unless an approved barrier is provided at the ((~~ground~~)) exit level nearest grade to prevent persons from accidentally continuing ((~~into the basement~~)) below the exit level.

(e) **Access.** Access to stairways in smokeproof enclosures shall be by way of a vestibule or open exterior exit balcony construction of noncombustible materials.

(f) **Smokeproof Enclosure by Natural Ventilation.** 1. **Doors.** When a vestibule is provided, the door assembly into the vestibule shall have a one- and one-half-hour fire-protection rating, and the door assembly from the vestibule to the stairs shall be a smoke-and draft-control assembly having not less than a 20-minute fire-protection rating. Doors shall be maintained self-closing or shall be automatic closing by actuation of a smoke detector.

When access to the stairway is by means of an open exterior exit balcony, the door assembly to the stairway shall have a one- and

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Section 89. Table 23-A of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 23-A -- UNIFORM AND CONCENTRATED LOADS

USE OR OCCUPANCY			
CATEGORY	DESCRIPTION	UNIFORM LOAD[1]	CONCEN-TRATED LOAD
1. Access floor systems	Office Use	50	2,000[2]
	Computer Use	100	2,000[2]
2. Armories		150	0
3. Assembly areas[3] and auditoriums and balconies therewith	Fixed seating areas	50	0
	Moveable seating and other areas	100	0
	Stage areas and enclosed platforms	125	0
4.((~~Cornices,~~)) Marquees[9] ((~~and residential balconies~~))		60	0
5. Exit facilities[4]		100	0[5]
6. Garages[10]	General storage and /or repair	100	[6]
	Private or pleasure-type motor vehicle storage	50	[6]
7. Hosptials	Wards and rooms	40	1,000[2]
8. Libraries	Reading rooms	60	1,000[2]
	Stack rooms	125	1,500[2]
9. Manufacturing	Light	75	2,000[2]
	Heavy	125	3,000[2]
10. Offices		50	2,000[2]
11. Printing plants	Press rooms	150	2,500[2]
	Composing and linotype rooms	100	2,000[2]
12. Residential[7]		40	0[5]
13. Rest rooms[8]			
14. Reviewing stands, grandstands, bleachers, and folding and tele-scoping seating		100	0
15. Roof decks	Same as area served or for the type or occupancy accommodated.		
A. Private decks accessory to a dwelling unit		40	
B. Common use decks generally not accessible to the public		60	
C. All other decks		100	
16. Schools	Classrooms	40	1,000[2]
17. Sidewalks and driveways	Public access	250	[6]
18. Storage	Light	125	
	Heavy	250	
19. Stores	Retail	75	2,000[2]
	Wholesale	100	3,000[2]

CS 19.2

FOOTNOTES TO TABLE 23-A

1 See Section 2306 for live load reductions.
2 See Section 2304(c), first paragraph, for area of load application.
3 Assembly areas include such occupancies as dance halls, drill rooms, gymnasiums, playgrounds, plazas, terraces and similar occupancies which are generally accessible to the public.
4 Exit facilities shall include such uses as corridors serving an occupant load of 10 or more persons, exterior exit balconies, stairways, fire escapes and similar uses.
5 Individual stair treads shall be designed to support a 300-pound concentrated load placed in a position which would cause maximum stress. Stair stringers may be designed for the uniform load set forth in the table.
6 See Section 2304(c), second paragraph, for concentrated loads.
7 Residential occupancies include private dwellings, apartments, congregate residences and guest rooms of hotels and lodging houses.
8 Rest room loads shall not be less than the load for the occupancy with which they are associated, but need not exceed 50 pounds per square foot.
9 This loading condition need only be considered for marquees that are less than 10 feet above the ground at all points, more than 10 feet below an adjacent roof, or are located less than 10 feet from operable openings above or adjacent to the level of the marquee.
10 See Section 1712(b) for vehicle barriers.

Section 90. Table No. 23-B of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 23-B – SPECIAL LOADS[1]

USE		VERTICAL LOAD	LATERAL LOAD
CATEGORY	DESCRIPTION	(Pounds per Square Foot Unless Otherwise Noted)	
((~~1. Construction, public access at site (live load)~~	~~Walkway, see Sec. 4406~~	~~150~~	
	~~Canopy, see Sec. 4407~~	~~150~~))	
2. Grandstands, reviewing stands bleachers and folding and telescoping seating (live load)	Seats and footboards	120[2]	See Footnote [3]
3. Stage accessories (live load)	Gridirons and fly galleries	75	
	Loft block wells[4]	250	250
	Head block wells and sheave beams[4]	250	250
4. Ceiling framing (live load)	Over stages	20	
	All uses except over stages	10[5]	
5. Partitions and interior walls, see Sec. 2309 (live load)			5
6. Elevators and dumbwaiters (dead and live load)		2 X Total loads[6]	
7. Mechanical and electrical equipment (dead load)		Total loads	
8. Cranes (dead and live load)	Total load including impact increase	1.25 X Total load[7]	0.10 X Total load[8]
9. Balcony railings and guard rails	Exit facilities serving an occupant load greater than 50		50[9]
	Other		20[9]
10. Handrails		See footnote No. 10	See footnote No. 10
11. Storage racks	Over 8 feet high	Total loads[11]	See Table No. 23-P
12. Fire sprinkler structural support		250 pounds plus weight of water-filled pipe[12]	See Table No. 23-P
13. Explosion exposure	Hazardous occupancies, see Sec. 910		
14. Vehicle Barriers	see Section 1713.		

[1] The tabulated loads are minimum loads. Where other vertical loads required by this code or required by the design would cause greater stresses, they shall be used.

[2] Pounds per lineal foot.

[3] Lateral sway bracing loads of 24 pounds per foot parallel and 10 pounds per foot perpendicular to seat and footboards.

[4] All loads are in pounds per lineal foot. Head block wells and sheave beams shall be designed for all loft block well loads tributary thereto. Sheave blocks shall be designed with a factor of safety of five.

[5] Does not apply to ceilings which have sufficient total access from below, such that access is not required within the space above the ceiling. Does not apply to ceilings if the attic areas above the ceiling are not provided with access. This live load need not be considered as acting simultaneously with other live loads imposed upon the ceiling framing or its supporting structure.

[6] ((~~Where Appendix~~)) See Chapter 51 ((~~has been adopted, see reference standard cited therein~~)) for additional design requirements.

[7] The impact factors included are for cranes with steel wheels riding on steel rails. They may be modified if substantiating technical data acceptable to the building official is submitted. Live loads on crane support girders and their connections shall be taken as the maximum crane wheel loads. For pendant-operated traveling crane support girders and their connections, the impact factors shall be 1.10.

[8] This applies in the direction parallel to the runway rails (longitudinal). The factor for forces perpendicular to the rail is 0.20 x the transverse traveling loads (trolley, cab, hooks and lifted loads). Forces shall be applied at top of rail and may be distributed among rails of multiple rail cranes and shall be distributed with due regard for lateral stiffness of the structures supporting these rails.

[9] A load per lineal foot to be applied horizontally at right angles to the top rail.

[10] The mounting of handrails shall be such that the completed handrail and supporting structure are capable of withstanding a load of at least 200 pounds applied in any direction at any point on the rail. These loads shall not be assumed to act cumulatively with Item 9.

[11] Vertical members of storage racks shall be protected from impact forces of operating equipment, or racks shall be designed so that failure of one vertical member will not cause collapse of more than the bay or bays directly supported by that member.

[12] The 250-pound load is to be applied to any single fire sprinkler support point but not simultaneously to all support joints.

Section 91. Subsection 2406(c)1 of the Uniform Building Code, 1991 Edition, is amended as follows:

1. **General.** When the quality control provisions do not include requirements for continuous special inspection as prescribed in Section 306, the allowable design stresses in this section shall be reduced by one-half.

Section 92. Subsection 2515(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

WOOD COMBINED WITH MASONRY OR CONCRETE

Sec. 2515. (a) **Dead Load.** Wood members shall not be used to permanently support the dead load of any masonry or concrete.

EXCEPTIONS: 1. Masonry or concrete nonstructural floor, stair landing or roof surfacing not more than 4 inches thick may be supported by wood members. Precast concrete structural stair treads may be supported by wood stringers.

2. Any structure may rest upon wood piles constructed in accordance with the requirements of Chapter 29.

3. Masonry or concrete fireplace with a factory-built chimney conforming to Chapter 37 may be supported by wood framing.

4. Veneer of brick, concrete or stone applied as specified in Section 3006(b) may be supported by approved treated wood foundations when the maximum height of veneer does not exceed 25 feet above the foundation. Such veneer used as an interior wall finish may also be supported on wood floors which are designed to support the additional load, and be designed to limit the deflection and shrinkage to 1/500 of the span of the supporting members.

Section 93. Subsection 2516(f)4 of the Uniform Building Code, 1991 Edition, is amended as follows:

4. **Draft stops, where required.** Draftstopping shall be provided in the following locations:

A. **Floor-ceiling assemblies.** (i) **Single-family dwellings.** When there is usable space above and below the concealed space of a floor-ceiling assembly in a single-family dwelling, draft stops shall be installed so that the area of the concealed space does not exceed 1,000 square feet. Draftstopping shall divide the concealed space into approximately equal areas.

(ii) **Two or more dwelling units and hotels.** Draft stops shall be installed in floor-ceiling assemblies of buildings having more than one dwelling unit and in hotels. Such draft stops shall be in line with walls separating individual dwelling units and guest rooms from each other and from other areas.

(iii) **Other uses.** Draft stops shall be installed in floor-ceiling assemblies of buildings or portions of buildings used for other than dwelling or hotel occupancies so that the area of the

concealed space does not exceed 1,000 square feet and so that the horizontal dimension between stops does not exceed 60 feet.

EXCEPTION: Where approved automatic sprinklers are installed within the concealed space, the area between draft stops may be 3,000 square feet and the horizontal dimension may be 100 feet.

B. **Attics.** (i) **Single-family dwellings.** None required.

(ii) **Two or more dwelling units and hotels.** Draft stops shall be installed in the attics, mansards, overhangs, false fronts set out from walls and similar concealed spaces of buildings containing more than one dwelling unit and in hotels. Such draft stops shall be above and in line with the walls separating individual dwelling units and guest rooms from each other and from other uses.

EXCEPTIONS: 1. Draft stops may be omitted along one of the corridor walls, provided draft stops at walls separating individual dwelling units and guest rooms from each other and from other uses, extend to the remaining corridor draft stop.

2. Where approved sprinklers are installed, draftstopping may be as specified in the exception to Item (iii) below.

3. Where a building contains more than four dwelling units or guest rooms, or where a building is more than two stories in height, draftstopping may be as provided in Item (iii) below.

(iii) **Other uses.** Draft stops shall be installed in attics, mansards, overhangs, false fronts set out from walls and similar concealed spaces of buildings having uses other than dwellings or hotels so that the area between draft stops does not exceed 3,000 square feet and the greatest horizontal dimension does not exceed 60 feet.

EXCEPTION: Where approved automatic sprinklers are installed, the area between draft stops may be 9,000 square feet and the greatest horizontal dimension may be 100 feet.

Section 94. Subsection 2605(e) of the Uniform Building Code, 1991 Edition, is amended as follows:

(e) **Proportioning by** ((~~Water-Cement Ratio~~)) **Minimum Cement Content.** If data required by Section 2604(d) are not available, ((~~permission may be granted to base~~)) concrete proportions ((~~on water-cement ratio limits~~)) may be based upon the values in Table No. 26-A-7.

Table No. 26-A-7 shall be used only for concrete to be made with cements meeting strength requirements for Type I, ((~~IA,~~)) II, ((~~IIA,~~)) or III((~~, III-A, or V; or Type IS, IS-A, IS(MS), IS-A(MS), I(SM), I(SM)-A, IP, IP-A, I(PM), I(PM)-A, IP(MS), IP-A(MS), or P~~)) of U.B.C. Standard No. 26-1, and shall not be applied to concrete containing lightweight aggregates. ((~~or admixtures other than those for entraining air.~~)) When approved by the building official, Table No. 26-A-7 may be used with air-entraining admixtures (conforming to ASTM C260) and/or normal-range water-reducing admixtures (conforming to ASTM C494, Types A, D or E).

one-half-hour fire-protection rating and shall be maintained self-closing or shall be automatic closing by actuation of a smoke detector.

2. **Open-air vestibule.** The vestibule shall have a minimum dimension of 44 inches in width and 72 inches in direction of exit travel. The vestibule shall have a minimum of 16 square feet of opening in a wall facing an exterior court, yard or public way at least 20 feet in width.

(g) **Smokeproof Enclosures by Mechanical Ventilation.** 1. **Doors.** The door assembly from the building into the vestibule shall have a one- and one-half-hour fire-protection rating, and the door assembly from the vestibule to the stairway shall be a smoke- and draft-control assembly having not less than a 20-minute fire-protection rating. The door to the stairways shall be provided with a drop sill or other provision to minimize the air leakage. Doors shall be maintained self-closing or shall be automatic closing by activation of a smoke detector or in the event of a power failure.

2. **Vestibule size.** Vestibules shall have a minimum dimension of 44 inches in width and 72 inches in direction of exit travel.

3. **Vestibule ventilation.** The vestibule shall be provided with not less than one air change per minute, and the exhaust shall be 150 percent of the supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches of the floor level. The top of the exhaust register shall be down from the top of the smoke trap and shall be entirely within the smoke trap area. Doors, when in the open position, shall not obstruct duct openings. Duct openings may be provided with controlling dampers if needed to meet the design requirements but are not otherwise required.

4. **Smoke trap.** The vestibule ceiling shall be at least 20 inches higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward-moving air column. The height may be decreased when justified by engineering design and field testing.

5. **Stair shaft air movement system.** The stair shaft shall be provided with a dampered relief opening at the top and supplied mechanically with sufficient air to discharge a minimum of 2,500 cubic feet per minute through the relief opening while maintaining a minimum positive pressure of 0.05 inch of water column in the shaft relative to atmosphere with all doors closed and a minimum of 0.10-inch water column difference between the stair shaft and the vestibule. <u>Supply air ducts shall be enclosed in two-hour fire-resistive construction between the exterior of the building and the stair enclosure.</u>

6. **Operation of ventilating equipment.** The activation of the ventilating equipment shall be initiated by a smoke detector installed outside the vestibule door in an approved location. The activation of the closing device on any door shall activate the closing devices on all doors of the smokeproof enclosure at all levels. When the closing device for the stair shaft and vestibule doors is activated by a smoke detector or power failure, the mechanical equipment shall operate at the levels specified in Subsections 3 and 5.

7. **Standby power.** Standby power for mechanical ventilation equipment shall be provided by an approved self-contained generator set to operate whenever there is a loss of power in the normal house current. The generator shall be in a separate room having a minimum one-hour fire-resistive occupancy separation and shall have a minimum fuel supply adequate to operate the equipment for two hours. See Section 1807(i) for standby power requirements for high-rise ((~~Group B, Division 2 offices and Group R, Division 1 Occupancies~~)) buildings.

8. **Acceptance testing.** Before the mechanical equipment is accepted by the building official, it shall be tested to confirm that the mechanical equipment is operating in compliance with these requirements.

9. **Emergency lighting.** The stair shaft and vestibule shall be provided with emergency lighting. A standby generator which is installed for the smokeproof enclosure mechanical ventilation equipment may be used for such stair shaft and vestibule power supply. See Section 1807(i) for emergency lighting requirements for high-rise ((~~Group B, Division 2 offices and Group R, Division 1 Occupancies~~)) buildings.

EXIT COURTS

Sec. 3311. (a) **General.** Exit courts shall discharge into a public way or exit passageway.

(b) **Width.** Exit court minimum widths shall be determined in accordance with provisions of Section 3303 based on the occupant load and such required width shall be unobstructed to a height of 7 feet, except for projections permitted in corridors by Section 3305. The width of exit courts shall not be less than 44 inches except Group R, Division 3 and Group M Occupancies, where the width may be reduced to 36 inches.

When the width is reduced from any cause, the reduction shall be effected gradually by a guardrail at least 3 feet in height and making an angle of not more than 30 degrees with the axis of the exit court.

(c) **Number of Exits.** Exit courts shall be provided with exits as determined by Section 3303.

(d) **Construction and Openings.** When an exit court serving a building or portion thereof having an occupant load of 10 or more is less than 10 feet in width, the exit court walls shall be a minimum of one-hour fire-resistive construction for a distance of 10 feet above the floor of the court, and all openings therein shall be protected by fire assemblies having a fire-protection rating of not less than three-fourths hour.

> **EXCEPTION:** Except in single exit buildings, where it is possible to exit in two directions from the court, opening protection need not be provided.

EXIT PASSAGEWAYS

Sec. 3312. (a) **Construction and Openings.** The walls of exit passageways shall be without openings other than required exits and shall have walls, floors and ceilings of the same period of fire resistance as required for the walls, floors and ceilings of the building served with a minimum of one-hour fire-resistive

construction. Exit openings through the enclosing walls of exit passageways shall be protected by fire assemblies having a three-fourths-hour fire-protection rating.

(b) **Detailed Requirements.** Except for construction and opening protection as specified in Subsection (a) above, exit passageways shall comply with the requirements for corridors as specified in Section 3305.

EXIT ILLUMINATION

Sec. 3313. (a) **General.** Except within individual dwelling units, guest rooms and sleeping rooms, exits shall be illuminated at any time the building is occupied ((~~with light having intensity of not less than 1 footcandle at floor level.~~)) Exit illumination shall be installed whenever internally illuminated exit signs are required as specified in Section 3314.

((~~**EXCEPTION:** In auditoriums, theaters, concert or opera halls and similar assembly uses, the illumination at floor level may be reduced during performances to not less than 0.2 footcandle.~~))

1. **Location and Fixture Placement.** Exit illumination shall be located in stairways, corridors, halls, passenger elevator cars, lobbies, rooms with an occupant load of 100 or more, and other areas required to provide safe egress from the premises and immediately outside of the building exit when required by the building official. Fixtures shall be installed to not less than the following schedule:

Interior and exterior stairways and landings and outside building exit	At least one per landing
Corridors and halls and designated exit paths in parking garages	At least one for each 40 lineal feet
Lobbies, vestibules, foyers, elevator cars and other similar areas as required	At least one for each 250 square feet
Warehouses	See Item 2

These fixtures may be included in the watts per square foot calculation for exit illumination.

2. **Amount of Illumination.** Where exit illumination is required, illumination shall be provided at the rate of 0.1 watt Installations using incandescent lamps shall have a minimum wattage of at least 3 times the fluorescent requirements. Use of other light sources shall be subject to the approval of the building official.

EXCEPTIONS: 1. In warehouses, the allowable minimum illumination may be 0.1 watt per square foot provided fixtures are placed either:

A. Where exit pathways are not designated, fixtures shall be placed to cover an area not larger than 1,600 square feet, or

B. Where exit pathways are designated, fixtures shall be placed at least one for every 40 lineal feet.

2. In theaters, auditoriums or other places of assembly where motion pictures or other projections are made by means of directed light, the minimum allowable illumination may be reduced to 0.05 watts per square foot of floor area. For Group A, Division 1 and 2 Occupancies, see Section 605.

3. In Group B, Division 2 Occupancies, when approved by the building official, the minimum allowable illumination may be reduced to 0.05 watts per square foot of floor area.

4. In Group B, Division 2 office space and parking garages with walls meeting the openness requirements of Division 3 open parking garages, when approved by the building official, the illumination may be eliminated when within 50 feet of a window wall or open side and light is not totally obscured.

Fixtures required for exit illumination shall be supplied from separate sources of power where required by Subsection (b). Exit illumination fixtures shall be spaced and designed to give adequate distribution of light for safe egress and so that the failure of any individual lighting element, such as the burning out of a light bulb, will not leave any individual space in total darkness. Illumination from battery operated fixtures shall provide the same level of illumination required for hard wired fixtures.

(b) **Separate Sources of Power.** The power supply for exit illumination shall normally be provided by the premises wiring system. In the event of its failure, illumination shall be automatically provided from an emergency system for Group I, Divisions 1.1 and 1.2 Occupancies and for all other occupancies where the exiting system serves an occupant load of 100 or more. The emergency system shall be as specified in the Seattle Electrical Code Section 700-12 a, b, c or f.

((~~For high-rise buildings, see Section 1807. For smokeproof enclosures, see Section 3310(g)9.~~

~~Emergency systems shall be supplied from storage batteries or an on-site generator set and the system shall be installed in accordance with the requirements of the Electrical Code.~~))

EXIT SIGNS

Sec. 3314. (a) **Where Required.** When two or more exits from a story are required by Section 3303, and where a building is designed with a single exit stairway per Exception 8 to Section 3303(a) exit signs shall be installed at stair enclosure doors, horizontal exits and other required exits from the story. When two or more exits are required from a room or area, exit signs shall be installed at the required exits from the room or area and where otherwise necessary to clearly indicate the direction of egress. Exit placards may be used to identify exits in other occupancies where illuminated exit signs are not required.

EXCEPTIONS: 1. Main exterior exit doors which obviously and clearly are identifiable as exits need not be signed when approved by the building official.

2. Group R, Division 3, and individual units of Group R, Division 1 Occupancies.

3. Exits from rooms or areas with an occupant load of less than 50 when located within a Group I, Division 1.1, 1.2 or 2 Occupancy or a Group E, Division 3 day-care occupancy.

4. Exit signs shall not be required on exterior stairways serving exterior exit balconies.

5. Directional exit signs are not required within an individual tenant space of a Group B, Division 2 office building.

Either exit signs or exit placards shall be required at any other location determined by the building official to be necessary to clearly indicate the direction of egress.

(b) **Graphics.** The color and design of lettering, arrows and other symbols on exit signs shall be in high contrast with their background. Words on exit ((~~the~~)) signs or placards shall be in green block letters at least 6 inches in height with a stroke of not less than 3/4 inch.))

EXCEPTION: Existing exit signs or placards with letters at least 5 inches in height may be reused.

(c) **Illumination.** ((~~Signs shall be internally or externally illuminated by two electric lamps or shall be of an approved self-luminous type. When the luminance on the face of an exit sign is from an external source, it shall have an intensity of not less than 5.0 footcandles from either lamp. Internally illuminated signs shall provide equivalent luminance.~~)) Exit signs shall comply with one of the following criteria:

1. Internally illuminated with two electric lamps of not less than 15 watts each if of the incandescent type or 5 watts each if of the fluorescent type, or

2. Self-energized exit signs (powered by radiant energy) provided the exit sign has a current International Conference of Building Officials research committee report and is installed in accordance with its findings.

(d) **Power Supply.** ((~~Current supply to one of the lamps for exit signs shall be provided by the premises' wiring system. Power to the other lamp shall be from storage batteries or an on site generator set and the system shall be installed in accordance with the Electrical Code. For high-rise buildings, see Section 1807.~~))

Power shall be supplied as provided for exit illumination in Section 3313(b).

((~~(e) **Floor-level Exit Signs.** Where exit signs are required by Section 3314 (a), additional approved low-level exit signs which are internally or externally illuminated, or self-luminous, shall be provided in all interior exit corridors serving guest rooms of hotels in Group R, Division 1 Occupancies.~~

~~The bottom of the sign shall not be less than 6 inches or more than 8 inches above the floor level. For exit doors, the sign~~

~~shall be on the door or adjacent to the door with the closest edge of the sign within 4 inches of the door frame.~~))

(f) **Amusement Building Exit Marking.** Approved direction exit marking and exit signs shall be provided. ((~~Approved low-level exit signs and directional marking shall be located not more than 8 inches above the walking surface and at the exit path.~~)) Such marking shall be activated in accordance with Section 610(c).

(g) **Not-an-Exit Warnings.** Non-illuminated placards reading NOT AN EXIT shall be installed at all doorways, passageways or stairways which are not exits, exit accesses or exit discharges, and which may be mistaken for an exit. A sign indicating the use of the doorway, passageway or stairway, such as TO BASEMENT, STOREROOM, LINEN CLOSET, is permitted in lieu of the NOT AN EXIT sign.

AISLES

Sec. 3315. (a) **General.** Aisles leading to required exits shall be provided from all portions of buildings. Those portions of every building in which seats, tables, merchandise, book stacks, work benches or other equipment or similar materials are installed shall be provided with aisles leading to an exit. Aisles located within an accessible route of travel shall also comply with ((~~Chapter 31~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10, Washington Administrative Code.

(b) **Width in Occupancies without Fixed Seats.** The width of aisles in occupancies without fixed seats shall comply with this section. Aisle widths shall be provided in accordance with the following:

1. In areas serving employees only, the minimum aisle width may be 24 inches but not less than the width required by the number of employees served.

2. In public areas of Group B, Division 2 Occupancies, and in assembly occupancies without fixed seats, the minimum clear aisle width shall be 36 inches where tables, counters, furnishings, merchandise or other similar obstructions are placed on one side of the aisle only and 44 inches when such obstructions are placed on both sides of the aisle.

(c) **Width in Assembly ((~~Occupancies~~)) Areas with Fixed Seats.** Aisles in assembly ((~~occupancies~~))areas with fixed seats shall comply with this section. The clear width of aisles shall be based on the number of occupants within the portion of the seating areas served by the aisle.

The clear width of an aisle in inches shall not be less than the occupant load served by the aisle multiplied by 0.3 for aisles with slopes greater than 1 vertical to 8 horizontal and not less than 0.2 for aisles with slopes of 1 vertical to 8 horizontal or less. In addition, when the rise of steps in aisles exceeds 7 inches, the aisle clear width shall be increased by 1 1/4 inches for each 100 occupants or fraction thereof served for each 1/4 inch of riser height above 7 inches.

Where exiting is possible in two directions, the width of such aisles shall be uniform throughout their length.

When aisles converge to form a single path of exit travel, the aisle width shall not be less than the combined required width of the converging aisle.

In assembly rooms with fixed seats arranged in rows, the clear width of aisles shall not be less than set forth above or less than the following:

48 inches for stairs having seating on both sides.
36 inches for stairs having seating on one side.
23 inches between a stair handrail and seating when the aisles are subdivided by the handrail.
42 inches for level or ramped aisles having seating on both sides.
36 inches for level or ramped aisles having seating on one side.
23 inches between a stair handrail and seating when an aisle does not serve more than five rows on one side.

(d) **Aisle Termination.** Aisles shall terminate at a cross aisle, foyer, doorway or vomitory. Aisles shall not have a dead end greater than ((~~20~~)) 25 feet in length.

> **EXCEPTION:** A longer dead-end aisle is permitted when seats served by the dead-end aisle are not more than 24 seats from another aisle measured along a row of seats having a minimum clear width of 12 inches plus 0.6 inch for each additional seat above 7 in a row.

Each end of a cross aisle shall terminate at an aisle, foyer, doorway or vomitory.

(e) **Ramp Slope.** The slope of ramped aisles shall not be more than 1 vertical in 8 horizontal. Ramped aisles shall have a slip-resistant surface.

When provided with fixed seating, the main floor of the assembly room of a Group A, Division 1, 2, 2.1, or 3 Occupancy may have a slope not steeper than 1 vertical to 5 horizontal.

(f) **Aisle Steps. 1. When prohibited.** Steps shall not be used in aisles having a slope of 1 vertical to 8 horizontal or less.

2. **When required.** Aisles with a slope steeper than 1 vertical to ((~~8~~)) 5 horizontal shall consist of a series of risers and treads extending across the entire width of the aisle.

The height of risers shall not be more than 7-1/2 inches or less than 4 inches and the tread run shall not be less than ((~~11~~)) 10 inches. The riser height shall be uniform within each flight and the tread run shall be uniform throughout the aisle. Variations in run or height between adjacent treads or risers shall not exceed 3/16 inch. A contrasting marking stripe or other approved marking shall be provided on each tread at the nosing or leading edge such that the location of each tread is readily apparent when viewed in descent. Such stripe shall be a minimum of 1 inch wide and a maximum of 2 inches wide.

> **EXCEPTION:** When the slope of aisle steps and the adjoining seating area is the same, the riser heights may be increased to a maximum of 9 inches and may be nonuniform but only to the extent necessitated by changes in the slope of the adjoining seating area to maintain adequate sightlines. Variations may exceed 3/16 inch between adjacent risers provided the exact

location of such variations is identified with a marking stripe on each tread at the nosing or leading edge adjacent to the nonuniform riser. The marking stripe shall be distinctively different from the contrasting marking stripe.

(g) **Handrails.** Handrails shall comply with the height, size and shape dimensions set forth in Section 3306 (i) and shall have rounded terminations or bends. Ramped aisles having a slope steeper than 1 vertical to 15 horizontal and aisle stairs (two or more adjacent steps) shall have handrails located either at the side or within the aisle width. Handrails may project into the required aisle width a distance of 3 1/2 inches.

EXCEPTIONS: 1. Handrails may be omitted on ramped aisles having a slope not greater than 1 vertical in ((~~8~~)) 5 horizontal and on stairways when fixed seating is on both sides of the aisle.

2. Handrails may be omitted when a guardrail is at the side of an aisle which conforms to the size and shape requirements for handrails.

Handrails located within the aisle width shall be discontinuous with gaps or breaks at intervals not to exceed five rows. These gaps or breaks shall have a clear width of not less than 22 inches or more than 36 inches measured horizontally. ((~~Such handrails shall have an additional intermediate handrail located 12 inches below the main handrail.~~))

Seat Spacing

Sec. 3316. When seating rows have 14 or less seats, the minimum clear width between rows shall not be less than 12 inches measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind. Where seats are automatic or self-rising, measurement may be made with the seats in the raised position. Where seats are not automatic or self-rising, the minimum clear width shall be measured with the seat in the down position.

The clear width shall be increased as follows:

(a) For rows of seating served by aisles or doorways at both ends, there shall be no more than 100 seats per row and the minimum clear width of 12 inches between rows shall be increased by 0.3 inch for every additional seat beyond 14, but the minimum clear width need not exceed 22 inches. If the aisles are dead ended, see Section 3315 (d) for further limitations.

(b) For rows of seating served by an aisle or doorway at one end only, the minimum clear width of 12 inches between rows shall be increased by 0.6 inch for every additional seat beyond seven, but the minimum clear width need not exceed 22 inches. In addition, the distance to the point where the occupant has a choice of two directions of travel to an exit shall not exceed 30 feet from the point where the occupant is seated.

GROUP A OCCUPANCIES

Sec. 3317. (a) **Main Exit.** Group A, Division 1, 2 or 2.1 Occupancies shall be provided with a main exit.

The main exit shall be of sufficient width to accommodate one-half of the total occupant load but shall not be less than the total required width of all aisles, exit passageways and stairways leading thereto and shall connect to a continuous and unobstructed means of egress to a public way.

(b) **Side Exits.** Auditoriums of Group A, Division 1, 2 or 2.1 Occupancies shall be provided with exits on each side. The exits on each side of the auditorium shall be of sufficient width to accommodate one-third of the total occupant load served. Side exits shall open directly to a public way or into an exit court, approved stairway, exterior stairway or exit passageway leading to a public way. Side exits shall be accessible from a cross aisle.

(c) **Balcony Exits.** Balconies having an occupant load of 11 or more shall be provided with a minimum of two exits. Balcony exits shall open directly to an exterior stairway or other approved stairway or ramp. When there is more than one balcony, exits shall open into an exterior or enclosed stairway or ramp. Balcony exits shall be accessible from a cross aisle. The number and distribution of exits shall be as otherwise specified in this chapter.

(d) **Panic Hardware.** Exit doors from Group A Occupancies having an occupant load of 50 or more shall not be provided with a latch or lock unless it is panic hardware.

EXCEPTIONS: 1. In Group A, Division 3 Occupancies and in all churches, panic hardware may be omitted from the main exit when the main exit consists of a single door or pair of doors. A key-locking device may be used in place of the panic hardware, provided there is a readily visible durable sign adjacent to the doorway stating THIS DOOR MUST REMAIN UNLOCKED DURING BUSINESS HOURS. The sign shall be in letters not less than 1 inch high on a contrasting background. When unlocked, the single door or both leaves of a pair of doors must be free to swing without operation of any latching device. When a pair of doors is installed, one leaf shall have no locking devices whatsoever, and the second leaf shall be arranged to latch or lock into the frame and into the first leaf in such a manner that a single unlocking action will unlock both leaves simultaneously. Flush, edge or surface bolts or any other type of device that may be used to close or restrain the door other than by operation of the locking device are prohibited. The use of this exception may be revoked by the building official for due cause.

2. Panic hardware may be waived on gates surrounding stadiums when the gates are under constant immediate supervision while the public is present, and provided safe dispersal areas based on 3 square feet per occupant are located between the stadium and the fence. The required dispersal area shall not be located less than 50 feet from the stadium. <u>See Section 3322 for exits from dispersal areas.</u>

<u>3. Doors equipped with panic hardware may be secured with a chain or padlock during the hours when the building is unoccupied by the public provided there is a readily visible durable sign adjacent to the doorway stating THIS DOOR TO REMAIN UNLOCKED DURING BUSINESS HOURS. The sign shall be in</u>

letters not less than 1 inch high on a contrasting background. The use of this exception may be revoked by the fire chief for due cause.

(e) **Multitheater Complex.** The main exit from the multitheater complex shall be of sufficient width to accommodate one-half of the aggregate occupant load of the complex.

Corridor walls and ceilings shall be of not less than one-hour fire-resistive construction with openings protected as required in Section 3305 (h).

EXCEPTION: Opening protection is not required when each motion picture auditorium has at least one-half of its required exits opening directly to the exterior or into an exit passageway.

GROUP E OCCUPANCIES

Sec. 3318. (a) **Definitions.** For the purpose of this section, the following definitions apply:

INTERIOR ROOM is a room whose only exit is through an adjoining or intervening room which is not an exit corridor.

ROOM is a space or area bounded by any obstructions to exit passage which at any time enclose more than 80 percent of the perimeter of the area. In computing the unobstructed perimeter, openings less than 3 feet in clear width and less than 6 feet 8 inches high shall not be considered.

SEPARATE EXIT SYSTEM is a path of exit travel separated in such a manner from other required exits as to provide an atmospheric separation which precludes contamination of both paths by the same fire.

(b) **Separate Exit Systems Required.** Every room with an occupant load of more than 300 shall have one of its exits into a separate exit system. When three or more exits are required from a room, no more than two required exits shall enter into the same exit system.

(c) **Travel Distance.** 1. **In rooms.** The distance from any point in a room shall not be more than 75 feet from an exit corridor, an enclosed stairway or the exterior of the building.

EXCEPTIONS: 1. In buildings not more than two stories in height and protected throughout with smoke detectors, the distance may be increased to 90 feet.

2. In buildings protected throughout by an automatic sprinkler system, the distance may be increased to 110 feet.

2. **From any location.** All portions of unsprinklered buildings shall not be more than 150 feet from either an exterior exit door, a horizontal exit, an exit passageway or an enclosed stairway measured along the line of travel. In a building protected throughout with an automatic sprinkler system such distance may be increased to 225 feet. In buildings not more than two stories in height protected throughout with smoke detectors, the distance may be increased to 175 feet.

(d) **Exits Through Adjoining Rooms.** Interior rooms may exit through adjoining or intervening rooms, provided the total distance of travel through such rooms to an exit corridor does not exceed that specified in Subsection (c)1 above and is a direct, obvious and unobstructed path of travel. Such paths of exit travel shall not pass through kitchens, storerooms, rest rooms, closets, laboratories using hazardous materials, industrial shops or other similar places.

Foyers and lobbies constructed as required for exit corridors shall not be construed as adjoining or intervening rooms.

When the only means of exit from a room is through an adjoining or intervening room, smoke detectors shall be installed throughout the area of the common atmosphere through which the exit must pass. The detectors shall actuate alarms audible in the interior room and shall be connected to the school fire alarm system.

EXCEPTIONS: 1. When the aggregate occupant load of the interior room or rooms is 10 or less.

2. When the enclosures forming interior rooms are less than two-thirds of the floor-to-ceiling height and do not exceed 8 feet.

3. Rooms used exclusively for mechanical and public utility service to the buildings.

(e) **Corridors and Exterior Exit Balconies.** Corridor walls and ceilings shall be of not less than one-hour fire-resistive construction with openings protected as required in Section 3305(h).

EXCEPTIONS: 1. When each room used for instruction has at least one exit door directly to the exterior at ground level and when rooms used for assembly purposes have at least one-half of the required exits directly to the exterior ground level, one-hour fire-resistive construction of corridor walls and ceilings is not required.

2. Group E, Division 3 Occupancies with an occupant load of less than 30.

Any change in elevation of less than 2 feet in a corridor or exterior exit balcony shall be by means of ramps.

The width of a corridor in a Group E, Division 1 Occupancy shall be the width required by Section 3303, plus 2 feet, but not less than six feet.

EXCEPTION: When the number of occupants served is 100 or less, the corridor may be 44 inches wide.

(f) **Exit Serving Auditoriums in Group E, Division 1 Occupancy.** An exit serving an auditorium and other rooms need provide only for the capacity of whichever requires the greater width if the auditorium is not to be used simultaneously with the other rooms.

(g) **Stairs.** Each floor above or below the ground floor level shall have not less than two exit stairs and the required exit width shall be equally divided between such stairs, provided that stairs serving an occupant load of 100 or more shall be not less than 5 feet in clear width.

EXCEPTION: This subsection does not apply to rooms used for maintenance, storage and similar purposes.

(h) **Doors.** The width of exit doors shall be sufficient to accommodate the occupant load served.

(i) **Basement Rooms.** Exit stairways from a basement <u>or basement-like story</u> shall open directly to the exterior of the building without entering the first floor corridor.

(j) **Panic Hardware.** Exit doors from rooms having an occupant load of 50 or more and from corridors shall not be provided with a latch or lock unless it is panic hardware.

(k) **Fences and Gates.** School grounds may be fenced and gates therein equipped with locks, provided safe dispersal areas are located not less than 50 feet from the buildings. Dispersal areas shall be sized to provide an area of not less than 3 square feet per occupant. Gates shall not be installed across corridors or passageways leading to such dispersal areas unless they comply with exit requirements. See Section 3322 for exits from dispersal areas.

GROUP H OCCUPANCIES

Sec. 3319. Every portion of a Group H Occupancy having a floor area of 200 square feet or more shall be served by at least two separate exits.

EXCEPTION: Group H, Division 4 Occupancies having a floor area of less than 1,000 square feet may have one exit.

Within Group H, Divisions 1, 2 and 3 Occupancies, all portions of any room shall be within 75 feet of an exit door. Exit doors from a room classified as Group H, Divisions 1, 2 and 3 Occupancies shall not be provided with a latch or lock unless it is panic hardware.

Doors leading to a corridor of fire-resistive construction shall have a minimum three-fourths-hour fire protection rating; shall not have more than 100 square inches of wired glass set in steel frames; shall be maintained self-closing or shall be automatic closing as defined in Section 4306(b); and shall open in the direction of exit travel.

Within Group H, Division 7 and within fabrication areas of Group H, Division 6 Occupancies, the distance of travel to an exterior exit door, exit corridor, horizontal exit, exit passageway or an enclosed stairway shall not exceed 100 feet.

GROUP I OCCUPANCIES

Sec. 3320. (a) **Exterior Doors.** All required exterior exit doors shall open in the direction of exit travel.

(b) **Minimum Size of Exits.** The clear width of exits serving areas occupied or used by bed or litter patients shall be such that it will allow ready passage of such equipment, but shall not be less than 44 inches. Other exits shall have a clear width of not less than 32 inches. There shall be no projections into the clear width.

(c) **Corridors.** The minimum clear width of a corridor shall be determined as specified in Section 3303 (b), but shall not be less than 44 inches, except that corridors serving any area housing one or more nonambulatory persons shall not be less than 8 feet in width.

> **EXCEPTION:** Corridors serving surgical areas of Group I, Division 1.2 Occupancies shall not be less than six feet in width until reaching an exterior door, enclosed exit stairway or horizontal exit and shall not pass through an adjoining room.

Any change in elevation of the floor in a corridor serving nonambulatory persons shall be made by means of a ramp.

Corridors shall comply with Section 3305 except that in hospitals and nursing homes classified as Group I, Division 1.1 Occupancies the following exceptions apply:

1. Nurses' stations including space for doctors' and nurses' charting and communications constructed as required for corridors need not be separated from corridors.

2. Waiting areas and similar spaces constructed as required for corridors need not be separated from corridors, provided:

   (i) Each space is located to permit direct visual supervision by the facility staff, and

   (ii) The space and corridors into which the space opens are in the same smoke compartment and the space is protected by an approved electrically supervised automatic smoke-detection system.

3. Door closers need not be installed on doors to sleeping rooms.

4. Fixed fully tempered or laminated glass in wood or metal frames may be used in corridor walls, provided the glazed area does not exceed 25 percent of the area of the corridor wall of the room.

5. The total area of glass in corridor walls is not limited when the glazing is fixed 1/4-inch-thick wired glass in steel frames and the size of individual glazed panel does not exceed 1,296 square inches.

(d) ((~~**Basement**~~)) **Exits <u>from</u> <u>Basements</u> <u>or</u> <u>Basement-like</u> <u>Stories.</u>** One exit accessible to every room below grade shall lead directly to the exterior at grade level.

(e) **Ramps.** Group I, Divisions 1.1 and 1.2 Occupancies housing nonambulatory patients shall have access to a ramp leding from the first story to the exterior of the building at the ground floor level.

(f) **Hardware.** Exit doors serving an area having an occupant load of 50 or more shall not be provided with a latch or lock unless it is panic hardware. Patient room doors shall be readily openable from either side without the use of keys.

> **EXCEPTIONS:** 1. In Group I, Division 1.1 hospitals and nursing homes, locking devices, when approved, may be installed on patient sleeping rooms, provided such devices

are readily openable from the patient room side and are readily operable by the facility staff on the other side. When key locks are used on patient room doors, keys shall be located on the floor involved at a prominent location accessible to the staff.

2. In Group I, Division 3 Occupancies, approved locks or safety devices may be used where it is necessary to forcibly restrain the personal liberties of inmates or patients.

SPECIAL HAZARDS

Sec. 3321. (a) **Rooms Containing Fuel-fired Equipment or Cellulose Nitrate.** Except in Group R, Division 3 Occupancies, any room containing a boiler, furnace, incinerator or other fuel-fired equipment shall be provided with two exits when both of the following conditions exist:

1. The area of the room exceeds 500 square feet, and

2. The largest piece of fuel-fired equipment exceeds 400,000 Btu per hour input capacity.

If two exits are required, one may be a fixed ladder. Exits shall be separated by a horizontal distance not less than half the greatest horizontal dimension of the room. Interior openings between a Group H Occupancy and an incinerator room are prohibited.

(b) **Cellulose Nitrate Handling.** When cellulose nitrate is handled in film laboratories, projection rooms and film processing rooms, two exits shall be provided. Doors shall be self-closing and have a fire-protection rating of not less than one hour.

REVIEWING STANDS, GRANDSTANDS, BLEACHERS AND FOLDING AND TELESCOPING SEATING

Sec. 3322. (a) Scope. The provisions of this section apply to reviewing stands, grandstands, bleachers, and folding and telescoping seating.

(b) **Definitions.** For the purpose of this section certain terms are defined as follows:

BLEACHERS are tiered or stepped seating facilities without backrests in which an area of 3 square feet or less is assigned per person for computing the occupant load.

DISPERSAL AREA, SAFE, is an area which will accommodate a number of persons equal to the total capacity of the stand and building which it serves such that a person within the area will not be closer than 50 feet from the stand or building. Dispersal area capacity shall be determined by allowing 3 square feet of net clear area per person.

FOLDING AND TELESCOPING SEATING is a structure that is used for tiered seating of persons, and which overall shape and size may be reduced without being dismantled, for purposes of moving or storing.

FOOTBOARDS are that part of a raised seating facility other than an aisle or cross aisle upon which the occupant walks to reach a seat.

GRANDSTANDS are tiered or stepped seating facilities wherein an area of more than 3 square feet is provided for each person.

OPEN-AIR GRANDSTANDS AND BLEACHERS are seating facilities which are located so that the side toward which the audience faces is unroofed and without an enclosing wall.

PERMANENT STANDS are those seating facilities which remain at a location for more than 90 days.

REVIEWING STANDS are elevated platforms accommodating not more than 50 persons. Seating facilities, if provided, are normally in the nature of loose chairs. Reviewing stands accommodating more than 50 persons shall be regulated as grandstands.

TEMPORARY SEATING FACILITIES are those which are intended for use at a location for not more than 90 days.

(c) **Height of Reviewing Stands, Grandstands, Bleachers, and Folding and Telescoping Seating.** See Section 602 (a).

(d) **Design Requirements.** See Chapter 23 and Section 2907 (i).

(e) **General Requirements.** 1. **Row spacing.** There shall be a clear space of not less than 12 inches measured horizontally between the back or backrest of each seat and the front of the seat immediately behind it. The minimum spacing of rows of seats measured from back to back shall be:

A. Twenty-two inches for seats without backrests.

B. Thirty inches for seats with backrests.

C. Thirty-three inches for chair seating.

2. **Rise between rows.** The maximum rise from one row of seats to the next shall not exceed 16 inches unless the seat spacing from back to back measured horizontally is 40 inches or more.

> **EXCEPTION:** When automatic- or self-rising seats are installed, the rise between rows may be increased to 24 inches with the horizontal spacing back to back of 33 inches.

3. **Seating capacity determination.** When bench-type seating is used, the number of seats shall be based on one person for each 18 inches of length of the bench.

4. **Aisles.** A. **Aisles required.** Aisles shall be provided in all seating facilities except that aisles may be omitted when all of the following conditions exist:

(i) Seats are without backrests.

(ii) The rise from row to row does not exceed 12 inches per row.

(iii) The number of rows does not exceed 11 in height.

(iv) The top seating board is not over 10 feet above grade.

(v) The first seating board is not more than 20 inches above grade.

B. **Obstructions.** No obstruction shall be placed in the required width of any aisle or exitway.

C. **Width.** Aisles serving seats on both sides shall have a minimum width of 42 inches. When serving seats on only one side, the aisle shall have a minimum width of 36 inches.

The required width for aisles shall equal the greater of the two minimum required widths determined in accordance with Sections 3315 (b) and this subsection.

5. **Cross aisles and vomitories.** Cross aisles and vomitories shall not be less than 54 inches in clear width and shall extend to an exit, enclosed stairway or exterior perimeter ramp.

The required width for cross aisles shall equal the greatest of three minimum required widths determined in accordance with Section 3315 and this subsection.

6. **Stairways and ramps.** Except as otherwise provided in this item, grandstands, bleachers, and folding and telescoping seating shall comply with other applicable sections of this chapter. Stairways and ramps shall have a maximum rise and run as provided in Section 3306 (c) and Section 3307, except those within the seating facility which serve as aisles at right angles to the rows of seats where the rise shall not exceed 8 inches. Risers may also comply with the exception to Section 3315(f). When an aisle terminates at an elevation more than 8 inches above grade or floor below, the aisle shall be provided with a stairway or ramp which width is not less than the width of the aisle. Stairways and ramps shall have handrails as provided in Sections 3306 and 3307, except stairways within the seating facility which serve as aisles at right angles where handrails shall be provided at one side or along the center line. A minimum clear width of 48 inches between seats shall be provided for aisle stairways having center-aisle handrails. When there is seating on both sides of the aisle, handrails shall be discontinuous with openings at intervals not exceeding five rows for access to seating. The openings shall have a clear width of at least 22 inches and not greater than 36 inches measured horizontally, and the handrail shall have rounded terminations. When handrails are provided in the middle of the aisle stairs, there shall be an additional intermediate rail located approximately 12 inches below the top of the handrail.

7. **Guardrails.** Perimeter guardrails or enclosing walls or fencing shall be provided for all portions of elevated seating facilities which are more than 30 inches above grade or floor. Construction of guardrails shall comply with Section 1712 and Table No. 23-B. Guardrails shall be 42 inches above the rear of a seat board or 42 inches above the rear of the steps in an aisle when the guardrail is parallel and adjacent to the aisle.

> **EXCEPTION:** Guardrails at the front of the front row of seats, which are not located at the end of an aisle and where there is no cross aisle, may have a height of 26 inches and need not meet the 6-inch-maximum spacing specified in Section 1712; however, a midrail shall be installed.

The open vertical space between footboards and seats shall not exceed 9 inches when footboards are more than 30 inches above grade.

8. **Toeboards.** A 4-inch-high vertical barrier shall be installed along the edge of walking platforms whenever guardrails are required.

EXCEPTION: Toeboards shall not be required at the ends of footboards.

9. **Footboards.** Footboards shall be provided for all rows of seats above the third row or beginning at such a point where the seat is more than 2 feet above the grade or floor below. When the same platform is used for both seating and footrests, footrests are not required, provided each level or platform is not less than 24 inches wide. When aisles are required by Section 3322 (e) 4, footboards not less than 18 inches in width shall be installed between each row of seats.

(f) **Grandstands, Bleachers, and Folding and Telescoping Seating Within Buildings.** Except as otherwise provided in this section, grandstands, bleachers, and folding and telescoping seating within a building shall comply with the other applicable sections of this chapter.

EXCEPTIONS: 1. When seats are without backrests, there may be nine seats between any seat and an aisle.

2. When seats are without backrests, dead ends in vertical aisles shall not exceed a depth of 16 rows.

(g) **Open-air Grandstands, Bleachers, and Folding and Telescoping Seating.** Except as otherwise provided in Items 1 through 9 below, open-air grandstands, bleachers, and folding and telescoping seating shall comply with the other applicable sections of this chapter.

1. **Number of seats between aisles.** The number of seats between any seat and an aisle shall not be greater than 20 when the seats are without backrests and nine if the seats have backrests.

2. **Dead ends.** Dead ends in vertical aisles shall not exceed a depth of 16 rows for permanent grandstands and 26 rows for temporary grandstands.

3. **Distance to exit.** The line of travel from any seat to a safe dispersal area exit ramp, enclosed stairway or vomitory shall not be more than 200 feet. When the seats have no backrests, the distance may be a direct line measurement.

4. **Safe dispersal area.** Each safe dispersal area shall have a minimum of two exits. If more than 6,000 persons are to be accommodated within a dispersal area, there shall be a minimum of three exits and for more than 9,000 persons there shall be at least four exits. The aggregate clear width of exits from a safe dispersal area shall be determined on the basis of not less than one exit unit of 22 inches for each 500 persons to be accommodated, and no exit shall be less than 44 inches in width.

5. **Two exits required.** Two exits shall be provided from every facility which accommodates more than 300 persons.

6. **Three exits required.** Three exits shall be required when a facility or section thereof accommodates more than 1,000 persons.

7. **Four exits required.** Four exits shall be required when a facility or section thereof accommodates more than 3,000 persons.

8. **Determination of exit width.** The total width of exits in feet shall not be less than the total occupant load served divided by 150 when exiting by stairs and divided by 200 when exiting by ramps, corridors, tunnels or vomitories.

9. **Minimum exit width.** No exit shall be less than 42 inches in width.

TABLE NO. 33-A - MINIMUM EGRESS AND ACCESS REQUIREMENTS[1]

USE[2]	MINIMUM OF TWO EXITS OTHER THAN ELEVATORS ARE REQUIRED WHERE NUMBER OF OCCUPANTS IS AT LEAST	OCCUPANT LOAD FACTOR[3]	ACCESS BY MEANS OF A RAMP OR AN ELEVATOR SHALL BE PROVIDED FOR PERSONS WITH DISABILITIES AS INDICATED[1]
1. Aircraft Hangars (no repair)	10	500	YES
2. Auction Rooms	((~~30~~)) 50	7	YES
3. Assembly Areas, Concentrated Use (without fixed seats) Auditoriums Churches & Chapels Dance Floors Lobby Accessory to Assembly Occupancy Lodge Rooms Reviewing Stands Stadiums	50	7	YES[5]
3a. Waiting Areas	50	3	YES
4. Assembly Areas, Less-concentrated Use Conference Rooms Dining Rooms Drinking Establishments Exhibit Rooms Gymnasiums Lounges Stages	50	12	YES[6]
5. Bowling Alley (assume no occupant load for bowling lanes)	50	–[4]	YES
6. ((~~Children's Homes and Homes for the Aged~~)) Boarding Homes and Group Care Facilities	6	80	YES
7. Classrooms	50	((~~20~~)) 25	YES[7]
8. Congregate Residences (accommodating 10 or less persons and having an area of 3,000 square feet or less)	10	300	NO
Congregate residences (accommodating more than 10 persons or having an area of more than 3,000 square feet	10	200	YES
9. Courtrooms	50	40	YES
10. Dormitories	10	50	YES
11. Dwellings	10	300	NO
12. Exercising Rooms	50	50	Yes
13. Garage, Parking	30	200	Yes[8]

TABLE NO. 33-A - MINIMUM EGRESS AND ACCESS REQUIREMENTS[1]
(continued)

USE[2]	MINIMUM OF TWO EXITS OTHER THAN ELEVATORS ARE REQUIRED WHERE NUMBER OF OCCUPANTS IS AT LEAST	OCCUPANT LOAD FACTOR[3]	ACCESS BY MEANS OF A RAMP OR AN ELEVATOR SHALL BE PROVIDED FOR PERSONS WITH DISABILITIES AS INDICATED[1]
14. Hospitals, ((~~and Sanitariums,~~))Nursing Homes, Psychiatric Hosptials, Alcoholism Detoxification Facilities and Residential Treatment Facilities, and Maternity Homes:			
Sleeping Rooms	6	80	Yes
Treatment Rooms	10	80	Yes
Health-care centers	10	80	Yes
15. Hotels, and apartments; all Group R Alcoholism Treatment Facilities	10	200	Yes
16. Kitchen - Commercial	30	200	Yes
16a. Laboratories (B-2) Instructional and teaching laboratories at colleges	10	50	Yes
All other B-2 labs	10	100	Yes
Group E Laboratories	See Sec. 804		
17. Library Reading Room	50	50	Yes
18. Locker Rooms	30	50	Yes
19. Malls - (See Chapter 56)	--	--	---
20. Manufacturing Areas	30	200	Yes
21. Mechanical Equipment Room (For electrical equipment areas, see also Sections 110-16 and 110-33 of the Seattle Electrical Code.)	30	300	No
22. Nurseries for Children, Day Care Centers, Day Treatment Centers and Mini-day Care Centers, Preschools	7	35	Yes
23. Offices without sprinkler protection	((~~30~~)) 50	100	Yes
Offices on floors protected by an automatic sprinkler system	50	130[9]	Yes[9]
24. School Shops and Vocational Rooms	50	50	Yes
25. Skating Rinks	50	50 on the skating area; 15 on the deck	Yes

TABLE NO. 33-A - MINIMUM EGRESS AND ACCESS REQUIREMENTS[1]
(continued)

USE[2]	MINIMUM OF TWO EXITS OTHER THAN ELEVATORS ARE REQUIRED WHERE NUMBER OF OCCUPANTS IS AT LEAST	OCCUPANT LOAD FACTOR[3]	ACCESS BY MEANS OF A RAMP OR AN ELEVATOR SHALL BE PROVIDED FOR PERSONS WITH DISABILITIES AS INDICATED[1]
26. Storage and Stock Rooms	30	300	No
27. Stores - Retail Sales Rooms	50	30	Yes
28. Swimming Pools	50	50 for the pool area; 15 on the deck	Yes
29. Warehouses	30	500	No
30. All Others	50	100	Yes

[1] Access to and egress from buildings for persons with disabilities shall be provided as specified in ((~~Chapter 31.~~)) the Washington State Regulations for Barrier-Free Facilities, Chapter 51-10 Washington Administrative Code.

[2] For additional provisions on number of exits from Group H and I Occupancies and from rooms containing fuel-fired equipment or cellulose nitrate, see Sections 3319, 3320 and 3321, respectively.

[3] This table shall not be used to determine working space requirements per person.

[4] Occupant load based upon five persons for each alley, including 15 feet of runway.

[5] Reviewing stands, grandstands, bleachers and folding and telescoping bleachers need not comply.

[6] Access requirements for conference rooms, dining rooms, lounges and exhibit rooms that are part of an office use shall be the same as required for the office use.

[7] When the floor closest to the grade offers the same programs and activities available on other floors, access to the other floors may be by stairs only, except when the only available toilet facilities are on other levels.

[8] An elevator is not required where an accessible route of travel is provided from accessible parking spaces on levels with accessible horizontal connections to the primary building served.

[9] For the purposes of compliance with the Washington State Regulations for Barrier-Free Facilities, an occupant load factor of 100 shall be used.

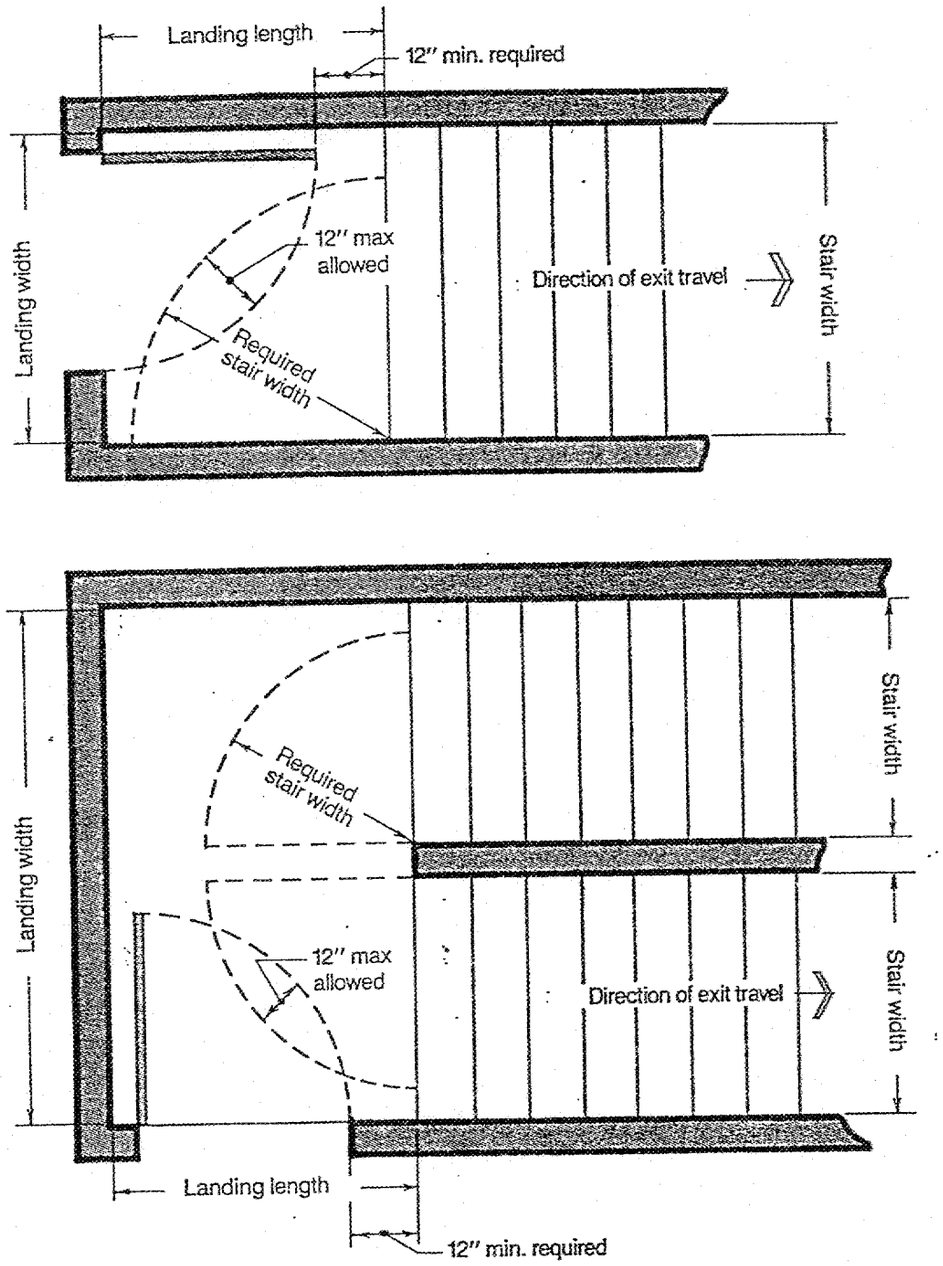

Landing length
12" min. required
Landing width
12" max allowed
Required stair width
Direction of exit travel
Stair width
Stair width
Required stair width
Landing width
12" max allowed
Direction of exit travel
Stair width
Landing length
12" min. required

Figure 33-1

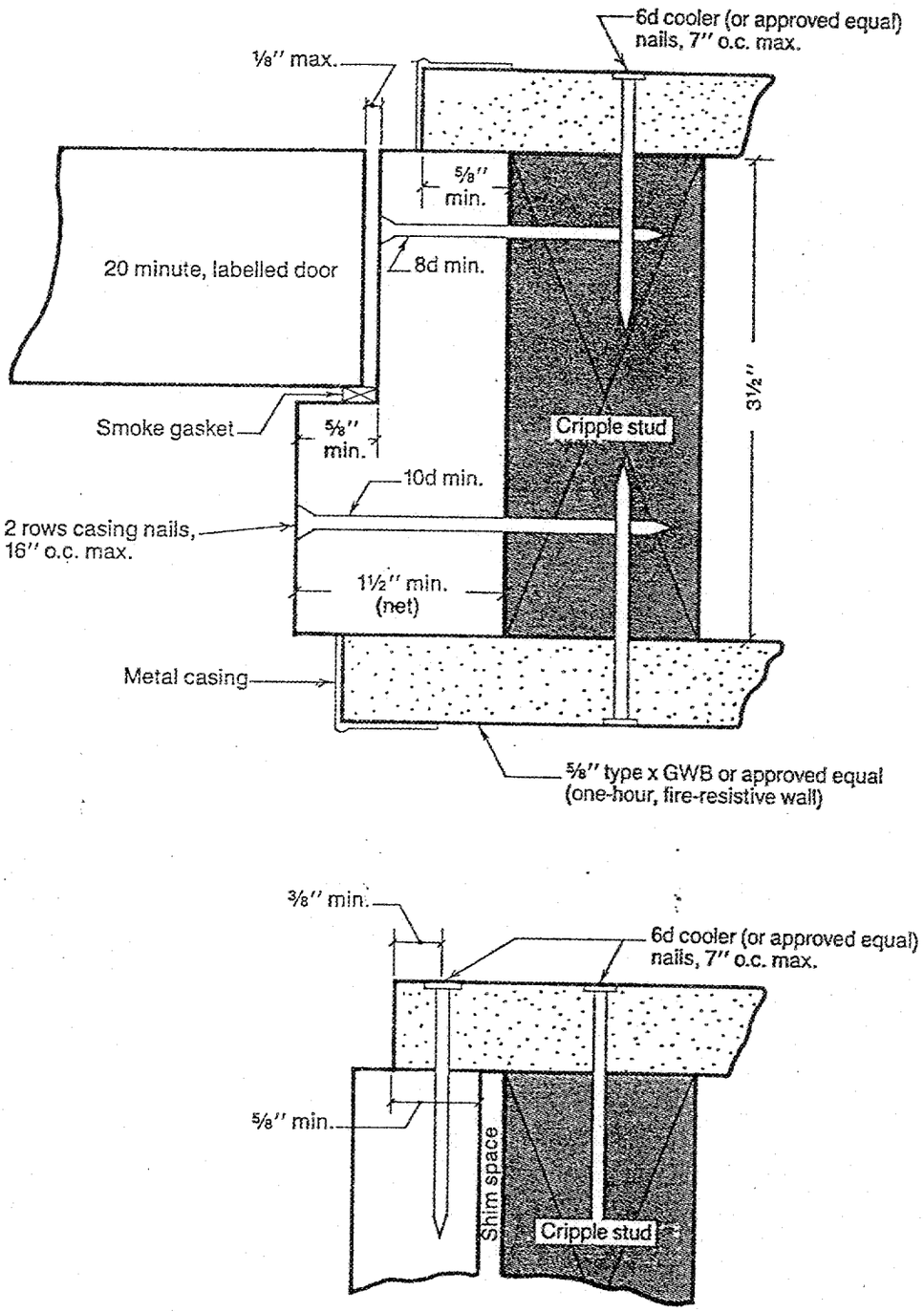
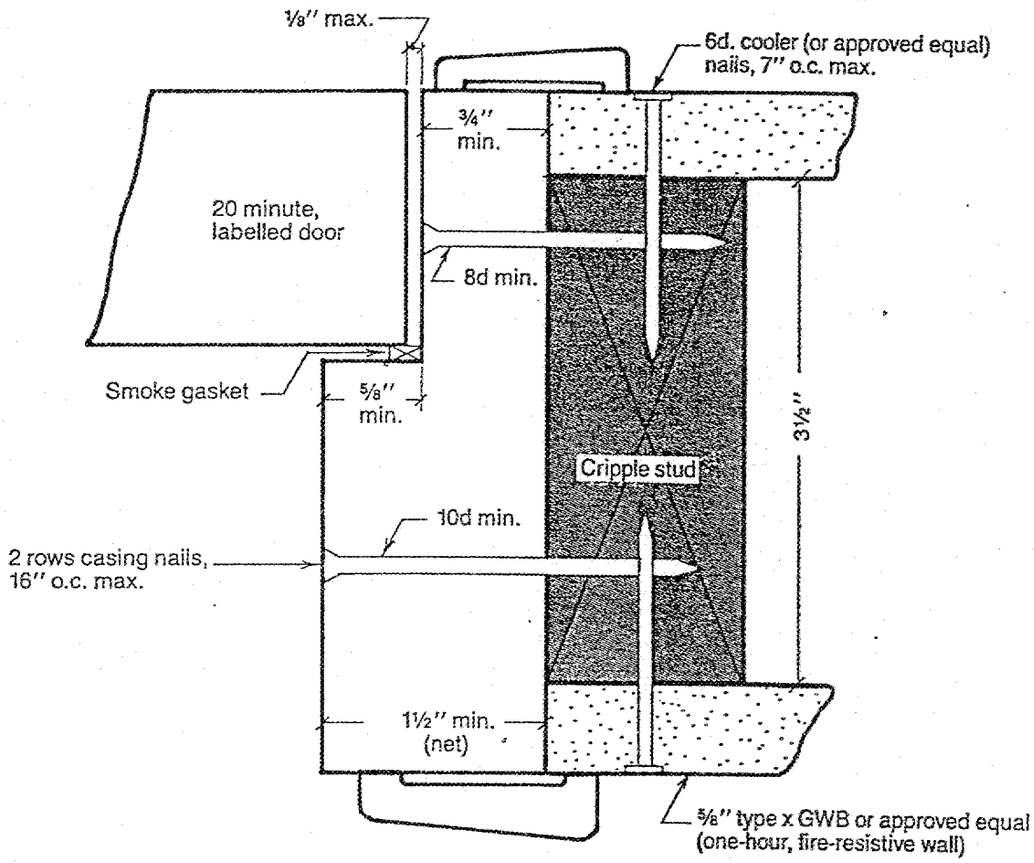

6d cooler (or approved equal) nails, 7" o.c. max.
1/8" max.
5/8" min.
20 minute, labelled door
8d min.
3 1/2"
Smoke gasket
5/8" min.
Cripple stud
10d min.
2 rows casing nails, 16" o.c. max.
1 1/2" min. (net)
Metal casing
5/8" type x GWB or approved equal (one-hour, fire-resistive wall)
3/8" min.
6d cooler (or approved equal) nails, 7" o.c. max.
5/8" min.
Shim space
Cripple stud

Figure 33-2(a)


1/8" max.
6d. cooler (or approved equal) nails, 7" o.c. max.
3/4" min.
20 minute, labelled door
8d min.
Smoke gasket
5/8" min.
3 1/2"
Cripple stud
10d min.
2 rows casing nails, 16" o.c. max.
1 1/2" min. (net)
5/8" type x GWB or approved equal (one-hour, fire-resistive wall)

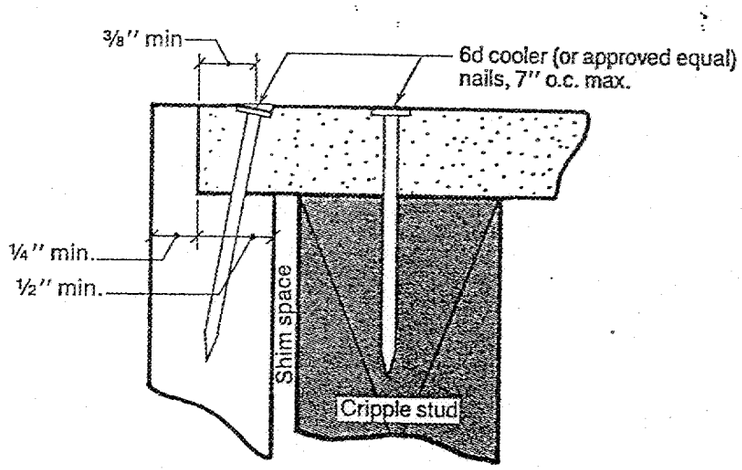

3/8" min
6d cooler (or approved equal) nails, 7" o.c. max.
1/4" min.
1/2" min.
Shim space
Cripple stud

Figure 33-2(b)

Section 116. Chapter 35 of the Uniform Building Code, 1991 Edition, is amended as follows.

Chapter 35

SOUND TRANSMISSION CONTROL

SOUND TRANSMISSION CONTROL

Sec. 3501. (a) **General.** In Group R, Division 1 and Group R, Division 3 duplex Occupancies, interior wall and floor-ceiling assemblies separating dwelling units or guest rooms from each other and from public space such as interior corridors and service areas shall provide airborne sound insulation for walls, and both airborne and impact sound insulation for floor-ceiling assemblies.

The standards listed below are guideline standards and as such are not adopted as part of this code (see Sections 6002 and 6003).

1. ASTM E90 and E413, Laboratory Determination of Airborne Sound Transmission Class (STC)

2. ASTM E492, Impact Sound Insulation

3. ASTM E336, Airborne Sound Insulation Field Test

Interior wall and floor-ceiling assemblies which provide an occupancy separation between Group R, Division 1 and Group R, Division 3, duplex Occupancies shall provide airborne and impact sound insulation as required for walls and floor-ceiling assemblies separating dwelling units.

Joints in the perimeter of such separating wall or floor-ceiling assemblies shall be acoustically sealed with a permanent resilient material approved for such purpose. The separating wall or floor-ceiling assembly shall extend completely to and be sealed to another separating assembly or an exterior wall, roof or floor assembly.

Conduits, ducts, pipes and vents within such wall or floor-ceiling assemblies causing vibration shall be reasonably isolated from the building construction at points of support by means of resilient sleeves, mounts or underlayments. All other openings through which such conduits, ducts, pipes or vents pass shall have the excess opening fully sealed with insulative and permanently resilient materials approved for such purpose.

Design and materials for sound transmission control shall not impair the fire-resistive integrity of separating walls or floor-ceiling assemblies required to be of fire-resistive construction.

(b) **Airborne Sound Insulation.** All such separating walls and floor-ceiling assemblies shall provide an airborne sound insulation equal to that required to meet a Sound Transmission Class (STC) of 50 ((~~(45 if field tested)~~)).

((~~Penetrations or openings in construction assemblies for piping, electrical devices, recessed cabinets, bathtubs, soffits, or~~

~~heating, ventilating or exhaust ducts shall be sealed, lined, insulated or otherwise treated to maintain the required ratings.~~))

EXCEPTION: Dwelling unit or guest room ((~~E~~))entrance doors from interior corridors and interconnecting doors between separate units ((~~together with their~~)) shall have perimeter seals and such door assemblies shall have a ((~~laboratory-tested~~)) sound transmission class (STC) rating of not less than ((~~26~~)) 28 ((~~and such perimeter seals shall be maintained in good operating condition.~~))

Electrical outlet boxes shall not be placed back-to-back and shall be offset by not less than 12 inches from outlets in the opposite wall surface and back and sides of boxes shall be sealed with one-eighth-inch resilient sealant and backed by a minimum of 2-inch thick material fiber insulation or approved equivalent.

Metal ventilating and conditioned air ducts shall be lined where necessary to reduce sound transmission between dwelling units.

(c) **Impact Sound Insulation.** All separating floor-ceiling assemblies between separate units or guest rooms and all floor-ceiling assemblies which provide an occupancy separation shall provide impact sound insulation equal to that required to meet an impact insulation class (IIC) of 50 ((~~(45 if field tested)~~)). Floor coverings may be included in the assembly to obtain the required ratings ((~~and must be retained as a permanent part of the assembly and may be replaced only by other floor covering that provides the same sound insulation required above.~~))

EXCEPTION: Floor assemblies in the bathrooms of Group R, Division 1 Occupancies are not required to meet the impact insulation class of 50 where structural concrete floor systems are used.

(d) **Tested Assemblies.** ((~~Field or 1~~))Laboratory tested wall or floor-ceiling designs having an STC or IIC of 50 ((~~or more may be used without additional field testing when, in the opinion of the building official, the tested design has not been compromised by flanking paths. Tests may be required by the building official when evidence of compromised separations is noted.~~)) wall or floor-ceiling designs field tested by U.B.C. Standard No. 35-3 having a minimum FSTC or FIIC rating of 45 may be used.

(e) **Field Testing and Certification.** Field testing, ((~~when required,~~)) when permitted to determine airborne sound transmission or impact sound insulation class, shall be done in accordance with U.B.C. Standard Test Procedure 35-2 or 35-3 under the supervision of a professional acoustician who shall be experienced in the field of acoustical testing and engineering and who shall forward certified test results to the building official that minimum sound insulation requirements stated above have been met.

((~~(f) Airborne Sound Insulation Field Tests. When required, airborne sound insulation shall be determined according to the applicable Field Airborne Sound Transmission Loss Test procedures. All sound transmitted from the source room to the receiving room shall be considered to be transmitted through the test partition.~~))

(f) **Mechanical Equipment Spaces.** Spaces or shafts containing air conditioning, refrigeration or ventilating equipment, elevator machinery, or other mechanical equipment shall be separated both vertically and horizontally from adjoining dwelling units or guest rooms by construction designed to provide a minimum STC rating of 50.

((~~(g) Impact Sound Insulation Field Test. When required, impact sound insulation shall be determined~~.

~~SOUND TRANSMISSION CONTROL SYSTEMS~~

~~Sec. 3502. Generic systems as listed in the Fire Resistance Design Manual, Twelfth Edition, dated August 1988, as published by the Gypsum Association may be accepted where a laboratory test indicates that the requirements of Section 3501 are met by the system.~~))

Section 117. Subsection 3601(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Construction.** Roof structures shall be constructed with walls, floors and roof as required for the main portion of the building.

EXCEPTIONS: 1. On Types I and II-F.R. buildings, the exterior walls and roofs of penthouses which are 5 feet or more from an adjacent property line may be of one-hour fire-resistive noncombustible construction.

2. On Types III and IV buildings, walls not less than 5 feet from an adjacent property line may be of one-hour fire-resistive noncombustible construction.

3. Enclosures housing only mechanical equipment and located at least ((~~20~~)) 16 feet from adjacent property lines may be of unprotected noncombustible construction.

4. On one-story buildings, unroofed mechanical equipment screens, fences or similar enclosures may be of combustible construction when located at least ((~~20~~)) 16 feet from adjacent property lines and when not exceeding 4 feet in height above the roof surface.

The restrictions of this subsection shall not prohibit the placing of wood flagpoles or similar structures on the roof of any building.

Section 118. Subsection 3703(h) of the Uniform Building Code, 1991 Edition, is repealed.

Section 119. Section 3704 of the Uniform Building Code, 1991 Edition, is amended as follows:

MASONRY CHIMNEYS

Sec. 3704. (a) **Design.** Masonry chimneys shall be designed and constructed to comply with Sections 3703(b) and 3704(b).

(b) **Walls.** Walls of masonry chimneys shall be constructed as set forth in Table No. 37-B.

(c) **Reinforcing and Seismic Anchorage.** Unless a specific design is provided, every masonry or concrete chimney ((~~in Seismic Zones Nos. 2, 3 and~~ 4)) shall be reinforced with not less than four No. 4 steel reinforcing bars conforming to the provisions of Chapter 24 or 26 of this code. The bars shall extend from the top of the smoke chamber to the chimney cap in a fireplace and the full height of the chimney not serving a fireplace and shall be spliced in accordance with the applicable requirements of Chapters 24 and 26. In masonry chimneys the vertical bars shall have a minimum cover of 1/2 inch of grout or mortar tempered to a pouring consistency. The bars shall be tied horizontally at ((~~18~~)) not more than 16-inch intervals for concrete products in running bond, 9-inch intervals for all other products, with not less than 1/4-inch-diameter steel ties or 4-inch standard weight masonry joint reinforcement when one of the following occurs:

1. The distance between the vertical bars and the exterior face of the chimney is greater than 20 inches, or

2. The distance between the vertical bars is greater than 28 inches.

Regardless of vertical bar spacing, horizontal reinforcement shall be provided at all floor and ceiling lines as well as in the chimney cap. The slope of the inclined portion of the offset in vertical bars shall not exceed 1 inch horizontal in 2 inches vertical. ((~~Two ties shall also be placed at each bend in vertical bars.~~)) Where the width of the chimney exceeds ((~~40~~)) 60 inches, two additional No. 4 vertical bars shall be provided for each additional flue incorporated in the chimney or for each additional ((~~40~~)) 60 inches in width or fraction thereof.

((~~In Seismic Zones Nos. 2, 3 and 4,~~)) All masonry and concrete chimneys shall be anchored at each floor or ceiling line more than 6 feet above grade, except when constructed completely within the exterior walls of the building. Anchorage shall consist of two 3/16-inch by 1-inch or equivalent steel straps ((~~cast at least 12 inches into the chimney with a 180-degree bend with a 6-inch extension around the vertical reinforcing bars in the outer face of the chimney~~)) connected around the nearest vertical bars with a 180-degree bend or a 90-degree bend with an extension of at least 6 inches into the grout space. When straps are connected around the vertical bars in the outer face of the chimney as specified above for the nearest vertical bars, horizontal reinforcement will not be required at floor and ceiling lines and in the chimney cap provided the distance between the vertical bars and the exterior face of the chimney is not greater than 20 inches and the distance between vertical bars is not greater than 28 inches.

Each strap shall be fastened to the structural framework of the building with two 1/2-inch-diameter bolts per strap. Where the joists do not head into the chimney, the anchor strap shall be connected to 2-inch by 4-inch ties crossing a minimum of four joists. The ties shall be connected to each joist with two 16d nails. As an alternative to the 2-inch by 4-inch ties, each anchor strap shall be connected to the structural framework by two 1/2-inch-diameter bolts in an approved manner. ((~~Metal chimneys shall be anchored at each joist with two 1-1/2-inch by~~

~~1/8-inch metal straps looped around the outside of the chimney installations and nailed with six 8d nails per strap to the roof or ceiling framing.~~))

(d) **Chimney Offset.** Masonry chimneys may be offset at a slope of not more than 4 inches in 24 inches, but not more than one-third the dimension of the chimney, in the direction of the offset. The slope of the transition from the fireplace to the chimney shall not exceed 1 inch horizontal in 2 inches vertical.

(e) **Change in Size or Shape.** Changes in the size or shape of a masonry chimney, where the chimney passes through the roof, shall not be made within a distance of 6 inches above or below the roof joists or rafters.

(f) **Separation of Masonry Chimney Passageways.** ((~~Two~~)) Three or more flues in a chimney shall be separated such that there are no more than two adjacent flues. Interior voids greater than 24 inches in any dimension shall be separated. The separation shall be by masonry not less than 4 inches thick bonded into the masonry wall of the chimney. Reinforcing and anchorage shall be provided as specified in subsection (c) above.

(g) **Inlets.** Every inlet to any masonry chimney shall enter the side thereof and shall be of not less than 1/8-inch-thick metal or 5/8-inch-thick refractory material. Where there is no other opening below the inlet other than the cleanout, a masonry plug shall be constructed in the chimney not more than 16 inches below the inlet and the cleanout shall be located where it is accessible above the plug. If the plug is located less than 6 inches below the inlet, the inlet may serve as the cleanout.

Section 120. Section 3706 of the Uniform Building Code, 1991 Edition, is amended as follows:

METAL CHIMNEYS

Sec. 3706. Metal chimneys shall be constructed and installed to meet the requirements of the Mechanical Code. Metal chimneys shall be anchored at each joist with two 1-1/2-inch by 1/8-inch metal straps looped around the outside of the chimney installations and nailed with six 8d nails per strap to the roof or ceiling framing.

Section 121. Section 3707 of the Uniform Building Code, 1991 Edition, is amended as follows:

MASONRY AND CONCRETE FIREPLACES AND BARBECUES

Sec. 3707. (a) **General.** Masonry fireplaces, barbecues, smoke chambers and fireplace chimneys shall be of masonry or reinforced concrete and shall conform to the requirements of this section. The building official shall accept fireplaces designed and constructed in accordance with the "Residential Fireplace & Chimney Construction Standards" promulgated by the Masonry Institute of Washington. See Seattle Energy Code and Seattle Mechanical Code for additional requirements.

(b) **Support.** Masonry fireplaces shall be supported on foundations designed as specified in Chapters 23, 24, and 29.

When an approved design is not provided, foundations for masonry and concrete fireplaces shall not be less than 12 inches thick, extend not less than 6 inches outside the fireplace wall and project below the natural ground surface in accordance with the depth of foundations set forth in Table No. 29-A.

(c) **Fireplace Walls.** Masonry walls of fireplaces shall not be less than 8 inches in thickness in the back and 7 inches in thickness on the sides. ((~~Walls of fireboxes shall not be less than 10 inches in thickness, except that where a lining of fire-brick is used, such walls shall not be less than a total of 8 inches in thickness.~~)) The firebox shall not be less than 20 inches in depth measured from the back of the firebox to the finished face of the fireplace and shall be lined with 4-1/2 inches of firebrick laid flat in the back and 2-1/2 inches of firebrick on the sides. Joints in firebrick shall not exceed 1/4 inch.

(d) **Hoods.** Metal hoods used as part of a fireplace or barbecue shall not be less than No. 19 gauge copper, galvanized steel or other equivalent corrosion-resistant ferrous metal with all seams and connections of smokeproof unsoldered constructions. The hoods shall be sloped at an angle of 45 degrees or less from the vertical and shall extend horizontally at least 6 inches beyond the limits of the firebox. Metal hoods shall be kept a minimum of 18 inches from combustible materials unless approved for reduced clearances.

(e) **Metal Heat Circulators.** Approved metal heat circulators may be installed in fireplaces.

(f) **Smoke Chamber.** Front and side walls shall not be less than 8 inches in thickness. Smoke chamber back walls shall not be less than 6 inches in thickness.

(g) **Chimneys.** Chimneys for fireplaces shall be constructed as specified in Sections 3703, 3704 and 3705 for residential-type appliances.

(h) **Clearance to Combustible Material.** Combustible materials shall not be placed within 2 inches of fireplace, smoke chamber or chimney walls. Combustible material shall not be placed within 6 inches of the fireplace opening. No such combustible material within 12 inches of the fireplace opening shall project more than 1/8 inch for each 1-inch clearance from such opening.

No part of metal hoods used as part of a fireplace or barbecue shall be less than 18 inches from combustible material. This clearance may be reduced to the minimum requirements specified in the Mechanical Code.

(i) **Areas of Flues, Throats and Dampers.** The net cross-sectional area of the flue and of the throat between the firebox and the smoke chamber of a fireplace shall not be less than as set forth in Table No. 37-A. Tight-fitting metal dampers equivalent to not less than No. 12 gauge steel shall be installed. When fully opened, damper openings shall not be less than 90 percent of the required flue area.

(j) **Lintel.** Masonry over the fireplace opening shall be supported by a noncombustible lintel.

(k) **Hearth.** Masonry fireplaces shall be provided with a brick, concrete, stone or other approved noncombustible hearth slab. This slab shall ((~~not~~)) be lined with 2-1/2 inches of firebrick and shall not be less than ((4)) 6 inches ((~~thick and~~)) in total thickness. It shall be supported by noncombustible materials or reinforced to carry its own weight and all imposed loads. Combustible forms and centering shall be removed.

(l) **Hearth Extensions.** ((~~Hearths shall extend~~)) Masonry fireplaces shall be provided with a brick, concrete, stone or other approved noncombustible hearth extension, extending at least 16 inches from the front of, and at least 8 inches beyond each side of, the fireplace opening. Where the fireplace opening is 6 square feet or larger, the hearth extension shall extend at least 20 inches in front of, and at least 12 inches beyond each side of, the fireplace opening. It shall not be less than 4 inches thick when reinforced to carry its own weight and all imposed loads, and not less than 2 inches thick when supported by approved noncombustible materials.

Except for fireplaces which open to the exterior of the building, the hearth slab shall be readily distinguishable from the surrounding or adjacent floor.

(m) **Fire Blocking.** Fire blocking between chimneys and combustible construction shall meet the requirements specified in Section 2516.

(n) **Nonconforming Fireplaces.** Imitation and other fireplaces not conforming to the other requirements of this section shall not exceed 6 inches in depth. Gas-burning appliances may be installed in such nonconforming fireplaces, provided that compliance is made in accordance with the requirements of the Mechanical Code.

Section 122. Subsection 3801(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Standards.** Fire-extinguishing systems shall comply with U.B.C. Standards Nos. 38-1 and 38-2.

EXCEPTIONS: 1. Automatic fire-extinguishing systems not covered by U.B.C. Standard No. 38-1 or 38-2 shall be approved and installed in accordance with approved standards.

2. Automatic sprinkler systems may be connected to the domestic water-supply main when approved by the ((~~building official~~)) fire chief, provided the domestic water supply is of adequate pressure, capacity and sizing for the combined domestic and sprinkler requirements. In such case, the sprinkler system connection shall be made between the public water main or meter and the building shutoff valve, and there shall not be intervening valves or connections. The fire department connection may be omitted when approved by the fire department.

3. Automatic sprinkler systems in Group R Occupancies four stories or less may be in accordance with U.B.C. Standard No. 38-3. ((~~When residential sprinkler systems as set forth in U.B.C. Standard No. 38-3 are provided,~~

~~exceptions to, or reductions in, code requirements based upon the installation of an automatic fire-extinguishing system shall not be allowed.~~))

4. The sprinkler alarm valve for an automatic sprinkler system may be omitted when the sprinkler system serves less than 6 heads or where the system is connected to an approved fire alarm system.

Section 123. Subsection 3801(e) of the Uniform Building Code, 1991 Edition, is amended as follows:

(e) **Modifications.** ((~~When a residential sprinkler system as set forth in U.B.C. Standard No. 38-1 is provided, exception to, or reductions in, code requirements allowed because of the installation of an automatic fire-extinguishing system are not permitted.~~)) When residential sprinkler systems as set forth in U.B.C. Standard No. 38-3 are provided, exceptions to, or reductions in, code requirements based on the installation of an automatic fire-extinguishing system are not allowed.

Section 124. Section 3801 of the Uniform Building Code, 1991 Edition, is amended by adding a new Subsection 3801(f) as follows:

(f) **Insulation Around Sprinklers.** When sprinklers are installed in an insulated ceiling cavity not meeting exceptions of U.B.C. Standard No. 38-1 or in locations where the discharge from the sprinkler head would be blocked by ducts or other similar obstructions, a space 6 inches or greater in depth with not less than 12 inches clearance from ducts or other similar obstructions shall be provided under all sprinkler heads.

Section 125. Section 3802 of the Uniform Building Code, 1991 Edition, is amended as follows:

AUTOMATIC FIRE-EXTINGUISHING SYSTEMS

Sec. 3802. (a) **Where Required.** An automatic fire-extinguishing system shall be installed in the occupancies and locations as set forth in this section.

For provisions on special hazards and hazardous materials, see the Fire Code.

(b) **All Occupancies Except Group R, Division 3 and Group M.** Except for Group R, Division 3 and Group M Occupancies, an automatic sprinkler system shall be installed:

1. In every story or basement of all buildings when the floor area exceeds 1,500 square feet and there is not provided at least 20 square feet of opening entirely above the adjoining ground level in each 50 lineal feet or fraction thereof of exterior wall in the story or basement on at least one side of the building. Openings shall have a minimum dimension of not less than 30 inches. Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that fire fighting or rescue cannot be accomplished from the exterior.

When openings in a story are provided on only one side and the opposite wall of such story is more than 75 feet from such openings, the story shall be provided with an approved automatic sprinkler system, or openings as specified above shall be provided on at least two sides of an exterior wall of the story.

If any portion of a basement or basement-like story is located more than 75 feet from openings required in this section, the basement or basement-like story shall be provided with an approved automatic sprinkler system.

2. At the top of rubbish and linen chutes and in their terminal rooms. Chutes extending through three or more floors shall have additional sprinkler heads installed within such chutes at alternate floors. Sprinkler heads shall be accessible for servicing.

((~~3. In rooms where nitrate film is stored or handled.~~))

3.((~~4.~~)) In protected combustible fiber storage vaults as defined in the Fire Code.

4. In waterfront structures as specified in Sections 5905(c) and 5906(i).

5. In warehouses, factories, workshops and stores which are not otherwise covered by this section, where height exceeds four stories.

(c) **Group A Occupancies.** 1. **Drinking establishments.** An automatic sprinkler system shall be installed in rooms used by the occupants for the consumption of alcoholic beverages and unseparated accessory uses where the total area of such unseparated rooms and assembly uses exceeds 5,000 square feet. For uses to be considered as separated, the separation shall not be less than as required for a one-hour occupancy separation. The area of other uses shall be included unless separated by at least a one-hour occupancy separation.

2. **Basements.** An automatic sprinkler system shall be installed in basements or basement-like stories classified as a Group A Occupancy when the basement is larger than 1,500 square feet in floor area.

3. **Exhibition and display rooms.** An automatic sprinkler system shall be installed in Group A Occupancies which have more than 12,000 square feet of floor area which can be used for exhibition or display purposes.

4. **Stairs.** An automatic sprinkler system shall be installed in enclosed usable space below or over a stairway in Group A, Divisions 2, 2.1, 3 and 4 Occupancies. See Section 3309(f).

5. **Multitheater complex.** Every building containing a multitheater complex.

6. **Amusement buildings.** An automatic sprinkler system shall be installed in all permanent and portable amusement buildings. The main water-flow switch shall be electrically supervised. The sprinkler main cutoff valve shall be supervised. When the amusement building is ((~~temporary~~)) portable, the sprinkler water-supply system may be of an approved temporary type.

EXCEPTION: An automatic sprinkler system need not be provided when the floor area of a ((~~temporary~~)) portable amusement building is less than 1,000 square feet and the exit travel distance from any point is less than 50 feet.

7. **Other areas.** An automatic sprinkler system shall be installed under the roof and gridiron, in the tie and fly galleries, and in all places behind the proscenium wall of stages; over and within permanent platforms in excess of 500 square feet in area; and in dressing rooms, workshops and storerooms accessory to such stages or permanent platforms.

EXCEPTIONS: 1. Stages or platforms open to the auditorium room on three or more sides.

2. Altars, pulpits or similar platforms and their accessory rooms.

3. Stage gridirons when side-wall sprinklers with 135°F. rated heads with heat-baffle plates are installed around the entire perimeter of the stage except for the proscenium opening at points not more than 30 inches below the gridiron or more than 6 inches below the baffle plate.

4. Under stage or under platform areas less than 4 feet in clear height used exclusively for chair or table storage and lined on the inside with materials approved for one-hour fire-resistive construction.

(d) **Group B Occupancies.** 1. **Division 2 Occupancies.** An automatic sprinkler system shall be installed in retail sales rooms or storage rooms for combustible materials classed as Group B, Division 2 Occupancies where the floor area exceeds 12,000 square feet on any floor or 24,000 square feet on all floors or in Group B, Division 2 retail sales occupancies more than three stories in height. The area of mezzanines shall be included in determining the areas where sprinklers are required.

An automatic sprinkler system shall be installed in liquor stores and warehouses.

2. **Basement or Basement-like Story.** In any basement or basement-like story used for automobile parking or for the storage or sale of combustible materials.

EXCEPTIONS: 1. Portions of the basement or basement-like story not containing combustible materials and protected by a one-hour fire-resistive occupancy separation.

2. Storage rooms not exceeding 500 square feet in area, protected by a one-hour fire-resistive occupancy separation, containing no material classified as a flammable liquid, hazardous material or highly combustible material, and served by exterior fire access or interior access by a one-hour fire-resistive corridor as specified in Section 3305. No more than 3 such rooms shall be permitted in any one basement or basement-like story.

3. In other than a Group M Occupancy, passenger car parking when the ceiling is at least a one-hour occupancy separation; Fire Department access is provided which complies with Section 3802(b)1; an additional opening, other than an exit stair serving upper floors, is provided

opposite the Fire Department access openings; automatic heat detection connected to the building fire alarm system is provided and an approved central station monitor is provided in buildings requiring a fire alarm system.

(e) **Group E Occupancies. 1. Basements.** An automatic sprinkler system shall be installed in basements or basement-like stories classified as a Group E Occupancy when the basement or basement-like story is larger than 1,500 square feet in floor area.

2. **Stairs.** An automatic sprinkler system shall be installed in enclosed usable space below or over a stairway in Group E Occupancies. See Section 3309(f).

3. **Boiler Rooms.** In every boiler room or room containing a central heating plant below usable space unless separated by a three-hour fire-resistive occupancy separation.

(f) **Group H Occupancies.** 1. **General.** An automatic fire-extinguishing system shall be installed in Group H, Divisions 1, 2, 3 and 7 Occupancies.

2. **Division 4.** An automatic fire-extinguishing system shall be installed in Group H, Division 4 Occupancies having a floor area of more than 3,000 square feet.

3. **Division 6.** An automatic fire-extinguishing system shall be installed throughout buildings containing Group H, Division 6 Occupancies. The design of the sprinkler system shall not be less than that required under U.B.C. Standard No. 38-1 for the occupancy hazard classifications as follows:

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 3
Service corridors	Ordinary Hazard Group 3
Storage rooms without dispensing	Ordinary Hazard Group 3
Storage rooms with dispensing	Extra Hazard Group 2
Exit corridors	Ordinary Hazard Group 3[1]

[1] When the design area of the sprinkler system consists of a corridor protected by one row of sprinklers, the maximum number of sprinklers that needs to be calculated is 13.

(g) **Group I Occupancies.** An automatic sprinkler system shall be installed in Group I Occupancies.

EXCEPTION: In jails, prisons and reformatories, the piping system may be dry, provided a manually operated valve is installed at a continuously monitored location. Opening of the valve will cause the piping system to be charged. Sprinkler heads in such systems shall be equipped with fusible elements or the system shall be designed as required for deluge systems in U.B.C. Standard No. 38-1.

((~~(h) **Group R, Division 1 Occupancies.** An automatic sprinkler shall be installed throughout apartment houses three or more stories in height or containing 16 or more dwelling units, in congregate residences three or more stories in height and having an occupant load of 50 or more and in hotels three or more stories in height or containing 20 or more guest rooms. Residential or quick-response standard sprinklers shall be used in the dwelling units and guest rooms portions of the building.~~))

(h) **Group R Occupancies.** 1. **General.** An automatic sprinkler system shall be installed in any Group R occupancy hereafter constructed which does not have approved fire department access, which does not have adequate fire flow or which is located more than 500 feet from the nearest hydrant.

EXCEPTION: For Group, Division 3 Occupancies, the Chief may authorize a greater distance but in no case more than 1,000 feet to the nearest hydrant.

2. **Group R, Division 1 Occupancies.** An automatic sprinkler system shall be installed in Group R, Division 1 Occupancies as follows:

A. Any building having three or more stories of height; or

B. Any building having two stories (floors) of Group R, Division 1 Occupancy located above any occupancy other than:

(i) Group M;

(ii) Group B, Division 1 parking garage; or

(iii) Storage, mechanical or laundry or similar rooms accessory to the R-1 occupancy.

C. Any apartment building containing five or more dwelling units; or

D. Any hotel containing ten or more guest rooms.

E. Any congregate residence of 50 or more occupants.

3. **Determination of Stories.** For the purpose of this section, in mixed occupancy buildings, the number of stories shall be determined based on the total building, not just those stories occupied by the Group R, Division 1 Occupancy, provided other occupancies shall be sprinklered when specifically required for each occupancy.

4. **Area Separation Walls.** Area separation walls may be used as provided in Section 505 of this code (of the Building Code) provided, for this purpose of this subsection, the total number of dwelling units or total number of Guest rooms shall be determined based on the complete, attached building regardless of any area separation walls.

5. **Sprinkler Systems.** Sprinkler systems installed in Group R, Division 3 occupancies may comply with NFPA Standard 13D. Sprinkler systems installed in Group R, Division 1 occupancies may be installed in accordance with NFPA Standard 13R (Uniform Building Code Standard No. 38-3); however, provided where a sprinkler system is required throughout, the system shall comply with N.F.P.A. 13 (Uniform Building Code Standard No. 38-1). With either standard, residential sprinkler heads shall be used in the dwelling unit and guest room portions of the building.

Sprinkler systems which have 100 or more sprinkler heads shall comply with Section 3803.

Section 126. Section 3803 of the Uniform Building Code, 1991 Edition, is amended as follows:

SPRINKLER SYSTEM SUPERVISION ALARMS

Sec. 3803. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically supervised when the number of sprinklers are:

(a) Twenty or more in Group I, Division 1.1 Occupancies.

(b) One hundred or more in all other occupancies.

Valve supervision and water-flow alarm and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, remote station or proprietary supervising station as defined by national standards, or, when approved by the building official with the concurrence of the chief of the fire department, sound an audible signal at a constantly attended location.

EXCEPTION: Underground key or hub valves in roadway boxes provided by the municipality or public utility need not be supervised.

Section 127. Section 3804 of the Uniform Building Code, 1991 Edition, is amended as follows:

PERMISSIBLE SPRINKLER OMISSIONS

Sec. 3804. Subject to the approval of the building official and with the concurrence of the chief of the fire department, sprinklers may be omitted in rooms or areas as follows:

(a) When sprinklers are considered undesirable because of the nature of the contents or in rooms or areas which are of noncombustible construction with wholly noncombustible contents and which are not exposed by other areas. Sprinklers shall not be omitted from any room merely because it is damp, of fire-resistive construction or contains electrical equipment.

(b) Sprinklers shall not be installed when the application of water or flame and water to the contents may constitute a serious life or fire hazard, as in the manufacture or storage of quantities of aluminum powder, calcium carbide, calcium phosphide, metallic sodium and potassium, quicklime, magnesium powder and sodium peroxide.

(c) Safe deposit or other vaults of fire-resistive construction, when used for the storage of records, files and other documents, when stored in metal cabinets and transformer vaults as specified in Chapter 55.

(d) Communication equipment areas under the exclusive control of a public communication utility agency, provided:

1. The equipment areas are separated from the remainder of the building by one-hour fire-resistive occupancy separation; and

2. Such areas are used exclusively for such equipment; and

3. An approved automatic smoke-detection system is installed in such areas and is supervised by an approved central, proprietary or remote station service or a local alarm which will give an audible signal at a constantly attended location; and

4. Other approved fire-protection equipment such as portable fire extinguishers or Class II standpipes are installed in such areas.

(e) Other approved automatic fire-extinguishing systems may be installed to protect special hazards or occupancies in lieu of automatic sprinklers in rooms or areas such as escalator gear rooms containing electrical switches, and areas occupied by electrical generating, transforming apparatus and switch boards.

Section 128. Section 3805 of the Uniform Building Code, 1991 Edition, is amended as follows:

STANDPIPES

Sec. 3805. (a) **General.** Standpipes shall comply with the requirements of this section and U.B.C. Standard No. 38-2.

(b) **Where Required.** Standpipe systems shall be provided as set forth in Table No. 38-A.

(c) **Location of Class I Standpipes.** There shall be a Class I standpipe outlet connection at every floor-level landing except as exempted by Footnote 8, Table 38-A, of every required stairway above or below grade and on each side of the wall adjacent to the exit opening of a horizontal exit. Outlets at stairways shall be located within the exit enclosure or, in the case of smokeproof enclosures, within the vestibule or exterior balcony, giving access to the stairway.

Risers and laterals of Class I standpipe systems not located within an enclosed stairway or smokeproof enclosure shall be protected by a degree of fire resistance equal to that required for vertical enclosures in the building in which they are located.

EXCEPTIONS: 1. In buildings equipped with an approved automatic sprinkler system, risers and laterals which are not located within an enclosed stairway or smokeproof enclosure need not be enclosed within fire-resistive construction.

2. In other than buildings subject to Section 1807, where two stairways are required, a single standpipe may be permitted with the approval of the building official and the fire chief, provided the standpipe is located in the stairway that extends to the roof, the floor area is less than 7,500 square feet per floor, and all portions of the floor area are within 150 feet of hose travel distance of the standpipe.

3. In other than buildings subject to Section 1807, standpipes at horizontal exits may be omitted with the

approval of the building official and fire chief provided standpipes are located in all required stairways, the floor area on each side of the horizontal exit is less than 7,500 square feet per floor, and all portions of the floor area are within 150 feet of hose travel distance of a standpipe.

There shall be at least one outlet above the roof line when the roof has a slope of less than 4 inches in 12 inches.

In buildings where more than one standpipe is provided, the standpipes shall be interconnected at the bottom.

(d) **Location of Class II Standpipes.** Class II standpipe outlets shall be accessible and shall be located so that all portions of the building are within 30 feet of a nozzle attached to 100 feet of hose.

In Group A, Divisions 1 and 2.1 Occupancies, with occupant loads of more than 1,000, outlets shall be located on each side of any stage, on each side of the rear of the auditorium and on each side of the balcony.

Fire-resistant protection of risers and laterals of Class II standpipe systems is not required.

(e) **Location of Class III Standpipes.** Class III standpipe systems shall have outlets located as required for Class I standpipes in Section 3805(c) and shall have Class II outlets as required in Section 3805(d).

Risers and laterals of Class III standpipe systems shall be protected as required for Class I systems.

EXCEPTIONS: 1. In buildings equipped with an approved automatic sprinkler system, risers and laterals which are not located within an enclosed stairway or smokeproof enclosure need not be enclosed within fire-resistive construction.

2. Laterals for Class II outlets on Class III systems need not be protected.

In buildings where more than one Class III standpipe is provided, the standpipes shall be interconnected at the bottom.

Section 129. Section 3807 of the Uniform Building Code, 1991 Edition, is repealed.

Section 130. Table No. 38-A of the Uniform Building Code, 1991 Edition, is amended as follows:

TABLE NO. 38-A -- STANDPIPE REQUIREMENTS

OCCUPANCY	NONSPRINKLERED BUILDING[1] Standpipe Class	NONSPRINKLERED BUILDING[1] Hose Requirement	SPRINKLERED BUILDING[2,3] Standpipe Class	SPRINKLERED BUILDING[2,3] Hose Requirement
1. Occupancies exceeding ((~~150~~)) 75 ft. in height[10] ((~~and more than one story~~))	III[9]	Yes[5]	I[8&9]	No
2. Occupancies 4 stories or more but less than ((~~150~~)) 75 ft. in height, except Group R, Div.3	[I[7,9] & II[4]] (or III[8,9])	5 Yes	I[7,9] (or III[8,9])	No
3. Group A Occupancies with occupant load exceeding 1,000[6]	II	Yes	No Requirement	No
4. Group A, Div. 2.1 Occupancies over 5,000 square feet in area used for exhibition	II	Yes	II	Yes
5. Groups I, H, B, Div. 1, 2 or 3 Occupancies less than 4 stories in height but greater than 20,000 square feet per floor	II[4]	Yes	No Requirement[11]	No[11]

1. Except as otherwise specified in Item 4 of this table, Class II standpipes need not be provided in basements having an automatic fire-extinguishing system throughout.
2. The standpipe system may be combined with the automatic sprinkler system.
3. Portions of otherwise sprinklered buildings which are not protected by automatic sprinklers shall have Class II standpipes installed as required for the unsprinklered portions.
4. In open structures where Class II standpipes may be damaged by freezing, the building official may authorize the use of Class I standpipes which are located as required for Class II standpipes.
5. Hose is required for Class II standpipes only.

6. Class II standpipes need not be provided in assembly areas used solely for worship.

7. The Class I standpipe may be omitted in Group B, Division 2 and Group R, Division 1 Occupancies when primary fire department vehicle access is provided on at least one side within 3 stories of the roof (not over 35 feet total height).

8. Fire department outlets on Class I and III standpipes need not be provided at grade level or floors below grade when all portions of such floor are within 150 feet hose travel distance of grade level exterior doors fronting on streets or yards usable by fire department apparatus.

9. Class I and III standpipes shall have two 2-1/2 inch roof outlets. The outlets shall be a minimum of 10 feet from the roof edge, skylight, light well or other opening; unless protected by a 42 inch high guardrail or equivalent.

10. For additional requirements, see Section 1807.

11. Exception - See Article 81 of the Seattle Fire Code for special requirements.

Section 131. Subsection 3903(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) **Vents.** Stages exceeding 1,000 square feet in floor area shall be provided with one or more vents constructed of noncombustible material. Vents shall be located near the center and above the highest part of any stage. They shall be raised above the stage roof and shall have a total vent area equal to at least 5 percent of the floor area of the stage.

The vents shall open by spring action or force of gravity sufficient to overcome the effects of neglect, rust, dirt, frost, snow or expansion by heat or warping of the framework. Glass, if used in vents, must be protected against falling onto the stage. A wire screen, if used under the glass, must be so placed that, if clogged, it cannot reduce the required venting area or interfere with the operating mechanism or obstruct the distribution of water from an automatic sprinkler. Vents shall be arranged to open automatically by the use of fusible links. The fusible links and operating cable shall hold each door closed against the minimum 30-pound counterforce which may be exerted by springs or counterweights. This minimum counterforce shall be exerted on each door through its entire arc of travel and for a minimum of ((~~115~~)) 90 degrees. A manual control shall be provided at an approved location.

Springs, when employed to actuate vent doors, shall be capable of maintaining full required tension. Springs shall not be stressed more than 50 percent of their rated capacity and shall not be located directly in the airstream or exposed to the outside.

A fusible link shall be placed in the cable control system on the underside of the vent at or above the roof line or as approved by the building official and shall be so located as not to be affected by the operation of an automatic sprinkler system. Remote, manual or electrical controls shall provide for both opening and closing of the vent doors for periodic testing and shall be located at a point on the stage designated by the building official. When remote control vents are electrical, power failure shall not affect its instant operation in the event of fire. Hand winches may be employed to facilitate operation of manually controlled vents.

Curbs for vents shall be as required for skylights.

Section 132. Subsection 3903(d) of the Uniform Building Code, 1991 Edition, is amended as follows:

(d) **Proscenium Walls.** Legitimate stages shall be completely separated from the seating area by a proscenium wall of not less than two-hour fire-resistive noncombustible construction.

((~~Proscenium walls may have, in addition to the main proscenium opening, one opening at the orchestra pit level and not more than two openings into the auditorium at the stage floor level. Each of the latter two openings shall not be more than 25 square feet in area.~~))

All openings in the proscenium wall of a legitimate stage shall be protected by a fire assembly having a 1-1/2-hour fire-protection rating. The main proscenium opening used for viewing performances shall be provided with an automatic-closing fire-protection curtain as provided in U.B.C. Standard No. 6-1. Such curtain materials shall conform to the following conditions:

1. The curtain shall be tested in accordance with U.B.C. Standard No. 43-1 as modified in Standard No. 6-1. The time period for testing shall be not less than 30 minutes, and the unexposed surface of the test sample shall not show any evidence of through penetration of flame or smoke, or excessive smoking (only the vapors escaping as a result of baking the sample).

2. The curtain shall be listed by an approved agency and have permanent marking giving the manufacturer's name, the approved agency's name or insignia, the rating achieved, and a statement that the curtain shall be installed in accordance with U.B.C. Standard No. 6-1.

3. Curtain fabrics shall have a smoke density no greater than 25 when tested in accordance with U.B.C. Standard No. 42-1. The curtain fabric shall be tested in the condition in which it is to be used.

4. A water curtain or deluge system complying with U.B.C. Standard No. 38-1 may be used only in conjunction with an automatically closing opaque noncombustible curtain in lieu of the proscenium fire-safety curtain described in U.B.C. Standard No. 6-1. Both the deluge system and curtain closure shall be actuated by combination rate-of-temperature-rise and temperature devices located on the stage. The water system shall be designed to completely wet the entire curtain.

Section 133. Chapter 42 of the Uniform Building Code, 1991 Edition, is amended as follows:

FIRE-RESISTIVE STANDARDS

FOR FIRE PROTECTION

CHAPTER 42

INTERIOR ((~~WALL AND CEILING~~)) FINISHES

GENERAL

Sec. 4201. (a) **Scope.** Interior ((~~wall and ceiling~~)) finish shall mean interior wainscoting, paneling, carpeting or other finish applied structurally or for decoration, acoustical correction, surface insulation or similar purposes. Requirements for finishes in this chapter shall not apply to trim defined as picture molds, chair rails, baseboards and handrails; to doors and windows or their frames; or to materials which are less than 1/28 inch in thickness applied directly to the surface of walls or ceilings, if these materials have surface-burning characteristics no greater than paper of this thickness applied directly to

a noncombustible backing in the same manner. See also Chapter 51 of this code for regulation of finishes in elevator cars and Section 11.210 of the Seattle Fire Code.

Foam plastics shall not be used as interior finish except as provided in Section 1713. For foam plastic trim, see Section 1705(e).

(b) **Standards of Quality.** The standards listed below labeled a "U.B.C. standard" are also listed in Chapter 60, Part II, and are part of this code.

1. U.B.C. Standard No. 42-1, Test Method for Surface-burning Characteristics of Building Materials

2. U.B.C. Standard No. 42-2, Standard Test Method for Evaluating Room Fire Growth Contribution of Textile Wall Covering

TESTING AND FLAME SPREAD CLASSIFICATION OF MATERIALS

Sec. 4202. (a) **Testing.** Tests shall be made by an approved testing agency to establish surface-burning characteristics and to show that materials when cemented or otherwise fastened in place will not readily become detached when subjected to room temperatures of 300° F. for 25 minutes. Surface-burning characteristics shall be determined by one of the following methods:

1. The surface-burning characteristics as set forth in U.B.C. Standard No. 42-1.

2. Any other recognized method of test procedure for determining the surface-burning characteristics of finish materials that will give comparable results to those specified in method No. 1 above.

3. The room fire growth contribution for textile wall coverings as set forth in U.B.C. Standard No. 42-2.

(b) **Classification.** The classes of materials based on their flame-spread index shall be as set forth in Table No. 42-A. The smoke density shall be no greater than 450 when tested in accordance with U.B.C. Standard No. 42-1 in the way intended for use.

APPLICATION OF CONTROLLED INTERIOR FINISH

Sec. 4203. Interior finish materials applied to walls and ceilings shall be tested as specified in Section 4202 and regulated for purposes of limiting surface-burning by the following provisions:

1. When walls and ceilings are required by any provision in this code to be of fire-resistive or noncombustible construction, the finish material shall be applied directly against such fire-resistive or noncombustible construction or to furring strips not exceeding 1-3/4 inches applied directly against such surfaces. The intervening spaces between such furring strips shall be filled with inorganic or Class I material or shall be fire blocked not to exceed 8 feet in any direction. See Section 2516(f) for fire blocking.

2. Where walls and ceilings are required to be of fire-resistive or noncombustible construction and walls are set out or ceilings are dropped distances greater than specified in para-

graph 1 of this section, Class I finish materials shall be used except where the finish materials are protected on both sides by automatic sprinkler systems or are attached to a noncombustible backing or to furring strips installed as specified in paragraph 1. The hangers and assembly members of such dropped ceilings that are below the main ceiling line shall be of noncombustible materials except that in Type III and Type V construction fire-retardant-treated wood may be used. The construction of each set-out wall shall be of fire-resistive construction as required elsewhere in this code. See Section 2516(f) for fire blocks and draft stops.

EXCEPTION: When set-out walls are required to be of fire-resistive construction, protection may be limited to the room side of concealed spaces formed entirely of noncombustible materials.

3. Wall and ceiling finish materials of all classes as permitted in this chapter may be installed directly against the wood decking or planking of Type IV heavy-timber construction, or to wood furring strips applied directly to the wood decking or planking installed and fire blocked as specified in paragraph 1.

4. An interior wall or ceiling finish that is not more than 1/4 inch thick shall be applied directly against a noncombustible backing.

EXCEPTIONS: 2. Class I finish materials.

2. Finish materials where the qualifying tests were made with the material suspended or furred out from the noncombustible backing.

MAXIMUM ALLOWABLE FLAME SPREAD

Sec. 4204. (a) **General.** The maximum flame-spread class of finish materials used on interior walls and ceilings shall not exceed that set forth in Table No. 42-B.

EXCEPTIONS: 1. Except in Group I Occupancies and in enclosed vertical exitways, Class III may be used in other exitways and rooms as wainscoting extending not more than 48 inches above the floor and for tack and bulletin boards covering not more than 5 percent of the gross wall area of the room.

2. In other than exit enclosures, when a sprinkler system complying with U.B.C. Standard No. 38-1 or 38-3 protection is provided, the flame-spread classification rating may be reduced one classification, but in no case shall materials having a classification greater than Class III be used.

3. The exposed faces of Type IV-H.T., structural members and Type IV-H.T., decking and planking, where otherwise permissible under this code, are excluded from flame-spread requirements.

(b) **Carpeting on Ceilings.** When used as interior ceiling finish, carpeting and similar materials having a napped, tufted, looped or similar surface shall have a Class I flame spread. Carpeting shall not be used on ceilings in exit enclosures.

TEXTILE WALL COVERINGS

Sec. 4205. When used as interior wall finish, textile wall coverings, including materials such as those having a napped, tufted, looped, nonwoven, woven or similar surface shall comply with the following:

1. Textile wall coverings shall have a Class I flame spread and shall be protected by automatic sprinklers complying with U.B.C. Standard No. 38-1 or 38-3, or

2. The textile wall covering shall meet the acceptance criteria of U.B.C. Standard No. 42-2 when tested using a product mounting system, including adhesive, representative of actual use.

Carpeting and textile wall coverings shall not be used on walls in exit exclosures

INTERIOR FLOOR FINISHES

Sec. 4206 (a) **Classification.** Interior floor finish materials in an exit enclosure, passageway or corridor shall be tested and classified on the basis of tests conducted in accordance with Appendix IV-A of the Seattle Fire Code as follows:

1. **Class 1 Interior Floor Finish.** Materials having a minimum critical radiant flux of 0.45 watt per square centimeter.

2. **Class 2 Interior Floor Finish.** Materials having a minimum critical radiant flux of 0.22 watt per square centimeter.

(b) **Interior Floor Materials.** The maximum radiant flux value classification of interior floor finish materials which are to be installed in an exit enclosure, passageway or corridor shall not exceed that set forth in Table No. 42-C for the occupancies specified.

EXCEPTIONS: 1. Interior floor finish materials of a traditional type, such as wood, vinyl, linoleum, terrazzo and other resilient floor covering materials.

2. In other than enclosed exitways, when an approved automatic sprinkler system is installed, Class 2 materials may be used in any area where Class 1 materials are required and the materials need not be classified in areas where Class 2 materials are permitted.

When used as floor finish in exit enclosures, carpeting and similar materials having a napped, tufted, looped or similar surface shall have a Class 1 radiant flux value classification. Carpeting shall not be used in stairways required to be of noncombustible construction as specified for Type I or Type II buildings in Sections 1805 and 1905.

(c) **Testing, Identification and Report Availability.** Interior floor finishes required to meet the standards of this section shall comply with the testing, classifications, identification and report availability requirements of Appendix IV-A of the Seattle Fire Code.

TABLE NO. 42-A
Flame-Spread Classification

Material Qualified by:	
Class	**Flame-Spread Index**
I	0-25
II	26-75
III	76-200

TABLE NO. 42-B
Maximum Flame-Spread Class[1,8]

Occupancy Group	Enclosed Vertical Exitways[2]	Other Exitways[2]	Rooms or Areas
A	I	II	II[3]
E	I	II	III
I	I	I[7]	II[4]
H	I	II	III[5]
B	I	II[9]	III[9]
R-1	I	II	III
R-3	III	III	III[6]
M	N O R E S T R I C T I O N S		

1 Foam plastics shall comply with the requirements specified in Section 1712. Carpeting on ceilings and textile wall coverings shall comply with the requirements specified in Sections 4204(b) and 4205, respectively.

2 "Enclosed vertical exitways" are enclosures as regulated in Section 3309 including horizontal extensions of the enclosure to the exterior of the building. "Other exitways" means exitways other than those required by Section 3309. Finish classification is not applicable to interior walls and ceilings of exterior exit balconies.

3 In Group A, Divisions 3 and 4 Occupancies, Class III may be used.

4 In rooms in which personal liberties of inmates are forcibly restrained, Class I material only shall be used.

5 Over two stories shall be of Class II.

6 Flame-spread provisions are not applicable to kitchens and bathrooms of Group R, Division 3 Occupancies.

7 In Group I, Divisions 2 and 3 Occupancies, Class II may be used or Class III when the Division 2 or 3 is sprinklered.

[8] See Section 1007(b) of the Mechanical Code for flame spread requirements for suspended ventilating ceilings.

[9] See also Section 3305(g), Exception 6.

Section 134. Chapter 42 of the Uniform Building Code, 1991 Edition, is amended by adding Table No. 42-C as follows:

TABLE NO. 42-C
Maximum Radiant Flux Class

Occupancies	Enclosed Vertical Exitways[1,2]	Other Exitways[1,2]
A	2	2
B	2	2
E	2	2
H-1-6	1	1
H-7	2	2
I[3]	1	1
M	No restrictions	No restrictions
R-1	2[4]	2[4]
R-3	No restrictions	No restrictions

[1] In other than Group R, Division 1 Occupancies, combustible floor finish is not permitted for stairs in Types I and II construction except for stairs of combustible construction which are permitted by either Section 1805 or 1905, where finishes are not restricted.

[2] "Enclosed vertical exitways" are enclosures as regulated in Section 3309 including horizontal extensions of the enclosure to the exterior of the building. "Other exitways" are exitways other than those required by Section 3309.

[3] Combustible floor finish is not permited in rooms occupied by inmates or patients whose personal liberties are restrained.

[4] The finish materials on stairs within a dwelling unit are not restricted regardless of the construction of the building.

Section 135. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 44 as follows:

CHAPTER 44

PROTECTION OF PEDESTRIANS DURING CONSTRUCTION OR DEMOLITION

Sec. 4401. The protection of the public and of the sidewalks, streets and other public property during construction or demolition shall be provided as required by Title 15, Seattle Municipal Code, Street and Sidewalk Use.

Section 136. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 45 as follows:

CHAPTER 45

PERMANENT OCCUPANCY OF PUBLIC PROPERTY

GENERAL

Sec. 4501. Any encroachment of a building or structure on, over or under sidewalks, streets and other public property is subject to approval by the Director of Engineering and/or the building official.

Structures or appendages regulated by this code shall be constructed of materials as specified in Section 1710 except marquees which shall be constructed of materials as specified in this chapter and awnings which shall be constructed of materials as specified in Chapter 46.

The projection of any structure or appendage shall be the distance measured horizontally from the property line to the outermost point of the projection.

Structural building overhangs are encroachments into public property which include cornices, eaves, sills, belt courses, bay windows, balconies, facade treatment and other architectural features, and shall be designed in accordance with the standards set forth in Section 4504 and rules promulgated by the building official.

No provisions of this chapter shall be construed to permit the violation of other laws or ordinances regulating the use and occupancy of public property.

STRUCTURAL BUILDING OVERHANGS

Sec. 4502. Structural building overhangs, when approved, shall meet all of the requirements of this code and be designed in accordance with the following standards:

1. Vertical clearance shall be a minimum of 8 feet from the sidewalk or 26 feet from the alley, or greater when required by other regulations.

2. Overhead horizontal projections of a purely architectural or decorative character such as cornices, eaves, sills and belt courses shall be limited to a maximum horizontal extension of one foot and a maximum vertical dimension of two feet six inches, and shall not increase the floor area or the volume of space enclosed by the building. At roof level, the projections may extend not more than three feet horizontally. The vertical dimension of the overhead horizontal projection at the roof level may be increased if the roof level is 100 feet or higher above the street elevation. The total area of these projections shall not exceed 30 percent of the area of any one facade. (See Figure 45-1.)

3. Exceptions to the standards in this section may be authorized for historic or rehabilitated buildings, when they are consistent with the scope and intent of these standards.

4. Vertical bay (projecting) windows, balconies (other than balconies used for primary access), and similar features that increase either the floor area of the building or the volume of space enclosed by the building above grade, shall be limited as follows:

A. The maximum horizontal projection shall be three feet and the projection shall in no case be closer than eight feet to the center line of any alley. (See Figure 45-5.)

B. The glass areas of each bay window, and the open portions of each balcony, shall not be less than 50 percent of the sum of the areas of the vertical surfaces of such bay window or balcony above the required open area. At least 1/3 of such required glass area of such bay window, and open portions of such balcony, shall be on one or more vertical surfaces situated at an angle of not less than 30 degrees to the line establishing the required open area. In addition, at least 1/3 of such required glass area or open portions shall be on the vertical surface parallel to, or most nearly parallel to, the line establishing each open area over which the bay window or balcony projects.

C. The maximum length of each bay window or balcony shall be 15 feet at the line establishing the required open area (see Figure 45-2), and shall be reduced in proportion to the distance from such line by means of 45-degree angles drawn inward from the ends of such 15-foot dimension, reaching a maximum of nine feet along a line parallel to and at a distance of three feet from the line establishing the required open area.

D. Where a bay window and a balcony are located immediately adjacent to one another, and the floor of such balcony in its entirety has a minimum horizontal dimension of six feet, the limit set in Item C, above, shall be increased to a maximum length of 18 feet at the line establishing the required open area, and a maximum of 12 feet along a line parallel to and at a distance of three feet from the line establishing the required open area. (See Figure 45-6.)

E. The minimum horizontal separation between bay windows, between balconies, and between bay windows and balconies (except where a bay window and a balcony are located immediately adjacent to one another, as provided for in Item D, above), shall be two feet at the line establishing the required open area, and shall be increased in proportion to

the distance from such line by means of 135-degree angles drawn outward from the ends of such two-foot dimension, reaching a minimum of eight feet along a line parallel to and at a distance of three feet from the line establishing the required open area. (See Figure 45-3.)

F. Each bay window or balcony over a street or alley shall also be horizontally separated from interior lot lines (except where the wall of a building on the adjoining lot is flush to the interior lot line immediately adjacent to the projecting portions of such bay window or balcony) by not less than one foot at the line establishing the required open area, with such separation increased in proportion to the distance from such line by means of a 135-degree angle drawn outward from such one-foot dimension, reaching a minimum of four feet along a line parallel to and at a distance of three feet from the line establishing the required open area. (See Figure 45-4.)

MARQUEES

Sec. 4503. (a) **General.** For the purpose of this section, a marquee shall include any object or decoration attached to or a part of a marquee.

(b) **Size and Location.** No marquee shall project more than 16 feet from the face of the building to which it is attached. No marquee shall project closer than 2 feet from any curb.

(c) **Construction.** Marquees shall be of noncombustible material or one-hour fire-resistive construction.

(d) **Drainage.** Marquees shall be provided with conductors for water which shall drain back to the building line and be connected to a sewer or, if approved by the Director of Engineering, to a dry well or under a sidewalk to a gutter.

(e) **Loads.** Marquees shall be designed to comply with the load requirements contained in Table No. 23-A.

Section 137. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 46 as follows:

CHAPTER 46

AWNINGS

SCOPE

Sec. 4601. All awnings shall be subject to the requirements of this chapter. Awnings containing electrical wiring and light fixtures shall also be subject to the Seattle Electrical Code. Awnings over a public place shall comply with the Street and Sidewalk Use Ordinance (Title 15, Seattle Municipal Code).

DEFINITIONS

Sec. 4602 For the purposes of this chapter, certain terms are defined as follows:

AWNING is a nonrigid, fabric-covered protective covering attached to an exterior wall of a building.

AWNING SIGN is a sign applied to the surface of an awning.

FIRE-RETARDANT COVERING is a material which has a flame spread rating of less than 15 when tested to ASTM-E84.

SIGN. See Section 4903.

VENEER. See Section 3002.

PERMITS REQUIRED

Sec. 4603. No awning shall be erected, constructed, altered or structurally revised without a permit issued by the building official.

A sign/awning permit shall be required for an awning specific to any business entity. A single permit may be issued for a single awning which serves a multi-tenant building. A single permit may be issued for all awning signs for each business entity installed concurrently. Awning signs for separate business entities must have a separate sign permit whether or not located on a separate awning. Subsequent installation of an awning or awning sign shall require a separate permit.

Painting, cleaning, repair and other maintenance shall not require a permit unless a structural change is made or the awning is covered with new fabric.

PERMIT APPLICATION

Sec. 4604. To obtain a permit as required by this chapter, the applicant shall file an application which shall include the following:

1. The location of the proposed awning on the building;
2. Plans or drawings and specifications;
3. Signature of the building owner or an authorized agent;
4. Permit fee as specified in the Permit Fee Ordinance.

INSPECTIONS

Sec. 4605. All awnings shall be subject to inspection and periodic reinspection by the building official.

MAINTENANCE OF AWNINGS AND CLOSURE OF BUSINESS

Sec. 4606. (a) **Maintenance.** All awnings, together with their supports, braces and anchors, shall be kept in good repair and in a proper state of preservation. The surface of all awnings shall be kept clean and protected with a sealer-type solution. The building official may order the removal of any awning not properly maintained or no longer in use and may cancel the permit.

(b) **Closure of Business.** Within 90 days after the date of cessation of a business or activity, the operator of the business or activity shall remove all awnings relating to the business or activity. Failure to remove any awning within the 90-day period

shall be a violation of this code unless the business or activity is resumed during that period.

CONSTRUCTION

Sec. 4607 (a) **General.** Awnings shall have noncombustible or aluminum frames and fire-retardant coverings. All structural welding shall conform to the requirements of Chapter 27 for steel and Chapter 28 for aluminum.

(b) **Electric signs.** No electric sign, including a neon assembly, shall be attached to, or located on, any part of the frame of an awning.

(c) **Light fixtures.** No electric light fixture shall be mounted or attached to the frame of an awning.

EXCEPTIONS: 1. The building official may approve light fixtures secured to the vertical and horizontal rear frame members of the awning.

2. The building official may approve light fixtures secured to the frame of an awning located at the entrance to a building, provided adequate bracing is designed and installed to sustain the additional loads imposed by the weight of the light fixtures.

(d) **Obstruction of Light and Ventilation.** An awning shall not reduce the light or ventilation to any occupancy below requirements of this code.

(e) **Clearances.** All portions of awnings shall be at least 8 feet above the walking surface immediately below. No portion of the surface or support of an awning, including a retracted awning, shall interfere with the free use of a fire escape, exit or standpipe.

(f) **Retractable awnings.** Retractable awnings shall be collapsible, retractable or capable of being folded against the face of the supporting building.

(g) **Labels.** Every awning shall display the name of the manufacturer and/or contractor.

DESIGN

Sec. 4608. (a) **Design Loads--General.** Awnings shall be designed and constructed to resist all forces to which they are subject as specified in Chapter 23. The frame shall be designed and constructed to transfer all forces to the structural frame of the building or structure.

(b) **Pitch.** The upper surface of all awnings shall have a pitch of at least thirty degrees from the horizontal.

(c) **Attachment to Masonry, Concrete or Steel.** All awnings attached to masonry, concrete or steel shall be safely secured with steel anchors and bolts, or approved rated expansion bolts of sufficient size and anchorage to support the loads safely.

(d) **Attachment to Parapet Walls.** No anchor or support of an awning shall be connected to or supported by a parapet wall unless the wall is designed for the added forces.

(e) **Attachment to Veneer.** No support or attachment for an awning shall be connected to, supported by, or fastened to exterior veneer.

(f) **Prohibited Anchorage.** Wooden blocks, plugs or anchors with wood used in connection with screws or nails shall not be used as anchorage. Lead plugs or anchors shall not be used to support an awning.

Section 138. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 49 as follows:

Chapter 49

SIGNS AND OUTDOOR DISPLAYS

PURPOSE

Sec. 4901. It is the purpose of this chapter to safeguard the life, health, property and welfare of the citizens of the City by regulating and controlling the design, quality of materials, construction, location, illumination, and maintenance of signs and sign structures visible from any portion of public property or rights-of-way.

ENFORCEMENT

Sec. 4902. (a) **Authority.** The building official is hereby authorized and directed to enforce all of the provisions of this chapter, Chapter 23.55 of the Land Use Code and the Zoning Code, Title 24, relating to signs erected and maintained on private property. Under the direction of the Board of Public Works, the Director of Engineering and the building official shall enforce the provisions of this chapter and Chapter 23.55 of the Land Use Code and the Zoning Code, Title 24, as they relate to signs over public places as defined in Section 15.02.040 of the Seattle Municipal Code.

Signs erected without permit as required by Section 4904 which do not conform to the provisions of this chapter, Chapter 23.55 of the Land Use Code and the Zoning Code, Title 24, shall be removed upon notification in writing by the building official.

(b) **Other Requirements.** All signs shall comply with any additional regulations as to type, height, clearance, size, copy, design and location imposed by the Land Use Code, the Zoning Code and Title 15, Seattle Municipal Code, Street and Sidewalk Use, as amended, and other ordinances of the City. Signs which may be unregulated by the Land Use Code, may be subject to requirements of this chapter.

DEFINITIONS AND ABBREVIATIONS

Sec. 4903. For the purposes of this chapter, certain terms shall be defined as follows:

APPROVED PLASTIC MATERIALS are those plastic materials which have a flame spread rating of 225 or less when tested in accordance with U.B.C. Standard No. 42-1, in the way intended for use; and a smoke density rating no greater than 450 when tested in

accordance with U.B.C. Standard No. 42-1, in a way intended for use; or a smoke density rating no greater than 75 when tested in the thickness intended for use by the chamber method of test under U.B.C. Standard No. 52-2.

The products of combustion shall be no more toxic than those of untreated wood when burned under similar conditions.

BILLBOARD is a ground, wall, or roof sign erected, constructed, or maintained for the purpose of displaying outdoor advertising by means of pictorial or reading matter attached thereto or posted thereon and available by means of rental to persons other than the owner of the sign.

BUILDING FACADE is that portion of any exterior elevation of a building extending from the grade of the building to the top of the parapet wall or eaves, for the entire width of the building elevation.

BUILDING FACADE FACING is a resurfacing of an existing facade with approved material.

BULLETIN BOARD is a board for messages for users of the premises on which the board is erected and not intended for view from the public right-of-way. A bulletin board is not a sign.

DISPLAY SURFACE is the area of a sign structure used to display the advertising message.

ELECTRIC SIGN is any sign containing electrical wiring, but not including signs illuminated by an exterior light source.

FABRIC SIGN is a sign made of canvas, cloth or similar non-rigid material.

MARQUEE SIGN is a sign placed on, constructed in or attached to a marquee.

NONSTRUCTURAL TRIMS are the moldings, battens, caps, nailing strips, latticing or cutouts which are attached to the sign structure.

ON-PREMISE DIRECTIONAL SIGN is an on-premise incidental sign designed to direct pedestrian or vehicular traffic.

ON-PREMISE SIGN is a sign which displays messages which are strictly applicable only to a use of the premises on which it is located, including signs or sign devices indicating the business transacted, principal services rendered, goods sold or produced on the premises, name of the business, and name of the person, firm or corporation occupying the premises. This definition shall not include signs located within a business establishment except signs oriented so as to be visible through a window.

PORTABLE SIGN is a sign which is not permanently affixed and is designed for or capable of being moved, except those signs explicitly designed for people to carry on their persons or which are permanently affixed to motor vehicles.

PROJECTING SIGN is a sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

PROJECTION is the distance by which a sign extends over public property or beyond the building line.

ROOF SIGN is a sign erected upon or above a roof or parapet of a building or structure.

SIGN is any medium, including its structure and component parts, which is used or intended to be used to attract attention to the subject matter for advertising, identification or informative purposes.

SIGN STRUCTURE is any structure which supports or is designed to support any sign as defined in this chapter. A sign structure may be a single pole or may be an integral part of the building.

TEMPORARY MERCHANDISING SIGN is a temporary sign attached to a storefront window and used to advertise a particular event, product or service.

TEMPORARY SIGN is any sign of either rigid or nonrigid construction, including, but not limited to, banners, pennants, streamers, fabric signs, wind animated objects, clusters of flags, festoons of lights and search lights, to be displayed for a limited period of time only.

WALL SIGN is any sign attached to and supported by a wall of a building or structure, with the exposed face of the sign on a plane parallel to the plane of the wall.

PERMITS REQUIRED

Sec. 4904. (a) **Permanent Signs.** No sign shall be erected, re-erected, constructed, painted, posted, applied, altered, structurally revised or repaired, except as provided in this chapter and Chapter 23.55 of the Land Use Code and pursuant to a permit issued by the building official.

A separate permit shall be required for a sign or signs for each business entity and/or a separate permit for each group of signs on a single supporting structure installed simultaneously. Thereafter, each additional sign erected on the structure must have a separate permit, including electric signs. In addition, electrical permits shall be obtained for circuits for electric signs and street use permits shall be required for signs over any public place pursuant to the Street Use Ordinance as amended.

EXCEPTION: The following sign activity shall not require a permit, provided the owner of any such sign shall continue to have the responsibility of erection and maintenance of such sign and for compliance with the provisions of this chapter and any other law or ordinance regulating signs:

A. Signs which are located within the interior of the building and which are not visible from the public right-of-way unless:

1. The sign is mounted within an interior shared pedestrian mall of a multi-tenant retail facility; located over or adjoining the pedestrian walking surface; and

2. When any individually mounted element of the sign is greater than 10 square feet in area or when it is an electric sign;

B. The changing of the advertising copy or message on a lawfully erected painted or printed sign, theater marquee, gasoline price sign or similar sign specifically designed for the use of replaceable copy;

C. Painting, repainting, cleaning, repairing, and other normal maintenance unless a structural or electrical change is made;

D. One business identification sign, nonelectrical and non-illuminated, 1-1/2 square feet or less in area and permanently affixed to the building facade or wall on a plane parallel to the building facade or wall located entirely on private property;

E. On-premises directional and information signs not over 5 square feet in area;

F. One bulletin board not over 12 square feet in area and not over 8 feet in height for each public, charitable or religious institution when located on the wall of the institution;

G. Memorial signs or tablets and names of buildings and dates of building erection when cut into a masonry surface or constructed of bronze or other noncombustible material;

H. Signs of public service companies indicating danger and/or providing service or safety information.

(b) **Temporary Signs.** 1. **Permit Required.** The erection, re-erection, construction, posting or placement of temporary signs as permitted by Section 23.55.012 of the Land Use Code shall require a temporary sign permit.

EXCEPTION: The following temporary signs shall not require a permit, provided the owner of any such sign shall continue to have the responsibility of erection, maintenance and removal of such sign and for compliance with the provisions of this chapter and any other law or ordinance regulating signs:

A. Temporary decorations customary for special holidays, such as Independence Day and Christmas, erected entirely on private property;

B. Real estate signs. Such signs shall be removed not later than 7 days after the sale, lease or rental of the property;

C. One temporary sign not exceeding 12 square feet in area for each 300 feet of street frontage of premises where work is under construction, identifying the architect, engineer, contractor or other individual or company involved in a construction project.

D. Temporary political advertising signs which are subject to the provisions of the Fair Campaign Act, Chapter 2.24 Seattle Municipal Code, as amended;

E. Temporary merchandising signs applied to storefront windows;

F. Large signs as required by Chapter 23.76 of the Land Use Code.

2. **Length of Permit.** Temporary signs shall be limited by their permit to periods not to exceed 14 days.

3. **Number of Events.** Temporary sign permit issuance shall be limited to new business openings and to the relocation of an existing business to an entirely new location. In addition, temporary sign permits may be issued for a maximum of two other special events each year.

4. **Placement of Sign Permit Number.** All temporary signs of rigid construction requiring a permit shall have the temporary sign permit number placed in the upper left hand corner by the permittee.

(c) **Number of Signs.** Temporary signs as permitted by Section 23.55.012 of the Land Use Code and signs not requiring a permit as specified in Section 4904(a) shall not be included as part of the maximum number of signs permitted under Chapter 23.55 of the Land Use Code.

(d) **Attachments to Signs.** Ancillary devices, displays and attachments not originally a part of the sign for which a permit was issued shall not be added to an existing sign except as provided in this chapter, Chapter 23.55 of the Land Use Code or the Zoning Code and pursuant to another permit issued by the building official.

PERMIT APPLICATION

Sec. 4905. To obtain a sign permit, the applicant shall file an application which shall:

1. Clearly indicate the precise location of the proposed sign;

2. Be accompanied with adequate plans and specifications;

EXCEPTION: The building official may waive submission of plans and specifications when the structural aspect is of minor importance.

3. Be signed by the owner of the premises or an authorized agent; and

4. Be accompanied by the permit fee specified in the Permit Fee Ordinance.

Sec. 4906. No requirements.

Sec. 4907. No requirements.

INSPECTIONS

Sec. 4908. All signs regulated by this chapter shall be subject to inspection and periodic reinspection by the building official.

All footing inspections shall be made by the building official.

All signs containing electrical wiring shall be subject to the Seattle Electrical Code. Refurbished, used electrical signs and field-assembled electrical signs shall be inspected by the building official.

MAINTENANCE AND CLOSURE OF BUSINESS

Sec. 4909. (a) **Maintenance.** All signs, together with all of their supports, braces, guys and anchors, shall be kept in good repair and in a proper state of preservation. The display surface of all signs shall be kept neatly painted or posted at all times. The building official may order the removal of all signs not properly maintained or no longer in use by the owner, occupant or lessee, and the permit therefore may be cancelled.

(b) **Closure of Business - Abandoned Signs.** Upon the closure and vacation of a business or activity, the operator of the business or activity shall be responsible for the removal of all signs relating to the business or activity within 90 days from the date of such closure. If the operator of the business or activity fails to remove the signs within the designated time period and said business or activity is not reoccupied or resumed during the 90-day period, then the owner of the premises upon which the signs are located shall be responsible for the removal of the signs within 180 days from the date of closure and vacation of the premises.

NONCONFORMING SIGNS

Sec. 4910. A nonconforming sign is a sign or any portion thereof which because of its location or construction could not lawfully be reconstructed in its present location. A nonconforming sign shall have no additions thereto.

> **EXCEPTION:** Minor additions which the building official may find necessary in the interest of safety, or the changing of the advertising message thereon in connection with a change of ownership or tenancy of the premises, provided that the addition or physical change does not expand the nonconforming nature of the sign.

GENERAL REQUIREMENTS

Sec. 4911. (a) **General.** All signs shall conform to the requirements of this section.

(b) **Clearance From High Voltage Power Lines.** Signs shall be located no closer than 3 feet horizontally or 8 feet vertically from overhead electrical conductors which are energized at 750 volts or less and not less than 10 feet in any direction from overhead conductors energized at more than 750 volts. The term "overhead conductors" as used in this section means any electrical conductor, either bare or insulated, installed above the ground except such conductors as are enclosed in iron pipe or other material covering of equal strength.

(c) **Clearance from Fire Escapes, Exits or Standpipes.** No sign or sign structure shall be erected in such a manner that any portion of its surface or supports will interfere in any way with the free use of any fire escape, exit or standpipe.

(d) **Obstruction of Openings.** No sign shall obstruct any openings to such an extent that light or ventilation is reduced to a point below that required by this code.

Signs erected within 5 feet of an exterior wall in which there are openings within the area of the sign shall be constructed of noncombustible material or approved plastics.

(e) **Supporting Members.** Signs mounted on and attached to buildings shall be so designed and mounted that secondary structural members shall be incorporated into and become a part of the sign display. Exterior bracing such as angle irons, guy wires, cables and similar devices shall be permitted only where no other reasonable method of fastening consistent with safety is possible.

(f) **Non-display Surfaces.** If a sign is visible from more than one direction, all areas not intended as display surfaces including the back and sides shall be designed so that such areas are given a finished and pleasing appearance with the display surfaces visible only from the directions that they are intended to be seen.

(g) **Label.** Every permanent sign shall display the name of the sign erector.

DESIGN

Sec. 4912. (a) **General.** Signs and sign structures shall be designed and constructed to resist all forces to which they are subject as specified in Chapter 23 and this section. All signs shall be designed and installed to transfer all forces directly to the structural frame of the building or structure.

The overturning moment produced from lateral forces shall in no case exceed two thirds of the dead load resisting moment. Uplifts due to overturning shall be adequately resisted by proper anchorage to the ground or to the structural frame of the building. The weight of earth superimposed over footings may be used in determining the dead load resisting moment. Such earth shall be carefully placed and thoroughly compacted.

(b) **Wind and Seismic Loads.** Signs and sign structures shall be designed and constructed to resist wind and seismic forces as specified in Chapter 23 of this code.

(c) **Allowable Stresses.** The design of wood, concrete, steel or aluminum members shall conform to the requirements of Chapters 25, 26, 27, and 28. Loads, both vertical and horizontal, exerted on the soil shall not produce stresses exceeding those specified in Chapter 29 of this code.

The working stresses of wire rope and its fastenings shall not exceed 25 percent of the ultimate strength of the rope or fasteners.

CONSTRUCTION

Sec. 4913. (a) **General.** The supports for all signs or sign structures shall be placed in or upon private property and shall be securely built, constructed, and erected in conformance with the requirements of this chapter. All structural welding on signs and sign structures shall conform to the requirements of Chapter 27 for steel and Chapter 28 for aluminum.

(b) **Materials.** Materials of construction for signs and sign structures shall be of quality and grade as specified for buildings in this code.

In all signs and sign structures the materials and details of construction shall, in the absence of specified requirements, conform with the following:

1. Structural steel shall be of such quality as to conform with U.B.C. Standard No. 27-1. Secondary members in contact with or directly supporting the display surface may be formed of light gauge steel provided such members are designed in accordance with the specifications of the design of light gauge steel as specified in U.B.C. Standard No. 27-9 and in addition shall be galvanized. Secondary members, when formed integrally with the display surface, shall not be less than No. 24 gauge in thickness. When not formed integrally with the display surface, the minimum thickness of the secondary members shall be No. 12 gauge.

   The minimum thickness of hot-rolled steel members furnishing structural support for signs shall be 1/4 inch except that if galvanized, such members shall not be less than 1/8 inch thick. Steel pipes shall be of such quality as to conform with U.B.C. Standard No. 27-1. Steel members may be connected with one galvanized bolt provided the connection is adequate to transfer the stresses in the members.

2. Anchors and supports, when of wood and embedded in the soil, or within 6 inches of soil, shall be of all heartwood of a durable species or shall be pressure treated with an approved preservative. Such members shall be marked or branded by an approved agency.

(c) **Restrictions on Combustible Materials.** In the Fire District all signs and sign structural members shall be constructed of noncombustible materials.

EXCEPTIONS: 1. Signs fronting on streets or yards. Regardless of fire resistive requirements for exterior walls, certain elements of signs fronting on streets or yards having a width of 50 feet may be constructed as follows:

Wood veneer of boards not less than 1 inch nominal thickness or exterior type plywood panels not less than 3/8 inch nominal thickness may be applied to walls provided the veneer does not exceed 15 feet above grade, and further provided such veneer shall be placed either directly against noncombustible surfaces or furred out from such surfaces not to exceed 1-5/8-inches with all concealed spaces firestopped as provided by this code.

2. The display surface of a projecting sign may be of wood provided such sign is not more than 42 square feet in area, is constructed of materials not less than 2 inches in nominal thickness and is not over 15 feet in height, from ground level to the top of the sign.

3. Nonstructural trim as in (d) below.

(d) **Nonstructural Trim.** Nonstructural trim and portable display surfaces may be of wood, metal, approved plastics or any combination thereof.

(e) **Anchorage.** Members supporting unbraced signs shall be so proportioned that the bearing loads imposed on the soil in either direction, horizontal or vertical, shall not exceed the safe

values. Braced ground signs shall be anchored to resist the specified wind or seismic load acting in any direction. Anchors and supports shall be designed for safe bearing loads on the soil and for an effective resistance to pull-out amounting to a force 25 percent greater than the required resistance to overturning.

Signs attached to masonry, concrete or steel shall be safely and securely fastened thereto by means of metal anchors, bolts or approved expansion screws of sufficient size and anchorage to support safely the loads applied.

No wooden blocks or plugs or anchors with wood used in connection with screws or nails shall be considered proper anchorage except in the case of signs attached to wood framing.

No lead plugs or anchors shall be used to support signs.

No anchor or support of any sign shall be connected to or supported by an unbraced parapet wall unless the wall is designed or braced for the added forces.

(f) **Display Surfaces.** Display surfaces of wood may not be used in electric signs.

Sections of approved plastics on wall signs shall not exceed 150 square feet in area.

EXCEPTIONS: 1. Outside the fire district the area of approved plastics may be increased by 50 percent.

2. Sections of approved plastics on signs other than wall signs may be of unlimited area if approved by the building official.

Sections of approved plastics on wall signs shall be separated 3 feet laterally and 6 feet vertically by the required exterior wall construction.

EXCEPTION: Sections of approved plastics on signs other than wall signs need not be separated if approved by the building official.

(g) **Approved Plastics.** The building official shall require that sufficient technical data be submitted to substantiate the proposed use of any plastic material and may approve its use if it is determined that the evidence submitted is satisfactory for the use intended.

ROOF SIGNS

Sec. 4914. (a) **General.** Roof signs shall be constructed of noncombustible material except as specified in Section 4913. When constructed on a building, the sign shall be thoroughly secured and anchored to the frame of the building on which it is constructed and erected.

(b) **Clearance and Access.** A passage clear of all obstructions shall be left under or around, and immediately adjacent to, signs exceeding a height of 4 feet above the roof. Such passage shall not be less than 3 feet wide and 4 feet high and shall be at parapet or roof level.

There shall be one such passage or access opening as follows:

1. For each roof sign upon a building.

2. An access opening for every 50 lineal feet of horizontal roof sign extension.

3. Within 20 feet of walls and parapets when roof signs are at right angles to a face of the building.

ELECTRIC SIGNS

Sec. 4915. (a) **Construction.** Electric signs shall be constructed of noncombustible materials except as provided in Section 4913. The enclosed shell of electric signs shall be watertight except that service holes fitted with covers shall be provided into each compartment of such signs.

(b) **Installation.** Electrical equipment used in connection with display signs shall be installed in accordance with the Seattle Electrical Code.

TEMPORARY FABRIC SIGNS

Sec. 4916. Temporary signs made of fabric or similar non-rigid material shall be supported and attached with wire rope of 3/8 inch minimum diameter. No strings, fiber ropes or wood slats shall be permitted for support or anchorage purposes. Temporary fabric signs and panels shall be perforated over at least 10 percent of their area to reduce wind resistance.

EXCEPTION: Temporary fabric signs over private property not exceeding 60 square feet may be supported and attached with wire rope which shall meet the requirements of Section 4912.

Section 139. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 51 as follows:

CHAPTER 51

ELEVATORS, DUMBWAITERS, MATERIAL LIFTS, ESCALATORS AND MOVING WALKS

PURPOSE

Section 5101. The purpose of this chapter is to protect persons, buildings and the contents thereof from hazards arising from the use of elevators, dumbwaiters, material lifts, escalators and/or moving walks by establishing minimum requirements regulating the design, construction, alteration, operation and maintenance of elevators, dumbwaiters, material lifts, escalators and moving walks, and by establishing procedures by which these requirements may be enforced.

SCOPE

Sec. 5102. (a) **General.** This code of safety standards covers the design, construction, installation, operation, inspection testing, maintenance, alteration and repair of elevators, dumbwaiters, material lifts, escalators, moving walks and their hoistways.

(b) **Additions and Alterations.** Additions and alterations may be made to the conveyance system of existing buildings or structures without making the entire system comply with all of the requirements of this chapter for new buildings or structures, provided the additions and alterations that are made shall comply with the requirements of this chapter for a new system, except as otherwise specifically provided in other applicable retroactive ordinances of the city.

(c) **Maintenance.** All conveyances covered under this chapter, both existing and new, and all parts thereof shall be maintained in a safe condition. All devices and/or safeguards which are required by this chapter shall be maintained in good working order. The owner or his/her designated agent shall be responsible for the maintenance of such equipment.

(d) **Historic Buildings and Structures.** Refer to Section 104(f) of this building code for determinations regarding historic buildings or structures.

(e) **References to the National Electrical Code.** For the purpose of this chapter, all references in the ANSI Code to the National Electrical Code shall not apply and are hereby deleted. All electrical work shall be done in accordance with the requirements of the Seattle Electrical Code.

(f) **Conflicts.** In any case where the codes adopted by reference in Section 5103 conflict with the requirements of this chapter, this chapter shall control.

CODES ADOPTED BY REFERENCE

Sec. 5103. The following codes are hereby adopted by reference and together with the provisions of this chapter shall constitute the Elevator Code of the City of Seattle. A copy of each is filed in the Office of the City Comptroller.

(a) Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1987.

EXCEPTION: Part XIX of ANSI A17.1, Elevators Used for Construction, is not adopted.

(b) The building official may adopt by administrative rule, in accordance with Section 207 of this code, addenda to the Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1987 which further the intent and purpose of this code, which encourage the use of state of the art technology, materials or methods of construction, and which provide standards which are equal or better than those contained in this code.

(c) Safety rules governing existing elevators, dumbwaiters, escalators and other lifting devices - moving walks, Washington Administrative Code Chapter 296-81, Sections .005 through .370, inclusive, 1986 Edition.

(d) Safety regulations for casket lifts in mortuaries, Washington Administrative Code Chapter 296-91, 1986 Edition.

(e) Chapter 296-93 Washington Administrative Code for Material Lifts, 1986 Edition.

DEFINITIONS

Sec. 5104. The following definitions are in addition to Section 3 of ANSI A17.1, RCW 70.87, Laws Governing Elevators and Other Lifting Devices, and Chapter 4 of this code.

ALTERATIONS, REPAIRS AND REPLACEMENTS - See Part XII, ANSI A17.1.

ANSI CODE shall mean the American National Standard Safety Code for Elevators and Escalators with Appendices A through H, published by the American Society of Mechanical Engineers, designated ANSI A17.1 - 1987.

AUTOMATIC ELEVATOR shall mean a type of elevator which does not require an attendant. All calls are registered by the passengers.

AUTOMOBILE PARKING ELEVATOR shall mean an elevator located in either a stationary or horizontally moving hoistway and used exclusively for parking automobiles where, during the parking process, each automobile is moved under its own power onto and off the elevator directly into parking spaces or cubicles in line with the elevator and where no persons are normally stationed on any level except the receiving level.

CONVEYANCE shall mean an elevator, escalator, dumbwaiter, material lift, automobile parking elevator or moving walk.

CONVEYANCES IN SERVICE shall mean that the units are in operation, are inspected and certified for operation by the building official.

CONVEYANCES OUT OF SERVICE shall mean the use of the unit has been prohibited either temporarily or permanently in accordance with section 5105 below.

ENFORCING AUTHORITY as used in the ANSI Code means the building official.

EXISTING INSTALLATIONS means all conveyances which have been tested and approved for use by the building official.

INSPECTOR means inspectors employed by the City of Seattle and working under order from the building official.

MATERIAL LIFT means a fixed, stationary conveyance that:

(1) Has a car or platform that moves in guides;

(2) Serves two or more floors or landings of a building or structure;

(3) Has a vertical rise of at least five feet and no more than sixty feet;

(4) Has a maximum speed of fifty feet per minute;

(5) Is an isolated, self-contained lift and is not a part of a conveying system;

(6) Travels in an inclined or vertical, but not horizontal, direction;

(7) Is operated only by, or under the direct supervision of, an individual designated by the employer; and

(8) Is installed in a commercial or industrial area, and not in an area that is open to access by the general public.

OTHER LIFTING DEVICES as regulated by WAC 296-81 shall include the equipment listed under Section 1 of ANSI A17.1. The building official shall have the responsibility for making a decision as to whether the proposed installation and use of the device is subject to the requirements of this chapter.

SUPERVISOR OF SAFETY as referred to in the Washington State Safety Rules (WAC-296-81) shall mean the building official.

AUTHORITY TO DISCONNECT UTILITIES, TAKE CONVEYANCES OUT OF SERVICE AND INVESTIGATE ACCIDENTS

Sec. 5105. (a) **Disconnection of Utilities.** In addition to the provisions for Emergency Orders provided in Section 203 of this code, the building official shall have the authority to disconnect or order discontinuance of any utility service or energy supply to equipment regulated by this code in cases of emergency or where necessary for safety to life and property. Such utility service shall be discontinued until the equipment, appliances, devices or wiring found to be defective or defectively installed are replaced, repaired, or restored to a safe condition. Proper posting and seals shall be affixed to the equipment to prevent inadvertent use.

(b) **Conveyances Out of Service.** A conveyance shall be taken out of service temporarily after the building official has inspected the unit for proper parking of the car, securing the hoistway openings, and disconnection of power. A seal and tag shall be placed on the equipment to insure against unauthorized use. A conveyance may remain in a temporarily out-of-service status for a period not to exceed two years, after which time it shall be placed in a permanently out-of-service status.

> **EXCEPTION:** Elevators which could be returned to service without repair may remain in a temporary out-of-service status with approval of the building official.

A conveyance shall be deemed permanently out of service by landing the car and counterweights and removing the hoisting cables or fluid lines. Conveyances placed in a permanently out-of-service status shall have the hoistway sealed off for fire protection by securing existing doors.

Conveyances in an out-of-service status either temporarily or permanently may be placed back into service and classified as an existing installation unless determined to be hazardous by the building official. Requirements in effect at that time must be completed before certification and use. No installation or reconnection of hydraulic elevators powered by city water pressure will be permitted.

(c) **Report and Investigation of Accidents.** The owner or the owner's authorized agent shall promptly notify the building official of each accident which requires the service of a physician or results in a disability exceeding one day, and shall afford the building official every facility for investigating and inspecting the accident. The building official shall without

delay, after being notified, make an inspection and shall place on file a full and complete report of the accident. The report shall give in detail all material facts and information available and the cause or causes, so far as they can be determined. The report shall be open to public inspection at all reasonable hours. When an accident involves the failure or destruction of any part of the construction or the operating mechanism of a conveyance, the use of the conveyance is forbidden until it has been made safe; it has been reinspected and any repairs, changes, or alterations have been approved by the department; and a permit has been issued by the building official. The removal of any part of the damaged construction or operating mechanism from the premises is forbidden until the building official grants permission to do so.

INSTALLATION AND ALTERATION PERMITS

Sec. 5106. (a) **Installation Permits.** A permit issued by the building official shall be required to install any elevator, escalator, dumbwaiter, automobile parking elevator, material lift or moving walk. A separate permit shall be obtained for each conveyance installed regardless of location and/or contract arrangements.

(b) **Alteration/Repair Permits.** A permit is required to make any alterations to existing elevators, escalators, dumbwaiters, automobile parking elevators, material lifts, moving walks or lifts for people with disabilities. A separate permit shall be obtained for each conveyance altered or relocated regardless of location and/or contract arrangements.

EXCEPTIONS: 1. Permits for repairs required by inspection reports may be combined for a single building.

2. The building official may issue a single permit for minor alterations to more than one conveyance which do not require individual retesting of each conveyance.

3. No permit shall be required for ordinary repairs, made with parts of the same materials, strength and design normally necessary for maintenance.

4. No permit shall be required for: modifications of cars which do not change the weight or materials (see ANSI A17.1, Rules 1202.4b and 1203.2m; connection of alarm to stop switch; securing of car top exit cover; installation of door extension panels; cable guards; switch covers; access ladders or access modification; capacity posting; repairs of lighting fixtures; counterweight and pit guards; photoelectric eye devices and/or repairs to hoistway enclosures. All such installations and/or modifications shall be in conformance with the requirements of this code.

PLANS AND SPECIFICATIONS

Sec. 5107. In lieu of complete erection drawings and plans the building official may require details of any portion of an installation. When an installation requires material, fabrication or construction other than recognized standard types, has an offset car frame or is an observation-type elevator installed in other than a fully enclosed hoistway, drawings and details shall be submitted with the application for permit.

REQUIRED INSTALLATION INSPECTIONS

Sec. 5108. It shall be the duty of the person doing the work authorized by a permit to notify the building official that such work is ready for inspection.

It shall be the duty of the person requesting any inspections required by this code to provide access to and means for proper inspection of such work.

Final inspection shall be called for when the work described on the permit has been completed, and when ready for testing with weights and instruments as may be needed. A final inspection is required after all wiring has been completed and all permanent fixtures such as switches, outlet receptacles, plates, lighting fixtures and all other equipment has been properly installed and the hoistway and machine rooms are properly completed.

CERTIFICATES OF INSPECTION AND OPERATION

Sec. 5109. (a) **Certificates Required.** It shall be unlawful to operate any elevator, escalator, dumbwaiter, automobile parking elevator, material lift or moving walk without a certificate of inspection issued by the building official. A certificate of inspection shall be issued following an inspection by the building official showing that the conveyance has been found to be in safe operating condition and applicable fees for inspection time, as put forth in the Permit Fee Ordinance, have been paid. The certificate shall remain valid until 45 days after the next inspection or until the cerificate is withdrawn, whichever comes first.

> **EXCEPTION:** The building official may, after inspection of a conveyance under construction, authorize temporary use of the conveyance without issuing a certificate of inspection if the building official determines that temporary operation of the conveyance is reasonably safe. The building official may authorize temporary use for a period not to exceed 60 days to allow completion of the installation and passing of the final inspection.
>
> If, at any time during the period of temporary use, the building official determines that the building owner is not making adequate progress toward obtaining a certificate of inspection, the building official may withdraw the temporary use approval on 7-day notice. The building official may forbid further use of the conveyance until a certificate of inspection is obtained.
>
> Operation of a conveyance without either a valid certificate of inspection or authorization of temporary use shall be a violation of this code, as described in section 205.

Whenever any conveyance is found to be unsafe or failing to comply with a notice of correction, the building official may withdraw the certificate of inspection.

(b) **Periodic Inspections.** The building official shall cause inspections to be made of every conveyance at intervals of 12 months or as soon thereafter as is practical. The inspector shall file a full and correct report on each conveyance with the building official that shall note any ordinance violations, corrections required and/or the general condition of the conveyance.

(c) **Inspection Report by Building Official.** After each inspection of a conveyance the building official shall mail a copy of the inspection report to the owner of the conveyance inspected. If inspection shows a conveyance to be in violation of the requirements of this chapter, the building official shall issue a notice in writing listing the corrections to be made to the conveyance which are necessary to bring it into compliance with this chapter and may order the operation thereof discontinued until the corrections are made.

(d) **Inspections, Tests and Test Reports.** Reports of required tests shall be submitted to the owner and to the building official on forms furnished by the building official. Performance of required tests and their cost shall be the responsibility of the owner. Identification of conveyances shall be noted by use of assigned city numbers.

REQUIREMENTS FOR OPERATION AND MAINTENANCE

Sec. 5110. The owner shall be responsible for the safe operation and maintenance of each device regulated by this chapter. The installation of pipes, ducts, conduits, wiring or the storage of materials not required for the operation of the elevator is prohibited in machine rooms and hoistways. Sidewalk elevators on public places are also subject to the requirements of Title 15, Seattle Municipal Code, Street and Sidewalk Use, as amended. (See also Section 1719.)

RETROACTIVE REQUIREMENTS FOR EXISTING INSTALLATIONS

Sec. 5111. (a) **General.** Existing conveyances shall be made to comply with the State of Washington "Safety Rules Governing Existing Elevators, Dumbwaiters, Escalators, and Moving Walks" (WAC 296-81) and the provisions of this section.

Alterations and additions required under this section shall not be construed as major alterations as specified in the ANSI Code.

(b) **Doors to Elevator and Dumbwaiter Machine Rooms.** Elevator and dumbwaiter machine room doors shall be self-closing and self-locking. The lock shall be a spring-type lock arranged to permit the door to be opened from the inside without a key, incapable of being left in the unlocked position, and accessible only by a key from the outside.

(c) **Key Retainer Box.** A key retainer box locked and keyed to the standard City access key for elevator access and operation keys shall be provided. The retainer box shall meet the following standards:

1. Dimensions - eight inches high, six inches wide, one inch deep.
2. Material - sixteen gauge steel welded.
3. Color - red (unless located in the main lobby above the hall call button, six feet nominal above the floor).
4. Labeling - "FOR FIRE DEPARTMENT USE."
5. Lock - Ace one-inch cylinder cam lock key #39504.

The key box is to be installed at the designated recall floor above the Phase I recall switch or in the main lobby above the hall call button when no recall feature exists. The key box is to be mounted six feet nominal above the floor. Other locations may be approved by the building official upon request.

(d) **Elevator Access Keys.** Keys for access to and for the operation of elevator equipment shall be tagged and retained in the key box. They shall be designated "ELEVATOR" and may consist of any or all of the following:

1. Machine room door;
2. Secondary level door;
3. Pit door;
4. Roof door;
5. Independent, hospital emergency and/or attendant operation;
6. Fire emergency service (Phase I and II) (one key for each switch);
7. Hoistway access;
8. Mechanical hoistway access devices (broken arm, lunar, etc.);
9. Miscellaneous switch keys.

(e) **Passenger Elevator Emergency Stop Buttons.** Passenger elevator emergency stop buttons or switches shall be so installed and connected as to activate the elevator alarm when in the stop position. An optional door hold open switch may be provided if desired, but such door hold open function shall automatically cancel upon activation of a Phase I recall.

(f) **Passenger Elevator Exit Covers.** Passenger elevator exit covers shall open outward and shall be hinged or otherwise attached to the car top and so arranged that the cover shall be opened from the top of the car only.

(g) **Dumbwaiter Machinery Access.** Access doors to dumbwaiter machinery space shall be provided with electric contacts and labeled on the exterior side "DANGER - DUMBWAITER MACHINE" in one-inch letters.

(h) **Buffers.** Buffers shall be installed in pits in accordance with ANSI A17.1, Section 201.

(i) **Machine Space Lighting.** Lighting of the machine rooms shall comply with ANSI A17.1, Rule 101.5a as amended below:

Permanent electric lighting shall be provided in all machine rooms and machinery spaces.

The illumination shall be not less than 10 footcandles at the floor level. The lighting control switch shall be located within easy reach of the access to such rooms or spaces. ((~~Where practicable~~)) The light control switch shall be located on the lock-jamb side of the access door.

Elevator machinery spaces shall be provided with an electrical outlet.

(j) **Access to Terminal Landings.** Access to terminal landings of elevator hoistways shall be provided in accordance with ANSI A17.1, Rule 111.9(e) (by the use of lunar or broken arm key).

(k) **Material for Passenger Car Enclosure.** Material for passenger car linings shall comply with the following:

1. ANSI A17.1, Rule 204.2a, as amended by the following:

   a. Seattle Building Code regulations concerning flame spread ratings for wall coverings and use of plastics (See Chapters 17, 42 and 43);

b. Carpeting without padding may be used for interior finishes provided it shall have a Class I rating, flame spread of 25 or less which must include all the components of assembly other than the adhesive. The adhesive shall be a slow-burning type;

c. Slow-burning combustible materials other than carpet may be used for interior finishes provided they have a Class II rating or better (flame spread of 75 or less) which must include all components of assembly other than the adhesive. Materials shall be firmly bonded flat to the enclosure and shall not be padded. Fabric materials with spray-type fireproofing shall not be installed in elevators.

Equivalent ratings in watts per centimeter squared as derived in the radiant flux test are also acceptable. (See Table No. 42-C.)

.45 watts/cm^2 or higher is equivalent to Class 1 or better.
.22 watts/cm^2 or higher is equivalent to Class 2 or better.

In the radiant flux test, the higher the number of watts the better the resistivity to flame. In the flame spread test Class I and II system, the lower the number, the better the resistivity to flame.

Smoke density of materials shall be less than 450 when tested in accordance with UBC Standard No. 42-1.

d. Certification that the materials and assembly meet these requirements shall be submitted to the building official.

(l) **Control and Operating Circuits and Overcurrent Protection.** Control and operating circuit requirements shall comply with ANSI A17.1, Rules 209.3c, 210.9 and 306.9. Overcurrent protection shall be maintained in accordance with Article 620-61, Seattle Electrical Code.

(m) **Roped Hydraulic Elevators.** Roped hydraulic elevators may continue in service but once taken out of service may not be reactivated. Single flat belt drive systems are prohibited.

(n) **Door By-Pass Systems.** Door by-pass systems where used shall conform to the requirements of ANSI A17.1, Rule 210.1e.

(o) **Pit Access and Equipment.** Access ladders shall be installed in elevator pits deeper than 4 feet.
Pit light control switches shall be located inside the hoistway of every elevator within 18 inches of the access door and approximately 48 inches above the threshold.
Access shall be provided for safe maintenance and inspection of all equipment located in the pit.

(p) **Hand Line Controls.** Hand line controls are prohibited.

(q) **Guards.** Gears, sprockets, sheaves, cables, tapes, belts and chains shall be fitted with suitable guards to prevent accidental contact as is practical. Openings in machine room floors above the hoistway shall be guarded to prevent common tools from falling into the hoistway below. Ventilation grids where exposed to

the hoistway below shall be firmly bolted or secured to prevent accidental removal and shall be fitted with 1/2-inch wire mesh under the grid.

(r) **Floor Numbers.** Elevator hoistways shall have floor numbers, not less than 2 inches in height, placed on the walls and/or doors of hoistways at intervals such that a person in a stalled elevator upon opening the car door could determine the floor position.

(s) **Car Top Work Light.** A permanently wired work light and outlet shall be installed on top of freight and passenger elevators to provide adequate illumination for inspection and work in the hoistway.

(t) **Threshold Clearance.** 1. The maximum dimension from the hoistway door or gate face to the hoistway edge of the threshold shall not exceed 2-1/4 inches.

2. The maximum clearance from the car door or gate face to the edge of the car threshold shall not exceed 2-1/4 inches.

(u) **Labeling.** All equipment (disconnect switches, machines and controllers) operating on a voltage in excess of 250 volts shall be labeled for the voltage used in letters 3/4 inches high.

(v) **Capacity and Loading.** For existing passenger and freight elevators, the requirements of ANSI A17.1, Rule 207 shall be regarded as a minimum. Minimum load capacity of existing freight elevators may be reduced to 30 pounds per square foot with the approval of the building official.

(w) **Interior Alterations.** Alterations or modifications of elevator car interiors shall comply with ANSI A17.1, Rule 1202.4b (increases in dead weight of car), Seattle Building Code requirements concerning flame spread ratings for wall coverings [See Chapter 42 and Section 5111(k).], and lighting requirements of ANSI A17.1.

(x) **Platform Guards (Aprons).** The entrance sides of passenger and freight elevators equipped with leveling devices, truck zone devices or other controls to permit stopping at a height above the normal floor level shall be protected with suitable aprons. Each apron shall have a straight vertical face, be the full width of the opening, flush with the outer edge of the platform and have a depth not less than the distance between the normal landing level and the highest landing level at any floor plus 3 inches. The construction of the apron shall meet or exceed the requirements of ANSI A17.1, Rule 203.9.

(y) **Flexible Hydraulic Connections.** When flexible hydraulic connections are replaced, the requirements of ANSI A17.1, Rule 303.1d shall be complied with in all respects. Where flexible connections pass through walls the replacement shall be made with steel piping.

(z) **Machine Room Enclosures.** Machine room enclosures shall comply with ANSI A17.1, Rules 101 and 300; and Seattle Electrical Code, Article 620. There shall be no storage of miscellaneous items other than those permitted by ANSI A17.1, Rule 1206.2b. There shall be no infringement on required elevator clearances.

(aa) **Access to Overhead Sheave Spaces.** Overhead sheave spaces requiring inspection and maintenance shall be provided with suitable access and decking to provide a safe space for personnel. Where decking does not cover the complete hoistway, guard rails shall be provided. Support shall be similar to that required for the top of an elevator car and may be made of either wood or metal compatible with the existing hoistway construction. Servicing from the top of the car is permitted if no ladder is required.

(bb) **Illumination.** Illumination in the elevator car shall be maintained unless it is turned off manually by the switch in the car. A toggle-type test switch shall be provided on the top of the car to cut lighting power manually and test the emergency lighting.

(cc) **Car Top Station.** A control station shall be installed on top of automatic freight and passenger elevators with a vertical rise of more than 15 feet. For elevators having a speed of less than 150 feet per minute and where control is automatic (including constant pressure from outside the hoistway), this requirement shall be effective November 19, 1990. Control stations of the plug-in module type may not be installed. Modules for existing plug-in control stations must be kept available in the machine room. (See ANSI A17.1, Rule 210.1d).

(dd) **Car Number Designation.** In any building with more than one elevator, escalator or other type of conveyance a designating number (not less than two inches in height) shall be located at the door of the main entrance lobby, alternate recall floor where provided, inside the car, on the machine and on the disconnect switch or stop switch.

(ee) **Service Outlets.** Service outlets in or on elevator cars, hoistways and machinery spaces shall be of the grounded type.

(ff) **Anchorage for Seismic Activity.** Any elevator equipment, hydraulic or cable type, that is displaced by result of seismic activity shall be anchored to conform with current standards when repaired or reanchored to the building.

(gg) **Restricted Opening of Doors.** All existing passenger elevators in Group R, Division 1 hotels and dormitory buildings shall comply with the requirements of ANSI A17.1, Rule 111.12 within 2 years of the effective date of this code.

(hh) **Keys for Wheelchair Lifts.** Inclined stairway chairlifts and inclined and vertical wheelchair lifts installed in locations other than in or at a private residence for use by people with disabilities shall be keyed to the City of Seattle standard key "electric switch lock double-sided key #2252". All existing elevators shall be in compliance with this subsection within 2 years of the effective date of this code.

RETROACTIVE REQUIREMENTS FOR EXISTING MATERIAL LIFTS

Sec. 5112. (a) **General.** Existing material lifts shall be made to comply with the following requirements. (Note: New material lifts shall comply with all the requirements contained in WAC 296-93).

(b) **Hoistway Enclosure Gates and Doors.** The openings at each material lift landing must have gates or doors that guard the

full width of the opening. A hoistway door shall be vertically sliding, bi-parting, counter-balanced, or horizontally swinging or sliding. Gates and doors must meet the following requirements:

1. A balanced-type, vertically sliding hoistway gate shall extend from not more than two inches from the landing threshold to not less than sixty-six inches above the landing threshold.

2. A gate shall be solid or openwork of a design that will reject a ball two inches in diameter. A gate shall be located so that the distance from the hoistway face of the gate to the hoistway edge of the landing sill is not more than two and one-half inches. A gate shall be designed and guided so that it will withstand a lateral pressure of one hundred pounds applied at approximately its center without breaking or being permanently deformed and without displacing the gate from its guides or tracks.

3. Hoistway gates or doors shall have a combination mechanical lock and electric contact, which shall prevent operation of the material lift by the normal operating devices unless the door or gate is closed.

(c) **Controls.** 1. The control station shall be remotely mounted so that it is inaccessible from the material lift car.

2. Controls shall be clearly marked or labeled to indicate the function of control.

3. All control stations shall have a stop switch. When opened, the stop switch shall remove the electrical power from the driving machine and brake. The stop switch shall:

A. Be manually operated;
B. Have red operating handles or buttons;
C. Be conspicuously and permanently marked "STOP";
D. Indicate the stop and run positions; and
E. Be arranged to be locked in the open position.

(d) **Capacity Posting and No-Riders Sign.** 1. Each material lift shall have a capacity sign permanently and securely fastened in place in the material lift car and on the landings. The sign shall indicate the rated load of the material lift in pounds. The sign shall be metal with black letters two inches high on yellow background.

2. A sign stating "NO PERSONS PERMITTED TO RIDE THIS DEVICE" shall be conspicuously and securely posted on the landing side of all hoistway gates and doors and in the enclosure of each material lift car. The sign shall be metal with black letters two inches high on red background.

Sec. 5113. No requirements.

EMERGENCY SERVICE FOR ELEVATORS IN EXISTING BUIDINGS - PHASE I RECALL.

Sec. 5114. (a) **General.** All existing elevators requiring Phase I recall when installed or under Article 93 of the Seattle Fire Code shall comply with this section.

EXCEPTIONS: 1. Elevators which comply with the standards for new installations as provided in Section 5118;

2. Elevators with less than 25 feet of travel when the building official and the fire chief give written approval; and

3. Elevators which comply with ANSI A17.1, Rule 211.3a 1984 edition or later and subsections (j) and (k) below.

(b) **Phase I Recall Keyed Switch.** A three-position (on, off and by-pass) key cylinder switch shall be provided at the designated level for each elevator or group of elevators. Key operated toggle switches may only be approved for use by the building official. Plans and a sample switch shall be submitted for approval. (Group is hereby defined as all elevators serving the same portions of a building: highrise, midrise, lowrise, etc.) See Section 5117 for duplicate switches when a central control station is provided.

(c) **Keyed Cylinder-Type Switches.** Keyed cylinder-type switches shall comply with the following:

1. Keys shall be removable only in the emergency (on) and normal (off) positions. Keys shall not be removable in the by-pass position.

2. One key shall be provided for each Phase I switch or key cylinder.

3. All emergency operation cylinders (Phases I and II) shall be keyed alike but such key shall not be a part of a building master key system.

(d) **Key Location.** 1. When a central control station is provided, the keys shall be identified by a ring or paddle and hung in a location designated by the Fire Department in the control station.

2. Where there is no central control station, a key box meeting the standards of Section 5111(c) shall be provided at the designated recall floor above the Phase I recall switch. The key box is to be mounted approximately six feet above the floor. Other locations may be approved upon request.

(e) **Key Switch Functions.** 1. The three positions of the switch shall be marked normal (off position), emergency (on position) and by-pass (by-pass position).

2. When the switch is in the "off" position, normal elevator service shall be provided and smoke detectors, where required, shall be functional.

3. When the switch is in the "by-pass" position, normal elevator service shall be restored independent of any required smoke detectors.

4. When the switch is in the "on" position, the elevators are in Phase I elevator recall mode.

(f) **Phase I Automatic Recall Operation.** When the Phase I recall switch is in the emergency (on) position:

1. All cars controlled by this switch which are on automatic service shall return nonstop to the designated level and power-operated doors shall open and remain open.

2. A car traveling away from the designated level shall reverse at or before the next available floor without opening its doors.

3. A car stopped at a landing shall have the in-car emergency stop switch rendered inoperative as soon as the doors are closed and the car starts toward the designated level. A moving car, traveling to or away from the designated level, shall have the in-car emergency stop switch rendered inoperative immediately.

4. A car standing at a floor other than the designated level, with doors open and in-car emergency stop switch in the run position, shall conform to the following:

   A. Elevators having automatic power-operated horizontally sliding doors shall close the doors without delay and proceed to the designated level;

   B. Elevators having power-operated vertically sliding doors provided with automatic or momentary pressure closing operation in accordance with ANSI A17.1, Rule 112.3d shall have the closing sequence initiated without delay in accordance with ANSI A17.1, Rule 112.3d (1), (2), (3) and (5) and the car shall proceed to the designated level;

   C. Elevators having power-operated doors provided with continuous pressure closing operation per ANSI A17.1, Rule 112.3b or elevators having manual doors shall conform to the requirements of Section 5114(g). Sequence operation, if provided, shall remain effective.

5. Door reopening devices for power-operated doors which are sensitive to smoke or flame shall be rendered inoperative. Mechanically actuated door reopening devices not sensitive to smoke or flame shall remain operative. Car door open buttons shall remain operative. Door closing shall conform to the requirements of ANSI A17.1, Rule 112.5. Door hold open switches shall be rendered inoperative.

6. All car and corridor call buttons and all corridor door opening and closing buttons shall be rendered inoperative. All call register lights and directional lanterns shall be extinguished and remain inoperative. Position indicators, when provided, shall remain in service. All prior registered calls shall be cancelled.

7. The activation of a smoke detector installed in accordance with Article 93 of the Seattle Fire Code in any elevator lobby or associated elevator machine room, other than the designated level, shall cause all cars in all groups that serve that lobby to return nonstop to the designated level. The fire chief may approve the connection of other detection devices to activate recall. The operation shall conform to the requirements of Phase I emergency recall operation. Whenever new elevator controllers are installed, they shall meet all provisions of the then current building and elevator codes. Newly installed controllers shall have the capability of selecting alternate recall floors.

(g) **Attendant-Operated Recall Operation.** Attendant-operated elevators shall be provided with visible and audible signals which alert the operator to return to the lobby when the car has been recalled under Phase I control.

(h) **Dual Recall Operation.** Elevators arranged for dual operation shall conform to all requirements for automatic operation and attendant operation as applicable.

(i) **Inspection/Maintenance Recall Operation.** During inspection operation the audible and visible signals required in Section 5114(g) will be actuated when the car has been recalled under Phase I control. The car shall remain under the control of the operator and/or car top station until the car is returned to service.

(j) **Nurses' Preemption.** Nurses' preemption (hospital service) may be allowed to commandeer up to one-half of the cars in a particular bank of elevators. At least one-half of the cars shall respond to Phase I and all cars not preempted shall respond.

(k) **Operation Instruction.** Operation instructions shall be available in accordance with ANSI A17.1, Rule 211.7. In addition, Phase I operating instructions shall be adjacent to the Phase I switch in the fire control center and other approved locations.

(l) **Latching.** All cars responding to Phase I Recall, activated by a smoke detector or other approved detection device, shall return to the appropriate recall floor as determined by the first detector recall signal received. No device, other than the Phase I switch (Rule 211.3a), may override the first recall signal received. A later detection signal shall not change the recall floor. Smoke detector activation shall only be reset manually.

EMERGENCY SERVICE FOR ELEVATORS IN EXISTING BUILDINGS - PHASE II HIGHRISE IN-CAR OPERATION

Sec. 5115. (a) **General.** Existing elevators in buildings having floors used for human occupancy located more than 75 feet above the lowest level of fire department vehicle access, or buildings having floors used for human occupancy 35 feet above grade, which lack fire department vehicle access to at least one side shall have Phase II in-car operation and shall comply with this section.

EXCEPTIONS: 1. Elevators which comply with the standards for new installations as provided in Section 5119;

2. Elevators with less than 25 feet of travel when the building official and fire chief give written approval; and

3. Elevators which comply with ANSI A17.1, Rule 211.3c.

(b) **Phase II In-Car Operation Key Switch.** 1. A two-position (off and on) key cylinder switch shall be provided in each elevator car.

2. The switch shall become effective only when the designated level Phase I switch is in the on position or a smoke detector has been activated and the car has returned to the designated level. The on position shall place the elevator in Phase II in-car operation.

3. The elevator shall be removed from Phase II operation only by moving the switch to the off position with the car at the designated level.

4. The switch shall be operable by the Phase I key and such key shall not be part of a building's master key system.

5. The key shall be removable only in the off position.

6. One key shall be provided for each Phase II switch or key cylinder.

(c) **Key Location.** See Section 5114(d) for the location of the keys.

(d) **Designated Operator.** The operation of elevators on Phase II emergency in-car operation shall be by trained emergency service personnel only.

(e) **Car Operation Only.** An elevator shall be operable only by a person in the car.

(f) **Corridor Call Buttons and Directional Lanterns.** All corridor call buttons and directional lanterns shall remain inoperative.

(g) **Car and Hoistway Door Operation.** The operation of car and hoistway doors shall comply with the following:

1. The opening of power-operated doors shall be controlled only by constant pressure open buttons or switches.

2. If the constant pressure open button or switch is released prior to the doors reaching the fully open position, the doors shall automatically reclose. Once doors are fully open, they shall remain open until signaled to close.

3. The closing of power-operated doors shall be by constant pressure of either the call button or door close button. If a door close button is supplied, it shall be operable.

4. If the constant pressure close button or car call button is released prior to the doors reaching the fully closed position, the doors shall automatically reopen. Once doors are fully closed, they shall remain closed until signaled to open.

   EXCEPTION: Momentary pressure control of doors using the sill trip-type operator may be permitted as existing; however, the doors must not open automatically upon arrival at a floor.

(h) **Door Reopening Devices.** Smoke-sensitive door reopening devices and door open switches shall be rendered inoperative. Non-smoke sensitive door reopening devices required to be operative under all other conditions may be rendered inoperative under Phase II in-car operation only if the doors are closed by constant pressure.

(i) **Car Call Cancellation.** All registered calls shall cancel at the first stop.

(j) **Direction of Travel.** Direction of travel and start shall be by the car call buttons. With doors in the closed position, actuation of the car call button shall select the floor, and start the car to the selected floor. If no door close button is available, constant pressure of the car call button shall select the floor, close the door, and start the car to the selected floor.

> **EXCEPTION:** On proximity-type car call buttons or any other type subject to false firing (calls being placed by line spikes, intermittent loss of power, etc.), the doors must be closed by a door close button. Floors may be selected either before or after closing of the doors. The car will start only on the call button or door close button depending on which is the last device to be actuated.

(k) **Motor Generator Time Out.** The motor generator shall not time out automatically.

(l) **Car Position Indicators.** The car position indicators, when provided, shall be operative.

(m) **Phase II Priority.** Phase II operation shall override any floor calls keyed out for security reasons.

(n) **False Starts.** The elevator shall not start with no calls registered.

(o) **Terminal Runs.** The elevator shall not make unprogrammed terminal runs.

(p) **Loss of Power.** Elevators on fire emergency Phase II car operation shall remain in their respective locations and in Phase II mode upon loss of power. They shall not move unless the elevator is under the control of the operator and power has been restored.

NEW INSTALLATIONS AND MAJOR ALTERATIONS - CONSTRUCTION STANDARDS

Sec. 5116 (a) **General.** All new elevators, escalators, moving walks and dumbwaiters and their installation shall conform to the requirements of ANSI A17.1 as amended in this section and to the specific requirements of Sections 5117, 5118 and 5119. A major alteration as defined in Part XII of ANSI A17.1 shall comply with the requirements of Part XII. Where Part XII refers to a requirement which has been amended by this chapter, the requirements of this chapter shall take precedence. For elevator shaft requirements, see Table No. 17-A. All new material lifts and major alterations to existing material lifts shall conform to the requirements contained in Chapter 296-93 of the Washington Administrative Code.

(b) **Material for Passenger Car Enclosures and Enclosure Linings.** Material for passenger car enclosures and linings shall comply with the following:

1. ANSI A17.1, Section 204.

2. Seattle Building Code requirements concerning flame spread ratings for wall coverings and use of plastics (See Chapters 17, 42 and 43).

3. Carpeting without padding may be used for interior finishes provided it shall have a Class I rating, flame spread of 25 or less which must include all the components of assembly other than the adhesive. The adhesive shall be a slow-burning type.

4. Slow-burning combustible materials other than carpet may be used for interior finishes provided they have a Class II rating or better (flame spread of 75 or less) which must include all components of assembly other than the adhesive. Materials must be firmly bonded flat to the enclosure and shall not be padded. Fabric materials with spray-type fire-proofing shall not be installed in elevators.

   Equivalent ratings in watts per centimeter squared as derived in the radiant flux test are also acceptable. (See Table 42-C.)

   .45 watts/cm^2 or higher is equivalent to Class 1 or better.
   .22 watts/cm^2 or higher is equivalent to Class 2 or better.

   In the radiant flux test, the higher the number of watts the better the resistivity to flame. In the flame spread test Class I and II system, the lower the number, the better the resistivity to flame.

   Smoke density of materials shall be less than 450 when tested in accordance with UBC Standard No. 42-1.

5. Certification that the materials meet these requirements shall be submitted to the building official.

(c) **Working Clearances.** Working clearances shall conform to the following. The minimum clear space working clearances shall be 18 inches on two sides and between units of controllers, selectors and/or walls or other building obstructions. The minimum clear space in front of controllers shall be 48 inches. The minimum clear space at the rear of controllers with back-wiring, terminals or other elements requiring access shall be 36 inches. Such clearance shall be free of pipes, vents, storage, ducts or any other obstruction. The 18 inches side clearance may be combined to permit 36 inches clear on one side only.

(d) **Seismic Considerations.** All requirements of ANSI A17.1, Appendix F are superseded by the following:

The anchorage of the elevator drive and suspension systems shall be designed in accordance with Section 2336 for a lateral force based upon a *Cp* value of 1.25 unless data substantiating a lesser value is furnished. Stress values may be increased 1/3 in accordance with Section 2303(d). Calculation of loads shall be applied to produce maximum stress. Elevator drive and suspension systems requiring seismic anchorage shall include:

1. **Cabled Elevators**

   A. Machine room equipment.

   B. Counterweight system.

(i) Weights and rails.
(ii) Deflecton and compounding sheaves.
(iii) Car sling and rails.

2. **Hydraulic Elevators**

A. Machine room equipment.

B. Hydraulic lines of hydraulic elevators shall not cross building seismic joints.

C. Hydraulic elevators shall have a safety valve in accordance with ANSI A17.1-1987 paragraph F303.5.

(e) **Requirements to Accommodate People with Disabilities.** All new elevators shall comply with Washington Administrative Code Chapter 51-10. In addition, WAC 296-81-315 and -335 shall apply.

(f) **Hoistway Smoke Control.** Requirements of ANSI A17.1, Rule 100.4 are superseded by the following:

1. Hoistways of elevators shall be provided with means to prevent the accumulation of smoke and hot gases in case of fire.

2. When an elevator hoistway is pressurized and emergency power is provided for the pressurization equipment under the provisions of Section 1807, hoistway venting will not be required.

3. When pressurization is installed in elevator shafts, the pressurization of the shaft shall be measured with all elevator systems in recall mode, Phase I, and all cars at the designated recall level with the doors in the open position.

4. Unless specifically installed to serve that space only, environmental air systems and pressurization systems shall not be located in hoistways, elevator mechanical rooms and elevator machinery spaces.

EXCEPTIONS: 1. Pressurization ducts serving a hoistway which are separated from the room or space by construction equal to the rated construction of the room or space and so located that all required clearances are maintained.

2. Pressurization duct openings, dampers and grilles may be located in hoistway shaft walls provided the pressurization air does not impair the operation of the elevator.

5. Hoistways shall not be pressurized through pressurization of elevator machine rooms. The machine room floor between the hoistway and overhead machine room shall contain as few penetrations as possible. All penetrations for cable drops, etc., shall be held to a minimum size.

6. Elevator doors must operate properly when hoistway pressurization is in effect.

7. Ventilation louver operating motors shall not infringe on any elevator machinery or controller working clearances.

8. Hoistways shall be vented in accordance with the following:

A. Hoistways of elevators with more than 25 feet of travel from lowest floor level to highest floor level shall be provided with means for venting smoke and hot gases to the outer air in case of fire.

EXCEPTIONS: 1. Pressurized hoistways with less than 75 feet of travel may be unvented.

2. Pressurized hoistways with emergency power may be unvented.

B. Vents, if used, shall be located in the side of the hoistway enclosure directly below the machinery floor or ceiling at the top of the hoistway, and shall open directly to the outer air or through noncombustible ducts to the outer air. Ducts must have the same rating as is required for the hoistway they are venting.

C. The area of the vents shall not be less than three and one-half percent of the area of the hoistway nor less than three square feet for each elevator car, whichever is greater. The required area of the vent is to be free area, unobstructed by louvers, etc.

9. Hoistway vents may be of the closed type which open automatically in the event of smoke or heat. Openings shall be fail safe and not subject to malfunction or loss of power.

(g) **Elevator Operation on Emergency Power.** All elevators operating on emergency or standby power, when supplied, shall comply with the following:

1. Each elevator shall be transferable to the emergency supply when the emergency supply is designed with the capacity to accommodate the elevators.

2. Emergency power supply systems capable of handling all elevators on the premises need no sequencing or switching other than the possibility of staggering the restarting of the generators.

3. Emergency power supply systems whose capacity can only handle one elevator of a duplex or one elevator in each group of elevators shall comply with the following. (For the purposes of this section, group is defined as all elevators serving the same portions of a building: highrise, midrise, lowrise, etc.)

A. All elevators on automatic operation shall be automatically assigned emergency power in sequence and returned to the Phase I recall or lobby floor, where they shall open their doors and then time out of service.

B. The last car down will generally be the selected car of a duplex or a group to remain in service. The service shall continue to be automatic.

C. The assignment of emergency power will skip or rotate past cars which may be out of service (emergency stop switch pulled, malfunction, car top operation, etc.). If assignment is made to a manual or attendant-operated car and the car is unattended, the system shall rotate past the car as though it is out of service.

4. The car and elevator machine room lights shall be activated on the emergency system.

5. A manual emergency power assignment switch or switches shall be in an elevator status panel located in the fire department central control station. Each elevator shall be capable of being assigned emergency power from this location. The manual switching shall be effective at all times other than when the cars are automatically sequencing to the lobby or when the selected car is traveling. The switch shall not remove power in midflight or with doors closed.

6. Elevators on Phase II car operation shall remain in their respective locations upon loss of power. They shall remain in Phase II mode and shall not move unless the elevator is under the control of the operator and normal power has been restored or emergency power has been assigned to the car by either automatic or manual means.

7. Loss of power and initiation of emergency power immediately after Phase I recall operation has occurred shall not cause any cars to be stranded in the building. Upon the application of emergency power to the equipment, the cars shall follow the normal sequencing to the lobby, open their doors and time out of service. When all cars have been bypassed (out of service) or returned to the lobby, the assigned car shall then become available for firefighter's use on Phase II in-car operation.

8. Each elevator operating on emergency power shall be tested in accordance with applicable ANSI A17.1-1987, Rules 207.8 and 210.10, and ANSI A17.2-1985, Division 118. Note: Rule 207.8 and Division 118 require the tests to be performed with 125 percent of rated load.

9. If the elevator cars are recalled to the alternate floor by Phase I recall and a loss of power occurs, the cars shall be sequenced to the alternate floor upon assignment of standby or emergency power. The cars shall not go to the primary designated recall floor under these conditions.

10. The elevator position indicator system when provided shall not become disoriented due to the loss of power or any other reason, however, upon the resumption of power, the car may move to reestablish absolute car position.

11. Communications to the car shall remain in service.

(h) **Multiple Hoistways.** The number of elevators permissible in a hoistway shall be in accordance with this subsection. The requirements of ANSI A17.1, Rule 100.1d are superseded by the following:

1. No more than four elevators may be in a single hoistway.

2. No more than three elevators serving all or the same portion of a building may be in a single hoistway.

EXCEPTION: Four elevators serving all or the same portions of a building may be in a common hoistway under the following conditions:

A. The hoistway is pressurized; and

B. Standby generator power is available to serve both the elevators and pressurization equipment.

(i) **Additional Doors.** Doors other than the hoistway door and the elevator car door shall be prohibited at the point of access to an elevator car.

EXCEPTION: Doors which are readily openable from the car side without a key, tool, or special knowledge or effort.

(j) **Key Retainer Box.** A key retainer box locked and keyed to the standard city access key for elevator access and operation keys shall be provided. The retainer box shall meet the following standards:

1. Dimensions - eight inches high, six inches wide, one inch deep.
2. Material - sixteen gauge steel welded.
3. Color - red (unless located in the main lobby above the hall call button, six feet above the floor).
4. Labeling - "FOR FIRE DEPARTMENT USE."
5. Lock - Ace one-inch cylinder cam lock key #39504.

The key box is to be installed at the designated recall floor above the Phase I recall switch or in the main lobby above the hall call button when no recall feature exists. The key box is to be mounted approximately six feet above the floor. Other locations may be approved by the building official upon request.

(k) **Elevator Access Keys.** Keys for access to and for the operation of elevator equipment shall be tagged and retained in the key box. They shall be designated "ELEVATOR" and may consist of any or all of the following:

1. Machine room door;
2. Secondary level door;
3. Pit door;
4. Roof door;
5. Independent, hospital emergency and/or attendant operation;
6. Fire emergency service (Phase I and II) (one key for each switch);
7. Hoistway access;
8. Mechanical hoistway access devices (broken arm, lunar, etc.);
9. Miscellaneous switch keys.

(l) **Access to Terminal Landings.** Access to terminal landings of elevator hoistways shall be provided in accordance with ANSI A17.1, Rule 111.9e (by the use of lunar or broken arm key).

(m) **Escalator Starting Switches.** All escalators shall comply with ANSI A17.1, Rule 805.1a Starting Switch as amended below.

Rule 805.1a Starting Switch

Starting switches shall be of the key-operated type and shall be located so that the escalator steps are within sight. <u>"Up" and "Down" positions shall be clearly indicated on all starting switches.</u>

(n) **Keys for Wheelchair Lifts.** Inclined stairway chairlifts and inclined and vertical wheelchair lifts installed in locations other than in or at a private residence for use by people with disabilities shall be keyed to the City of Seattle standard key "electric switch lock double-sided key #2252".

NEW INSTALLATIONS AND MAJOR ALTERATIONS - GENERAL EMERGENCY OPERATION REQUIREMENTS

Sec. 5117. (a) **General.** All elevators having a travel of 25 feet or more, above or below the designated level shall conform to the requirements of this section and the specific requirements of Sections 5118 and 5119.

(b) **Multi-Deck Elevators.** Multi-deck elevators shall conform to applicable recall requirements and to additional requirements as follows:

1. The Phase I switch shall be located at the designated level served by the upper deck;

2. The switch in the car required for emergency service operation shall be located in the top deck. The elevators shall be provided with a means for placing the lower deck out of service, which means shall be located in that deck or adjacent to the entrance at the lower lobby floor.

(c) **Central Control Stations.** The following criteria shall be met where buildings provide a central control station in accordance with Section 1807:

1. A duplicate Phase I recall switch for each elevator or group as defined by Section 5118 shall be installed when the control station is not within easy line of sight of the lobby Phase I recall switches;

2. A car position indicator which shall be of a positive type that will not lose the car position nor need resetting on loss of power; however, upon the resumption of power, the car may move to reestablish absolute car position.

3. A telephone connection switch to elevator phones or a firefigher's phone jack connected to the fire control center;

4. A manual emergency power assignment switch;

5. A Phase I indicator;

6. A Phase II indicator.

(d) **Nurses' Preemption.** Nurses' preemption (hospital service) may be allowed to commandeer up to one-half of the cars in a particular bank of elevators. At least one-half of the cars shall respond to Phase I and all cars not preempted shall respond.

(e) **Phase I and II Operation Instructions.** Operation instructions shall be available in accordance with ANSI A17.1, Rule 211.7. In addition, Phase I operating instructions shall be adjacent to the Phase I switch in the fire control center and other approved locations.

NEW INSTALLATIONS AND MAJOR ALTERATIONS - PHASE I RECALL OPERATION REQUIREMENTS (ANSI A-17.1, Rule 211.3 a and b)

Sec. 5118. Elevators requiring Phase I recall emergency operation shall comply with ANSI A17.1, Rule 211.3 Firefighters' Service - Automatic Elevators as amended below.

Rule 211.3 Firefighters' Service - Automatic Elevators

((~~All automatic (non-designated attendant) operation elevators having a travel of 25 ft or more above or below the designated level shall conform to the requirements of this Rule.~~))

Phase I emergency recall operation shall be provided for all elevators with fully automatic open and close power operated doors.

> **Exception:** Connection of smoke, heat, or other detection devices which activate recall functions may only be installed with the approval of the fire chief.

211.3a Phase I Emergency Recall Operation. A three-position ("on," "off," and "by pass") key-operated switch shall be provided only at the designated level for each single elevator or for each group of elevators. The key shall be removable only in the "on" and "off" positions.

Groups of elevators containing four or more cars shall be provided with two, three-position key switches per group. A group shall be defined for the purpose of this section as all elevators serving the same portion of a building. Duplicate switches may be provided in the fire control center where Chapter 18 of this code requires such a center. Hall call buttons common to a group will remain in service unless both Phase I recall switches of a four-car or larger group are placed in the recall mode, or a fire alarm recall signal is initiated.

When the switch is in the "off" position, normal elevator service shall be provided and the smoke detectors required by Rule 211.3b shall be functional.

When the switch is in the "by pass" position, normal elevator service shall be restored independent of the smoke detector required by Rule 211.3b.

When the switch is in the "on" position:

(1) All cars controlled by this switch which are on automatic service shall return nonstop to the designated level and power-operated doors shall open and remain open.

(2) A car traveling away from the designated level shall reverse at or before the next available floor without opening its doors.

(3) A car stopped at a landing shall have the in-car emergency stop switch, where required by Rule 210.2(e), rendered inoperative as soon as the door is closed, and the car starts toward the designated level. A moving car, traveling to or away from the designated level, shall have the in-car emergency stop switch rendered inoperative immediately. Once the in-car emergency stop switch, where required by Rule 210.2(e), has been rendered inoperative, it shall remain inoperative while the car is on Phase I emergency recall operation. All other emergency stop switches shall remain operative.

(4) A car standing at a floor other than the designated level, with the doors open and the in-car emergency stop switch, where required by Rule 210.2(e), in the run position, shall conform to the following.

(a) Elevators having automatic power-operated horizontally sliding doors shall close the doors without delay and proceed to the designated level.

(b) Elevators having power-operated vertically sliding doors provided with automatic or momentary pressure closing operation per Rule 112.3d shall have the closing sequence initiated without delay in accordance with Rule 112.3d(1), (2), (3), and (5), and the car shall proceed to the designated level.

((~~(c) Elevators having power-operated doors provided with continuous pressure closing operation per Rule 112.3b or elevators having manual doors shall, when the doors are closed, conform to the requirements of Rule 211.3a. Sequence operation, if provided, shall remain effective.~~))

(5) Door reopening devices for power-operated doors which are sensitive to smoke or flame shall be rendered inoperative. Mechanically actuated door reopening devices not sensitive to smoke or flame shall remain operative. Door closing for power-operated doors shall conform to the requirements of Rule 112.5.

(6) All car and corridor call buttons and all corridor door opening buttons shall be rendered inoperative. All call registered lights and directional lanterns shall be extinguished and remain inoperative. Position indicators, where provided, shall remain in service.

(7) All cars shall be provided with a visual and audible signal system which shall be activated to alert the passengers that the car is returning nonstop to the designated level. The signal shall remain activated until the car has returned to the designated level.

(8) A car stopped at a landing shall have the door open button rendered inoperative as soon as the door is closed and the car starts toward the designated level. A moving car traveling to or away from the designated level shall have the door open button rendered inoperative immediately. Once the door open button has been rendered inoperative, it shall remain inoperative until the car has returned to the designated or alternate level.

211.3b **Smoke Detectors.** Smoke detectors shall be installed in each elevator lobby at each floor and associated machine room in accordance with NFPA No. 72E, Chapter 4. Smoke detectors are not required in elevator lobbies at unenclosed landings. The activation of a smoke detector <u>or other detection device approved by the fire chief</u> in any elevator lobby or associated elevator machine room, other than at the designated level, shall cause all cars in all groups that serve that lobby to return nonstop to the designated level. The operation shall conform to the requirements of Rule 211.3a.

((~~No device, other than the Phase I switch (Rule 211.3a) or the detectors in the elevator lobby or associated machine room, shall initiate Phase I operation.~~))

If the smoke detector at the designated level is activated, the cars shall return to an alternate level approved by the enforcing authority, unless the Phase I switch (Rule 211.3a) is in the "on" position.

Smoke detector activation shall only be reset manually.

NEW INSTALLATIONS AND MAJOR ALTERATIONS - PHASE II IN-CAR OPERATION REQUIREMENTS (ANSI A17.1, RULE 211.3 c and d)

Sec. 5119. Elevators requiring Phase II in-car operation shall comply with ANSI A17.1, Rule 211.3c and d Phase II Emergency In-Car Operation, as amended below.

211.3c Phase II Emergency In-Car Operation.

A three-position ("off," "hold," and "on," in that order) key-operated switch shall be provided in or adjacent to an operating panel in each car. It shall become effective only when the designated level Phase I switch (Rule 211.3a) is in the "on" position or a smoke detector (Rule 211.3b) has been activated, and the car has returned to the designated or alternate level by Phase I operation.

The key shall be removable in each position. The "off," "hold," and "on" positions shall not change the operation until the car is at a floor with the doors fully opened.

(1) When in the "on" position, it shall place the elevator on Phase II emergency in-car operation, for use by trained emergency service personnel only, and the elevator shall operate as follows.

(a) The elevator shall be operable only by a person in the car.

(b) All corridor call buttons and directional lanterns shall remain inoperative.

(c) The opening of power-operated doors shall be controlled only by continuous pressure door open buttons. If the button is released prior to the doors reaching the fully open position, the doors shall automatically reclose.

(d) Open power-operated doors shall be closed by continuous pressure on a door close button.

(e) Door reopening devices rendered inoperative per Rule 211.3a(5) shall remain inoperative. Corridor door closing buttons, if provided, shall remain operative.

(f) Every car shall be provided with a call cancel button, which shall be effective during Phase II emergency in-car operation. When activated, all registered calls shall be cancelled and traveling cars shall stop at or before the next available floor.

(g) Floor selection buttons shall be provided in the car to permit travel to all floors served by the car. Means which prevent the operation of these buttons shall be rendered inoperative.

(2) When the switch is in the "hold" position, the car shall remain at the floor with its doors open, and door close buttons shall be inoperative.

(3) When the switch is in the "off" position, the elevator is not at the designated or alternate level, and Phase I operation is in effect:

(a) The car shall operate in accordance with Rule 211.3a(4) and (5).

(b) The car shall return nonstop to the designated or alternate level and power-operated doors shall open.

(4) Elevators shall be removed from Phase II operation only by moving the emergency key-operated switch in the car to the "off" position with the car at the designated or alternate level.

211.3d **Switch Keys.** The switches required by Rules 211.3a and 211.3c shall be operable by the same key but which is not part of a building master key system. There shall be a key for the designated level switch and for each elevator in the group. These keys shall be kept ((~~on the premises in a location readily accessible to authorized personnel, but not where they are available to the public.~~)) in the key retainer box as required by Section 5111 or Section 5116.

FIRE-RESISTIVE CONSTRUCTION (ANSI A17.1, RULE 100.1a)

Sec. 5120. All elevator hoistways and machine rooms shall comply with ANSI A17.1, Rule 100.1a, Fire-Resistive Construction, as amended below:

Rule 100.1a Fire-Resistive Construction.

(1) Hoistways shall be enclosed throughout their height with fire-resistive enclosures as required by the building code. ((~~(See definition.)~~))

(2) Partitions between fire-resistive hoistways and machine rooms having fire-resistive enclosures and which are located at a side of or beneath the hoistway may be of unperforated noncombustible material at least equal to 0.0598 in thick sheet steel in strength and stiffness with openings therein essential for ropes, drums, sheaves, and other elevator equipment.

The fire-resistive rating of the hoistway shall include space behind all penetrations for fixture boxes, etc. Fixture boxes or other devices requiring servicing from the hoistway side shall have an access cover rating equivalent to that of the hoistway. All other fixture boxes or devices shall be grouted over to a thickness which maintains the rating of the hoistway.

(3) All hoistway openings shall be provided with fire-resistive protective assemblies. The fire-resistance rating shall be not less than 1-1/2 hour when installed in 2 hr fire-resistance-rated construction. Protective assemblies installed in fire-resistance-rated construction of less than 2 hr shall have ratings as required by the building code, ~~(see definition).~~ The fire-resistance rating shall be determined by the test specified in Section 1102.

CONSTRUCTION OF FLOORS (ANSI A17.1, RULE 100.3d)

Sec. 5121. All elevator hoistways and machine rooms shall comply with ANSI A17.1, Rule 100.3d, Construction of Floors, as amended below.

Rule 100.3d Construction of Floors.

Floors may be of concrete, or may be of metal construction ((~~with or~~))without perforations. Metal floors shall conform to the following.

((~~(1) If of bar-type grating, the openings between bars shall reject a ball 3/4 in. in diameter.~~

~~(2) If of perforated sheet metal or of fabricated openwork construction, the openings shall reject a ball 1 in. in diameter.~~))

(1) Floors shall be limited to concrete when the hoistway serves a highrise building as defined in Section 1807.

(2) Floors may be of concrete or unperforated metal in structures other than highrise buildings.

INSTALLATION OF PIPES OR DUCTS CONVEYING GASES, VAPORS OR LIQUIDS IN HOISTWAYS, MACHINE ROOMS OR MACHINERY SPACES (ANSI A17.1, RULE 102.2)

Sec. 5122. (a) Prohibited Wiring, Pipes and Ducts. In accordance with ANSI A17.1, Rule 102, non-elevator electric wiring, pipes and ducts shall be prohibited in elevator machine rooms and hoistways. The use of false ceilings and furring does not remove such items from the elevator spaces and shall not be acceptable. See also Section 1719.

(b) All elevator hoistways and machine rooms shall comply with ANSI A17.1, Rule 102.2, Installation of Pipes or Ducts Conveying Gases, Vapors or Liquids in Hoistways, Machine Rooms or Machinery Spaces, as amended below:

Rule 102.2 Installation of Pipes or Ducts Conveying Gases, Vapors or Liquids in Hoistways, Machine Rooms, or Machinery Spaces

(a) Steam and hot water pipes are not permitted to be installed in hoistways, machine rooms, and machinery spaces for the purpose of heating these areas only((~~, subject to the following.~~

~~(1) Heating pipes shall convey only low pressure steam (5 psi or less) or hot water (212°F or less).~~

~~(2) All risers and return pipes shall be located outside the hoistway.~~

~~(3) Traps and shutoff valves shall be provided in accessible locations outside the hoistway.~~))

(b) Only ducts and pipes for heating, cooling, ventilating, and venting these spaces are permitted to be installed in the hoistway, machine room, and machinery space.

Ducts and pipes may pass through an elevator machine room or machinery space which are separated from the room or space by construction equal to the rated construction of the room or space and so located that all required clearances are maintained.

If the machine room is vented directly to the outside of the building, the vent shall be enclosed within one-hour fire-resistive construction, or as required for shafts where it passes through occupied floors.

(c) Standard sprinkler protection conforming to the requirements of ANSI/NFPA No. 13 may be installed in these spaces, subject to the following.

(1) All risers and returns shall be located outside these spaces.

(2) Branch lines in the hoistway shall supply sprinklers at not more than one floor level.

(3) Branch lines in machine rooms or machinery spaces shall supply sprinklers in these spaces or rooms only.

((~~(3)~~))(4) Shutoff valves shall be provided for each branch line in accessible locations outside these spaces.

((~~(4)~~))(5) Means shall be provided to ((~~automatically~~)) disconnect the main line power supply to the affected elevator prior to the application of water. This means shall not be self-resetting. The activation of sprinklers outside of the hoistway or machine room shall not disconnect the main line power supply ((~~(also see Rule 210.5)~~)).

A. Power for the disconnect control circuit shall be derived from the elevator power main disconnecting means. The disconnect control device shall be located in the elevator equipment room and shall be easily identifiable.

B. Power shall not be interrupted to the elevator emergency lighting, machine room, alarm and communications.

C. For new high rise elevator installations, automatic sprinklers located in an elevator machine room or top of hoistway shall be shut off at a solenoid fail-open valve, located outside of the machine room.

1. Key switches adjacent to the machine room entrance and at the fire alarm panel shall interrupt all elevator power and operate the sprinkler control.

2. Key switches shall be under the control of the fire department.

3. Key switches shall be labeled "Elevator Disconnect and Sprinkler Activation" by a permanently attached sign in 1/4" letters.

4. All wiring shall be according to the National Electrical Code.

D. In other than highrise buildings, an approved shut-off valve with a built-in tamper switch shall be connected to the elevator automatic power disconnect control device. The valve shall be located outside and next to the machine room door and not be higher than 6′ above the floor level. The valve shall be normally closed. Activation shall cause the sprinkler lines to be charged and the automatic power disconnect control device to activate. Signage shall be provided as per Sec. 5122(c) (5)C.3.

Exceptions: 1. Where automatic sprinklers are required in machine rooms or tops of hoistways, new elevator installations may provide waterproofed protection for controls and other elevator operating equipment which would be adversely affected by water.

2. Other alternate methods which accomplish the intent of ANSI A17.1, Rule 102.2 may be used subject to the approval of the building official.

(d) Other pipes or ducts conveying gases, vapors, or liquid and not used in connection with the operation of the elevator shall not be installed in any hoistway, machine room, or machinery space.

ACCESS TO PITS (ANSI A17.1, RULE 106.1d)

Sec. 5123. All pits shall comply with ANSI A17.1 as amended below:

Rule 106.1d Access to Pits.

Safe and convenient access shall be provided to all pits, and shall conform to the following.

(1) Access shall be by means of the lowest hoistway door or by means of a separate pit access door.

(2) There shall be installed in the pit of each elevator where the pit extends more than 3 ft below the sill of the pit access door, a fixed vertical ladder of noncombustible material, located within reach of the access door unlocking device. The ladder shall extend not less than 42 in. above the sill of the access door, or handgrips shall be provided to the same height. Access ladder width shall be 20 inches unless approved by the building official, but in no case less than 12 inches.

(3) Pits shall be accessible only to authorized persons.

(4) Where a separate pit access door is provided, it shall be self-closing and provided with a spring-type lock arranged to permit the door to be opened from inside the pit without a key. Such doors shall be kept locked.

(5) If the door swings into the pit, it shall be located so that it does not interfere with moving equipment.

(6) The door shall have a minimum width of 30 in. and a minimum height of 80 in. ((~~6 ft~~)).

(7) Separate pit access doors cannot be located where a person standing in the doorway can be struck by any part of the car or counterweight when either is on its fully compressed buffer.

CAR EMERGENCY SIGNALING DEVICES (ANSI A17.1, RULE 211.1)

Sec. 5124. All elevators shall comply with ANSI A17.1, Rule 211.1, Car Emergency Signaling Devices, as amended below:

Rule 211.1 Car Emergency Signaling Devices

Elevators shall be provided with the following signaling devices.

(a) In all buildings, the elevator shall be provided with the following:

(1) An audible signaling device, operable from the emergency stop switch, where required by Rule 210.2(e), and from a switch

marked "ALARM" which is located in or adjacent to each car operating panel. The signaling device shall be located inside the building and audible inside the car and outside the hoistway. One signaling device may be used for a group of elevators.

(2) Means of two-way conversation between the car and a readily accessible point outside the hoistway which is available to emergency personnel. (Telephone, intercom, etc.). The means to activate the two-way conversation system does not have to be provided in the car.

(3) If the audible signaling device, or the means of two-way conversation, or both, are normally connected to the building power supply, they shall automatically transfer to a source of standby (emergency) power within 10 sec after the normal power supply fails. The power source shall be capable of providing for the operation of the audible signaling device for at least 1 hr, and the means of two-way conversation for at least 4 hrs.

(b) In buildings in which a building attendant (building employee, watchman, etc.) is not continuously available to take action when the required emergency signal is operated, the elevators shall be provided with ((~~a~~)) one of the following additional emergency signaling devices:

(1) A telephone connected to a central telephone exchange system; immediately adjacent to this phone shall be a sign indicating the name and address of the building and the elevator car number. Also included shall be instructions on the use of the phone.

(2) Means within the car for communicating with or signaling to a service which is capable of taking appropriate action when a building attendant is not available.

A standby (emergency) power system shall be provided conforming to the requirements of Rule 211.1(a)(3).

MACHINE ROOMS AND MACHINERY SPACES (ANSI A17.1, RULES 101.2 and 300.2)

Sec. 5125. (a) **Electric Elevators.** Machine rooms and machinery spaces for electric elevators shall comply with ANSI A17.1, Rule 101.2, Equipment in Machine Rooms, as amended below:

Rule 101.2 Equipment in Machine Rooms

101.2a Equipment Permitted in Machinery and Control Spaces. Elevator machine and control equipment may not be located in a room or space containing other machinery and equipment((~~, essential to the operation of the building, provided that they are separated from the other machinery or equipment by a substantial metal grille enclosure not less than 6 ft high with a self closing and self locking door. The grille enclosure shall be of a design which will reject a ball 2 in. in diameter.~~))

101.2b **Equipment Prohibited in Machine Room.** ((~~Where the elevator machine and control equipment are not located at the top of the hoistway~~ ~~o~~))Only machinery and equipment required for the operation of the elevator shall be permitted in the elevator machine room.

(b) **Hydraulic Elevators.** All machine rooms and machinery spaces shall comply with ANSI A17.1, Rule 300.2, Machine Rooms and Machinery Spaces, as amended below:

Rule 300.2 Machine Rooms and Machinery Spaces

Where pumps, motors, valves, and electrical control equipment are located in spaces separated from the hoistway enclosure (Rule 100.1), such spaces shall be separated from other parts of the building by ((~~enclosures conforming to the requirements of Rule 101.1b and having an access door conforming to the requirements of Rule 101.3d.~~)) a full room or enclosure (floor to ceiling). The fire-resistance rating of the room or enclosure shall not be less than that required by this building code. The access door shall conform to Rule 101.3d.

SUPPLY LINE SHUTOFF VALVE (ANSI A17.1, RULE 303.3d)

Sec. 5126. All hydraulic elevators shall comply with ANSI A17.1, Rule 303.3d, Supply Line Shutoff Valve, as amended below:

Rule 303.3d Supply Line Shutoff Valve

A manual shutoff valve shall be installed in the supply line to the cylinder of every hydraulic elevator where the cylinder is not exposed to inspection. The shutoff valve ((~~shall~~)) may be located in the pit or the machine room.

Sec. 5127. No requirements.

GUARDS AT CEILING INTERSECTION (ANSI A17.1, RULE 802.3g)

Sec. 5128. All escalators shall comply with ANSI A17.1, Rule 802.3g, Guard at Ceiling Intersection, as amended below:

Rule 802.3g Guard at Ceiling Intersection

(1) On high deck balustrades, a solid guard shall be provided in the intersection of the angle of the outside balustrade deck and the ceiling or soffit, under the following conditions:

(a) where the clearance between the outside edge of the deck and the ceiling or soffit is 12 in. or less; or

(b) where the projected intersection of the outside deck and the ceiling or soffit is 24 in. or less from the center line of the handrail.

(2) On low deck balustrades, a solid guard shall be provided to protect the intersection formed by the top of the handrail and the plane of the ceiling or soffit where the center line of the handrail is 14 in. or less from the ceiling or soffit.

(3) The vertical edge of the guard shall be a minimum of 8 in. in length.

(4) The escalator side of the vertical face of the guard shall be flush with the face of the wellway.

(5) The exposed edge of the guard shall be rounded and have a minimum width of 1/4 in.

(6) Guards may be of glass or plastic, provided they meet the requirements of Rule 802.3c.

Also see Appendix D, Figs. D4 and D5.

Guards shall be provided at any pinching, snagging or wedging points between the handrail, balustrade and adjacent building components or equipment when such points are within the clearances delineated in this rule.

ROUTINE AND ACCEPTANCE INSPECTION AND TESTS

Sec. 5129. (a) **Acceptance Inspection and Tests.** Inspections and tests shall comply with ANSI A17.1, Rule 1000.1c, Acceptance Inspection and Tests, as amended below:

Rule 1000.1c Acceptance Inspection and Tests

(1) The acceptance inspection shall be made by an inspector employed by the ((~~authority having jurisdiction,~~)) building official except as specified in Rule 1000.1c(3).

(2) The person installing or altering the equipment shall perform all of the tests required by Sections 1003, 1006, 1009, and 1010 of ANSI A17.1 in the presence of an inspector employed by the ((~~authority having jurisdiction,~~)) building official except as specified in Rule 1000.1c(3).

(3) The ((~~authority having jurisdiction~~)) building official may authorize a qualified person to make the inspection and witness the tests ((~~on its behalf~~)). Immediately after the inspection and tests, the inspector shall submit to the ((~~authority having jurisdiction~~)) building official a statement certifying that the inspection and test have been performed and a report on the results thereof.

Test results shall be submitted for approval on a form furnished by the building official. The submitted results shall be completed and signed by the person performing the tests and shall identify the testing firm.

(b) **Routine Inspection and Tests.** Routine inspection and tests required by ANSI A17.1 Rules 1001.1 (electric elevators), 1004.1 (hydraulic elevators), 1007.1 (escalators and moving walks), 1010.3 (hand elevators), 1010.6 (special purpose personnel elevators), and 1010.7 (inclined elevators) shall be performed at intervals not longer than 1 year as part of the periodic inspection and tests of those conveyances.

SAFETY INSPECTION AND TEST REQUIREMENTS (ANSI A17.1, RULES 1002.2b and 1002.3)

Sec. 5130. (a) **ANSI A17.1, Rule 1002.3.** Elevators shall be subject to five-year inspection test requirements in accordance with ANSI A17.1, Rule 1002.3, Five-Year Inspection Test Requirements, as amended below:

Rule 1002.3 Five-Year Inspection Test Requirements

1002.3a Safety and Governor Systems. Type((~~s~~)) A, B, and C car safeties((~~, except those operating on wood guide rails~~)), and their governors, shall be tested with rated load in the car. Counterweight safety tests shall be made with no load in the car.

Tests shall be made by tripping the governor by hand at the rated speed. The following operational conditions shall be checked (Division 113):

(1) Type B safeties shall stop the car with the rated load within the required range of stopping distances for which the governor is tripped [Item 113.4, Tables 113.4(a) and 113.4(b)(1) through (3)].

(2) For Type A safeties and Type A safety parts of Type C safeties, there shall be sufficient travel of the safety rollers or dogs remaining after the test to bring the car and its rated load to rest on safety application at governor tripping speed.

A metal tag shall be attached to the safety-releasing carrier in a permanent manner, giving the date of the safety test together with the name of the person or firm who performed the test.

(3) See ANSI A17.2, Appendix C, Inspector's Manual, for definitions of Gradual Wedge Clamp and Drum Operated Flexible Guide Clamp Safeties.

(b) **ANSI A17.1, Rule 1002.2b.** The tests required by ANSI A17.1, Rule 1002.2b paragraphs (3) and (4) shall be performed at one year intervals with rated load in the car.

INSPECTION AND TEST PERIODS FOR HYDRAULIC ELEVATORS (ANSI A17.1, RULE 1005.1)

Sec. 5131. Hydraulic elevator inspection and test periods shall be in accordance with ANSI A17.1, Rule 1005.1, Inspection and Test Periods, as amended below:

Rule 1005.1 Inspection and Test Periods

In addition to the routine inspection and tests (Rule 1004.2), the inspections and tests specified in Rule 1005.2 shall be performed at intervals not longer than ((~~1~~)) 3 years, the inspections and tests specified in Rule 1005.3 shall be made at intervals not longer than 3 years, and the inspections and tests specified in Rule 1005.4 shall be made at intervals not longer than 5 years.

NOTE: See Rule 1010.2 for private residence elevators.

THREE YEAR INSPECTION AND TEST REQUIREMENTS (ANSI A17.1, RULE 1005.2)

Sec. 5132. The title of ANSI A17.1, Rule 1005.2, One Year Inspection and Test Requirements, is amended to read as follows:

Rule 1005.2 ((~~One~~)) Three Year Inspection and Test Requirements

INSPECTION AND TEST PERIODS FOR ESCALATORS AND MOVING WALKS (ANSI A17.1, RULE 1008.1)

Sec. 5133. Escalators and moving walks shall be inspected and tested in accordance with ANSI A17.1, Rule 1008.1, Inspection and Test Periods, as amended below:

Rule 1008.1 Inspection and Test Periods

In addition to the routine inspection and test (Rule 1007.2), the inspection and tests specified in Rule 1008.2, inspection and test of all safety switches and a certificate of cleaning the escalator trusses and pan shall be performed at intervals not longer than ((~~1~~)) 2 years. Test results shall be submitted for approval on a form furnished by the building official. The submitted results shall be completed and signed by the person performing the tests and shall identify the testing firm.

Section 140. Subsection 5206(c) of the Uniform Building Code, 1991 Edition, is amended as follows:

(c) ((~~Roof panels of Class CC1 plastics shall be limited to a maximum individual panel area of 150 square feet, and the total maximum aggregate area of all panels shall not exceed 33-1/3 percent of the floor area of the room or space sheltered. Roof panels of Class CC2 plastics shall be limited to a maximum individual panel area of 100 square feet, and the total maximum aggregate area of all panels shall not exceed 25 percent of the floor area of the room or space sheltered.~~)) Each roof panel shall be limited to a maximum individual panel area of 100 square feet for Class CC2 material and 150 square feet for Class CC1 material.

EXCEPTIONS: 1. Swimming pool shelters are exempt from the area limitations ((~~of Section 5206~~)), provided such shelters do not exceed 5,000 square feet in area and are not closer than 10 feet to the property line or adjacent building.

2. Except for Group A, Division 1 and 2, Group I and Group H, Divisions 1, 2 and 3 Occupancies, the maximum area need not be limited where roof panels are:

A. Serving as a fire-venting system complying with this code, or

B. Used in a building equipped with an approved automatic sprinkler sytem throughout.

3. Detached carports, patio covers or roofed decks accessory to detached dwellings are exempt from the requirements of this section provided the roof panels are located at least 10 feet from adjacent buildings and property lines and their floor area does not exceed 250 square feet.

4. Attached carports, patio covers or roofed decks accessory to detached dwellings are exempt from the requirements of this section provided the roof panels are of an approved type as defined in this chapter, they are located at least 5 feet from adjacent property lines and their area does not exceed 250 square feet.

The aggregate area of roof panels installed in the roof shall not exceed 33-1/3 percent of the floor area of the room or space sheltered by the roof when Class CC1 materials are used and 25 percent when Class CC2 materials are used.

EXCEPTION: Swimming pool shelters are exempt from the area provisions of this section provided such shelters do not exceed 5,000 square feet in area and are not closer than 10 feet to the property line or adjacent buildings.

Section 141. Chapter 53 of the Uniform Building Code, 1991 Edition, is amended as follows:

CHAPTER 53
~~(SEE CHAPTER APPENDIX 53)~~

ENERGY CONSERVATION REQUIRED

Sec. 5301. Energy conservation is regulated according to the requirements of the Seattle Energy Code.

Section 142. Subsection 5401(a) of the Uniform Building Code, 1991 Edition, is amended as follows:

SCOPE

Sec. 5401. (a) **General.** The provisions of this chapter apply to:

1. Exterior glass and glazing in all occupancies.

EXCEPTION: Occupancy Groups R and M not over three stories in height and located in areas with a minimum basic wind speed of ((~~less than~~)) 80 mph or less; and

2. Interior and exterior glass and glazing in all occupancies subject to human impact as specified in Section 5406.

Section 143. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 55 as follows:

CHAPTER 55

TRANSFORMER VAULTS

GENERAL

Section 5501. (a) **Scope.** The provisions of this chapter are minimum standards for transformer vaults. Vaults containing utility transformers or equipment shall also comply with requirements of Seattle City Light.

(b) **When Required.** Transformer vaults shall be required for all oil insulated transformers and all other transformers rated over 35,000 volts when located within a building.

EXCEPTION: Vaults need not be provided for certain oil insulated transformers in accordance with Article 450 of the Seattle Electrical Code.

Required transformer vaults shall comply with the provisions of this chapter and Article 450 of the Seattle Electrical Code.

LOCATION

Sec. 5502. Vaults shall be located where they can be ventilated to the outside air without using flues or ducts wherever such an arrangement is practicable.

CONSTRUCTION

Sec. 5503. Vaults shall not be less than three-hour fire-resistive construction. The floors of vaults in contact with the earth shall be of concrete not less than four inches thick.

EXCEPTIONS: 1. Subject to the approval of the building official, where the total capacity of an oil insulated transformer does not exceed 112-1/2 kVA, the vault may be constructed of reinforced concrete not less than 4 inches thick.

2. Subject to the approval of the building official, where transformers are protected with automatic sprinkler, water spray, carbon dioxide, or halon, construction of one-hour fire-resistance rating may be used.

DOORWAYS

Sec. 5504. Vault doorways shall be protected as follows:

1. **Type of Door.** Each doorway leading into a vault from the building interior shall be protected by a self-closing fire assembly having a fire-protection rating equal to that required for the vault. All exterior openings in a vault other than ventilation openings, if located below openings in another story or if less than 10 feet from other doors or windows of the same building, shall be protected by a fire assembly having a three-fourths-hour fire-protection rating. No door shall swing into the transformer room.

EXCEPTION: Subject to the approval of the building official, interior doors may have a one hour fire-resistance rating where transformers are protected with automatic sprinkler, water spray, carbon dioxide or halon.

2. **Sills.** A doorsill or curb of sufficient height to confine within the vault the oil from the largest transformer shall be provided, but in no case shall the height be less than 4 inches.

3. **Locks.** Entrance doors shall be equipped with self-closing and self-locking devices. Locks and latches shall be so arranged that the door may be readily and quickly opened from the inside.

VENTILATION

Sec. 5505. (a) **Openings.** Ventilation openings shall be provided to dispose of the transformer full-load losses without creating a temperature rise which is in excess of the transformer rating and shall be in accordance with the following:

1. **Location.** Exhaust ventilation shall be to the outside of the building. Exhaust and intake ventilation openings shall be located not less than 10 feet from fire escapes, required exits, combustible materials and unprotected openings.

2. **Covering.** Ventilation openings shall be covered with durable metal gratings, screens or louvers.

3. **Opening Protection.** Ventilation openings to the interior of the building shall be protected by automatic closing fire dampers having a fire-resistance rating equal to that required for the vault. The actuating device on the fire damper should be made to function at a temperature of 165°F.

4. **Ventilation Ducts.** Exhaust ventilation ducts, if used, shall be enclosed in construction having a fire-resistive rating equal to that of the vault. Exhaust ducts shall extend from the vault to the outside of the building. An exhaust duct for a mechanically ventilated vault shall be used exclusively for ventilating the vault.

(b) **Circulation Method.** Ventilation shall be provided either by natural circulation or mechanical circulation.

1. **Ventilation by Natural Circulation.** A vault ventilated by natural circulation of air shall be permitted to have roughly half of the total area of openings required for ventilation in one or more openings in the lower half of the vault walls and the remainder in one or more openings in the roof of the vault or in the upper half of the exterior sidewalls.

The combined minimum net intake and exhaust area, exclusive of area occupied by screens, grating or louvers, shall not be less than 3 square inches per kVA of transformer capacity. An area equal to at least one half of the total required area shall be provided each for intake and exhaust. In no case shall either the intake or exhaust area be less than 72 square inches.

2. **Ventilation by Mechanical Circulation.** The ventilation system shall supply a minimum of 1.6 cfm of air per kVA of transformer capacity. The fans shall be installed external to the vault. The intake shall be in the lower half of the exterior walls of the vault and the exhaust shall be in the roof or ceiling of the vault or in the upper half of the sidewalls of the vault.

DRAINAGE

Sec. 5506. (a) **General.** Drains shall be prohibited unless specifically approved by the fire chief.

(b) **Storage Sump.** A storage sump with metal grate cover shall be installed in the vault and the floor pitched to drain into it. The sump shall not be less than 8 cubic feet, with a depth and width not less than 12 inches, and designed with a bottom to hold an accumulation of water or oil.

WATER PIPES AND ACCESSORIES

Sec. 5507. Any pipe or duct systems foreign to the electrical installation shall not enter or pass through a transformer vault. Piping or other facilities provided for fire protection inside the vault or for water-cooled transformers are not deemed to be foreign to the electrical installation.

EQUIPMENT TO BE ACCESSIBLE

Sec. 5508. An accessible vault opening, which may be a door or suitable ventilation opening, adequate in size to permit the installation and/or removal of equipment to be located in the vault, shall be provided and kept free of obstruction at all times.

STORAGE IN VAULTS

Sec. 5509. Materials shall not be stored in transformer vaults.

LOCATION OF PAD MOUNT TRANSFORMERS

Sec. 5510. Pad mount transformers shall not be located closer than 10 feet to a property line as defined in Subsection 504(a), nor closer than 10 feet to a building unless, within the 10-foot distance, the building wall is not less than three-hour fire-resistive construction and openings to the interior are protected by fire assemblies having a three-hour fire protection rating.

Section 144. Subsection 5601(b) of the Uniform Building Code, 1991 Edition, is amended as follows:

(b) **Scope.** The provisions of this chapter shall apply to buildings or structures defined herin as covered mall buildings and shall supersede other similar requirements in other chapters of the code.

EXCEPTIONS: 1. Covered mall buildings conforming with all other applicable provisions of the code are not required to comply with the provisions of this chapter.

2. ((~~This chapter does not apply to~~)) Terminals for transportation facilities and lobbies of hotel, apartment and office buildings.

((~~Covered mall buildings conforming with all other applicable provisions of this code are not required to comply with the provision of this chapter.~~))

Section 145. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 57 as follows:

CHAPTER 57

NUMBERING BUILDINGS AND PREMISES

ENFORCEMENT BY BUILDING OFFICIAL - OWNERS TO AFFIX AND MAINTAIN BUILDING NUMBERS

Sec. 5701. The building official shall determine the address of any property in the City in accordance with the numbering system established in this Chapter.

Whenever the irregularity of plats, the changing direction of streets, avenues, or other highways, the interruption of the continuity of highways or any other condition causes doubt or dif-

ference of opinion as to the correct number of any piece of property or any building thereon, the number shall be determined by the building official. He/she shall be guided by the specific provisions of this chapter as far as they are applicable and when not applicable by such rules as may be established to carry out the intent of this chapter.

The owner of any building or other structure shall maintain the street number of each building and structure in a conspicuous place over or near the principal street entrance or entrances, or in other conspicuous places as is necessary for the easy locating of such address.

> **EXCEPTION:** Where there are multiple buildings on a site, the building official may waive the requirement for posting an address on appurtenant or accessory buildings where individual identification of each building is not essential.

Where a property has frontage along more than one named street or for any other property where there may be confusion regarding the address of a building or structure, the building official may require the complete address, including street number and street name to be conspicuously posted.

Numbers and letters shall be easily legible and shall not be less than 3 inches in height for dwellings and apartments and not less than 5 inches in height for all other occupancies. Numbers shall have a high contrast with the color of the building or other structure upon which they are posted.

Buildings served by a private road or a common driveway shall post their address number(s) at the head of the road or driveway in a manner that can be easily read from the intersecting street. Where the existing street grid may not adequately allow for the assignment of street addresses which will promote the easy locating of such addresses, or for any other reason consistent with the intent of this chapter, the building official may assign a name to the private road or common driveway which shall be used for addressing purposes. In addition, one or more property owners along the road or driveway may be required to post a sign displaying the assigned name at a location near the intersection of the road or driveway with a named public street.

Should the building official find that any building, structure or premises are not provided with numbers as herein required, or are not correctly numbered, he/she shall notify the owner, agent or tenant of the correct street number and shall require that the same shall be properly placed, in accordance with the provisions of this chapter, within a reasonable length of time. It is unlawful for any person to fail to comply with such notice.

NUMBERING SYSTEM PRESCRIBED

Sec. 5702. The numerical designation of all doorways and entrances to buildings, lots, yards and grounds fronting upon the several ways, avenues, streets, drives, places and squares of the City are established in accordance with the following system:

Except where otherwise specified, 100 numbers are allotted to each block; one whole number is allotted to each 20 feet of frontage in each block; even numbers shall be used on the northerly side of streets or ways extending in an easterly and westerly direction and on the easterly side of avenues or ways

extending in a northerly and southerly direction; odd numbers shall be used on the southerly side of streets or ways extending in an easterly and westerly direction and on the westerly side of avenues or ways extending in a northerly and southerly direction.

In the case of irregular drives, places, streets, ways or avenues, the frontages shall be numbered as near as may be according to the uniform series of block numbers with which they most nearly correspond.

NUMBERING OF BUILDINGS

Sec. 5703. (a) **Numbering of Buildings Downtown.** Between Yesler Way and Denny Way all frontages upon avenues west of Broadway, East Union Street, Minor Avenue and Melrose Avenue shall be numbered as follows:

Yesler Way to Fir Street number 100 and upwards, Fir Street to Spruce Street number 150 and upwards, Spruce Street to Alder Street number 200 and upwards, continuing by consecutive hundreds to Pine Street; Pine Street to Olive Street number 1600 and upwards, Olive Street to Howell Street number 1700 and upwards, Howell Street to Stewart Street number 1800 and upwards, Stewart Street to Virginia Street number 1900 and upwards, continuing by consecutive hundreds to Denny Way.

Between Yesler Way and Denny Way all frontages upon avenues east of Broadway, East Union Street, Minor Avenue and Melrose Avenue shall be numbered as follows:

Yesler Way to East Fir Street number 100 and upwards, East Fir Street to East Spruce Street number 150 and upwards, East Spruce Street to East Alder Street number 200 and upwards, continuing by consecutive hundreds to East Marion Street; East Marion Street to East Spring Street number 900 and upwards, East Spring Street to East Union Street number 1100 and upwards, East Union Street to East Pike Street number 1400 and upwards, continuing by consecutive hundreds to Denny Way.

Between Yesler Way and Denny Way all frontages upon ways and streets west of Broadway, East Union Street, Minor Avenue and Melrose Avenue shall be numbered as follows:

Westward from Elliott Avenue number 51 and downwards, Elliott Avenue to Western Avenue number 52 and upwards, Western Avenue to First Avenue number 76 and upwards, First Avenue to Second Avenue number 100 and upwards, continuing eastward to Broadway, East Union Street or Melrose Avenue by consecutive hundreds.

Between Yesler Way and East Denny Way all frontages upon ways and streets east of Broadway, East Union Street, Minor Avenue and Melrose Avenue shall be numbered as follows:

Melrose Avenue to Bellevue Avenue number 300 and upwards, Bellevue Avenue to Summit Avenue number 400 and upwards, continuing by consecutive hundreds to Broadway.

Broadway to Tenth Avenue number 900 and upwards, Tenth Avenue to Eleventh Avenue number 1000 and upwards, continuing by consecutive hundreds corresponding with the numbered series of avenues eastward to Lake Washington.

On Olive Way eastward from Melrose Avenue, the street numbers shall run upwards consecutively, eastward from the existing street numbers which are west of the Melrose Avenue intersection.

(b) **Numbering of Buildings South of Downtown and East of the East Waterway.** South of Yesler Way the frontages upon the avenues shall be numbered as follows:

Yesler Way to South Washington Street number 100 and upwards, continuing by consecutive hundreds to South Orcas Street with blocks and streets on the east side of 1st Avenue South being taken as a controlling series for numbering purposes.

South of South Orcas Street, 51st Avenue South shall be taken as the controlling series to the southern City limits. Note: Between South Othello Street and South Barton, 51st Avenue South becomes Rainier Avenue South, which shall be used for the controlling series until 51st Avenue South separates from Rainier Avenue South and continues on southward.

On the Second Avenue Extension from Jackson Street to Yesler Way all frontages shall be numbered as follows:

From Jackson Street to Main Street number 200 and upwards, Main Street to Washington Street number 300 and upwards, Washington Street to Yesler Way number 400 and upwards.

South of Yesler Way the frontages upon ways and streets shall be numbered as follows:

Westward from First Avenue South to the Harbor Line or East Waterway number 99 and downwards, First Avenue South to Occidental Avenue number 100 and upwards, Occidental Avenue to Second Avenue South number 150 and upwards, Second Avenue South to Third Avenue South number 200 and upwards, continuing by consecutive hundreds to Sixth Avenue South; Sixth Avenue South to Maynard Avenue number 600 and upwards, Maynard Avenue to Seventh Avenue South number 650 and upwards, Seventh Avenue South to Eighth Avenue South number 700 and upwards, continuing eastward by consecutive hundreds corresponding with the numbered series of avenues to Lake Washington, provided, that on South Michigan Street from 5th Place South to Seventh Avenue South all frontages shall be numbered as follows:

From 5th Place South to 6th Avenue South numbers 550 to 570 inclusive, and from 6th Avenue South to 7th Avenue South numbers 600 to 624 inclusive;

and on South River Street from 5th Place South to 7th Avenue South all frontages shall be numbered as follows:

From 5th Place South to 6th Avenue South numbers 550 to 570 inclusive, and from 6th Avenue South to 7th Avenue South numbers 600 to 624 inclusive.

(c) **Numbering of Buildings Between Downtown and the Ship Canal.** North of Denny Way (and East Denny Way) the frontages upon the avenues shall be numbered as follows:

Denny Way (and East Denny Way) to John Street (and East John Street) number 100 and upwards, continuing by consecutive hundreds to Galer Street (and East Galer Street), the blocks and

streets on the east side of Queen Anne Avenue being taken as a controlling series for numbering purposes.

Galer Street (and East Galer Street) to Garfield Street (and East Garfield Street) number 1500 and upwards, continuing by consecutive hundreds to Smith Street (and Louisa Street), the blocks and streets along the east side of First Avenue North being taken as a controlling series for numbering purposes; Smith Street (and Louisa Street) to Raye and West Raye Street (and Roanoke Street) number 2500 and upwards, continuing by consecutive hundreds to Barrett Street, East Roanoke Street to Edgar Street number 2600 and upwards, continuing by consecutive hundreds north to Lake Union; the blocks and streets along Queen Anne Avenue shall be taken as a controlling series for numbering purposes.

West Barrett Street number 3000 and upwards, to West Grover Street number 3400 and upwards, continuing by consecutive hundreds to West Emerson Street; West Emerson Street to West Thurman Street number 3800 and upwards, continuing by consecutive hundreds based on the shortest series of blocks northward to Salmon Bay and Admiralty Inlet.

Between Queen Anne Avenue and Eastlake Avenue and Lake Union the frontages on the ways and streets shall be numbered as follows:

Queen Anne Avenue to First Avenue North number 1 and upwards, First Avenue North to Warren Avenue number 100 and upwards, Warren Avenue to Second Avenue North number 150 and upwards, Second Avenue North to Third Avenue North number 200 and upwards, continuing by consecutive hundreds corresponding to the numbered series of avenues with half hundreds in the case of Nob Hill, Taylor and Dexter Avenues, to Ninth Avenue North; Ninth Avenue North to Westlake Avenue number 900 and upwards, Westlake Avenue to Terry Avenue North number 950 and upwards, Terry Avenue North to Boren Avenue North number 1000 and upwards, Boren Avenue North to Fairview Avenue number 1100 and upwards, Fairview Avenue to Minor Avenue North number 1150 and upwards, Minor Avenue North to Pontius Avenue number 1200 and upwards, Pontius Avenue to Howard Avenue North and Yale Avenue North number 1250 and upwards, Howard Avenue North and Yale Avenue North to Eastlake Avenue number 1300 and upwards.

East of Eastlake Avenue and Lake Union and North of East Denny Way the frontages upon the ways and streets shall be numbered as follows:

Eastlake Avenue to Melrose Avenue North number 200 and upwards continuing by consecutive hundreds eastward to North Broadway; North Broadway to Tenth Avenue North number 900 and upwards, Tenth Avenue North to Federal Avenue number 1000 and upwards, Federal Avenue to Eleventh Avenue North number 1050 and upwards, Eleventh Avenue North to Twelfth Avenue North number 1100 and upwards, continuing eastward to Lake Washington by consecutive hundreds corresponding with the numbered series of avenues with half hundreds where an additional avenue intervenes between two consecutively numbered avenues.

West of Queen Anne Avenue the frontages upon ways and streets shall be numbered westward from Queen Anne Avenue, all numbers being prefixed by the letter W, as follows:

Queen Anne Avenue to First Avenue West number W 1 and upwards, First Avenue West to Second Avenue West number W 100 and upwards, continuing westward consecutive hundreds corresponding with the numbered avenues with half hundreds where an additional avenue intervenes between two consecutively numbered avenues.

(d) **Numbering Buildings North of Union Bay of Lake Washington, Lake Union, Salmon Bay and Lake Washington Canal.** The plan for the numbering of frontages upon the various avenues, streets and other public places in that portion of the City of Seattle lying north of Union Bay of Lake Washington, Lake Union, Salmon Bay and Lake Washington Canal is established as follows:

The frontages upon the avenues and places which run in a general northerly and southerly direction, shall be numbered in accordance with the designations of the intersecting numbered streets, as follows: north from the southern-most line of the State Harbor Line abutting Gas Works Park, from 2900 upwards; from North Thirtieth Street, from 3000 upwards, from Fiftieth Street (or Northeast Fiftieth Street, or Northwest Fiftieth Street) from 5000 upwards; one hundred numbers being allowed for each block, except in cases where a named "place" intervenes between two consecutively numbered streets, and in such case 50 numbers shall be allowed for each block. Frontages on avenues and places shall number from 3400 upwards in the block commencing from North Thirty-fourth Street and running north; from 3500 upwards in the block north from North and Northwest Thirty-fifth Street and from 3600 upwards in the block north of North, Northwest and Northeast Thirty-sixth Street.

The frontages upon the streets and places which run in a general easterly and westerly direction, shall be numbered as follows:

West from First Avenue Northwest, commencing with 100, and continuing west in correspondence with the numbers of the avenues; 100 numbers being allowed for each block, except where an avenue or place intervenes between two consecutively numbered avenues, and in such case 50 numbers shall be allowed for each block.

East from First Avenue Northwest, commencing with 100 and continuing as follows: East from Palatine Avenue, 200 and upwards; from Greenwood Avenue, 300 and upwards; from Phinney Avenue, 400 and upwards; from Sunset Place, 450 and upwards; from Dayton Avenue, 500 and upwards; from Evanston Avenue, 600 and upwards; from Fremont Avenue, 700 and upwards; from Linden Avenue, 800 and upwards; from Aurora Avenue, 900 and upwards; from Winslow Place, 950 and upwards; from Whitman Avenue 1000 and upwards; from Albion Place, 1050 and upwards; from Woodland Park Avenue, 1100 and upwards; from Midvale Avenue, 1200 and upwards; from Stone Avenue, 1300 and upwards; from Interlake Avenue, 1400 and upwards; from Ashworth Avenue, 1500 and upwards; from Carr Place, 1550 and upwards; from Woodlawn Avenue, 1600 and upwards, from Densmore Avenue, 1700 and upwards; from Wallingford Avenue, 1800 and upwards; from Burke Avenue, 1900 and upwards; from Meridian Avenue, 2100 and upwards; from Bagley Avenue, 2200 and upwards; from Corliss Avenue, 2300 and upwards; from Sunnyside Avenue, 2400 and upwards; and from Eastern Avenue, 2500 and upwards.

East from First Avenue Northeast, commencing with 100, and continuing east in correspondence with the numbered avenues; 100 numbers being allowed for each block, except where an avenue or place intervenes between two consecutively numbered avenues, and in such case 50 numbers shall be allowed for each block.

(e) **Numbering Buildings on Harbor Island.** The frontages upon avenues and places which run in a general northerly and southerly direction, shall be numbered as follows:

South of Southwest Massachusetts Street, commencing with 1700 and continuing south corresponding with the numbers of the intersecting streets to the southernmost edge of Harbor Island.

West of the East Waterway beginning with 1000 and continuing westward to the West Waterway.

(f) **Numbering Buildings West of the West Waterway and the Duwamish Waterway.** The frontages upon avenues and places which run in a general northerly and southerly direction, shall be numbered as follows:

North of Southwest Andover Street, commencing with 3800 and continuing north in correspondence with the numbers of the intersecting streets to the Duwamish Head.

South of Southwest Andover Street, commencing with 4000 and continuing south in correspondence with the numbers of the intersecting streets to the south City limits.

The frontages upon streets and places which run in a general easterly and westerly direction, shall be numbered as follows:

West of California Avenue Southwest, commencing with 4300 and continuing westward in correspondence with the numbers of the intersecting avenues to Puget Sound, provided that Thirty-fifth Avenue Southwest shall control the series south of Southwest Holden Street.

East of California Avenue Southwest, commencing with 4200 and continuing eastward in correspondence with the numbers of the intersecting avenues to the Duwamish Waterway; provided that Thirty-fifth Avenue Southwest shall be taken as the controlling series south of Southwest Holden Street.

Section 146. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 58 as follows:

CHAPTER 58

FLOATING HOMES

DEFINITIONS

Sec. 5801. Certain words and terms used in this chapter, unless clearly inconsistent with their context, shall be defined as follows:

FLOATING HOME is a building constructed on a float used in whole or in part for human habitation as a single-family dwelling which is moored, anchored or otherwise secured in waters.

FLOATING HOME MOORAGE is a waterfront facility for the moorage of one or more floating homes and the land and water premises on which such facility is located.

FLOATING HOME SITE is a part of a floating home moorage, located over water, and designed to accommodate one floating home.

GARBAGE is all discarded putrescible waste matter, including small dead animals weighing not over 15 pounds, but not including sewage or human or animal excrement.

SEWAGE is all water-carried waste discharged from the sanitary facilities of buildings occupied or used by people.

MOORAGE LOCATION

Sec. 5802. Every floating home moorage shall be located on privately owned or privately controlled premises in accordance with the Land Use Code.

LAND ACCESS

Sec. 5803. Every floating home moorage shall have not less than 20 feet of land frontage abutting a public street sufficiently improved for automobile travel.

MOORAGE WALKWAYS

Sec. 5804. Every floating home moorage shall have firm and substantial walkways with a net width of not less than 4 feet and extending from land to every floating home site in such moorage.

MOORAGE LIGHTING

Sec. 5805. Every floating home moorage and the walkways to every floating home site shall be illuminated by lights designed, constructed and maintained to provide a minimum average illumination on said walkways of five footcandles of light intensity. The lowest footcandle value at any point on said walkways shall not be less than one half the average value.

FIRE PROTECTION

Sec. 5806. Floating home moorages shall be provided with fire extinguishing equipment as follows:

(a) **Portable Fire-Protection Equipment.** One fire extinguisher, 2A, 20-B:C rating minimum, shall be provided in each hose station required. The fire chief shall designate the type and number of all other fire appliances to be installed and maintained in each floating home moorage.

(b) **Standpipes.** All portions of floats exceeding 250 feet in distance from fire apparatus access and marine service stations shall be provided with an approved wet standpipe system installed in conformity with applicable standards set forth in U.B.C. Standard No. 38-2 and the Fire Code Appendix 2C.

1. Hose stations shall be spaced to provide protection to any portion of floats, floating homes or floating vessels. Hoses shall be mounted on a reel or rack and enclosed within an approved cabinet. Hose stations shall be labeled FIRE HOSE-EMERGENCY USE ONLY. All equipment shall meet the approval of the fire chief.

2. At the shore end, the waterline shall be equipped with a single 2-1/2 inch fire department connection.

3. Waterlines shall normally be dry where the area is subject to freezing temperatures.

WATER SERVICE CONNECTIONS

Sec. 5807. Every floating home moorage shall have a lawfully installed water service connection and shall provide water service piping securely fastened and stabilized above water from such water service connection to an outlet connection at each floating home site on a floating home moorage. The water piping in every floating home in a floating home moorage shall be connected to the water service outlet serving such floating home and such connection shall be securely fastened and stabilized above high water line. Water service connections and water service piping shall be constructed, installed and maintained in accordance with applicable standards established by or pursuant to ordinances.

PUBLIC SEWER CONNECTION

Sec. 5808. Every floating home moorage any part of which is within 300 feet of a public sewer and every floating home moorage on Shilshole Bay, Salmon Bay, Lake Washington Ship Canal, Lake Union, Portage Bay, Union Bay and that portion of Lake Washington lying within the City limits of Seattle shall have a lawfully installed connection to a public sewer.

LOCAL SIDE SEWER SYSTEM

Sec. 5809. Every floating home moorage within the limits specified in Section 5808 shall provide a local side sewer system for the collection of sewage from every floating home in such moorage. Such local side sewer system shall be connected to the public sewer, shall have an inlet connection at each floating home site and shall be constructed, installed and maintained in accordance with this and all other applicable ordinances regulating the construction, alteration, repair and connection of side sewers.

CONNECTION TO LOCAL SIDE SEWER SYSTEM

Sec. 5810. Every floating home in a floating home moorage which is required under Section 5808 to be connected to a public sewer shall be connected to the local side sewer system and no owner or operator of such a floating home moorage shall permit to be moored at such moorage under his/her control any floating home which is not connected to the local side sewer system. It is unlawful for any person to use, occupy or let any floating home for human habitation within the limits specified in Section 5808 unless the same is connected to the sewer system.

A reconnection permit shall be required for any floating home which is relocated from its original site of connection to a local side sewer system and such reconnection shall be subject to the approval of the Director of Engineering as to compliance with this chapter.

SEWER INSTALLATION FEES

Sec. 5811. The fee for the installation of any side sewer serving a floating home moorage shall be the fee provided by law for the connection to the public sewer of side sewers serving mobile home parks.

PLUMBING SYSTEMS

Sec. 5812. All plumbing and plumbing systems in every floating home shall meet the requirements of the Seattle Plumbing Code except as otherwise approved by the Director of Public Health in accordance with said Plumbing Code.

GARBAGE DISPOSAL

Sec. 5813. Every floating home moorage shall be provided with adequate garbage storage and collection facilities which shall be located in an accessible place on the moorage site and no garbage or refuse shall be thrown or dumped into the waters.

ELECTRICAL SERVICE AND WIRING

Sec. 5814. Electrical service to floating homes and floating home moorages shall be provided as approved by the City Light Department. Electrical wiring and equipment in every floating home shall conform to requirements of the Seattle Electrical Code as set forth for residential occupancies. No floating home shall be permitted to connect or reconnect to the electric utility's distribution system unless approved for such connection by the building official in accordance with the Seattle Electrical Code.

NEW CONSTRUCTION

Sec. 5815. All new construction of floating homes or major alterations thereto and all floating homes moved into city waters, excluding the structural members used for flotation, shall conform to the requirements for dwellings as set forth in this code and all other applicable codes and ordinances regulating the design, construction, use and occupancy of such buildings and the required installations therein.

HOUSING STANDARDS FOR EXISTING FLOATING HOMES

Sec. 5816. Every floating home shall comply with the minimum housing standards as set forth in the Seattle Housing and Building Maintenance Code except as otherwise approved by the building official in accordance with the Housing and Building Maintenance Code.

APPROVAL OF MOORAGE SITE PLAN REQUIRED

Sec. 5817. Every floating home moorage shall continuously conform to a moorage site plan which has been approved by the building official. Such approval shall be obtained as follows: Three copies of the site plan, drawn to scale and completely dimensioned, and setting forth the address and legal description of the property on which the moorage is located and the name and address of the owner or operator of the moorage, shall be filed with the building official.

The moorage site plan shall show:

1. The dimensions of the floating home moorage site.

2. The location of abutting public waterways.

3. The location and dimensions of private waterways and land access to the moorage.

4. The location and identification of individual floating home sites.

5. The location and dimensions of offstreet parking spaces.

6. The location and dimensions of walkways and any accessory structures or facilities.

7. The water service system.

8. The local side sewer system.

9. The electrical service and lighting system.

Such site plan shall be examined by the building official, the fire chief, the director of public health, the superintendent of water, and by the director of engineering, to each of whom the building official shall refer such plan. Upon approval of a floating home moorage site plan by the fire chief, the director of public health, the superintendent of water and the director of engineering as to compliance with laws and ordinances under their respective jurisdictions, and upon being satisfied that the plan conforms to the requirements of this code and other applicable ordinances and is otherwise lawful, the building official shall approve such plan. One copy of the approved site plan shall be retained in the office of the building official, one copy in the office of the director of public health, and one copy, which shall be maintained on the premises of the floating home moorage, shall be returned to the owner or operator.

MOORAGE REGISTER OF OWNERSHIPS

Sec. 5818. Every owner or operator of a floating home moorage shall maintain a current register of every floating home moored on the premises, such register to record the name and address of the legal owner of each floating home and the registration number assigned to it by the King County Assessor. A copy of said register shall be made available upon request to any City department head referred to in this chapter or to his/her representative.

Section 147. The Uniform Building Code, 1991 Edition, is amended by adding a new Chapter 59 as follows:

CHAPTER 59

WATERFRONT STRUCTURES - PIERS, WHARVES AND BUILDINGS

SCOPE

Sec. 5901. Waterfront structures shall be subject to all of the requirements of this code relating to other structures except as limited by, added to, or otherwise specified in this chapter.

Unless otherwise specified, all wood dimensions are nominal as defined in Section 2502.

For occupancy separations, see Table No. 5-B.

EXCEPTION: Fire resistive walls as specified in Section 5906(f) may be used as one-hour fire-resistive occupancy separations and as a separation between Group H, Division 4 and Group A, Division 2, 2.1, 3 or 4 Occupancies, including the specified opening protection in buildings of Types II-N, IV and V-N construction.

DEFINITIONS

Sec. 5902. For the purposes of this chapter, certain terms are defined as follows:

COVERED BOAT MOORAGE is a pier or system of floating or fixed accessways to which vessels on water may be secured, 50 percent or more of which is covered by a roof.

DOCK is a natural open or artificially closed basin in which vessels may remain afloat when berthed at a wharf or pier.

PIER is a structure, usually of greater length than width, of timber, stone, concrete or other material, having a deck and projecting from the shore into waters so that vessels may be moored alongside for loading, unloading, storage, repairs or commercial uses.

SUBSTRUCTURE is that portion of the construction below and including the deck.

SUPERSTRUCTURE is that portion of construction above the deck.

WATERFRONT STRUCTURE is a structure with at least 20 percent or 8,000 square feet, whichever is greater, of its area over water.

WHARF OR QUAY is a structure of timber, stone, concrete or other material having a platform built along and parallel to waters so that vessels may be moored alongside for loading, unloading, storage, repair or commercial uses.

ALLOWABLE AREA AND HEIGHT FOR WATERFRONT STRUCTURES

Sec. 5903. The height of structures to be built over water shall be measured from the elevation of ordinary high water as provided in Title 23 of the Seattle Municipal Code, Sections 23.60.952 and 23.60.930 for Shoreline Districts. Height and areas shall comply with the requirements of Tables No. 5-C and 5-D, except that the increases allowed in Section 506(b) are not applicable to waterfront structures.

EXCEPTION: 1. In covered boat moorages, the areas in Table No. 5-C may be increased not more than 400 percent when an approved automatic sprinkler system is provided throughout.

2. Each covered area of a boat moorage may be considered as a separate building subject to the following conditions:

A. Maximum individual areas shall be 8,000 square feet.

B. Walkways, finger piers and other decked areas shall not exceed 30 percent of the area of the roof that extends over water.

C. When a distance of exit travel exceeds 300 feet, an approved Class I standpipe with outlets spaced not more than 100 feet on center shall be provided. A Siamese connection at the shore end and direct access for fire department pumping apparatus shall be provided.

D. Covered areas shall be separated by not less than 16 feet. The intervening areas may be used for moorage provided the adjacent covered areas comply with Item F below.

E. Maximum width of connecting walkways shall be 10 feet.

F. Covered roof areas constructed in such manner that would trap smoke or hot gases shall be provided with the following:

(i) Vents or monitors of not less than 5 percent of the roof area.

(ii) A draft stop of splined or tongue-and-groove planking not less than 1 inch in thickness, 1/2-inch exterior-type plywood or 26 gauge steel shall extend across the end of each roof area when such roof is closer than 30 feet to an adjacent building. The draft stop shall extend to not less than 24 inches below the lower edge of the roof. A draft stop constructed in accordance with Section 5905 shall be provided under the walkway at each location where draft stops are required at the end of roofed areas.

G. There shall be no combustible storage on the piers or walkways within or between the covered areas. Uses accessory to the principal occupancy shall be permitted, provided they are conducted in an area separated from the moorage area by not less than 16 feet and the exposed side of the moorage area is protected by a one-hour fire-resistive occupancy separation as specified in Section 5901 extending 2-1/2 feet above the roof line. One-story superstructures shall be permitted for accessory uses but shall not exceed 1,000 square feet in area nor 20 feet in height.

LOCATION ON PROPERTY

Sec. 5904. Exterior walls shall have fire resistance and opening protection as determined by Section 504.

EXCEPTIONS: 1. Fire resistive construction and opening protection required because of proximity to property lines may be omitted for waterfront structures which are located on the same property, separated by an unobstructed deck not less than 16 feet wide, and which have a draftstop constructed according to Section 5905(b) installed in the substructure between the buildings.

2. In covered boat moorages exterior walls which are built entirely over water may be of tongue-and-groove or splined planks not less than 2 inches in thickness, covered with 26 gauge sheet metal, 3/8-inch exterior type plywood or equivalent on both sides, regardless of proximity to property lines. Walls at the substructure may be constructed as specified in Subsection 5905(b) for draft stops. Where such walls (even though part of such covered boat moorage) are built on land, this exception shall not apply.

SUBSTRUCTURE

Sec. 5905. (a) **Construction.** Substructures may be of any type of construction permitted in this code subject to the area limitations of Section 5903, except that, when constructed of wood, the members shall not be less than the following in any dimension, exclusive of piling:

Member	Size Unlimited Use	Piers for Boat Moorage Only, Not exceeding 10 Feet in Width
Caps and Girders	8"	6"
Joists, Beams and Other Members	4"	3"
Flooring or Deck	3" T & G or splined or 4" square edged	2"
Bracing	3"	2"

If the flooring or deck is under a roof or is used for parking, there shall be applied over the flooring or deck a tight-fitting wearing surface of softwood not less than 2 inches thick and not more than 6 inches wide, 1-inch thick hardwood, 2-inch thick asphaltic concrete or other material of equivalent fire resistance.

EXCEPTION: Covered piers used for moorage only need not have a wearing surface.

For types of softwoods, see U.B.C. Standard No. 25-1.

(b) **Draft Stops.** Draft stops shall be installed in all substructures constructed of combustible materials, exclusive of piling and pile bracing. They shall be placed not more than 100 feet apart measured along the main axis of the pier or wharf. They shall fit tightly around all joists, beams, etc., and extend from the underside of the deck to city datum if over salt water or to low water if over fresh water. See Section 5906(g) for draft stops in superstructures.

Substructure draft stops shall be constructed of at least two layers of lumber not less than 2 inches in thickness laid with broken joints or materials of equal fire resistance.

(c) **Automatic Sprinklers.** Automatic sprinklers shall be installed under the substructure of every new waterfront structure and as specified in Chapter 38.

EXCEPTIONS: 1. Combustible substructures whose deck area does not exceed 8,000 square feet supporting no superstructures.

2. Combustible substructures whose deck area does not exceed 8,000 square feet supporting superstructures not required to be provided with an approved automatic sprinkler system as specified in Section 5906.

3. Noncombustible substructures with or without superstructures.

4. Substructures, over other than tidal water, where sprinkler heads cannot be installed with a minimum clearance of 4 feet above mean high water.

5. Substructures resulting from walkways or finger piers which do not exceed 10 feet in width.

SUPERSTRUCTURE

Sec. 5906. (a) **Construction.** Superstructures may be of any type of construction permitted by this code subject to the height and area limitations of Section 5903 and the requirements of this section.

(b) **Floors.** See Section 5905.

(c) **Exterior Walls.** Exterior walls of Types II-N, II One-hour, III, IV and V buildings, when not subject to the requirements of Section 5904 because of their proximity to property lines, may be constructed of matched or lapped lumber not less than 2 inches thick and not more than 6 inches wide, or not less than 1 inch thick with a weather covering of noncombustible material applied directly to the wood. Fire stops shall be required as specified in Section 2516(f). Openings in exterior walls shall be protected by a fire assembly having a three-fourths-hour fire-protection rating when fire-resistive openings are required by Sections 504(b) and 3311(d).

(d) **Roof Coverings.** Roof coverings shall be fire-retardant as specified in Chapter 32.

(e) **Roof Construction.** In Type IV buildings the roof may be constructed of corrugated galvanized steel attached directly to wood or steel purlins in lieu of that specified in Section 2106(f).

(f) **Fire-Resistive Walls.** In Types II-N, II One-hour, III, IV and V buildings, there shall be at least one fire-resistive wall from the deck to at least 3 feet above the roof for each 500 feet of length. Areas greater than 100,000 square feet shall be divided with such fire-resistive walls. There shall be a draft stop constructed as specified in Section 5905(b), installed in the substructure immediately below every required fire-resistive wall when the deck is of combustible materials.

Fire-resistive walls shall be constructed as required for two-hour fire-resistive walls or may consist of at least 2 layers of tongue-and-groove or splined lumber, not less than 2 inches thick and not more than 6 inches wide, with a sheet of not less than No. 26 gauge galvanized steel or 3/8-inch exterior type plywood between the two layers, placed vertically with broken joints, or equivalent fire-resistive construction.

Openings in fire-resistive walls shall be protected by a fire assembly having a one and one-half hour fire protection rating.

(g) **Draft Stops.** Superstructure draft stops shall be installed as specified in Section 2516(f). Substructure draft stops constructed as specified in Section 5905(b) shall be installed in line with the superstructure draft stops above.

(h) **Stairs and Exits.** Stairs and exits shall be provided as specified in Chapter 33.

EXCEPTIONS: 1. Where two exits are required from an occupancy, the two exits shall not terminate on the same open deck.

2. An open deck may be considered an exit court and shall not be less than 10 feet in width.

3. In Group A, Division 2, 2.1, 3 and 4 Occupancies, the maximum distance of travel shall not be more than 75 percent of that specified in Section 3303(d).

4. Boat moorages which have no sales, service or repair facilities may have a single exit not less than 3 feet wide and shall be exempt from the requirements of Section 3303(d) if a Class I standpipe is provided as specified in Section 5903, Exception 2(C).

(i) **Automatic Sprinklers.** Automatic sprinklers shall be provided as specified in Chapter 38.

EXCEPTIONS: 1. Outside of the fire district, an automatic sprinkler system shall not be required in superstructures which are less than 8,000 square feet in floor area or in individual superstructures less than 8,000 square feet in floor area when separated by a substructure of a width not less than 16 feet and a substructure draft stop constructed as specified in Subsection 5905(b).

2. An automatic sprinkler system shall not be required in one story superstructures which do not exceed 1,000 square feet in floor area or 20 feet in height.

3. An automatic sprinkler system shall not be required in Group R, Division 1 Occupancies or Group B, Division 2 office buildings of Type I construction provided no one assembly room exceeds 1,000 square feet in floor area and the entire substructure is of Type I construction, unless otherwise required by Section 1807.

WIDTH OF PIERS

Sec. 5907. Floats, piers and walkways shall provide an aisle not less than 3 feet 6 inches in width for the purpose of fire department access.

EXCEPTION: Floats, piers and walkways which are less than 40 feet in length and which are not open to the public.

Section 148. The Director of the Department of Construction and Land Use shall for a period of 60 days following the effective date of this ordinance, accept applications for permits which comply with ordinances 113700 and 113701 in lieu of this ordinance.

Section 149. This ordinance shall take effect and be in force thirty days from and after its passage and approval, if approved by the Mayor, otherwise it shall take effect at the time it shall have become a law under the provisions of the City Charter.

Passed by the City Council the 16th day of December, 1991, and signed by me in open session in authentication of its passage this 16th day of December, 1991.

President of the City Council

Approved by me this 20th day of December, 1991

MAYOR

Filed by me this 23rd day of December, 1991

ATTEST: Norman J. Brooks
City Comptroller and City Clerk

BY: Margaret Carter
Deputy Clerk

KCR/MT:jk
910809
I:91B-ORD2.CPT/2-ord1-2-ord336

CS 19.2

PROPOSED 1991 SEATTLE BUILDING CODE

AUGUST 1, 1991

ANALYSIS OF REVISIONS

This is a chapter by chapter analysis of the revisions proposed for the adoption of the 1991 Seattle Building Code. The code includes changes from the 1985 Seattle Building Code as a result of changes in both the 1988 and 1991 Editions of the Uniform Building Code. There are also changes proposed to the Seattle amendments. Finally, there are changes incorporated from the UBC as adopted by the State Building Code Council. Each change is noted as to its source.

- 88 UBC -Are changes to UBC provisions from the 85 and contained in the 88 UBC.

- 91 UBC -Are changes to UBC provisions from the 88 edition which have been approved by ICBO for the 91 UBC.

- WASBC - Are changes to the 1988 UBC provision as adopted by the Washington State Building Code Council.

- WASVC - Are changes incorporated into the proposed Seattle Building Code to adopt provisions required by the Washington State Ventilation Code as adopted by the State Building Code Council.

- SBC - Are changes proposed to the Seattle Building code which are either new amendments, or revisions to existing amendments. Some of these changes relate to amendments made by the State Building Code Council.

Analysis of Revisions - Chapter 1 - ADMINISTRATION

Sec. 101 - Title - No changes

Sec. 102 - Purpose - No changes.

Sec. 103 - Scope of the Building Code - No changes.

Sec. 104 - Application to Existing Buildings and Structures

(b) - SBC - The second paragraph of the 1985 edition is deleted as unnecessary. If one of these occupancies is remodeled in a minor way, exiting would not need to be changed, but if there is substantial remodeling, exiting should be brought up to code. Language in the rest of the code is sufficient.

(c) 3 - SBC - Fire and Life Safety Regulations. The provision is slightly revised to clarify its application.

WASVC - A new No. 8 is added to be consistent with state law regarding radon control in basements.

(d) 1 - SBC - General provisions under Maintenance. A minor rewording of provision on maintaining elements clarifies that buildings built under this code must be maintained in these standards and that buildings built under previous code must be maintained to the standards of the previous codes. This is revised to allow better coordination with the Housing and Building Maintenance Code.

Item 3 - SBC - Revised to clarify application since the Central Waterfront Fire District is being changed. Also the provision specifying that the building official adopt a procedure is deleted. It is unneeded language, a rule is adopted.

(e) - Moved buildings. WASBC - Provision revised to reflect changes in state law on moved buildings. Local jurisdictions can not require a moved building to come completely up to current code standards. Similar provisions are included in the Electrical and Mechanical codes.

- SBC - A change requires a bond only for abatement or demolition, rather than completion of work. This will be an easier bond value to determine and an smaller, therefore, easier bond to get.

Sec. 105 - Alternate Materials, Methods of Construction and Design - No changes.

Sec. 107 - Tests - No changes.

Sec. 108 - Demolitions

SBC- Item 8 of the demolition standards was clarified regarding the materials used in filling and leveling a site. Inspection staff has had field enforcement problems with the existing provision.

Analysis of Revisions - Chapter 2 - ORGANIZATION AND ENFORCEMENT

Sec. 201 - Department of Construction and Land Use - Jurisdiction - No changes.

Sec. 202 - Powers and Duties of the Building Official

(c) - SBC - Right of Entry revised editorially, no substantive change.

(e) - SBC - Occupancy Violations - Revised slightly to allow posting of notice rather than just service of notice.

(f) - SBC - Liability - the second paragraph is revised editorially with no substantive change.

(h) - SBC - Reports and Records - this former section requiring maintenance of records on fees charges was deleted since the issue is adequately covered by the Permit Fee Ordinance.

Sec. 203 - Unsafe Buildings, Strictures and Premises - Emergency Orders

SBC - This section on unsafe buildings and emergency orders has been substantially revised to clarify its application. Also added is a new order called the hazard correction order.

The proposed changes will allow emergency orders to cover premises, especially buildings threatened by unsafe or unstable slope or soil conditions. The new report requirement in the emergency order section will establish that the building official can require reports from the owner before he/she undertakes a "questionable" cure for the dangerous problem. The proposed hazard correction order (new subsection (c)) will allow the building official to take action in those cases where an unsafe building exists but where no imminent hazard exists to justify the issuance of an emergency order.

Sec. 204 - Appeals

SBC - Minor revision to reflect changes to the Advisory Board.

Sec. 205 - Violations

SBC - A new subsection (b) is added outlining the existing notice of violation process. The NOV is purely discretionary and is not a precondition to imposition of either civil or criminal penalties.

(c) - SBC - Civil Penalties was changed to reflect that some cases are pursued which do not have a compliance date, such as a noise restriction violation.

Sec. 206 - Notices - No changes.

Sec. 207 - Rules of the Building Official - No changes.

Sec. 208 - Construction Codes Advisory Board

SBC - Revised to replace the Building Code Advisory Board with a Construction Codes Advisory Board. The new CCAB will now have responsibility for the 5 construction codes for review and comment. It will retain the discretion to hear appeals on building and mechanical codes. The new Electrical code will extend the appeal review authority to the Electrical Code as well. Membership has been changed to reflect its broader duties and to allow more opportunities for women and minority membership. The new Board would need to be established after passage of the 1991 Seattle Building Code. The Electrical Code Advisory Board has endorsed the merger.

Analysis of Revisions - Chapter 3 - Permits and Inspections

General _ There are a variety of changes throughout the code where changes in standards require changes in the application, review and inspection of permits. For example a new pre-design conference is required in Chapter 9 for certain Hazardous (Group H) Occupancies; and revised seismic standards in Chapter 23. Many of these individual changes are not noted.

Sec. 301 - Building Permit Requirements

(a) Permits Required - No changes.

(b) - SBC - Exemptions - Editorial revisions to Item 3.

SBC - Revised to coordinate with the new Critical Areas regulations.

(c) - SBC - Floodplain regulation reference was added in 1989.

Sec. 302 - Application for Permit

(a) - SBC - Application - A new #9 is added to reinforce the idea that the building permit application must also comply with Land Use regulations.

(b) Plans and Specifications. - No changes.

(c) - SBC - Information Required on Plans. The standards for driveways in 1.I. have been moved to the land use code, these provisions only reflect the application requirements. Item #3.A. is revised to clarify what information is needed on plans to reflect seismic considerations. This requirement is currently located in Chapter 23 of the 85 SBC.

91 UBC - A new # 5 is added per ICBO changes which requires the engineer or architect on record to specify on the final permit documents the special inspections required. This reflects current DCLU practice.

Sec. 303 - Permit Issuance

(c)4 - SBC - Cancellation of applications has been revised to clarify the cancellation process.

(d) - SBC - Permit life was extended to 18 months in 1989. Related changes have been made in various locations of Chapter 3.

Sec. 304 - Fees - No changes

Sec. 305 - Inspections

(b) - SBC - A minor revision to the second paragraph clarifies that work to be inspected must remain accessible and exposed until the building official has approved it.

Sec. 306 - Special Inspections

(a) - 88 and 91 UBC - Minor revisions have been made to special inspection provisions to #1 - Concrete; #7 - Structural Masonry; #3- Moment resisting frames; and #4 - Reinforcing steel based in 88 and 91 UBC revisions.

(l) - SBC - Minor revision in Item 3B to clarify final report requirements.

(o) - SBC - Request for appeal time period for special inspector revocation of certificate extended to 15 days, currently 5.

Sec. 307 -Structural Observation

91 UBC - This is a new section developed by ICBO to further clarify the role of the engineer of record during the construction phase of a project. SBC - revisions to the UBC language was proposed by the Structural Engineers of Washington to clarify the application of this section. In addition, the proposal adds a structural observation for large scale Section 702 buildings which may be pushing the limits of typical wood frame construction, thus warranting special attention by the engineers.

Sec. 308 - Certificate of Occupancy

Sec. 309 _ Temporary Permits

(a) - SBC - The length of permit allowed for temporary tents and similar temporary facilities is changed from 3 to 6 weeks. Three weeks has proved to be impractical for such items as the carousel at Westlake Mall at Christmas, haunted houses and similar holiday events. We have for years issued 3 week temporary permits, and not enforced against the violation of the limit. No problems have occurred.

(c) - SBC - The length of permits for temporary office trailers has been extended to 18 months to be consistent with other permits. However it has been made non-renewable because of a record of abuse of these permits. Currently they are allowed for 12 months, renewable once.

Analysis of Revisions - Chapter 4 - Definitions

Sec. 401 - The edition of the referenced Dictionary was changed from the 1981 edition to the 1986 edition. The 1981 is no longer in print.

Aerosol - 91 UBC - Added to coordinate with a new Article 88 in the fire code regulating aerosols.

Aggregate - WASVC - Added to incorporate the Washington Regulations on radon control.

Air Barrier - WASVC - Added to incorporate the Washington Regulations on radon control.

Air Supply - WASVC - Added to incorporate the Washington Regulations on radon control.

Alcoholism Treatment Facility - The subclasses of these buildings have been completely defined per the provisions of the Washington Administrative Code (WAC). Seattle apparently made up the 4 classes which confused people making such applications. Parallel changes have been made in Chapters 5, 7, 12 and 33 where these facilities are regulated.

Amusement Building - 91 UBC - Added as a part of new regulation of amusement buildings. SBC - Proposed changes to the 1991 UBC provisions clarify the application to temporary amusement buildings such as haunted houses.

Atrium - 88 UBC - An additional sentence has been added to clarify that an assembly occupancy having several mezzanines or balconies is not an atrium.

Awning - Added reference to chapter 46 for definitions related to awnings and canopies.

Balcony - 88 UBC - Amended to clarify that the area of a balcony includes the area providing access to the balcony seating area or serving as a vestibule to the balcony.

Boiler-Low Pressure - 91 UBC - Moved to L.

Central Heating Plant - 88 UBC - Updated by eliminating the term "comfort" and replacing it with "environmental". It further is revised by adding the qualification of directly utilizing fuel to heat the distribution medium.

Child Birth Center - SBC - Deleted from code as not needing to be separately regulated.

Congregate Residence - 91 UBC - Added as a part of a revision to Chapter 12 addressing non-family living situations.

Control Area - 88 UBC - Added as a part of Chapter 9 rewrite.

Corrosive - 88 UBC - Added as a part of Chapter 9 rewrite.

Depressurization System - WASVC - Added to incorporate the Washington Regulations on radon control.

Dormitory - 91 UBC - Deleted as part of creation of congregate residences.

Draft Stop - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Emergency Control Station - 88 UBC - Added as a part of Chapter 9 rewrite.

Fire-Retardant Treated Wood - 88 UBC - The definition is revised to refer to the new standard on fire-retardant treated wood and to reflect changes in the treatment technology.

Foam Plastic Insulation - 88 UBC - Added (and revised in 91 UBC) to distinguish between products used for thermal insulation and those used for acoustical control purposes. The revised terminology is used throughout Section 1713.

Guardrail - 88 UBC - Added for clarity of regulations.

Handrail - 91 UBC - Added for clarity of regulations.

Handling - 88 UBC - Added as a part of Chapter 9 rewrite.

Health Hazard - 88 UBC - Added as a part of Chapter 9 rewrite.

Highly Toxic Material - 88 UBC - Added as a part of Chapter 9 rewrite.

Hot Water Supply Boiler - Temperature limit raised 10 degrees to conform to UMC. See also analysis of definition of water heater.

HVAC - WASVC - Added to incorporate the Washington Regulations on radon control.

Irritant - 88 UBC - Added as a part of Chapter 9 rewrite.

Liquid Storage Room - 91 UBC - Revised as a part of Chapter 9 rewrite.

Liquid Storage Warehouse - 91 UBC - Revised as a part of Chapter 9 rewrite.

Listed and Listing - 91 UBC - Revision clarifies that the building official is responsible for deciding which standards are applicable to a particular application.

Marquee - Revision more accurately describes marquees, eliminates requirement that they be over public property.

Masonry - 91 UBC - Revised to include glass block as masonry, not a window.

Membrane Penetration Fire Stop - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Motor Vehicle Fuel Dispensing Station - 91 UBC - Added as part of a revision to Chapter 7 to clarify gas stations versus repair garages.

Penetration Fire Stop - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Protective Membrane - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Sensitizer - 88 UBC - Added as a part of Chapter 9 rewrite.

Shaft - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Shaft Enclosure - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Smoke Detector - 91 UBC - Revised to reflect that standards for smoke detectors are now contained in the standard.

Soil Gas Retarder - WASVC - Added to incorporate the Washington Regulations on radon control.

Structural Observation - 91 UBC - Added to clarify new requirements contained in new section 307.

Surgical Area - 91 UBC - Added to help clarify the new I-1.1 occupancy for outpatient surgery centers. WASBC - a revision was added to clarify its application, the phrase added comes from Chapter 10.

Through Penetration Fire Stop - 91 UBC - A new definition which is part of the shaft construction and penetration revisions throughout the code.

Use - flammable/combustible liquids - 88 UBC - Revised because of addition of following definition from the Chapter 9 rewrite.

Use - hazardous materials - 88 UBC - Added as a part of Chapter 9 rewrite.

Use, Closed System - 91 UBC - Added as a part of the Chapter 9 rewrite.

Use, Open System - 91 UBC - Added as a part of the Chapter 9 rewrite.

Water Heater - Sea - Language added to be consistent with UMC, UPC and ASME Standard. If equipment exceeds any of these parameters, it will be considered another type of appliance, such as a boiler. (See sections 403, UMC 2104 & 2401, UPC 1302(j).)

Analysis of Revisions - Chapter 5 - Classification of All Buildings by Use or Occupancy and General Requirements for All Occupancies.

Sec. 501 - Occupancies Classified - No changes

Sec. 502 - Change of Use - No changes

Sec. 503 - Mixed Occupancies

(a) General - 88 UBC - A fourth exception was added to allow the omission of the one-hour occupancy separation between B-1 and B-3 garages.

- SBC - A new Item E has been added to exception 2 to clarify that an occupancy separation is not needed for home occupations. ICBO in 1988 changed Table 5-B to require a one hour separation between B-2 and R.

(d) Ratings of Occupancy Separations. - 88 UBC - Exceptions 1 and 2 have been revised to allow a two hour occupancy separation between parking garages and A-2,2.1,3,4, E and R-1 occupancies. Seattle amendments to exception 2 have been simplified. In the 91 UBC the separation between garages and Group I was reduced to two hours. This was allowed because of parking garages excellent fire record.

- 91 UBC - A new exception 4 is added to more realistically regulate separations between fuel pumps and mini-marts

- 91 UBC - A new exception 5 waives certain occupancy separations between H-7 and other H occupancies when built to H-7 standards.

- SBC - A new exception 7 has been added to replace a provision currently in Seattle's amendments to Chapter 38. The exception waives any occupancy separation between a building and its covered entrance canopy such as at the Olympic and Westin hotels. A strict reading of the code requires a 1 hour separation. This exception allows no separation if both areas are sprinklered.

Sec. 504 - Location on Property

(b) Fire resistance of Walls - 88 UBC - The second paragraph regulating wall projections has been revised to clarify application, but a 91 UBC change confused the application. - SBC - A new Seattle amended is added to clarify the application where Table 5-A does not have limits for both opening prohibitions and opening protection. The clarification allows Seattle's traditional 18 inch eaves to be continued.

Sec. 505 Allowable Floor Areas

(c) In Mixed Occupancies - 91 UBC - A new subsection is added to relocate allowable area provisions to this section from 503. The move is editorial. However, the Seattle amendment on multi-story buildings was dropped because it was not accomplishing its intended purpose.

(f) Area Separation Walls - 91 UBC - A new paragraph is added to the charging paragraph to clarify regulations when a separation wall is both occupancy and area separating. - SBC - Adds a reference to 3802 (h) where this general provision is overridden by Seattle's residential sprinkler amendments.

- 91 UBC - Item 3 is revised in Part C to allow ferrous pipe penetrations close to the area separation wall (similar changes are made to Items 6). Part D is added to clarify the minimum roofing materials.

- 91 UBC - Item 4 was completely revised to clarify

- SBC - Item 6 is revised to by repeating language in the charging provision as part D of the exception. This clarifies the intent of the exception, and is a safer design than provided in the UBC.

Sec. 506 Allowable Area Increases

(c) Automatic sprinklers. - 88 UBC - Item 2 revised as part of Chapter 9 rewrite.

Sec. 507 Maximum Height of Buildings and Increases

- 88 UBC - Items 1 and 5 revised as part of the Chapter 9 rewrite.

- SBC - A third paragraph is added to clarify that grades can't be altered to gain a height advantage such as hide a story. For example, make a 3 story building seem to be only 2 by mounding dirt someplace. This change codifies existing Department practice.

Sec. 508 Fire-resistive Substitution

- 91 UBC - The entire section was reformatted because the listed items are limitations on allowed substitutions, they are not exceptions in the sense that they reduce a code standard.

- 88 UBC - Item 4 is added to prohibit reduction of separation between dwelling units now required by UBC. The separation requiremnt, but not this reference, has been in SBC for many editions.

Sec. 509 Pedestrian Walkways

(g) Required exits - 88 UBC - An exception is added to clarify that pedestrian bridges which conform to horizontal exit standards may be exits.

Sec. 510 Sanitation

(b) Floors and Walls - 91 UBC - Revised to distinguish wall and floor protections.

Sec. 511 Access to Toilets and Other Facilities

(a) Access to Water Closets - 91 UBC - These provisions were greatly simplified with the adoption of the new Chapter 31 on Accessibility. They will be superseded at least through July of 92 by the State Barrier Free Code.

Sec. 512 Compressed Gases - No changes.

Sec. 513 Premises Identification - No Changes.

Table 5-A

- SBC - Seattle has traditionally expanded the UBC Table 5-A to cover all construction types and all occupancies. Also listed were separate standards for each fire district. The revised table eliminates the different wall and open protection requirements for the fire districts, but still lists use and construction

prohibitions. The wall and opening protections have been reviewed with 91 UBC standards and made consistent with them. The Seattle code was fairly close in standards outside the fire districts except a few areas where walls needed to rated for a distance of 16 rather than 10 feet. Also different is a requirement prohibiting openings for some occupancies at 5 feet where Seattle now allows openings at 3 feet. For the Fire Districts, the wall and opening protections have been generally reduced. Seattle is not alone in maintaining fire districts. Both San Francisco and Los Angeles still have fire districts. LA limits certain construction types. SF requires certain construction types to be sprinklered and limits some occupancies. Neither city increases the wall and opening protection.

- 88 UBC - ICBO revised 5-A to refer H occupancies to Chapter 9. Seattle's version does not since all the regulations are contained in the Seattle version.

Table 5-A-1

- SBC - This is a Seattle Table. It lists, for the convenience of Table 5-A users what are the uses in each occupancy. This table has been revised to reflect changes in the 01 sections of each occupancy Group.

Table 5-B

- 88 UBC - Changes to H occupancies have been made as part of Chapter 9 rewrite.

- 91 UBC - Separations Changed:

B-4 and A-3 from N to 1 hour
A-3 and I from 3 to 2 hours
B-3 and 1 from 4 to 3 hours

- 88 UBC - The occupancy separation between R-3 and B-2, 3 and 4 changed from N to 1 hour to recognized mixed occupancy buildings. This allows removal of a 85 SBC amendment in Chapter 12.

Table 5-C

- 88 UBC - H occupancies revised as part of Chapter 9 rewrite.

Table 5-D

- 88 UBC - H occupancies revised as part of Chapter 9 rewrite.

- SBC - A new footnote 9 is added which allows an exception for the height and stories in an H-7. The department and the Board agreed that until more information is learned from the Fire Department's new Hazardous Materials program, that the City should allow some flexibility for Health Hazard occupancies. Many of our new biotech research firms could become harshly restricted. There is no record of safety problems which would warrant the UBC restrictions to 3 stories.

Table 5-E

- SBC - A Seattle table, it is revised to reflect changes in the H occupancies rewritten for Chapter 9. Also some occupancy groups left off previous editions are added.

Analysis of Revisions - Chapter 6 - Group A Occupancies

Sec. 601 Group A Occupancies Defined

- 88 UBC - Division 1 was clarified to require a legitimate stage.

- 91 UBC - A set of regulations is added to Chapters 6 and 7 to specifically handle amusement buildings. The regulations grow from research following a number of tragic incidences of fires in amusement parks.

Sec. 602 Construction, Height and Allowable Area

- 91 UBC - The whole section was editorially revised to clarify application of the regulations. This is mostly reformatting with no substantive changes.

(a) - 91 UBC - The second paragraph was revised to clarify that the roof exception was for the actual assembly area, not any room in an A occupancy.

(b) - SBC - This item is deleted. It unnecessary restricts design of theaters. Exiting and construction standards provide an adequate design. In addition, the provision is very imprecise and can not be easily interpreted.

Sec. 603 Location on Property - No changes other than a minor reformatting.

Sec. 604 Exit Facilities

- 91 UBC - Editorially revised to be consistent across the occupancy chapters (A Seattle proposed change to ICBO).

- 91 UBC - A part (b) is added for amusement buildings.

Sec. 605 Light, Ventilation and Sanitation

The ventilation regulations have been moved to Chapter 10.1 of the Mechanical Code, the reference in this section has been changed.

- 91 UBC - The distance between plumbing discharge and other openings into the building was reduced from 5 to 3 feet. (Similar to a Seattle proposed change to ICBO.) - SBC - The Board recommended adding the word "operable" before "opening" to clarify application of the provision. Similar changes have been made in the other occupancy chapters.

- 88 UBC - An exception was added which waives the drinking fountain requirement in dining/drinking establishments.

Sec. 606 Shaft and Exit Enclosures - No Changes

Sec. 607 Sprinkler and Standpipe Systems - No changes other than to correct reference to new Article of Fire Code.

Sec. 608 Special Hazards - No Changes other than a minor editorial revision in the 91 UBC.

Sec. 609 Fire Alarm Systems

- 91 UBC - This is a new section. It provides a clear reference to the alarm requirements already set forth in the Fire Code.

The former section 609 on modifications has been moved into the reformat of 602.

Sec. 610 Amusement Building Alarm Systems

- 91 UBC - This is a new section and is part of the overall amusement building regulations. The alarm systems are designed to shut down the amusement devices so exiting isn't confusing. SBC - Revisions are added to clarify application to temporary amusement buildings such as haunted houses. Further revisions to subsection (c) clarify the alarm and public address systems, the in the action that the alarm must institute.

Analysis of Revisions - Chapter 7 - Requirements for Group B Occupancies.

Sec. 701 Group B Occupancies Defined

Division 1 - 91 UBC - revised to clarify that B-1 garages are not open parking garages and to clearly distinguish parking "garages" from gas stations by calling the latter "motor vehicle fuel dispensing stations". This term is changed throughout the code.

Division 2 - SBC - A minor revision was made in the listing to clarify the application of regulations to liquor stores and warehouses.

SBC - Child birth centers was dropped. It was a state term for an occupancy which DCLU has not received any applications to construct.

Division 3 - 88 UBC - Helistops replaces heliports. (Heliports are now H-5's, this was a Seattle proposed change to ICBO).

Division 4 - SBC - Shipyard structures were relocated to clarify the application of code standards to this added use.

Sec. 702 Construction, Height and Allowable Area

- 91 UBC - The section is reformatted for the 91 UBC to add clarity to the different special provisions in the section.

(b)1 - 91 UBC - This is the traditional "702 building". The section has been revised to allow A-3 occupancies in the upper structure. Also revised to allow sprinklered office and retail in the lower building. (The latter was a Seattle sponsored change.)

SBC - The Seattle provision allowing the height to be measured from the 3-hour separation deck was revised to clarify which type of sprinkler system was required. The Department and the Board discussed this provision at length. The department's concerns over the size and design of these buildings was not convincing to the Board to limit the use of this provision.

(b)2 - 91 UBC - A new section is added which allows a mixed B-1 and B-3 parking garage. Specific limitation are included.

(c)1 - 91 UBC - A minimum height for gas station canopies is established to reduce the risk of vehicles hitting the canopies, which can cause a spark and ignite fuel or vapors.

(c)2 - 88 UBC - The existing provisions covering storage areas in connection with wholesale or retail sales has been restructured to more clearly identify the requirements of this code provision. The change is editorial, no substantive change was intended.

SBC - The Seattle provisions regulating mini-storage warehouses and other accessory storage has been clarified.

(c)3 - 91 UBC - This provision on laboratories was added in the 88 edition as part of the Chapter 9 rewrite, the 91 version is a editorial revision.
- SBC - The provisions are amended to clarify their application to laboratories and for consistency with the Departments joint rule on Labs (issued with the Fire Department).

(c)4 - 88 UBC - Standards for medical gas systems were also added as part of the Chapter 9 rewrite regulating hazardous materials.

(c)7 - 91 UBC - Requirements and references to other requirements for amusement buildings was added.

Sec. 703 Location on Property - No changes

Sec. 704 Exit Facilities

- 88 UBC - Revised for consistency in all the occupancy chapters. (A Seattle sponsored change.)

Sec. 705 Light, Ventilation and Sanitation

- 91 UBC - The complete section has been reformatted to separate different topic areas.

(b) - 88 UBC - The third paragraph is revised to require 6 air changes per hour where combustible liquids are in use. The change eliminates a conflict with the Fire Code.

SBC - Reference to ventilation provisions in Chapter 10.1 of the Mechanical Code is added.

(c) - 91 UBC - An exception was added to allow B-1 garages with openings similar to a B-3 open garage, then mechanical ventilation is waived. (Another Seattle sponsored change.)

Sec. 706 Shaft and Exit Enclosures

- 91 UBC - The second and third paragraphs are a relocation of an existing requirement from 1706(e).

Sec. 707 Sprinkler and Standpipe Systems - No changes.

Sec. 708 Special Hazards - No changes except for an editorial revision from the 91 UBC.

Sec. 709 Open Parking Garages

(b) - SBC - A minor Seattle amendment was dropped as unneeded. It had stated that a B-3 open parking garage had to be in a completely separate building. This is not completely accurate.

(c) - 91 UBC - A reference is added to the new vehicle barrier regulations in 1711. (A Seattle sponsored change.)

(e) - 88 UBC - The provision allowing increased areas is clarified with respect to how the openness of the structure must be designed.

(f) - 88 UBC - Revised to clarify intent of wall and opening protection for parking garages.

(j) - 88 UBC - A provision which conflicted with an exception from stairway enclosure requirements was deleted.

(l) - 91 UBC - Dispensing of fuel was added to the list of uses specifically prohibited in an open parking garage.

Sec. 710 Helistops - No changes.

Table 7-A - No changes.

Table 7-B

- 88 UBC - The table was revised to allow unprotected openings at 10 feet rather than 20 feet. The table also no includes requirements for opening protection due to location on the property.

SBC - Previously Seattle amended this table to address greater distances in fire districts. Since this part of the fire district regulations are being dropped, no local amendments to this table are needed.

Analysis of Revisions - Chapter 8 - Group E Occupancies

Sec. 801 Group E Occupancies Defined

Division 3 - WASBC - An exception for Family child day-care homes was added by Wash. State.

Sec. 802 Construction, Height and Allowable Area

(b) - 88 UBC - A reference to Sec. 3318 is added in two places.

(c) - 88 UBC - A provision has been added prohibiting the use of basements for kindergarten, daycare and 1 & 2 grades unless there is an at grade exit..

- WASBC - Provisions were added by Wash. State to clarify application to daycares above the first floor. Seattle staff worked very hard with state regulators to achieve this compromise.

Sec. 803 Location on Property - No changes except a minor editorial reorganization.

Sec. 804 Exit Facilities

- 91 UBC - A new second paragraph has been added to increase exiting requirements for educational laboratories. This is part of the overall revision of hazardous materials and locations regulations.

Sec. 805 Light, Ventilation and Sanitation - No changes.

Sec. 806 Shaft and Exit Enclosures - No changes.

Sec. 807 Sprinkler and Standpipe Systems - No changes.

Sec. 808 Special Hazards - No changes.

Sec. 809 Fire Alarms

- SBC - A sentence was added to reference Article 14 of the Fire Code. This is a parallel amendment to the other chapters.

Analysis of Revisions - Chapter 9- Requirements for Group H Occ.

General. Chapter 9 has been extensively revised for the 1988 edition and has been correlated with the revision to Article 80 of the 1988 Uniform Fire Code.

Sec. 901 Group H Occupancies Defined

- 91 UBC-3rd Year - (a) The charging paragraph was revised again to eliminate a confusing limitation storage of hazardous materials. (A Seattle sponsored change)

Sec. 901 (a). The section has been revised by including specific chemical groups which are capable of rapid energy releases and establishes a new occupancy classification for health hazards (Group H, Division 7 Occupancies).

In general, the materials are grouped in occupancies by the degree of susceptibility to energy release. The hazard categories are based upon the Code of Federal Regulations, Title 29 (CFR 29). CFR 29 requires the manufacturer or importer of hazardous materials to establish and make available the hazardous properties of the material they produce or import. The numerical classification of materials is based on the National Fire Protection Association standards. See Uniform Fire Code Standard No. 79-3 for standard systems for *The Identification of Health, Flammability, and Reactivity of Hazardous Materials*. See also, Uniform Fire Code Appendix Chapter VI-A, which contains the hazardous materials classification for hundreds of materials common to Group H Occupancies.

The definition of Group H, Division 1 Occupancies has been clarified by listing materials which have potential for causing chemical explosions that could destroy the building. The materials within this use are high explosive hazards. They can develop pressures that cannot practically be contained by the building. The hazards of this use are mitigated primarily by requiring that the building be isolated.

Group H, Division 2 Occupancies have been revised so that they contain some of the uses that were previously within Division 1 Occupancies and others, such as dust-producing operations, that were previously in Division 3 Occupancies. The uses included in Division 2 are moderate explosive or accelerated burning hazards. Except for large quantities of these materials, the hazards can be contained or controlled by the building construction. Two practical exceptions have been added to allow machines producing small amounts of dust to be included in Group B Occupancies. It is not likely that these machines will produce dust in quantities that could produce an explosion.

- 91 UBC-1st or 2nd Years -

Exception 1 to Item 6 in Division 2 has been revised by deleting the 500-square-foot size limitation and replacing it with an allowance for three woodworking appliances having an aggregate exhaust requirement of less than 1,000 cubic feet per minute.

- 91 UBC-3rd Year - Division 2 - Aerosols are exempted as part of a correlation with revisions to the fire code.

Group H, Division 3 Occupancies in effect is a new classification; it includes new uses and some uses that were previously in Divisions 1 and 2, and Group B Occupancies, but frequently in a closed condition. The material in quantity exceeding the exempt amounts given in Table No. 9-A presents a high fuel load or physical hazard. This division recognizes that the potential or risk of fire from flammable or combustible liquids and dust is substantially reduced when the material is not used or stored in a condition that allows vapors or particles to be mixed with the air.

Group H, Divisions 4, 5, and 6 are essentially unchanged.
Division 7 has been added to deal with health hazards.

- 91 UBC-3rd Year - Division 7 - Item 2 on the list was expanded to include toxic materials on the health hazard list.

- WASBC - Regulation of Sensitizers and Other Health Hazards is deleted from Divisions 7.

- SBC - Provisions clarifying application to woodworking shops (Division 2), Boatyard Structures (Division 3) and warehouses where highly combustible goods are stored (Division 4) have been retained from previous Seattle codes.

Sec. 901 (b). This subsection is added to require that when a material is defined in more than one Group H Occupancy, for example a material that is both health and fire hazard, both hazards be addressed.

Sec. 901 (c), (d) and (e). The requirements for rooms containing flammable or combustible liquids and for liquid storage warehouses, were previously within Section 902 (c). The intent of these provisions has been clarified. Although the provisions in Section 901 (c) and (d) seem identical, the provisions in Subsection (c) apply to Group H, Division 2 Occupancies and Subsection (d) applies to Division 3 Occupancies. It should be noted that the occupancy separation requirements in Table No. 5-B apply when they are more restrictive. Additional provisions in the subsections include a requirement that exterior doors be provided for use or storage rooms with an area of more than 500 square feet and a prohibition has been established on the use of liquids in basements or storage of Class I liquids in basements.

- 91 UBC-1st or 2nd Years -

Sec. 901 (d). Item 2 which appeared to limit the area of liquid storage rooms to 1,000 square feet was deleted as this provision was inconsistent with Exception 2 of Section 903 which allows liquid storage rooms to exceed 1,000 square feet under certain conditions.

Sec. 901 (f). Frequently, determining the hazardous characteristics of chemicals is very difficult, therefore, Subsection (f) has been added to specifically indicate that the building official can require that an independent analysis (opinion or report) of the potential hazards of a material be provided.

Further, the opinion or report may include a hazardous material management plan (HMMP). Revisions have been made in the Uniform Fire Code to also allow the chief to require such information. The intent is that both officials exchange relevant data in effecting cooperative code enforcement. In some cases, operators of hazardous material handling enterprises may be reluctant to share information on the properties of chemical compounds which may be trade secrets. Therefore, a provision has been added to specifically indicate that data obtained under this code provision not be released without authority from its owner.

(f) Requirement for Report - The State Building Code Council added an exception on the end of the reporting requirement allowing the use of SARA Title III reports rather than a separate set of reports.

(g) - SBC - A pre-design conference requirement was added to the Code for Group H-6 and some Group H-7 occupancies. The language for all the required predesign conferences has been revised to be consistent.

Sec. 902 Construction, Height and Allowable Area

Sec. 902. The type of construction requirements and allowable floor areas for Group H, Divisions 1, 2 and 3 Occupancies have been substantially revised from previous editions of the code and allowable areas for the newly established Group H, Division 7 Occupancy have been added.

The type of construction requirements for Division 1 Occupancies in Table No. 5-C are no longer combined with Division 2, and noncombustible construction is required. The allowable area for noncombustible construction types, however, is the same as allowed under previous editions of the code for Division 1 Occupancies. The number of stories allowed is now limited to one. The noncombustible construction is mandated so that explosives in storage or use in these buildings will not be exposed to fire from combustible parts of the construction. Furthermore, combustible vegetation, such as grass, outside of buildings will not ignite the construction and expose the explosives.

Division 2 construction requirements and floor area limitations are identical to the limitations of previous editions of the code for Division 1 Occupancies, as the uses allowed in this division include some of the less hazardous uses that were formerly under Division 1.

The allowable type of construction and floor area for Divisions 3, 4, 5 and 6 are unchanged from previous editions of the code. For exceptions to the number of stories allowed for Division 2 and 3 Occupancies, see analysis to Section 902 (j).

The construction requirements and floor area limitations for buildings contain materials that are health hazards, Division 7 Occupancies, are the same as for Group B, Division 2 Occupancies, as the fire hazard is not significantly different than uses in such occupancy. The height of the building, however, is limited to three stories due to the hazard to occupants that may be above a toxic environment and the difficulty of reaching upper floors in an emergency.

Sec. 902 (b). Requirements in this section were previously in Section 902, third paragraph. They have been revised so that the requirements also apply to floors in areas containing hazardous materials for consistency with Section 911 (b) 2.

Sec. 902 (c). The spill control provisions have been clarified and broadened, so that they apply when required by Section 80.301 (l) of the Uniform Fire Code and not only to flammable or combustible liquid spills as currently in the code.

Sec. 902 (d). Construction requirements for drainage of hazardous materials have been moved from the Uniform Fire Code to this section. Requirements have been clarified by establishing minimum design criteria for the capacity of the drainage system.

Sec. 902 (e). This section now provides for containment of hazardous materials. It parallels Uniform Fire Code Section 80.301 (l) 4, which applies to containment from exterior storage as well as interior storage of hazardous materials.

Sec. 902 (f). The cross reference was previously in Section 902; it calls attention to smoke in heat vent requirements in Section 3206.

Sec. 902 (g) and (h). Provisions for standby and emergency power facilities are included as they are essential for occupant safety and fire-fighting operations in some Group H Occupancies. The provisions are similar to those currently in Group H, Division 6 Occupancies.

- 91 UBC-1st or 2nd Years -

Sec. 902 (g) and (h). The changes to these subsections are essentially editorial to delete redundancy and to indicate that all required electrical equipment is to be installed in accordance with the Electrical Code, not just the exhaust and ventilation equipment.

Sec. 902 (i). Since Group H, Division 1 Occupancies contain high-explosive-type material, accidental exposure to hidden ignition sources can in part be avoided by limiting the concealed areas such as crawl spaces. The hazards of the stored material should not be compounded by increases in the allowable areas permitted in Section 505 for buildings more than one story or for buildings with basements. The use is, therefore, limited to one floor level. Some chemicals are very heat sensitive and provisions have been included to control temperatures within the building to prevent accidental explosions due to overheating.

(i) - 91 UBC - A second paragraph was added to address cases where materials could result in a building being classed either as a H-1 or H-7. The paragraph directs that the more stringent standards be met.

Sec. 902 (j). Large quantities of some materials allowed in Group H, Divisions 2 and 3 Occupancies, in the event of a fire, cannot be practically contained by the building. To deal with this high hazard, Table No. 9-E was developed, which requires isolation of the building when the quantity of listed material exceeds that specified. Buildings containing large quantities of hazardous materials are limited to one story and the condition that applies to Division 1 Occupancies.

Sec. 902 (k). The provisions of this section were previously in Section 902 (b).

Sec. 903 Location on Property

Sec. 903. Location on property requirements for Group H Occupancies are so unique, they cannot be properly addressed in Table No. 5-A nor the 03 sections of the type of construction chapters. These provisions have therefore been deleted from the latter and are incorporated in Tables Nos. 9-C and 9-D. Table No. 9-C references Table No. 9-D for Group H, Division 1 Occupancies, as they must be in detached buildings. Table No. 9-D in essence is the same as the American Table of Distances for Storage of Explosives found in the Code of Federal Regulation Titles 27 and 30, and also in Article 77 of the Uniform Fire Code. However, the distance shown is the minimum distance to property lines and not only to inhabited buildings which may be on a different property. The intent is that for permanent buildings used for Division 1 Occupancies, the property line limitation would apply when it is the most restrictive. When portable structures are to house the occupancy, the distance to inhabited buildings set forth in the Uniform Fire Code would apply even if the inhabited building is on a different property.

Another difference is that the scope of explosives under Chapter 9 is more broad than explosives regulated under the code of federal regulations. Therefore, Footnote 1 of Tables Nos. 9-B and 9-E establishes a performance method for increasing or decreasing the listed distance when the explosive in question has more or less energy than trintrotolulene (TNT).

When detached storage is required, the explosive hazard far exceeds the hazard from exposure to fire from adjacent buildings, therefore, fire-resistant requirements and opening protection due to location on property are not given.

The minimum distance to property line given in Table No. 9-C for Division 1 Occupancies has been increased from 60 to 75 feet and when the number of pounds of explosives exceeds the equivalent of 2 pounds of TNT, the distance given in Table No. 9-C increases substantially.

The distance from property line for uses that were previously Group H, Division 2 Occupancies remains at 30 feet when a detached building is not required and the area exceeds 1500 square feet. The fire resistance of exterior walls and the protection of openings required by Table No. 9-C is the same as set forth in Table No. 5-A of the 1985 code when a detached building is not required.

- 91 UBC-1st or 2nd Years -

Sec. 903. A reference to Tables Nos. 9-C and 9-D has been added to refer the reader directly to these tables rather than the indirect reference through Section 504.

Sec. 904 Exit Facilities

Sec. 904. This section was not changed, however, revisions were made to Section 3320 referenced by the section. See analysis to Section 3320.

Sec. 905 Light, Ventilation and Sanitation

Sec. 905. A Subsection (b) has been added to provide for the emergency shutoff of ventilation systems when its continued operation could spread a flammable or toxic gas or other hazard required to be contained by the Uniform Fire Code. See also analysis to Section 701.

- 91 UBC-1st or 2nd Years -

Sec. 905 (b). The revisions to this section broaden its application so that any area which needs ventilation may be required to have it. The revision correlates provisions of the Building Code with the Uniform Mechanical Code and Uniform Fire Code.

- 91 UBC-1st or 2nd Years -

Sec. 905 (d). See analysis of Section 705.

Sec. 906 Shaft and Exit Enclosures

- 91 UBC-1st or 2nd Years -

Sec. 906. Section 1706 (a), Exception 8, has been moved to the last paragraph of this section.

Sec. 908 Special Hazards

Sec. 908. A provision has been added to prohibit openings in occupancy separations that are required between heating plants and Divisions 1, 2 and 3 Occupancies. A provision has also been added to require explosion venting for equipment that is used to convey explosive dusts or fibers.

- 91 UBC-1st or 2nd Years -

Sec. 908. The provisions requiring the construction of a two-hour occupancy separation between combustible fiber storage rooms or vaults having a volume of 100 cubic feet have been increased to 500 cubic feet for consistency with Uniform Fire Code Section 9.103.

Sec. 909 Fire Alarms

- SBC - The provision in the UBC is misleading because there are many more fire alarm requirements in article 80 and 79 of the fire code than for just the manufacture of organic coatings.

Sec. 910 Explosion Control

Sec. 910. The provisions for explosion venting have been broadened, so that they apply when an explosion could result from gases in addition to flammable dust or flammable liquids currently covered by the code. In addition, provisions for the design of explosion venting systems have been included. In general, the design criteria are based on Factory Mutual data.

- 91 UBC-1st or 2nd Years -

Sec. 910. The terminology "explosion venting" has been revised to "explosion control" in recognition of the fact that there are a number of ways to mitigate explosion damage other than venting.

Sec. 911 Division 6 Occupancies

- 91 UBC-1st or 2nd Years -

Sec. 911 (f) 1. The first sentence has been revised to allow the use of other than welded connections in HPM systems that supply gas when the health hazard ranking of the gas is no greater than 1 or 2. The revision correlates the requirements of this section with Uniform Fire Code Section 51.105 (e).

Table 9-A

Table No. 9-A. There is now a distinction in Table No. 9-A between storage and use in closed systems, and use in open systems. This concept recognizes that the release of vapors and its exposure to ignition sources is a much more hazardous condition than the closed condition. The exempt quantities in open conditions are approximately one fourth of the closed condition. There are exceptions to this general rule, for example for organic peroxides, due to the explosive potential of the material.

The table has been revised so it is more comprehensive. Although many quantities of exempt materials listed in the table are the same as in the previous code, the concept of controlled areas has been adopted. This concept recognizes that hazards from materials can be mitigated by isolation of small quantities with fire-resistive construction.

Table No. 9-A now establishes the quantity of combustible dust per 1000 cubic feet of volume to one pound. This quantity is based on Factory Mutual data. The one pound per 1,000 cubic feet of volume is based on the fact that many combustible dusts have a lower explosive limit of 0.04 ounces per cubic foot or higher. Since the lower explosive limits should never be reached, a safety factor of 2.5 is applied which, when divided by the 40 ounces per 1000 cubic feet of volume, results in the 16 ounces or one pound per 1000 cubic feet.

Class III-B liquids have been added to the table as large quantities of these liquids in unsprinklered buildings become similar to flammable liquids when a hot fire is established.

The quantity given for organic peroxides and oxidizers is taken from NFPA standards and adjusted so the similar hazards are equated.

Since many of the unstable (reactive) materials could be organic peroxide and present a similar hazard, exempt quantities are based on the quantities of this material.

The quantity given for unstable reactives has been used as the basis for establishing the quantities of water reactives. Since water reactive Class 3 is included in unstable (reactive) Class 3, the same quantity is used. The fact that there are no water reactive Class 4 materials just means nothing reacts with water as violently as unstable (reactive) Class 4 material.

The quantities established for pyrophoric detonatables is the same limit used for peroxides. Ten cubic feet of gases taken as being approximately equivalent to one pound of solid or liquid.

The pyrophoric nondetonatable quantity is set as more than pyrophoric, detonatable, but significantly less than Class I-A flammable liquids, due to the increased level of hazard.

The quantity set for explosives is the same as the allowable quantities for Class I organic peroxide.

The quantities established for cryogenics is one typical 160 liter dewar which is approximately 45 gallons.

- 91 UBC-1st or 2nd Years -

Table No. 9-A. For clarification, dash marks in the tabulation have been replaced with "N.A." indicating that a quantity value is not applicable.

Footnote No. 5 has been revised to clarify that the 100 percent increase allowed by the footnote also applies to gases.

A reference to new Footnote No. 11 has been added to the column headings "Solid Pounds" and "Liquid Gallons," and Footnotes Nos. 11 and 12 have been added. These footnotes increase the quantities of Class III oxidizers permitted in Groups I, M and R Occupancies and allow the quantity of nonflammable solid and nonflammable noncombustible liquid hazardous materials within a single control area of Group B, Division 2 Occupancy to exceed exempt amounts in the tabulations. It has become evident that a variety of materials which are routinely found in Group B, Division 2 Occupancies used for retail sales are generally accepted by code officials and the general public. Examples of these materials include swimming pool supplies, pesticides, insecticides, lawn and garden products, and household cleaning products. Control measures are included in the Uniform Fire Code for the safe merchandising of these types of materials.

- 91 UBC-3rd Year - Footnote #1 revised to further clarify the definition of control areas.

- SBC - A revision to footnote 5 has been added which reflects current Fire Department practices and exceptions allowed via their permit process.

Table 9-B

Table No. 9-B. The exempt amounts of chemicals presenting a health hazard were established by professional judgement.

- 91 UBC-1st or 2nd Years -

Table No. 9-B. The changes to the last column correlate Table No. 9-B in the Uniform Building Code with Table No. 80.402-B in the Uniform Fire Code.

In the last column, "—" has been changed to "0" to indicate that the allowable quantities of gas in open systems is zero.

For comments on the revisions to footnotes, see analysis of Table No. 9-A, revision to Footnote No. 5.

For comments on new Footnote No. 9, see analysis of Table No. 9-A, new Footnotes Nos. 11 and 12.

- 91 UBC-3rd Year - Footnote #1 revised to further clarify the definition of control areas.

Table 9-C

Table No. 9-C. See analysis of Section 903.

- 91 UBC-1st or 2nd Years - Table No. 9-C. Revisions to the table clarify the intent. See also analysis of Section 903, Exception 2.

- SBC - A footnote is added to reference the code user to the limitations of certain Group H occupancies in the Fire District (Chapter 16.)

Table 9-E

Table No. 9-E. See analysis of Section 902 (j).

- 91 UBC-1st or 2nd Years - Table No. 9-E. The quantities of oxidizer liquids and solids within Table No. 9-E were revised to agree with Table No. 80.306-B in the Uniform Fire Code. The quantities were intended to agree with those contained in NFPA Standard No. 43-A; however, the prior edition incorrectly listed the oxidizer liquid and solid quantities.

Analysis of Revisions - Chapter 10- Group I Occupancies

General - 88 UBC - The I occupancy regulations were revised in 1988 to reduce conflicts, overlap and duplication between the UBC and the NFPA Life Safety Code. Changes occurred in this chapter, Chapter 5 and Chapter 33.

Sec. 1001 Group I Occupancies Defined

Division 1 - 91 UBC - Division 1 was split into 1.1 and 1.2. The existing 1 occupancies became 1.1. The 1.2 division is new and is aimed at the growing use of day surgery centers. It is written to treat them almost like hospitals, except corridors can be smaller. It only addresses those where the number of patients within an individual tenant space exceeds five.

Alcoholism treatment facilities Class 1 was changed to facilities providing detoxification services. Added is language from the WAC which specifies these shall be treated as hospitals.

Sec. 1002 Construction, Height and Allowable Area

(a) - 88 UBC - 3 exceptions are added which allow hospitals and nursing homes in a variety of construction types but often with sprinklers and often with overall limited size.

(b) - 88 UBC - This section is extensively rewritten. A limitation is established on the size of smoke compartments in patient-occupied areas. Revisions improve the fire-resistive and smoke penetration quality of the smoke-barrier partitions. Details on assemblies such as doors and windows that are used in connection with smoke-barrier partitions are set forth. Fire dampers in smoke barriers are required to be resistant to smoke and be smoke detector activated. Provisions similar to those in 702(b) on medical gas systems are also added.

Sec. 1003 Location on Property - No changes.

Sec. 1004 Exit Facilities

- 91 UBC - This section revised for editorial consistency with other occupancies.

Sec. 1005 Light, Ventilation and Sanitation - No changes.

Sec. 1006 Shaft and Exit Enclosures - No changes.

Sec. 1007 Sprinkler and Standpipe Systems - No changes.

Sec. 1008 Special Hazards

- 88 UBC - The provisions added to this section (and Table 10-A) clarify specific uses that are required to be separated from other uses in hospitals and nursing homes. A reference is added to the Fire Code for flammable/combustible liquids. An exception allowing omission of an occupancy separation between rooms with boilers of less than 400,000 Btu/hr and other spaces was eliminated.

Sec. 1009 Fire Alarms

- SBC - A reference parallel to that in other chapters was added to Article 14 of the Fire Code.

Sec. 1010 Smoke Detectors

- 88 UBC - This is a new section which mandates the installation of smoke detectors in patient sleeping rooms in hospitals and nursing homes. The smoke detector system is designed so nursing staff will be given early warning of the smoke detector being actuated.

Table 10-A

- 88 UBC - A new table establishing separations of differing uses in I occupancies has been added. The tabulation was based on an analysis of the hazards associated with each specific use.

Analysis of Revisions - Chapter 11 - Group M Occupancies

Sec. 1101 Group M Occupancies Defined - No Changes.

Sec. 1102 Construction, Height and Allowable Area

- 88 UBC - (b) The section was reformatted for clarity. (A Seattle sponsored change.)

Sec. 1103 Location on Property - No Changes.

Sec. 1104 Special Hazards - No Changes

Sec. 1105 Garage Floor Surfaces - No Changes.

Sec. 1106 Agricutural Buildings - No Changes.

Analysis of Revisions - Chapter 12 - Group R Occupancies

Sec. 1201 Group R Occupancies Defined

- 91 UBC - The term 'congregate residence' replaces convents and monasteries (and sororities, fraternities, residential clubs and dormitory buildings in the SBC.) There are corresponding changes throughout Chapter 12, Chapter 4, 5, 33 and 38. (A Seattle sponsored change.)

Division 1 - SBC - Alcoholism treatment facilities are no longer designated as classes, but now are named as they are in the WAC. The code now specifically says how they are regulated per the WAC.

Division 2 - WASBC - The State regulators have begun using the term Dwellings used as a Family Day Care Home rather than Mini-day care centers in a family abode. Additional state provisions are added later in the chapter.

Sec. 1202 Construction, Height and Allowable Area

(a) - WASVC - Reference to the new state provisions on radon resistive construction and formaldehyde reduction requirements is added. The new standards are in Chapter 17. The City is required to adopt these provisions.

(b) - 88 UBC - The UBC has added a provision similar to SBC requiring separation between dwelling units. However guest rooms were not addressed, nor was separation from corridors that have been contained in Seattle's code. These have been retained for the SBC.

(The fire alarm provisions have been moved to a new section 1211.)

Sec. 1203 Location on Property - No Changes other than an minor reorganization.

Sec. 1204 Exits and Emergency Escapes

- 91 UBC - The first paragraph revised for editorial consistency in all occupancy chapters.

- 88 UBC - In the second paragraph a provision added to require an escape window, like those from bedrooms, to be provided in all new basements, whether the plans show bedroom use or not. Other changes in this section are editorial.

- SBC - An existing Seattle amendment on exiting for Boarding Homes is moved to this section from the special provisions section of 1202. This amendment is based on Washington Administrative Code for Boarding homes.

Sec. 1205 Light, Ventilation and Sanitation

- 88 UBC - The section has been reformatted to group light, ventilation and sanitation in separate subsections.

(a) - 91 UBC - Skylights may now provide the required light and ventilation openings in residential occupancies.

(c) - 91 UBC - The provisions were revised for consistency with the mechanical code, requiring only a 3 foot separation between bathroom exhausts and other (operable) opening in the building.

- 88 UBC - Amendments limited the use of recirculating fans to rooms with toilets and lavatories.

- WASVC - This has been revised to require the mechanical ventilation as now required by the Washington State regulations on indoor air quality. The detailed provisions will be contained in Chapter 10.1 of the Seattle Mechanical Code.

Sec. 1206 Yards and Courts - No Changes.

Sec. 1207 Room Dimensions. - No Changes.

Sec. 1208 Efficiency Dwelling Units - No Changes.

Sec. 1209 Shaft and Exit Enclosures

- 88 UBC - A new second paragraph was added which requires separation of corridors on adjacent floors. In other words the Chapter 17 exception which allows two stories open to each other is restricted in non-sprinklered residential buildings. (1706, Exception 1. Seattle attempts to get a cross reference in 1706 repeatedly failed.)

Sec. 1210 Smoke Detectors and Sprinkler Systems

- 88 UBC - The smoke detector provisions were substantially revised and reorganized. Seattle picked these changes up in the 85 SBC.

- 91 UBC - Item 3 of (a) was revised to require the smoke detector systems be designed with a battery backup in case of power failure.

- 91 UBC - Item 4 of (a) was revised to require a smoke detector in each sleeping room. SBC - The treatment of congregate residences was changed to be handled similar to dwelling units rather than hotels.

- WASBC - Item 6 is added to specifically address smoke detectors in family day care homes. These are State provisions.

Sec. 1211 Fire Alarms Systems

- 88 UBC - This is a new section which was created by moving provisions from 1202. In addition a provision was added which precludes the use of area separation walls as designating separate buildings when applying this provision. (A minor editorial revision in 91 UBC.)

- SBC - A sentence, parallel to amendments in other chapters, is added to provide a reference to Article 14 of the Fire Code.

- SBC - Exception 1 - A sentence was added to clarify application to townhouse design buildings.

Sec. 1212 Heating - No Changes except adding congregate residences.

Sec. 1213 Special Hazards - No changes

Sec. 1214 Access to Buildings and Facilities - This section was dropped by the 1991 UBC as part of the adoption of Chapter 31 on Accessibility.

Sec. 1214 Family Care Day Care Homes

- WASBC - The state provisions on Family Child Day Care Homes have been added as a new Section in this location.

Sec. 1215 Unfinished Rooms - No Changes.

Sec. 1216 Security from Criminal Activity.

- SBC - This section was changed to be more readable and to be more consistent with UBC format. The provisions on building entrance doors was changed to prohibit openings to provide improved security.

The standard for strength of doors between corridors and dwelling units has been changed from a hollow door to solid core because a hollow core door provides very little resistance to forcible entry.

A requirement was added to the single family section that entrance doors be openable from inside without a key or special knowledge or effort, consistent with draft Director's Rule 8-90.

"Patio" doors was changed to "sliding" doors for clarity.

Garage doors have been excepted from the requirement for observation ports in single family dwellings.

certain construction types in its many fire districts, but again allows some, but not all, if sprinklered.

In preliminary discussions with the Fire Department, they felt the most important provision of the fire districts was the control of certain occupancies. These are the most hazardous in terms of explosion capabilities. While the Fire Code might now provide adequate standards for these uses, prohibiting them in the congested downtown remains a prudent restrictions. There is no longer a exception allowing dry-cleaning establishments because based on the new Chapter 9 regulations, most new dry cleaning establishments would be a B-2 occupancy.

The boundary change eliminating First Hill reflects the long term city land use policies for that area. The current boundary includes First Hill north of Columbia, excluding areas to the south. There is no clear distinction between the two areas. Both include hospitals, commercial development and high density residential. The zoning in both areas is similar. The current boundary is restrictive on some hospitals, but not others, and splits one down the middle. Zoning precludes most, if not all, of the uses that the Fire District would preclude.

Analysis of Revisions - Chapter 16 - Fire Districts

This Chapter establishes the Seattle Fire Districts and is completely Seattle amendments. For the new SBC a substantial revision to the Fire District regulations is proposed. Seattle has had fire districts for many years. Even when the 1979 UBC dropped fire districts, Seattle retained 2 districts in the downtown areas: Downtown Fire District and Central Waterfront Fire District. Seattle is one of only 3 known cities using the UBC which have retained the districts (Los Angeles and San Francisco are the other two). Denver, Houston, San Diego, Minneapolis, Portland, Dallas are all without such districts.)

Various options were considered including rescinding the districts altogether, limiting certain construction types only, limiting certain occupancy types only, some combination, changing the district boundaries, or retaining the districts as they are; or some combination of all those changes.

The proposed Chapter 16 has the following provisions:

1. One fire district instead of two.

2. Boundaries include all of the present waterfront fire district and most of the previous downtown district. I-5 is used as the eastern boundary line, eliminating portions of First Hill that had been included. The boundary now includes all of the Kingdome and its property.

3. All construction types except V-N would be allowed, however Types II-N, III-N, and V-1 Hour would be required to be sprinklered throughout and all roof coverings have to be Class B or better.

4. The H occupancy prohibitions have been retained, but revised to reflect the revision to their new definitions.

5. Chapter 5, and related provisions in Chapters 17-22 no longer have greater wall and opening protection requirements for the fire district. These requirements would be the same throughout the city.

Rationale

In most of the fire district area, the land values are now so high that the lower construction types are unlikely to be used. If they are, the new regulations require full sprinkler systems. We don't anticipate anyone proposing a building of V-N construction, but felt the regulations should clearly prohibit the possibility. This is similar to the approach taken by San Francisco in their fire districts. Los Angeles also restricts

Analysis of Revisions - Chapter 17 - Classification of All Buildings by Types of Construction and General Requirements.

Sec. 1701 General - No Changes.

Sec. 1702 Structural Frame

- SBC - The Seattle amendments were revised slightly to clarify the treatment of various provisions as structural frame versus secondary members. This revision is consistent with a director's rule on fireproofing which also addresses this issue.

Sec. 1703 Usable Space Under Floors

- 91 UBC - This section has been editorially revised to incorporate the provision which allows the omission of the one-hour construction on the basement of R-3 and M as an exception. A second exception is added to waive the requirement when the basement is a vehicle service pit.

Sec. 1704 Vertical Fire Spread at Exterior Walls.

- 91 UBC - This is a new section. (It replaces a section which made a simple reference to the roofing chapter.)

The section includes provisions to limit the vertical spread of fire at the juncture between the exterior walls and each floor. Seattle has had similar provisions in 1807 for many editions. Those provisions can now be eliminated in favor of the UBC. The intent of the new UBC provisions is to prevent fires from flanking a floor-ceiling assembly by penetrating concealed spaces and walls.

The section also requires flame barriers extending 30 inches from the exterior of walls at each story. These barriers can be eliminated for sprinklered buildings, buildings of 4 stories or less, where openings are 3/4 hour or better, or where openings are 5 feet, or more, apart.

Sec. 1705 Exceptions to Table 17-A

Minor editorial changes to improve references.

- SBC - Former Seattle sections (h) and (i) which allowed wood liturgical fixtures and church nave ceilings were deleted. The ceilings are now allowed by

more generalized UBC language in chapters 18, 19, etc. The liturgical fixtures have not been a problem and the amendment was seen as unnecessary.

Sec. 1706 Shaft Enclosures

The shaft provisions have been substantially revised for the 91 UBC. The changes have been coordinated with changes throughout the code, especially in Chapter 43. The ICBO detailed explanation of the changes to 1706 are below. Seattle has many amendments to this section. They are retained and worked into the appropriate locations of the new section.

Sec. 1706. This section has been reformatted. Provisions that were exceptions to general rules are now contained in Subsection (c), "Special Provisions."

Section 1706 (a). Exceptions 2 and 8, have been relocated to Sections 706 and 906.

Section 1706 (b) now provides for termination of shafts which do not extend through a building.

Exception 2 permits unprotected openings in the bottom of shafts when the openings accommodate a noncombustible duct which is used to convey explosive vapors or dusts, vents or chimneys. The 1988 and previous editions of the code generally allowed only horizontal openings into shafts and the openings were required to be dampered. This resulted in a conflict between the provisions of the Building Code and Mechanical Code which do not allow dampering of vents and chimneys. Also, ducts carrying flammable dusts or vapors are frequently designed for explosion within the duct and a damper closing off the duct could cause its failure. Fires in ducts containing dusts or vapors are mitigated by sprinklers in the duct. Exception 2 correlates provisions of the Building and Mechanical codes.

Exception 3 will allow the use of fire dampers conforming to U.B.C. Standard No. 43-7 to be installed at the bottom of shaft enclosures. Revisions have also been made to U.B.C. Standard No. 43-7 to provide for fire dampers that are designed, tested and listed for installation in floors.

Section 1706 (d) contains the same provisions that were previously in Section 1706 (b), but the exceptions have been revised.

Exception 1 has been broadened so that it allows unprotected openings in shaft walls that open to the exterior when unprotected openings are permitted by Table No. 9-C or Section 1803 (b), 1903 (b), 2003 (b) or 2103 (b), in addition to Table No. 5-A that is referenced in the 1988 edition of the code.

The second exception of Subsection (b) of the 1988 code has been deleted. This exception provided for the installation of fire dampers in ducts piercing shaft enclosures. At the time this provision was included in the code, fire dampers were not a tested self-closing fire assembly; they were an assembly that was to be constructed in accordance with specifications in the U.B.C. Standards. This antiquated provision was appropriately deleted as fire-damper assemblies now must be tested for performance under fire conditions. The second exception now in Section 1706 (d) provides for through-penetration fire stops of shaft walls that are referenced in revised Sections 4304 and 4305.

Section 1706 (e) is basically the same as Section 1706 (c) of the 1988 code; however, the fire-resistive rating of rubbish and chute termination rooms has been increased to two hours where shaft enclosures are required to be of two-hour fire-resistive construction.

Section 1706 (f) was previously Section 1706 (a), Exception 3, in the 1988 code. Revisions were made deleting antiquated provisions which refer to specific materials that were to be used in chutes and dumbwaiter shaft construction in favor of a more general reference to approved fire-resistive assemblies. Also, a provision was included which sets forth requirements for the membrane applied to the outside of a shaft. A 1 3/8-inch solid wood door has been substituted for the previously specified metal clad doors and metal clad jams, casings or frames.

(e) - SBC - Seattle amendments were deleted. Staff believes that the uniform language allowed what the amendments were intended to cover, and did not significantly clarify the issue.

(g) - SBC - This subsection, which is completely Seattle amendments is revised and reformatted to clarify their application. These provisions were added in the 85 SBC to specifically address the need for either elevator lobbies or pressurization in non-highrise situations. They were written as applicable to office occupancies, but we also referenced them in other parts of the code for other occupancies, specifically single exit residential. The provision, when referenced, was confusing. Similar provisions in the Seattle amendments to 1807 - Highrise - have been similarly revised.

Sec. 1707 Construction Joints

- 91 UBC - This is a new provision. It contains specific requirements mandating that the fire resistance of walls and floors not be compromised at construction joints, such as those accounting for wind, seismic or expansion movements. Related revisions are made to 4304(g) and 4305(c).

Sec. 1708 Weather Protection

(a) - 91 UBC - A minor revision clarify application of kraft paper.

Sec. 1709 Members Carrying Masonry or Concrete

- 88 UBC - The wording added to the end of the first paragraph clarifies that the intent of the code is to require that members supporting masonry or concrete walls have a fire-resistive rating not less than that of the wall.

Sec. 1710 Parapets

(a) - 91 UBC - Revised editorially to clarify the application of the exceptions. In addition, a new exception #5 is added which allows parapets to be eliminated when there is construction of the roof meets very specific criteria. It is similar to Sec 505(e)3, Exception #2. Exception 5 from the 1985 SBC has been deleted.

Sec. 1711 Projections.

- 91 UBC - A new final paragraph is added to clarify the interaction between this section and 504 - wall and opening protection.

Sec. 1712 Guardrails and Vehicle Restraint Systems

(a) - 88 UBC - The guardrail provisions were reformatted and slightly revised as part of a coordination effort with other model codes. The revision hopefully ends the confusion between handrails and guardrails. Many code change proposals were made to ICBO to allow guardrails on exterior balconies on individual dwelling units in R-1 to be only 36 inches high. These were repeatedly rejected. The Department will enforce a 42 inch minimum for these cases under this code.

- 91 UBC - The openings in guardrails has been changed from a maximum of 6 inches to a maximum of 4 inches. This change, subject of much debate nationally for years, was based on research data developed by the American Academy of Pediatrics which showed that 95 percent of children 10 year of age or under can pass through a 6 inch opening. This data also shows that the clear width openings should be no more than 4 inches in order to ensure that ambulatory children 1 year old or less will not be able to pass through.

- 91 UBC - An exception eliminating guardrails around vehicle service pits is added.

(b) - 91 UBC - A new provision on vehicle guardrails has been added. This is the result of a Seattle proposal and allows us to eliminate our local amendment.

Sec. 1713 Foam Plastic Insulation

Many revisions were made to these regulations in both the 1988 and 1991 editions of the UBC. The SBC makes no revisions from the latest version, except to retain our existing amendments to these provisions.

Sec. 1714 Insulation - No Changes other than new section number.

Sec. 1715 Solar Energy Collectors - No Changes other than new section number.

Sec. 1716 Atria

(a) - SBC - The provision requiring a pre-design conference was rewritten to clarify the conference purpose and to be consistent with provisions for other similar conferences.

(b) - 91 UBC - There was a reformatting of the section to improve clarity. In addition, provisions are added to allow the use of projected beam-type smoke detectors.

- 88 UBC - A provision is added to the second paragraph to clarify that automatic operation of the smoke control system need only occur when two or more smoke detectors activate. By deleting a reference to 1807 from the third paragraph, windows and exterior panels in tenant spaces can now be used for smoke control. This change is especially desired in hotel guest rooms. Other revisions clarify smoke detector installation requirements.

(c) - 88 UBC - Exception 2 now requires quick-response sprinklers to protect glazing between tenant spaces and an atrium. This will reduce glass breakage when the sprinklers do operate.

- 91 UBC - A revision allows the use of listed glass block in wall openings as an acceptable alternative to wired glass between guest rooms, dwelling units or tenant spaces and an atrium.

(k) - 88 UBC / SBC - The UBC eliminated the inspection requirement. Staff believes it should be retained as a Seattle amendment.

Sec. 1717 Mezzanines

- 91 UBC - The section has been revised and reformatted to clarify the requirements. It also results in uniformity between the three model codes. In Item 4 the guardrail height has been raised from 42 to 44 inches. By so doing, a tolerance of 2 inches is created between the required height of railings and the height of railings allowed at mezzanine openings.

- SBC - The area of mezzanines in a dwelling unit is measured against the area of the entire main floor of the dwelling unit rather than the room in which it is located. Since subsection 4 allows virtually all mezzanines in residences to be enclosed, there is little additional danger if the area below is enclosed by separate rooms.

- SBC - Subsection 7 codifies DCLU practice prohibiting mezzanines from extending over common corridors or other occupants' spaces.

Sec. 1718 Raised Floors

- SBC - Wood sleepers has been deleted from the title because the section does not address them. A reference to the sections in which they are addressed has been added. Other changes make the section more readable and more consistent with UBC format.

Sec. 1719 Electrical Wiring, Pipes and Ducts in Elevator Hoistways and Machine Rooms

- SBC - This section has been completely revised to a series references to the key code provisions. The former repetitions of these requirements in this section led to inconsistencies.

Sec. 1720 Radon Resistive Construction Standards

- WASVC - This is a new section which incorporates into the Seattle Building Code amendments the State of Washington mandatory regulations for radon emission control. The city must adopt these provisions. The State adopted a separate regulation, but Seattle believes that it is appropriate to include this construction standard in the building code. At the present time these regulations only apply to residential construction.

Even though this area does not have an observed high level of radon emissions, these standards apply statewide. Builders of new structures must supply radon monitors but they are not required to administer the test. The owner or occupant can choose whether to use the monitoring equipment. The standards also call for crawl space ventilation as already required by the code. If a crawl space is used as a plenum, detailed standards apply. Such crawl space plenums are very rare.

Sec. 1721 Formaldehyde Reduction Measures

- WASVC - This too is a requirements from the Washington State ventilation regulations and is mandatory. It only applies to residential construction.

Table 17-A

- 91 UBC - The revised footnote #1 establishes that there is concern for the protection of the structural frame members in exterior walls only where openings are prohibited or require protection. (A Seattle sponsored change.)

- 91 UBC - A footnote 3 is added to reference special provisions in 1706 which are applicable to all types of construction.

Table 17-B - No Changes.

Analysis of Revisions - Chapter 18 - Type I Fire-Resistive Buildings

Sec. 1801 Definition - No changes

Sec. 1802 Structural Framework

- 91 UBC - References to Chapter 9 were added.

Sec. 1803 Exterior Walls and Openings

- SBC - - Previous Seattle amendments to Exc #1 are deleted as part of the overall reduction of Fire District requirements.

88 UBC - New references to Chapter 9 - Hazardous occupancies have been added.

Sec. 1804 Floors - No changes

Sec. 1805 Stairway Construction

- 88 UBC - Some Seattle amendments in first paragraph have been removed due to adoption into UBC of similar language.

- SBC - The existing Seattle exception was repositioned to the first paragraph rather than the second (an error in 85 code.) A reference to the interior finishes regulations in Chapter 42 is added.

Sec. 1806 Roofs

- 91 UBC - A change restricts the unprotected roof exceptions reflecting greater fire loadings being experienced in retail occupancies. The new first paragraph addresses occupancies other than retail and storage. The new second paragraph allows the reduction in sprinklered retail and storage.

88 UBC - The third paragraph (which existed in the 85 code) has been expanded to also apply to atria (atriums).

Sec. 1807 Special Provisions for High Rise Buildings

- 88 UBC - Compartmentation was dropped by ICBO as an option for highrise construction. As a result various provisions were dropped and others reorganized. In the Seattle 85 code compartmentation was allowed only for

retrofit and life-safety core was only allowed for retrofit or for new residential buildings less than 150 feet in height. The 88 UBC requires sprinklers for all residential of this size.

- SBC - Section 1807 is substantially reorganized and many existing provisions have been removed. A detailed analysis of revisions follows. The changes are Seattle changes unless otherwise noted.

(a) **Scope** - The first two paragraphs are unchanged from the 85 code except they are now titled as #1. General. They define which buildings are subject to 1807. Added to the provision is an exception for B-3 and A-4 occupancies and those with low occupant loads over 75 feet such as manufacturing plants.

#2 - is the predesign conference requirement. It is revised to clarify the intent of the conference and to make the provisions consistent with similar provisions in other code locations.

(b) **Certificate of Occupancy** was deleted in 85 SBC and remains deleted.

Also removed from this section are provisions regarding opening protection and fire safing. Both of these provisions will be more generally covered by new UBC sections 1705 and are no longer needed in 1807.

Provisions on signing have been moved to 1807 (n)

Provisions on shaft pressurization have been moved to 1807(g) on smoke control.

(b) **Testing.** This is the remaining provision in 1807(b). It is unchanged from the 85 code.

(c) **Automatic Sprinkler System.** In the 1988 UBC, sprinklers becomes the only highrise design alternative. As a part of moving to be more consistent with the UBC we have moved our regulations back to its UBC location.

1. System Design

A. Unchanged from 85 code
B. Was formerly item F, now a revision to UBC B.
C. Was formerly item B, unchanged from 85.
D. Was formerly item C, provisions dictating the composition of the solder was dropped.
E. Was formerly item D, unchanged from 85.
F. Was formerly item E, unchanged from 85.

2. Modifications

A. Seattle language in 85 was very similar to UBC 88 language, except small underlined provision.
B. Occupancy references are deleted and reference is made to Sec. 3305(g) where the corridor requirements are found.
C. Not formerly in Seattle code.
D. The deletion of this UBC provision waiving fire dampers maintains an existing Seattle deletion. Waiving of these dampers is inappropriate for smoke control. This section was used to add a reference to the new provisions in 1704.
E. Was formerly item F in Seattle Code.
F. Was formerly item C in Seattle Code.

<u>91 UBC</u> - Provisions on fixed tempered windows have been relocated to 1807(g).

(d) **Smoke detection systems.** Seattle amendments clarify the distinction between when smoke versus heat detection are needed.

(e) **Alarm and Communication systems** - <u>91 UBC</u> - A minor revision now requires the two-way fire department communication system to include emergency and standby power rooms because of noise in those rooms and interference with radio communications.

Also added is an amendment which prohibits a design which would result in the failure of the system from the failure of a single component. Also added is a testing level for the sound system.

(f) **Central Station Control.** <u>91 UBC</u> - Substantially revised for the 91 UBC. Added are minimum dimensions of a central station to assure adequate space. Location of

the station is clarified. Items 8 through 12 are revised or new and clarify requirements for work space, schematic building plans and emergency power. Seattle's existing amendment moves from 10 to 13 but is unchanged.

91 UBC - A third paragraph has been added requiring audible and visual announciation for alarm, supervisory and trouble signals for each floor of a building served by the a central control station. It also sets up how a building should be zoned.

(g) Smoke Control.

Part 1, Part A - 91 UBC - Provisions on operable windows are revised. It clarifies the provision as a requirement, not a modification as indicated by its former location. In addition, the language prohibits coatings on tempered windows which would negate the breaking characteristics that tempered windows are designed for.

Part 2. This is the new home for shaft pressurization requirements. This is reformatted from the 85 SBC, but is substantively unchanged. Since all buildings must now be sprinklered, the standard for all elevator shafts is a pressure of 0.10. Added to the existing provisions is an exception for stair shafts which are less than 75 feet tall - this reflects current department practice.

(h) Elevators

A general provision on service by more than one elevator in different hoistways is repeated here in a new 2nd paragraph. It is currently located only in Chapter 51 and is often overlooked. The provision is revised slightly for clarity.

88 UBC - Item 1: A new exception 3 is added that allows the use of a "z" corridor through an elevator lobby in sprinklered office buildings. Item 4 is the existing Seattle provision eliminating the lobbies when pressurized.

Item 3, the second sentence has been crossed out because these sleeves are dangerous to elevator installers, servicers and inspectors. The reason for

these sleeves is to keep smoke out of the machine rooms, since Seattle requires pressurization, smoke is not a concern.

Item 5 is a relocation of an existing sign requirement which is in 1807(c) in the 85 SBC.

(i) **Standby Power** - No changes

(j) **Exits**

An existing sign requirement, which was in 1807(c) in the 85 SBC, is now located in Item 2. Item 2 is revised to clarify the requirement for re-entry in a building.

Item 3 was slightly reworded to refer to the door standards in Chapter 33 on Exiting.

(k) **Seismic Considerations** - No Change

(l) and (m) in the 85 SBC were the area of refuge (compartmentation) and life safety core options. Since these are only usable in retrofit of existing buildings and have not been used for many years, they have been deleted from the code. We would still consider them in options of existing buildings, but staff believes the City should be encouraging sprinklers for all rehabilitation projects.

(l) **Emergency Operational Plan** - No change other than location.

(m) **Standpipes and Hose Connections** - No change other than location.

(n) Signs - This is a new location of the sign provisions which have been revised to clarify application and to reflect current practice by DCLU and the Fire Department.

Analysis of Revisions - Chapter 19- Type II Buildings

Sec. 1901 Definition - No Changes.

Sec. 1902 Structural Framework - No Changes.

Sec. 1903 Exterior Walls and Openings

- 88 UBC - Revised to change references for H occupancies.

- SBC - Provisions in the exceptions requiring greater wall and opening protection in the fire districts has been eliminated. Exception #5, a Seattle amendment, restricting the exterior construction of certain Type II buildings in the fire districts is eliminated in its entirety.

Sec. 1904 Floors

- 88 UBC - This section has been revised to allow wood sleepers in Type II One-hour and Type II-N construction when they have fire-resistive, masonry or concrete floors. In addition the bowling alley exception was added based on the same exception in 1804.

Sec. 1905 Stairway Construction

- 88 UBC - This section was revised in all Construction chapters to be consistent in the reference. (A Seattle sponsored change allowing the elimination of Seattle amendments.)

- SBC - The existing Seattle exception was repositioned to the first paragraph rather than the second (an error in the 85 SBC.)

Sec. 1906 Roofs - No Changes.

Sec. 1907 Highrise Provisions.

- 91 UBC - Editorially revised.

Analysis of Revisions - Chapter 20- Type III Buildings

Sec. 2001 Definition

- SBC - A reference to Chapter 16 consistent with the other construction chapters is added.

Sec. 2002 Structural Framework - No Changes.

Sec. 2003 Exterior Walls and Openings

(b) - 88 UBC - Changes made in references for H occupancies.

- SBC - Seattle amendments related to the fire districts are eliminated.

Sec. 2004 Stairway Construction

- 88 UBC - Section revised in all the construction chapters for consistency. (A Seattle sponsored change.)

Sec. 2005 Roofs

- 91 UBC - Second and third paragraphs are added to allow similar roof protection exceptions as is allowed for Types I and II construction.

Analysis of Revisions - Chapter 21 - Type IV Buildings

Sec. 2101 Definition

- SBC - A reference to Chapter 16 consistent with the other construction chapters is added.

Sec. 2102 Structural Framework - No Changes.

Sec. 2103 Exterior Walls and Openings

(b) - 88 UBC - Changes made in references for H occupancies.

- SBC - Seattle amendments related to the fire districts are eliminated.

Sec. 2104 Stairway Construction

- 88 UBC - Section revised in all the construction chapters for consistency. It provides different construction requirements for interior and exterior stairways. (A Seattle sponsored change.)

Sec. 2105 Roofs - No Changes.

Sec. 2106 Heavy Timber Construction

(e) - 88 UBC - The thickness of plywood used as a flooring in heavy timber construction has been reduced from 1/2 inch to 15/32 inch. The main function of the plywood overlay is to serve as an air seal or draft stop. 15/32 inch plywood is expected to serve the purpose adequately and is the standard dimension of '1/2 inch' plywood.

(j) - 88 UBC - This section was deleted and the provisions relocated to the stairway requirements in Sec. 2104. (A Seattle sponsored change.)

Analysis of Revisions - Chapter 22 - Type V Buildings

Sec. 2201 Definition - No Changes.

Sec. 2202 Structural Framework - No Changes.

Sec. 2203 Exterior Walls and Openings

(b) - 88 UBC - Changes made in references for H occupancies.

Sec. 2204 Stairway Construction

- 88 UBC - Section revised in all the construction chapters for consistency. (A Seattle sponsored change.)

Sec. 2205 Roofs

- 91 UBC - Second paragraph is added to allow similar roof protection exceptions as is allowed for Types I and II construction.

Analysis of Revisions - Chapter 23 - General Design Requirements

Sec. 2301 Scope - No Changes.

Sec. 2302 Definitions - No Changes.

Sec. 2303 Design Materials - No Changes.

Sec. 2304 Floor Design

(a) - 88 UBC - The exception was deleted and a new paragraph added to clarify that the actual load is used when it exceeds the load shown in Table 23-A.

Sec. 2305 Roof Design

(b) - 88 UBC - The exception is revised to clarify when alternate span loadings have to be considered in the design of a roof. The intent of the exception is to not require consideration of alternate span loading when the roof is design for snow load or the roof live load is 20 pounds per square foot or more.

Sec. 2306 Reduction of Live Loads - No Changes.

Sec. 2307 Deflection - No Changes.

Sec. 2308 Special Design

(b) - 91 UBC - The second paragraph has been revised to clarify the design requirements for resisting sliding and the overturning moment individually.

Sec. 2309 Walls and Structural Framing - No Changes.

Sec. 2310 Anchorage of Concrete or Masonry Walls

- 91 UBC - Wording has been added that requires the minimum 200-pound-per-lineal-foot wall anchorage force be applied to all structural elements in addition to floors and roofs which provide lateral support.

Part II - 2311 Wind Design

- 91 UBC - A variety of provisions were added to improve wind design, especially as it relates to hurricanes. Specific provisions address the scour and water pressure resulting from wind or wave action. Exposure D is added here and in Table 23-G to represent the height, exposure and gust factors for buildings located adjacent to large bodies of water.

- SBC - In the notations the exposure for Seattle (B) and the wind design speed for Seattle (80 mph) are both added. In past codes these were added to the Figures, or in the case of the 85 code, missing.

- SBC - The basic wind speed of 80 mph for Seattle is added.

- SBC - The minimum exposure for Seattle is B.

Part III Earthquake Regulations

- 88 UBC - This Part of the Chapter covering seismic design has been completely revised along with companion provisions in Chapters 24 through 29 in 1988 and completely reformatted in 1991. These changes are based on revisions to the "Recommended Lateral Force Requirements" developed by the Seismology Committee of the Structural Engineers Association of California. They incorporate the advances in seismic design since the last major revision of the UBC seismic standards done in 1976. This change resulted in the renumbering of the figures and tables at the end of the chapter.

Sec. 2333(a) - SBC - This is the new location of the pre-design conference requirement. The provision has been revised to be consistent with similar provisions in other chapters and to clarify the intent of the conference.

Sec. 2333(b) - SBC - This provision has been specifically amended to indicate the seismic zone for Seattle of 3 and the zone factor z equal to 0.30.

- 91 UBC - Sec 2333 5 C (ii) The exception was revised editorially to ensure consistency in the use of forces for determining the effects of earthquake motion and the use of story-drift ratios.

- 91 UBC - Item 6E Editorially revised to clarify that the moment-resisting frames must be capable of resisting 25 percent of the total design base shear acting as an independent system and that the consideration for relative rigidities must be made at every level, not just the base.

- 91 UBC - Sec. 2333(j). A new subsection has been added to cover the requirements for soil structures resonance effects being considered.

Sec. 2334(h) - 91 UBC - The second paragraph is revised to be consistent with the story-drift limitations found in the SEAOC Blue Book.

Sec. 2335(b) - 91 UBC - Provisions have been revised to reflect requirements for design of buildings located on Soil Profile S4 soils and the limitation on scaling of these affects.

Sec. 2336 (a) and (b) - 91 UBC - The requirements pertaining to equipment and the anchorage thereof have been clarified to be based only on structural safety and not the operational safety of the equipment.

Sec. 2337(b)4 - 91 UBC - The last sentence was deleted since the value of the coefficient *I* for the connector was already given in Sec. 2312(g).

- 91 UBC - (b)11 An exception allowing for smaller separations in building separation when it can be shown that damage would not be significant.

Table 23-A

- 91 UBC - Revised in item 14 to include folding and telescoping seating. (A part of a Chapter 33 revision.)

- 91 UBC - Footnote 7 is revised as part of the creation of congregate residence.

- SBC - A Seattle footnote #9 is added to clarify load standards for marquees which are limited in location and access.

- SBC - A Seattle footnote #10 is added to refer to the new vehicle barrier standards in Chapter 17.

Table 23-B

- 91 UBC - a new footnote #11 has been added to clarify the requirements for design loading for fire sprinkler structural support. The intent is that every fire sprinkler support (hanger) be capable of supporting a 250 pound accidental loading during the system installation.

- 91 UBC - Item 2 is fixed for folding and telescoping seating.

- 91 UBC -Item 10 is added to separate guardrails from handrails. Handrail loading is regulated in a new footnote #12.

- 91 UBC - Item 13 is added to reference the explosion control standards in chapter 9. (A Seattle sponsored change.)

- SBC - Item 14 is added to reference the vehicle barrier loading.

Table 23-C

Seattle will maintain the deletion of this table.

Table 23-D - No Changes.

Table 23-E - No Changes.

Table 23-F

- 91 UBC - Revised to make application more consistent between the UBC and the ANSI standard these provisions were based on.

Table 23-G

- 91 UBC - Provisions added for Exposure D, Sec. 2311. Also revised for consistency with the base standard published by ANSI.

Table 23-H

- 88 UBC - Revised to clarify regulation of open frame structures.

- 91 UBC - Revised for consistency with the base standard published by ANSI.

Table 23-I

- 91 UBC - Revised to clarify application of regulations in seismic zone 0.

Table 23-J

- 91 UBC - Minor revisions to provide better descriptions of the two soil types and allow for easier administration.

Table 23-K

- 91 UBC - A footnote was added to define essential facilities.

Table 23-L

- 91 UBC - Revised to include both seismic and wind importance factors.

Table 23-M - No Changes.

Table 23-N - No Changes.

Table 23-O

- 91 UBC - The R_W value for concrete intermediate moment-resisting space frames was increased from 7 to 8. An IMRSF of concrete is not permitted as the primary lateral force resisting system in Seismic zone 3 or 4.

Table 23-P

- 91 UBC - Revisions to the table clarify that the requirements apply to only structural safety and not operational safety of the equipment anchored. Reference to footnote #2 is revised to clarify that it applies to exterior, not interior, wall panels.

Table 23-Q

- 91 UBC - Item 18 is added which requires a positive connection to resist wind uplift effects between the roof-framing system and exterior walls of conventional wood frame construction.

Figure 23-1

- 91 UBC - The title is changed to clarify that the figure applies to areas having a minimum basic wind speed of 70 miles per hour.

Figure 23-2 - No Changes.

Figure 23-3 - No Changes.

Analysis of Revisions - Detailed Structural Chapters

Chapter 24 - Masonry
Chapter 25 - Wood
Chapter 26 - Concrete
Chapter 27 - Steel
Chapter 28 - Aluminum

General. Seattle proposes to adopt the 1991 edition of these chapters as published by ICBO with relatively few amendments. Those few amendments are outlined below. The following pages include reproductions of the ICBO-published analysis of revisions to the 1988 and 1991 UBC for Chapters 24 through 28, and analysis of the Seattle amendments.

Chapter 24

1988 UBC Amendments

Sec. 2401 (b). The definition "hollow-unit masonry wall" has been deleted, as the term is not used in the code. The definitions "reinforced masonry," "grouted hollow-unit masonry" and "grouted multiwythe masonry" have been added to clarify the differences between types of masonry construction.

Sec. 2401 (c). The notation "t_p" was deleted, as it is not used in the code. New notations are included based on the revisions to the anchor bolt provisions. See analysis to Section 2406 (h).

Sec. 2402 (b) 5 B. The material requirements for open-end units have been relocated from the code to U.B.C. Standard No. 24-4.

Sec. 2402 (b) 5 D. The reference to U.B.C. Standard No. 24-5 and the standard were deleted, as the revised U.B.C. Standard No. 24-4 now addresses both hollow and solid load-bearing concrete masonry units.

Sec. 2402 (b) 9. Reference to a new U.B.C. Standard No. 24-29 has been added providing requirements for grout. See analysis to U.B.C. Standard No. 24-29.

Sec. 2402 (b) 10. The reference to U.B.C. Standard No. 24-15 has been revised. See analysis to U.B.C. Standard No. 24-15.

Sec. 2402 (c). See analysis to Section 2405 (c).

Sec. 2403 (d) 2. This subsection has been revised to allow specification of a minimum compressive strength for grout as an alternate to grout proportioning by volume. This revision is consistent with the new U.B.C. Standard No. 24-29.

Sec. 2403 (e) 2. The subsection has been revised to clarify that chloride salts are prohibited. The presence of chloride salts causes corrosion of the reinforcing bars through electrolysis.

Sec. 2404 (b) 7. This revision differentiates between mortars mixed at the jobsite and mortars mixed in factories. It also sets time limits on the use of mortar after the initial mixing.

Sec. 2404 (d) 1. A new second paragraph addressing bed-joint thickness has been added. The new provision is consistent with the construction practices contained in the 1982 Uniform Building Code.

Sec. 2404 (d) 3. This revision removes the option of not providing full mortar joints for solid masonry units.

Sec. 2404 (e). The revision to the first paragraph specifies the type of support required for reinforcement and is intended to provide more uniform construction practices and control.

Sec. 2404 (f) 1. The revisions to this subsection incorporate grouting requirements similar to those contained in the 1982 Uniform Building Code.

Sec. 2404 (f) 2. A second sentence has been added to ensure that bolts are properly set and held in place during grouting procedures. This change is part of the general revision of the seismic provisions in the code. See analysis to Section 2312. A new paragraph has been added to address solid grouted masonry foundations. This type of construction has been used successfully for many years and was contained in the 1982 Uniform Building Code.

A new paragraph has been added to permit mortar of pouring consistency in lieu of grout. This was also permitted in the 1982 Uniform Building Code.

Sec. 2404 (h). See analysis to Section 2407 (i) 5.

Sec. 2404 (l). This new paragraph requires the side wires of joint reinforcement to be deformed when used as the principal reinforcement. Deformed wires provide superior bonding to mortar. See analysis to U.B.C. Standard No. 24-15.

Sec. 2405 (c). Quality control provisions for masonry work are not appropriate under Section 2402 (c), which covers material standards, and therefore have been moved to this section. In addition, provisions are added for masonry prism testing which is to be in accordance with new U.B.C. Standard No. 24-26.

Sec. 2406 (b). The specified compressive strength of masonry provisions are clarified by defining three acceptable methods of selecting f'_m.

Sec. 2406 (c) 1. This revision clarifies the original intent and specifies that, when a special inspection is required, prism testing is also required.

Sec. 2406 (c) 7 B. This item was revised to clarify that in the application equations (6-10) and (6-11) the masonry alone is assumed to resist the shear forces. Although there may be in-plane flexural reinforcement present to resist overturning forces or out-of-plane forces, it is not considered as resisting shear forces.

Sec. 2406 (f). This revision provides a method for determining the modulus of elasticity based on tests. It changes the placement of the secant line to agree with ACI/ASCE Standard No. 530. Research has indicated that the modulus of elasticity, $E_m = 1000 f'_m$ is too high and does not properly represent the modulus of elasticity of masonry. The value $E_m = 750 f'_m$ is closer to the actual value for the modulus of elasticity considering the wide range of materials, concrete block, clay brick, mortar and grout. This value will provide more realistic deflection calculations and a more accurate stress distribution.

Sec. 2406 (h). This section has been completely revised and replaces the anchor bolt provisions previously contained in Section 2406 (h) and (i). This revision provides values for pull-out and shear in masonry having different strengths (f'_m). The design procedure includes reduced shear and tension design values for anchors located near the edge of masonry members. Also, anchor bolts subject to combined shear and pull-out forces are required to comply with the unity equation, (6-32). Tables Nos. 24-D-1, 24-D-2 and 24-E provide allowable tension and shear values for anchor bolts.

Sec. 2407 (e) 3 A (i), (ii) and (iii). The revisions to these items add construction practices that were contained in the 1982 Uniform Building Code.

Sec. 2407 (h) 1. The reference to the figure in Chapter 23 has been revised based on the rewrite of that chapter.

Sec. 2407 (h) 4. The second paragraph has been revised to clarify where prism tests are required.

A new paragraph has been added which requires the use of open-end units when stack bond construction is used as a part of a seismic resisting system. This change is part of the general revision of the seismic provisions in the code. See analysis to Section 2312.

Sec. 2407 (h) 4 E (i). This subsection was revised by deleting the limitation specifying the maximum unsupported height- or length-to-thickness ratio of 27. A recent test program showed that when walls were designed taking into account the additional bending moment due to lateral deflection caused by wind or earthquakes and the eccentrically applied vertical loads, the walls would not buckle at height-to-thickness ratio much greater than those prescribed in the code.

Sec. 2407 (h) 4 F (ii). The first paragraph was revised by deleting the last sentence; thus reinforcement steel must be used when special inspection is not provided and when the shear stress is between 17.5 psi and 35 psi for M/Vd greater than or equal to one. When the shear stress exceeds 35 psi, special inspection and reinforcing must be used.

A new paragraph has been added which requires the use of hot dip galvanized joint reinforcement in exterior walls where the wall element uses such reinforcement to develop shear strength. This requirement is due to the concern regarding corrosion of joint reinforcement in exterior walls. This change is part of the general revision of the seismic provisions in the code. See analysis to Section 2312.

Sec. 2407 (h) 4 G. The word "tie" has been substituted for the word "bar" in the exception, since wire reinforcement rather than reinforcing bars is used for ties in bed joints.

Sec. 2407 (i) 3. The revision to the first paragraph in which the word "plain" is replaced with "unreinforced" is merely editorial as the code does not define the term "plain masonry."

Sec. 2407 (i) 5. The provisions in Sec. 2404 (h) have been relocated to this section, combining all the requirements for glass masonry panel construction in this section.

Sec. 2409 (a) 1. A second sentence has been added to prohibit plain bars larger than 1/4 inch in diameter in reinforced masonry. This change is part of the general revision of the seismic provisions in the code. See analysis to Section 2312.

Sec. 2409 (c) 6. This revision requires that welded or mechanically connected bars have an additional safety factor above the tensile yield strength. This change is part of the general revision of the seismic provisions in the code. See analysis to Section 2312.

The last sentence of this section has also been changed to require an increase in lap length for adjacent splices in grouted masonry 0 to 3 inches apart.

Sec. 2410 (c) 2. Item B was deleted. Trying to address a strain of 0.001 between adjacent materials is impractical.

Sec. 2411 (a). Notation f'_m has been changed from ultimate to specified compressive strength to make it agree with other provisions of the chapter.

Sec. 2411 (b) 3 C. The new equations provide the procedure for determining the nominal moment strength, M_n. It takes into account the effect of the vertical load in increasing the moment capacity of the section.

The exception has been revised to be consistent with Section 2404 (e) which states, "At intervals not exceeding 200 bar diameters."

Sec. 2411 (b) 4. See second paragraph of analysis to Section 2411 (b) 3 C.

The deletion of the notation E_m eliminates duplication and possible confusion as the values for this factor are covered in Section 2406 (f) 1 A and B.

Sec. 2412. This section has been added to permit the use of strength design for reinforced masonry shear walls as an alternate design method. This method is applicable to both reinforced hollow-unit concrete and clay masonry shear walls.

Table No. 24-A. The table has been revised to reflect changes in ASTM Standard C 270-86. These changes recognize and provide specifications for four mortar types made with Types N, S and M masonry cement. This change is a companion to the revision to U.B.C. Standards Nos. 24-16 and 24-20 which provide specifications for Types N, S and M masonry cement.

Table No. 24-B. Footnote No. 1 was added to provide a minimum strength requirement for grout and to assure minimum quality control.

Table No. 24-C. Table No. 24-C of the 1985 Uniform Building Code has been relocated to the new U.B.C. Standard No. 24-26. The new Table No. 24-C addresses strength of masonry by providing separate values for clay and concrete masonry units. The f'_m span values for clay masonry were not changed except that units having a compressive strength of less than 4000 psi were deleted. The f'_m values for concrete masonry units were substantially increased based on test data. The values of f'_m for mortar Types M and S have been increased from 3 to 31 percent and for Type N mortar increased from 31 to 52 percent. Also, Footnote 3 has been revised by deleting the reference to coloring in mortar as it has not been shown to have a detrimental effect on the strength values.

Table No. 24-D. Tables Nos. 24-D-1, 24-D-2 and 24-E. See analysis to Section 2406 (h).

Table No. 24-G. Footnotes 5 and 6 have been added to the table to eliminate misunderstanding as to the meaning of "grout spaces" and "grout cells."

Table Nos. 24-K and 24-L. See analysis to Section 2412.

1991 UBC Amendments

Sec. 2401 (b). A new definition of "bond beam" has been added to clarify the code provisions where the term "bond beam" is used. The definitions of "grout pour" and "collar joint" have been revised for clarity and consistency with the use of the terms within the code provisions.

The definition of "column" has been revised and a definition for "reinforced column" has been added to provide additional clarity.

The definition of "wall tie" has been revised to clarify provisions in Section 2407 (e) 3 by using the generic term.

Sec. 2401 (c). To maintain format consistency, all formula definitions in Chapter 24 have been moved to Section 2401 (c). The definitions for d' and M_m in Section 2401 (c) are not used and, therefore, are deleted. Definitions for h and a have been revised to reflect current usage. The definition for p_b has been added based on revisions to Section 2411 for the slender wall design procedures. The definition of L has been revised to reflect standardization throughout the structural chapters of the code.

Several notations which previously appeared in Section 2312 have been relocated to Section 2401 for consistency with location of definitions. Additionally, terms have been revised and coordinated with other sections of Chapter 24.

Sec. 2402 (b). See analysis of Chapter 60.

A new U.B.C. Standard No. 24-30 was added to provide for a standard test method for the flexural bond strength of mortar cement. The purpose of these changes is to address the significant issues surrounding mortar performance criteria, methods of evaluating performance of mortar and needed quality control provisions. In response to these issues, a new standard for mortar cement was developed for use in all seismic zones and includes a performance requirement on flexural bond strength as well as prescriptive limitations on air content and proportions of mortar ingredients. Deleterious and restricted constituent materials are also included in the mortar cement standard as well as quality control provisions for the manufacturer of cementitious materials used in mortar. The test for flexural bond of mortar cement was based on a standardized masonry prism tested in a bond wrench apparatus. Minimum flexural bond strength values for Types M, S and N mortar cement have been included based on a series of laboratory tests to verify the allowable flexural bond strength values.

Sec. 2403 (b). This section has been revised to reflect the introduction of mortar cement and place restrictions on the types of cementitious material which may be used for mortar. See also the analysis of Section 2402 (b). A new sentence has been added at the end of the paragraph which restricts cementitious materials or additives containing certain substances that may be harmful to the mortar and grout.

Sec. 2403 (c) 2. The revisions clarify that requirements are addressing mortars in which the ingredients are determined by design and verified through testing. This is a performance-type requirement and needed parameters to define when and how it can be used. The specified f'_m is the ultimate goal and the "specified" mortars must achieve that goal; this must be demonstrated to the building official.

Sec. 2403 (d). The revision clarifies the requirements and is primarily a rewrite of the existing provision, except that it requires all grout to have a minimum strength of 2,000 pounds per square inch (psi) and permits grout to be specified based on the compressive strength required to achieve the required prism strength.

Sec. 2404 (e). Before the 1985 edition of the code, spacing of bracing, or positioners for reinforcement, were only 192 bar diameters without any other maximum limitation. The 192-bar-diameter requirement was based on a 10-foot spacing of a No. 5 reinforcement bar. In the 1985 edition of the code, the 192-bar-diameter requirement was changed to 200 bar diameters simply by rounding up to the next number.

As the bar diameters increase, the stiffness of the bars increases and the spacing of the reinforcement bracing or positioners can be increased. The 10-foot-maximum limitation is unnecessary as larger bars are stiffer and can therefore be supported at a larger spacing.

Sec. 2404 (f) 1. The requirements for cleanouts were previously located in footnotes and the right-hand column of Table No. 24-G. They have been moved to the body of the code for emphasis and clarity. The requirement for cleanouts is extremely important and was felt to be confusing in its previous location in the table.

A new paragraph has been added to clarify misconceptions about grout pours without cleanouts. The provisions clarify and emphasize the importance of keeping the grout space clean of debris and mortar droppings even for pours of 5 feet and under.

The additional language allows grout lifts of greater than 6 feet which have been proved under certain conditions to provide better end results by keeping the cavities cleaner between lifts since there are fewer lifts and less debris lodged on the rebars and sides of the cells.

Sec. 2405 (c). This section has been revised to clarify and eliminate confusion in interpreting the provisions. The provisions in Sections 2405 and 2406 of the 1988 edition for selection and verification of F'_m have caused confusion and differing interpretations. There are three methods to verify the strength of masonry.

Sec. 2406 (c) 4. The first paragraph was revised based on published data indicating the 25 percent reduction factor is too low to provide a reasonable factor of safety.

The value for bond stress for deformed bars has been increased from 142 to 200 psi based on recent tests. The values for flexural tension for clay and concrete masonry units have been combined since the differentiation was not warranted and the combination into a single listing will simplify the application of the code.

Sec. 2406 (d) 2. A new Subsection (c) and Equation (6-21) is added to clarify the compressive stress for shear walls confined as required for flexural members. The mechanism for transferring compressive stress from the masonry to the longitudinal steel in columns is ensured by lateral ties confining the surrounding masonry.

Sec. 2406 (f) 1. The revision is to clarify that high values of modulus of elasticity are not to be used in design. The "Test Report on Slender Walls" by the Structural

Engineers Association of Southern California clearly indicates that, for any strength of masonry, the modulus of elasticity will not exceed 3,000,000 psi.

Sec. 2406 (h) 1 A. A sentence has been added which defines headed anchor bolts and plate anchor bolts. These definitions conform to Table No. 26-G, Footnote No. 1.

Sec. 2406 (h) 1 B. The last sentence has been revised to allow small bolts in bed joints.

Sec. 2406 (h) 3. The second paragraph has been revised to provide criteria for reducing shear values based on anchor spacing and minimum spacing between bolts. Equation (6-31) expresses the allowable shear governed by the masonry which must be reduced when the anchor bolt edge distance is less than 12 bolt diameters. Tests conducted at Clemson University showed conical shear failure similar to pull-out cone failure observed in tension tests.

Sec. 2406 (h), Item 7. An item has been added to specify minimum center-to-center distance between anchors.

Sec. 2407 (e) 3. See analysis of Section 2401 (b).

Sec. 2407 (h) 3 A. The subsection has been revised to clarify the intent of restricting certain materials in both vertical or lateral load-resisting systems.

Sec. 2407 (h) 3 D. Clarifies that columns supporting vertical loads in Seismic Zones Nos. 2A and 2B should be reinforced to meet at least minimum standards and that the connection of beams or other members transferring principle loads to the top of the column should be adequately tied to the column vertical reinforcement.

Sec. 2407 (h) 4 A. See analysis of Section 2407 (h) 3 A.

Sec. 2407 (h) 4 B. The additional statement clarifies that the jamb steel in Seismic Zone No. 2 may be included as part of the minimum steel requirement of 0.002 times the cross section.

Sec. 2407 (h) 4 E. The deletion of the last sentence of the paragraph clarifies that the minimum coverage for steel will be that as set forth in the last paragraph of Section 2409 (e) 2. As previously written, the provision was permissive and could be interpreted as allowing less than the minimum coverage.

Sec. 2407 (i). The section has been completely updated, and is based on the American Concrete Institute/American Society of Civil Engineers 530 standards for masonry design. The empirical design method can be used in Seismic Zones Nos. 0 and 1 where the wind speed is less than 80 miles per hour.

Sec. 2407 (j). The provisions addressing glass masonry have been relocated to this section.

Sec. 2408 (f). The section has been added to clarify that horizontal reinforcement is necessary in unreinforced stack bond masonry for flexural continuity in the horizontal direction. In the previous code, stack bond required minimum horizontal joint reinforcement of at least No. 9 gauge joint reinforcement every 16 inches vertically. This joint reinforcement is less than what is required for reinforced masonry in Seismic Zones Nos. 2, 3 and 4. This caused some confusion in reinforced masonry design by suggesting either only the No. 9 gauge joint reinforcement is required or that both the minimum joint reinforcement and minimum steel areas are required.

Sec. 2409 (e) 5 B. The subsection has been revised to permit grade 40 bars to have a smaller bend diameter than other grades of steel. Table No. 24-F has also been revised to convey this intent.

Sec. 2409 (e) 6. The last paragraph has been revised to clarify the provision in the previous code and to add a provision for staggering splices. The new provision will allow splices to be staggered in lieu of increasing the lap length.

Sec. 2410 (b). A sentence has been deleted that addresses the modulus of elasticity as it contradicted with the more accurate method outlined in Section 2406 (f) 2.

Sec. 2411 (a). This section was revised based on the reformatting of formula definitions. See analysis of Section 2401 (c).

Two new paragraphs were added to require continuous inspection and to specify a minimum nominal thickness. The "Test Report on Slender Walls" by the Structural Engineers Association of Southern California is the basis for the slender wall code provisions. Walls tested under this report were constructed with exceptional workmanship and control. This workmanship would be difficult to totally duplicate in the field. Since the building inspector has limited time for the inspection of all phases of slender wall construction, the only other viable control on the construction in the field is to provide a special inspector. The minimum nominal thickness of 6 inches was added because of the difficulty of adequately placing the reinforcement steel and grouting the cells of hollow units.

Sec. 2411 (b) 1. The revision limits the reinforcement ratio to one half the ratio producing balanced strain conditions.

Sec. 2411 (b) 3. Formula definitions were moved to Section 2401 (c) based on reformatting of notations in Chapter 24.

The strength-reduction factor for flexure, ϕ, was modified based on always having continuous inspection. A factor of $\phi = 0.80$ was permitted with special inspection in the 1985 edition of the code.

The term "moment strength" has been corrected to "factored moment" to be consistent with strength design terminology. Additionally, the text is editorially revised to be consistent with the term "factored moment, M_u."

The text of Subsection 3 C has been revised to be consistent with strength design terminology.

Sec. 2411 (b) 4. The exception and Formula (11-11) has been deleted as minimum nominal thickness of 6 inches is now required by Section 2411 (a).

The values for the modulus of rupture have been revised and provide a value for partially grouted walls. This modulus is a measure of the tensile strength of a wall at the mortar joint and is one of the best known indicators of workmanship. In the previous code, only one value is specified for this modulus. For example, this value would be the same whether the work was done by a skilled mason under special inspection or by an unskilled mason without special inspection. Such disparity was considered inappropriate. These revisions, along with continuous special inspection of all slender walls, resolves such an inequity.

Sec. 2412 (c). The additional sentence clarifies that the working shear stress wall load factor of 1.5 is not appropriately used in addition to the strength design load factors given in Formulas (12-1) and (12-2).

Sec. 2412 (c) 4 B. The modulus of rupture in Section 2411 in the 1988 U.B.C. was changed to $4.0\sqrt{f'_m}$. This necessitates a change in the multiplier of 3.0 currently in Section 2412 to define minimum steel. A multiplier of 1.8 is used for a fully grouted wall, based on analysis of test data. This value is slightly less than the value obtained by direct ratio of (2.5/4.0)(3.0) = 1.875.

Table No. 24-A. See analysis of Section 2402 (b).

Table No. 24-C. Footnote No. 1 has been revised to require that in grouted hollow unit clay masonry construction, the grout should conform to the proportion specified in the Table No. 24-B. This will ensure significant strength to exceed the values in Table No. 24-C.

Tables Nos. 24-D-1, 24-D-2 and 24-E. The change in table titles will make them consistent with Section 2406 (h). In Table No. 24-D-2, $^1/_4$-inch anchor bolts used in clay and concrete masonry have been added.

Table No. 24-G. The table has been retitled and reworded to clarify and facilitate understanding. References to cleanouts have been moved to Section 2404 for clarity. Footnote No. 1 explains what is stated in Footnotes Nos. 2 and 3.

Tables Nos. 24-H, 24-I, 24-J and 24-K. See analysis of Section 2407 (i).

Seattle Amendments

Sec. 2406(c). Change is added to clarify that the special inspections on Masonry need not always be continuous, see Section 306(a).

Chapter 25

1988 UBC Amendments

Sec. 2502 (a). The definitions "block diaphragm," "diaphragm," "rotation" and "subdiaphragm" have been added to clarify the terms where used in the code. This change is part of the general revision of the seismic provisions of the code. See analysis to Section 2312.

Sec. 2504 (c) 3. This section was completely revised. Adjustments are specified for allowable stresses and modulus of elasticity. Also, adjustments for fasteners are specified. A new Standard No. 25-29 is added. The standard establishes test protocol acceptance criteria and quality control procedures.

Sec. 2504 (c) 6. A new entry for cantilever beams having a uniformly distributed load with an additional concentrated load at the cantilevered end was included in the table. This addition provides the appropriate effective length modifier for this condition of loading.

Sec. 2504 (c) 10. A new item has been added to clarify when an adjustment of lumber stresses is required for moist service conditions. This change has been added to prevent oversight by designers by having all the design stress adjustments listed in Section 2504.

Sec. 2504 (c) 11. This item has been added to reference the appropriate standard for stress adjustment of bolted connections using metal side plates. See the analysis to U.B.C. Standard No. 25-17.

Sec. 2506 (d). This subsection has been expanded to provide a method of design for horizontal shear when a beam is notched at the support on the compression side. The present code has a formula that is very conservative when applied to the design of members notched on the compression side. The new formula is based upon experimental research at the Forest Products Laboratory.

Sec. 2506 (f). The formula has been revised by deleting the constant 5.60 in order to simplify the calculation to determine the allowable compression perpendicular-to-grain. This revision reduces the design value by approximately 1 to 3 percent, depending on the species of wood.

Sec. 2510. Section 2510 was revised to clarify the fastener allowable loads when installed in wood wet at the time of fabrication or wet in service.

Sec. 2513 (c). This subsection has been added as part of the general revision of the seismic provisions of the code. The provision provides design, construction and inspection requirements for shear walls and diaphragms. See analysis to Section 2312.

Sec. 2515 (b). A second exception has been added which permits plywood shear walls to resist the lateral forces imposed by masonry or concrete construction in buildings not exceeding two stories, with five limitations. These limitations are thought to provide reasonable safeguards to the use of plywood shear walls for this purpose.

Sec. 2516 (f) 3. Particleboard was added since it has similar thermal transmission properties to those of lumber and plywood and provides equivalent firestopping protection.

In the second paragraph of this section, the term "mineral wool" has been changed to "mineral fiber," and "glass fiber" has been added. This has been done to clarify that glass fiber is suitable for use as fire stopping in combustible construction.

Sec. 2516 (f) 5. See analysis to Sec. 2516 (f) 3.

Sec. 2516 (g) 2. This section was revised to clarify that the 3/8-inch thickness applies only to solid wood siding.

A new provision has been added as experience has demonstrated that fasteners attaching horizontal and vertical siding do not provide adequate restraint if the fasteners penetrate only the sheathing material.

Sec. 2516 (h). A reference to Table No. 25-T-1 has been added to the fourth paragraph to indicate that compliance with this table is deemed to meet the requirements of the section. See also analysis to Table No. 25-T-1.

Sec. 2517 (d) 3. The required joist lap was revised to a minimum of 3 inches to provide for more efficient use of lumber. The reduction is believed to be adequate considering present construction practices.

Sec. 2517 (e) 3. This section was expanded to include particleboard, which provides the strength and durability required for this application.

Sec. 2517 (f). See analysis to Sec. 2517 (e) 3.

Sec. 2517 (g) 2. The exception has been revised by adding a last sentence which restricts the use of spacers, back-up cleats or other devices with fire-rated walls or shear walls unless such methods are approved. The exception has also been revised to include 3/8-inch thick particleboard. See analysis to Section 2517 (e) 3.

Sec. 2517 (g) 3. This section has been revised to clarify the existing code provisions. Section 2517 (g) 3 in the 1985 Uniform Building Code covering wall bracing was difficult to interpret. A new Table No. 25-V covers the type, location and amount of wall bracing. These changes are essentially editorial.

Sec. 2517 (g) 4. The second paragraph was modified to allow plywood sheeting to be used as bracing for crippled walls having a stud height of 14 inches or less. Plywood sheathing nailed to the crippled studs, top plate and sill has adequate strength to provide the needed stability.

Table No. 25-A-1. Additional values have been added to cover kiln-dried lumber with 15 and 19 percent moisture content and lumber with a moisture content over 19 percent to the southern pine lumber grade descriptions.

The first paragraph of Footnote 8 was deleted, as it was an inadvertent carryover from a previous revision and is not appropriate to the current table.

Table No. 25-A-2. Footnote 6 has been revised to address moisture content in excess of 19 percent. See analysis to Section 2504 (c) 10.

Table No. 25-C-1. The table and applicable footnotes in both Part A and Part B have been revised to indicate higher compression-perpendicular-to-the-grain values for glued-laminated lumber. This increase in stress is consistent with the increased values assigned to sawn lumber in the 1985 edition of the code. Also, in Table No. 25-C-1, Part A, several new combinations were added and changes made to the design values for other combinations.

Footnotes 4 and 11 were revised by changing "western wood or Canadian softwood species" to "softwood species," thereby clarifying the definition of western woods, because some species meeting the definition are actually grown in the eastern portion of the United States. New Footnotes 22, 23 and 24 were added. Footnote 22 reduces the design values for bending members when manufactured without special tension laminations.

Footnotes 23 and 24 provide for the use of some softwood species that do not meet all the requirements for the category by reducing reduced design values for selected species. In Table No. 25-C-1, Part B, several new combinations were

added covering the new grades of Alaska cedar and eastern spruce, and new Footnotes 15, 16 and 17 were added.

Table No. 25-C-2. Compression-perpendicular-to-grain values for California redwood have been increased from 270 to 315 psi for the reasons stated in the analysis to Table No. 25-C-1.

Tables Nos. 25-J-1 and 25-J-2. These tables have been revised to clarify when framing members should be increased in size and nailing staggered.

Table No. 25-K-1. The table has been revised to include plywood panel siding in order to clarify that nailing with common or box nails may use the same values as other grades of plywood since plywood siding is included among other grades in U.B.C. Standard No. 25-9. The table has also been revised to clarify when framing members should be increased in size and nailing staggered.

Table No. 25-K-2. See analysis to Table No. 25-J-1.

Table No. 25-T-1. The table has been completely revised to incorporate sanded exterior grade plywood panels and to clarify application of the table.

Table No. 25-T-2. The table has been revised by the deletion of 21/32-inch and the addition of 1/2-inch 2-M-W particleboard. Also, the allowable spans formerly shown as 19.2 inches were increased to 20 inches. The allowable span for 5/8-inch 2-M-W for subflooring was also increased to 20 inches.

Table No. 25-V. See analysis to Section 2517 (g) 3.

1991 UBC Amendments

Sec. 2501 (a). See analysis of Chapter 60.

Sec. 2502 (a). Bald cypress lumber has been deleted from the definition of "wood of natural resistance to decay" due to lack of availability of such lumber.

The definition of "particleboard" has been revised to include all types of particleboards, including extruded particleboard.

Sec. 2502 (b). See analysis of Section 2509.

Sec. 2504 (a). The change from the terminology "stress rated" to "graded structural" is to make the code text correspond to the table title and agree with the fact that lumber is visually graded, not stress rated.

Sec. 2504 (c) 3. The revision alerts code users to the problem of possible degradation and strength of fire-retardant-treated plywood in roof sheathing installations after the panels have been exposed to long-term, in-service heat and moisture conditions that are encountered in roof applications. Reported problems generally involved plywood that has been pressure impregnated with "second-generation" low-hygroscopic fire-retardant chemicals. The American Plywood Association will not recommend use of fire-retardant-treated plywood until methods and formulations are developed that will assure reliable long-term structural integrity.

Sec. 2504 (c) 6. Allowable design value reductions should apply to any member subject to bending. Procedures for determining the allowable stresses for bending members having a depth greater than breadth are contained in the new U.B.C. Standard No. 25-30.

Sec. 2504 (c) 9. The revision to the first paragraph limits the reduction specified in U.B.C. Standard No. 25-27 to untreated and preservative-treated wood. A new second paragraph has been added that requires that allowable design stresses for fire-retardant sawn lumber and plywood subject to prolonged elevated temperatures, not exceeding 150°F. be determined by tests approved by the building official. No evidence is available to show that the reduction values in U.B.C. Standard No. 25-27 are applicable to fire-retardant lumber and plywood used at prolonged elevated temperatures.

Sec. 2506 (d). The change is intended to preclude the use of alternate design procedures contained in the new U.B.C. Standard No. 25-30 when designing notched beams.

Sec. 2506 (e). The revision includes lag screws in the requirements for the design of joints in shear.

A new equation, which is contained in the 1986 National Design Specifications, has been added for determining the shear stresses in joints less than five times the depth of the member from its end.

Sec. 2506 (h) 4. The revision will clarify a different method of providing lateral support by support of the compression edge of the member in addition to the ends in all points of bearing. This will make the provisions agree with the National Design Specifications.

Sec. 2509. An allowable stress for end grain in bearing parallel to grain, $F_{\parallel}$, contained in U.B.C. Standard No. 25-30, has been added for use in the Hankinson's Formula. The deviation of load provisions is also referenced as to where they are applicable.

Sec. 2510 (a). A new third paragraph has been added to handle requirements for fasteners used in pressure-preservative-treated and fire-retardant-treated wood.

Sec. 2511 (d) 5. The last paragraph has been revised by incorporating a table which addresses modifiers based on *L/D* ratio. This change was necessary as U.B.C. Standard No. 25-11 was omitted.

Sec. 2513 (c) and (d). A paragraph was added to clarify that tongue-and-groove joints and underlayment do not qualify as blocking for diaphragms.

Sec. 2513 (e). A new Subsection (e) was added to cover the use of particleboard diaphragms and shear walls for resistance of lateral loads in Seismic Zones Nos. 3 and 4. Details related to the particleboard diaphragms and shear wall installation are included. The 2-M-W particleboard was shown to have the same allowable shear in pounds per foot as C-D, C-C and Structural II plywood when properly nailed.

Sec. 2516. The terms "firestops" and "firestopping" are replaced with "fire blocks" and "fire blocking," respectively, since the terms used in Chapters 25 and 43 have two different meanings. In Chapter 25, firestops (now fire blocks) are construction methods which are used to subdivide concealed spaces so that a fire cannot travel rapidly from floor to floor, from floor to attic or within a floor-ceiling space. In Chapter 43, a firestop is a construction device which is used to seal around a penetration of a fire-rated wall or floor-ceiling assembly to preserve the hourly rating of the assembly. Since the term "fireblocking" is commonly used in the frame construction industry, changing the terminology in Chapter 25 and related portions of the code was the preferable solution.

Sec. 2516 (c) 2. When the floor system is required to have specified clearances to protect against decay and/or termite damage, the under-floor area should be accessible for inspection, repair and maintenance.

Sec. 2516 (c) 6. The word "retarder" is substituted for "barrier" to agree with an industry-wide change in terminology.

Sec. 2516 (f) 2, Item A. A cross-reference to Section 4203, Item 1, has been added. The referenced Section 4203 applies to furred out wall construction which should be provided with firestops. In addition, the words "along the length of the wall" are replaced with "both vertical and horizontal" to clarify the intent of the code.

Sec. 2516 (f) 3. The change requires loose-fill insulation to be fire tested if it is to be used as a fireblock. Loose-fill insulation used as fireblocking in "closed" cavity applications could contain voids and uncontrolled densities may occur. The reference to mineral fiber was intended to apply only to batt mineral fiber insulation, which has been shown to perform as a fire block.

Sec. 2516 (f) 4, Items (a) ii and (b) ii. The revision clarifies that these provisions do not apply to the entire hotel or apartment building. The intent is to separate individual dwelling units and guest rooms. Tenant spaces such as offices, gift shops and restaurants within a hotel do not require a separation from each other.

Sec. 2516 (f) 6. A cross-reference to Chapter 43 has been added to address firestopping of penetrations in fire-resistive walls and floors.

Sec. 2516 (g) 2. The language change in the fourth paragraph was to clarify the fastening requirements of wood board sidings applied diagonally, horizontally or vertically.

Sec. 2517 (a). A new second paragraph has been added to provide specific reference to an appendix chapter covering wood-frame construction in high-wind areas.

The wording previously contained in the first paragraph dealing with light-wood-frame construction of unusual shape, size or configuration was revised and relocated as the new third paragraph. The intent of the provisions remain unchanged but are set off as a separate paragraph for clarity.

Sec. 2517 (h) 4. The new item provides requirements for group framing at openings such as skylights, fireplaces, etc. In the previous code there was no language in the roof-framing section to detail framing around openings in roofs.

Sec. 2517 (i). A new subsection has been added that requires certain exit elements to be positively anchored in conventional wood-frame construction. The purpose of the anchorage requirement is to increase the likelihood of exit elements remaining usable following an earthquake. The limitation on certain types of nailing as positive anchorage reflects the relative performance of these methods of fastening.

Table No. 25-A-1. The table covering allowable design stresses for visually graded lumber has been revised to include design values for mixed hardwoods, mixed maples, mixed oak, northern red oak, red oak, red maple and white oak as covered by the Northeastern Lumber Manufacturers Association grading rules and the supplement to the National Design Specifications.

Footnote No. 8 has been revised to place further limitations on the shear value adjustments *f*, as provided for in the National Design Specifications Supplement.

Tables Nos. 25-J-1, 25-J-2 and 25-Q. The revisions allow increased nail spacing at intermediate supports of floors, which has been demonstrated not to affect diaphragm performance. The changes reflect American Plywood Association recommendations. Intermediate nailing of roof and floor panels is now consistent with module fitting standard panel dimensions.

Tables Nos. 25-J-1 and 25-J-2. The last column of Table No. 25-J-1 has been revised to allow Case 5 and Case 6 means of application for unblocked plywood diaphragms. The illustrations of Case 5 and Case 6 for Tables Nos. 25-J-1 and 25-J-2 have been changed to clarify the requirements. The two prior installation diagrams showed the plywood applied with the face grain parallel to the framing although direction of the framing would not make a difference in the block diaphragms. The framing orientation shown in the prior code for Case 5 and Case 6 tended to be misleading and caused confusion when used for a conventional unblocked construction.

Table No. 25-K-1. The title of the table was revised to reflect the allowance of plywood being applied over $^5/_8$-inch gypsum sheathing, which is the more typical gypsum sheathing used in fire-resistive-rated walls. The revision will now make it clear that plywood shear walls may be constructed with the plywood applied over the required gypsum sheathing.

Table No. 25-M-1. Footnote No. 2 was revised to reflect the change in plywood thickness from $^1/_2$ inch to $^{15}/_{32}$ inch to agree with what is currently manufactured under PS 1-83.

Tables Nos. 25-M-2, 25-N-2, 25-S-3 and 25-T-2. The tables have been revised to eliminate one product grade (2-M-F) in these four tables as well as in Tables Nos. 25-25-A and 25-25-B in the Uniform Building Code Standards.

Table No. 25-O. The table was revised to clearly describe nails to be used for hardboard siding, and updates the code to be in agreement with current industry recommendations.

Tables Nos. 25-S-1 and 25-T-1. The change reflects smaller net thickness dimensions of wood-strip flooring, which manufacturers have been providing in recent years.

Table No. 25-T-1. Footnote No. 1 was revised to reflect the use of cellular or lightweight concrete to transfer loads across unsupported edges as is currently provided for in Footnote No. 4 to Table No. 25-S-I for floor sheathing plywood grades. Many builders prefer to use the grades included in Table No. 25-T-1 rather than Table No. 25-S-1, and the provisions will clarify this as being allowed.

Seattle Amendments

Sec. 2515(a). The first exception is amended to allow wood to support precast concrete stair treads. This is common practice for smaller apartments and businesses. This amendment was approved for the 1985 Seattle Code, but the revision was never sent to the State for approval. The City has been allowing this in practice.

Sec. 2516(f)4B(ii). This is an existing Seattle amendment allowing for a different pattern of draft stopping in buildings of more than four units.

Chapter 26

1988 UBC Amendments

Numerous editorial revisions have been made to make it easier for users of the code and ACI Standard 318 to identify the differences and to make reference to the ACI Commentary. The ACI chapter and section numbers have been shown in brackets following the Uniform Building Code number and where the code differs from ACI Standard 318, a different type style is used.

Sec. 2607 (b) 3 (iv). The detailed requirements for stirrup and tie hooks in Seismic Zones Nos. 3 and 4 have been replaced with a reference to Section 2625 (b) since they were already covered by this section.

Sec. 2607 (k) 3 D. Provisions covering column lateral tie requirements in this section were revised to provide consistency with other sections of the code.

Sec. 2610 (a). The notation A_2 has been changed by replacing the current wording with the wording in Section 2610 (p) 1 B. This revision does not change the present requirement in the code but is intended to resolve any inconsistency between the definition for A_2 in Section 2610 (a) and the provision in Section 2610 (p) 1 B.

Sec. 2610 (p). See analysis for Section 2610 (a).

Sec. 2611 (a). The notations have been changed by adding b_1 and b_2 and the deletion of C_2. These changes were made to reflect the change to Formula 11-40 in Section 2611 (m).

Sec. 2611 (b) 3. This section has been revised to add two conditions that were inadvertently omitted in the change to the 1985 code.,

Sec. 2611 (f) 5 D. This provision has been changed to indicate which of the two methods of calculating the minimum area of shear reinforcement in prestressed concrete beams is to be used. Current industry practice is to use the smaller value and use of this value has been substantiated by tests.

Sec. 2611 (i). This section was developed on the basis of tests of simply supported deep beams. A recent set of tests of continuous deep beams show that these provisions can be quite unsafe for such members. The problem stems from the model used, which does not appear to represent the true behavior. This is particularly a problem with continuous beams where V_{ud}/M_u approached infinity at the critical section defined in the code. The tests also show, as others have done, that horizontal stirrups had essentially no effect on the shear strength of deep beams.

ACI is working on revisions that will apply to deep beams, but these will not be ready for several years. As a stopgap measure, much of Section 2611 (i) has been limited to simply apply to supported deep beams.

Sec. 2611 (l) 2 B (i). A provision has been added to require columns at two-way prestressed slabs and footings be located at least four times the slab thickness from a discontinuous edge. This provision was inadvertently omitted in the previous code change.

Sec. 2611 (m) 2 C. Formula 11-40 covering the fraction of the moment transferred from a slab to a column by shear and flexure has been changed. These formulas previously expressed the lengths of the sides of the critical shear perimeter as $C_1 + d$ and $C_2 + d$ which are side lengths for an interior column but are generally not correct for an edge or corner column.

Sec. 2613 (a). The notations were changed by the deletion of C_1. The deletion was made to reflect the change to Formula 13-1 in Section 2613 (d).

Sec. 2613 (d) 5. Formula 13-1 has been changed to account for edge conditions. See analysis for 2611 (m) 2 C.

Sec. 2614 (a). See analysis to Sec 2614 (i).

Sec. 2614 (i). A new subsection was added which allows an alternate design for slender reinforced concrete walls where tension controls.

Sec. 2615 (i) 1 B. Item (ii) has been changed to require reinforcement, dowels and mechanical connectors to satisfy all of the requirements of Section 2615 (i) 2 or 2615 (i) 3, not just the requirements of Item A in each section.

Sec. 2618 (a). When considering the factors for prestressing tendons in developing Equation (18-3), the materials referenced in Section 2603 (f) 4 were checked but, inadvertently, high-strength bars, Type II, with a yield-to-strength ratio of 0.80, were overlooked. The addition corrects the oversight and provides factors for all prestressing tendon materials.

Sec. 2618 (b). The last paragraph of Section 2607 (g) has been added to the list of provisions not applying to prestressed concrete. Section 2618 (j) specifies the amount of bonded reinforcement required in flexural members with unbonded tendons, but does not specify the maximum spacing. Except over columns of flat plates, the spacing limits for primary bonded flexural reinforcement for conventionally reinforced walls and slabs specified in Section 2607 (g) are not intended for application to prestressed concrete members. Section 2618 (m) contains spacing limitations for tendons at variance with Section 2607 (g).

Sec. 2618 (f) 1. The maximum tensile stress in prestressing tendons, due to the jacking force, has been reduced to the lesser of $0.80 f_{pu}$ and the maximum value recommended by the manufacturer. This was done to avoid tendon stress values significantly greater than $0.74 f_{pu}$.

Sec. 2618 (t). The available wedge-type anchorages and couplers for strand post-tensioning tendons, which have been widely used for over 20 years, will not develop 100 percent of f_{pu}. The revision to require anchorages and couplers to develop 95 percent of the specified breaking strength of the tendons is in accordance with industry standards, and was recommended by ACI/ASCE Committee 423. The maximum allowable design stresses in unbonded tendons in beams and slabs are always much less than $0.95 f_{pu}$. The revision will eliminate confusion in specifications for post-tensioning tendons and will have no effect on the strength of members using either bonded or unbonded tendons.

Sec. 2621. This section covering shotcrete has been completely revised and is based on ACI Standard 506-66. Special inspection is required during the placement of all shotcrete, with exceptions as approved by the building official.

Sec. 2622 (a). This section has been revised as a part of the general change in the seismic provisions of the code. See Section 2312. The prohibition against the use of unreinforced concrete has been relocated to this section and an exception provided for footings of Group R, Division 3 Occupancies constructed in accordance with Section 2517.

Sec. 2624. This section has been completely revised. Provisions have been added allowing the use of strength design methods or testing to determine the strength of embedded anchor bolts and headed studs in concrete.

Sec. 2625. This section has been extensively revised as a part of the general change in the seismic provisions of the code. See Section 2312.

1991 UBC Amendments

General. The contents of this chapter have been revised to generally agree with the American Concrete Institute (ACI) 318-89. Sections 2609 (d) 4 and 2625 (c) 3 have been revised to agree with recommendations of the Structural Engineers Association of Southern California's *Recommended Lateral Force Requirements*.

Sec. 2602. A new definition for "wall pier" has been added to clarify that wall piers are defined as short wall segments. In addition, a new Subsection 2625 (f) 9 has been added to cover specific requirements related to the design of elements classified as wall piers. For example, when wall piers carry a significant portion of the total wall shear, they are required to have special transverse reinforcement. As a minimum, the design shear force, V_e, is determined by considering the probable flexural strength at ends of wall piers, based on 125 percent f_y and ϕ equal to 1, divided by the height of the opening. This reinforcement is required to extend into walls or spandrels above and below as in the case of columns supporting discontinuous shear walls.

Sec. 2603 (b). See analysis of Chapter 60.

Sec. 2603 (b) 4 A. The subsection has been revised to eliminate the need for special ordering and testing of deformed wire to 0.35 percent strain if the steel, as used in the design, has a yield strength not exceeding 60,000 psi.

Sec. 2604. A new Section 2604 has been added. Section 2604 (f) was deleted since it is covered by the new section. The remaining portions of Section 2604 were incorporated as part of Section 2605 and retitled "Concrete Quality, Mixing and Placing."

The purpose of the change was to emphasize the importance of special exposure requirements. Also, the reference to watertightness was deleted. The change clarifies that calculations of maximum water ratio also include consideration for amounts of fly ash and pozzolans and establishes minimum cement content for freezing and thawing exposures.

Sec. 2606 (c) 7 through 12. The provisions of the section have been revised to eliminate duplication and overlap since the controls are already covered by provisions contained within other codes and standards such as the Uniform Plumbing Code and Uniform Mechanical Code.

Sec. 2607 (b) 3. The revision references the specific reinforcement details contained in Section 2625. In addition, the definitions for crossties and hooks have been revised to incorporate a minimum extension of 3 inches and other modifications.

Sec. 2607 (k) 2. Section 2607 (k) 2 I has been revised to delete reference to vertical spaces, and Sections 2607 (k) 2 J and K have been deleted. This will make the provisions agree with ACI 318 which recognizes that spacers are not used as standard practice in all parts of the United States. This eliminates the need for installation of vertical spaces where spiral reinforcement is employed in columns. The reason for the revision is to recognize that alternative means of holding the spiral reinforcement in place could be employed. It is anticipated these would be part of the project specification or subcontract agreement. This change does not, howev-

er, eliminate the necessity to, by some means, hold the spiral reinforcement firmly in place in the proper location during concrete placement.

Sec. 2609 (d) 4. See analysis at beginning of chapter.

Sec. 2609 (f) 3. The section has been rewritten to refer the designer directly to a table that specifies slab thicknesses for flat slabs and flat plates since selection of minimum thickness for two-way slabs without beams should be a simple process. Additionally, Equations (9-11) and (9-12) have been simplified, thus reducing the likelihood of misinterpretation.

Sec. 2610 (a). The skin reinforcement requirements have been changed to require that the amount of skin reinforcement increases as the depth increases.

The definition of β_d as a ratio of dead to total moments has in the past caused confusion as to the selection of proper ratio, particularly when the moments are nominal. Also, in the case of braced columns, the ratio of vertical loads is important, whereas in unbraced columns, the ratio of lateral load effects is more important. The revised definition accounts for these issues.

Sec. 2610 (g). See analysis of Section 2610 (a).

Sec. 2611 (a). See analysis of Section 2611 (l) and (m).

Sec. 2611 (b). A new Item 3 has been added to cover findings of recent tests of high-strength concrete beams failing in shear, which suggested that the V_c equation based on $\sqrt{f'_c}$ becomes less conservative as f'_c increases. Recent tests of high-strength concrete girders with minimum web reinforcement satisfying the code indicated that this amount of web reinforcement was inadequate to prevent brittle shear failures when inclined cracking occurred.

Sec. 2611 (l) and (m). Several new notations have been added to Section 2611 (a) related to the new provisions in Section 2611 (l) and (m).

The revisions accomplish the following:

1. New Section 2611 (m) 1, Item C, allows the use of a rectangular critical section commonly used in actual practice.

2. Section 2611 (m) 1, Items B (ii) and (iii), require an additional check at the edges of shear capitals or drop panels.

3. Section 2611 (m) 2 A provides additional equations for limiting V_c around drop panels, shear capitals, etc.

4. Section 2611 (l) and (m) 6 separates provisions dealing with column-beam joints and column-slab joints.

5. Previous Section 2611 (m) 2 on moment transfer in slab-column joints has been written in a shorter fashion.

6. Previous Section 2611 (m) 2 D has been rewritten to allow shear reinforcement other than shearheads in situations involving moment and shear transfer.

Sec. 2612 (b). The new provision limits the maximum stress for the concept of developing reinforcement lengths.

Sec. 2612 (c). Development lengths for deformed bars and deformed wires have been significantly changed from the previous code. These changes increased the

development length for closely spaced bars and bars with minimal cover. The basic development lengths in Item 2 are essentially the same except that for No. 18 bars, the development length has been increased.

Sec. 2612 (n). Previous Items 1, 2 and 3 have been replaced with new Items 1 and 2 to reduce confusion. Also, good standard practice should involve providing hooks at ends of stirrups for bar support and anchorage.

Sec. 2612 (r). The section has been revised to clarify that the column splices must satisfy requirements for all load combinations for the column.

Sec. 2613 (a) and (b). A new notation has been added defining the size of rectangular or equivalent rectangular column, capital or brackets. The revisions to Subsection (b) clarify the application of the provisions and reaffirm the original intent. In recent years, posttension slabs have employed thickened areas around the columns to provide additional shear capacity. These areas generally do not extend $^1/_6$ away from the column and hence do not qualify as drop panels. As a result, they have been classified as capitals, and Section 2611 (b) 2 has been interpreted as making the outer portion of the capitals ineffective for shear. A review of ACI codes prior to 1971 suggested that the actual intent of the section was to introduce "c" to compute M_o. This change reestablishes that intent.

Sec. 2613 (f). The revision simplifies Section 2613 (f) and deletes bent bars from Figure No. 26-1 since, in practice, bent bars are seldom used and are difficult to place. The section also incorporates language requiring two continuous bottom bars or wires in slabs to provide some residual capacity following a single punching shear failure.

Sec. 2614 (h) 3. The new Equation (14-5) will provide the proper service load deflection when the service moment is less than the cracking moment. The present code equation provides the deflection only when the service moment is equal to or greater than the cracking moment.

Sec. 2615 (i) 2 C. The entire subsection was deleted because its restriction on diameter of dowels from footing to supporting member was felt to be unduly restrictive, unnecessary and not required at other construction joints.

Sec. 2618 (s). The change allows a 5 percent tolerance between force determination for gauge pressure and elongation measurements for pretensioned elements, versus 7 percent allowed for posttensioned elements. The contrast in tolerance is justified because posttensioning tendons are usually stressed at the jobsite and are subject to the effects of friction along the full length of the tendons whereas pretensioned elements are stressed in the air generally with minimal friction losses (except, in some cases, at tendon hold-down points). The new provisions recognize this distinction.

Sec. 2621 (d). The exception allows flexibility in the design and use of shotcrete, which the bar spacing requirements of the charging paragraph would preclude. Adding the exception allows flexibility for the design engineer and building official in the spacing of the reinforcing steel.

Sec. 2625 (a). See analysis of Section 2625 (h) 1 A and B.

Sec. 2625 (b). The revision clarifies that the 90- and 135-degree bends required of crosstie hooks represent a minimum bend, rather than an absolute value. See analysis of Section 2607 (b) 3.

Sec. 2625 (c) 3. The subsection has been revised by deleting the coefficients for certain elements where the nominal shear strength is less than the shear corresponding to development of their nominal flexural strength.

Sec. 2625 (c) 6. The revision will ensure the special requirements for welding A615 reinforcement, noted in the second sentence of the item, will be observed. The use of factored load combination terminology is more appropriate.

Sec. 2625 (d) 1. The revised language of Section 2625 (d) and (e) is intended to clarify that members which meet the requirements of Section 2625 (d) 1 A through D [or Section 2625 (e) 1 A and B] may be used and must comply with Section 2625 (d) and (e), respectively. This change does not alter the intent of the original wording.

Sec. 2625 (d) 3. The definitions for crossties and hooks have been revised to incorporate a minimum extension of 3 inches and other modifications.

Sec. 2625 (e) 1. See analysis of Section 2625 (d) 1.

Sec. 2625 (e) 4. The required area of transverse reinforcement in concrete framing members is permitted to be reduced. Several recent test programs subjecting frame members to repeated cycles of bending and axial loads have shown that required cross-sectional area of hoop reinforcement may be reduced.

Sec. 2625 (e) 4 E. The revision defines how transverse reinforcement must terminate where they meet discontinuous members or the foundation to provide necessary confinement.

Sec. 2625 (e) 4 G. The new Item G will provide for better protection and ductility to the midheight of columns between specified transverse reinforcement by requiring several additional ties in that column region.

Sec. 2625 (f) 3 D. The revision clarifies that forces in boundary members may be either tensile or compressive and both must be considered in design.

Sec. 2625 (f) 3 E. The revision specifies that the second paragraph also applies to shear walls without boundary elements, and further limits its application to shear walls with factored nominal shear stresses exceeding $\sqrt{f'_c}$.

Sec. 2625 (f) 9. See analysis of Section 2602.

Sec. 2625 (g) 2. The revision provides a maximum spacing requirement that was recommended by the ACI 352 Committee and has also been approved by the ACI 318 Committee. The selection of the maximum spacing limit was based on test data from several recent investigations.

The modification to related Section 2526 (e) 4 B adds a second spacing criteria based on member size. This provision is contained in the 1983 edition of the ACI code and may have been inadvertently deleted during previous updates of the U.B.C.

Sec. 2625 (g) 3 A. The provisions have been changed to recognize test data indicating that maximum assumed nominal shear value of 15 $\sqrt{f'_c}\, A_j$ is uncon-

servative when applied to corner joints. Additionally, the definition for A_j has been revised and placed in Section 2625 (a).

Sec. 2625 (h) 1 A and B. The revision clarifies that the strength-reduction factor of 1.0 and the allowance for over-strength reinforcement should apply to Section 2625 (h) 1 B as well as Section 2625 (h) 1 A. There is no need to calculate shear based on the full column moment strength when the upper limit on moment is controlled by flexural members framing into the column. The word "factored" has been removed to be consistent with the latest Structural Engineers Association of California *Recommended Lateral Force Requirements*. The addition of a notation for M_{pr}, and the revision to Section 2625 (h) 1 A are editorial.

Sec. 2625 (h) 2. The revision removes a discrepancy between Section 2625 (h) 2 of the U.B.C. and Section A.7.2.1 of the ACI 318 Code. The change had approval of the Structural Engineers Association of California and has already been implemented in the latest edition of the *Recommended Lateral Force Requirements*.

Figure No. 26-1. See analysis of Section 2613 (f).

Table No. 26-C-2. See analysis of Section 2609 (f) 3.

Seattle Amendments

Sec. 2604(e). This is an existing Seattle amendment which specifies the Minimum Cement Content the City will accept.

Sec. 2621. Shotcrete. These provisions were completely a Seattle amendment to the 1985 UBC, but are now a part of the 1988 UBC. In addition a few changes have been made for the 1991 UBC which have been incorporated in Item (d). Item (h) has been clarified for this adoption of the code where it was unclear what portion of the concrete had to be removed in the case of damage. In Item (j) the thickness of slabs is specified. Test panels must be thick enough to allow coring samples with a length of twice the diameter for a standard compression test on cores according to U.B.C. Standard No. 26-10, Sec. 26.1018. And finally Item (k) is revised to clarify the intent of the section was to include all structural members, so this change requires a special inspector for all structural members instead of trying to name the types of members.

Sec. 2622(a). The exception to the 4th paragraph has been revised to incorporate the relocation of an existing Seattle amendment regarding the minimum foundation for R-3 and M-1 occupancies. This amendment is located in the Seismic provisions of the 1985 code. However with the 1988/91 revisions to Sec. 2312, this amendment no longer fit into that section and is proposed to be moved here. A reference to Chapter 29 is added.

Table 26-A-7. Seattle will continue to replace this table as it has in previous editions. (It was numbered Table 26-A-3 in previous editions.)

Chapter 27

1988 UBC Amendments

All of the changes to this chapter, except for those listed below, were part of the general revision to the seismic provisions of the code. See Section 2312.

Sec. 2715 (a). This section has been revised by the deletion of the term "open web," and the addition of K-series joists. This change was part of the revision to U.B.C. Standard No. 27-4.

Sec. 2723. This section was deleted as a part of the general revision to the seismic provisions. A new section was added to permit the use of the recently developed Load and Resistance Factor Design (LRFD) for steel structures. Included with this change was the addition to the U.B.C. Standards of a new standard, No. 27-14, containing detailed design provisions.

1991 UBC Amendments

General. The chapter has been revised by making it a road map to the specific methods of design specified in the U.B.C. Standards. This will place all specifications for the design of steel structures in one place, except for special design and construction provisions in Sections 2710 and 2711.

Sec. 2701 (a). See analysis of Chapter 60.

Sec. 2710. The entire section has been revised to apply only to Seismic Zones Nos. 3 and 4. A new Section 2711 has been added to deal with the specific design requirements that apply to Seismic Zones Nos. 1 and 2.

Sec. 2710 (g) 1 B (ii). The term "slip critical" has been added to be consistent with appropriate industry terminology.

Sec. 2710 (g) 5. The section has been revised to reflect the experience of buildings with a strong beam, weak column frame. The restrictions do not apply to a one-story metal building.

Sec. 2710 (h) 5. The intent of the revision is to allow the use of slender braces in low-rise buildings, but to increase the size of the braces to reduce the chance of buckling. The previous wording implied that the $3(R_w/8)$ was applied to the entire braced frame at allowable stress design levels and thereby unnecessarily complicated the design and introduced confusion.

Sec. 2711 (h) 2 E. The revision will clarify that the intent of the section is that bracing connections are to be designed at strength levels, not allowable stress design.

Seattle Amendments

Sec. 2708. Revisions to clarify the welding procedures are carried over from the 1985 Seattle amendments

Sec. 2710(g)5 This amendment is new and is part of the revisions to the 1988 UBC as adopted by the State of Washington. This change was developed by the Structural Engineers of Washington.

Chapter 28

1988 UBC Amendments None.

1991 UBC Amendments

Sec. 2801 (a). See analysis of Chapter 60.

Sec. 2801 (c). The revision makes the code consistent with the 1986 edition of *Specifications for Aluminum Structures.*

Table No. 28-C. See analysis of Section 2801 (c).

Table No. 28-F. See analysis of Section 2801 (c).

Seattle Amendments

Sec. 2804(f). This replacement of the welding section is the same as in the 1985 Seattle amendments.

Analysis of Revisions - Chapter 29 - Excavations, Foundations and Retaining Walls.

Sec. 2901 Scope

(a) - SBC - A reference to the Grading Code is added.

Sec. 2902 Quality and Design - No changes.

Sec. 2903 Excavations and Fills - No changes.

(a) - SBC - Provisions contained in the UBC which limit the use of engineered designs for fill slopes is stricken. This conflicts with the Grading and Drainage Control code.

Sec. 2904 Soil Classification - Expansive Soil - No changes.

Sec. 2905 Foundation Investigation - No changes.

Sec. 2906 Allowable Foundation and Lateral Pressures - No changes.

Sec. 2907 Footings

(a) - 91 UBC - A provision is added limiting the use of this section where there is scour or water pressure against a foundation due to wind or waves.

(e) - 88 UBC - Provisions were added to address expansive soils when present, including reference to the new expansive soils standard.

(f) - 88 UBC - A sentence is added to ensure that a nut and washer are used in combination with the required anchor bolts. The provision is also revised to allow the same embedment length in unreinforced grouted masonry as in reinforced or concrete masonry

Sec. 2908 Piles - General Requirements

(a) - 91 UBC - This change contains provisions requiring verification of the installed bearing capacity of piles. It was determined that special inspection was not adequate for this determination, but that a soils engineer would need to prepare a foundation investigation and report.

(b) - 88 UBC - A new section is added covering the interconnection of pile caps and caissons. This is part of the seismic revisions in the code and is not a new standard, just a relocation.

Sec. 2909 Specific Pile Requirements

(b) - 91 UBC - An exception is added to allow the pile length to exceed 30 times its diameter subject to a foundation investigation report.

(f) and (g) Provisions were removed which overregulated steel piles

Sec. 2910 Foundation Construction - Seismic Zones Nos. 3 and 4

- 88 UBC - This is a new section for the 88 code which is part of the revision of the seismic provisions of the whole code.

(f) - SBC - This provision is a reference to V-N foundation exception allowed in Chapter 26 by Seattle amendments. This reference is new, the exception is not.

Table 29-A - No changes.

Table 29-B - No changes.

Table 29-C - No changes.

Table 29-D - No changes.

Figure 29-1 - No changes.

Analysis of Revisions - Chapter 30 VENEER

Sec. 3001 Scope

(b) - 88 UBC - This section was revised to allow a 5 foot increase in veneer height to 30 feet and to allow it to be measured from the top of a noncombustible foundation.

Sec. 3002 Definitions - No changes.

Sec. 3003 Materials

- 88 UBC - A new paragraph is added to define the term "corrosion resistant or noncorrosive" and to specify that the terms are intended to mean having a corrosion resistance equal or greater than hot-dipped galvanized coatings.

Sec. 3004 Design - No changes.

Sec. 3005 Adhered Veneer - No changes.

Sec. 3006 Anchored Veneer

(b) - 88 UBC - The support of veneer provisions were completely revised for the higher seismic zones.

(d) - 91 UBC - The change to Item 1 requires in Seismic zones 3 and 4 that sheet metal ties engage the horizontal wire. Corrugated ties or wire alone will not keep veneer from falling away. The change to Item 3 was the deletion of an inaccurate reference.

Sec. 3007 Plastic Veneer

- SBC - Exception #2 was revised to be consistent with the State amendment.

Table 30-A - No changes.

Analysis of Revisions - Chapter 31 ACCESSIBILITY

This is a new Chapter in the 1991 UBC which specifies which structures must be accessible to persons with disabilities. The State preempts local adoption of this Chapter until July of 1992. Throughout the code there are references to the State Barrier-Free regulations - WAC 51-10.

Analysis of Revisions - Chapter 32 ROOF CONSTRUCTION AND COVERING

GENERAL For the 1988 UBC, Chapter 32 was substantially rewritten and reorganized. According to ICBO this results in provisions that are easier to interpret and apply. Tables have replaced code sections for roof-covering and construction requirements. New materials and methods have been added and those requirements that no longer served a useful purpose were deleted. There was also a shift away from listing specific types of roof assemblies to relying on performance testing for one of the 3 classes of roof assemblies.

Sec. 3201 General

- 91 UBC - The second paragraph is revised to clarify that it is acceptable for roof coverings to be secured to the supporting roof by other than mechanical fasteners.

Sec. 3202 Definitions

- 91 UBC - 3 definitions are added for modified bitumen thermoplastic membrane and thermoset membrane roofings. Appropriate standards for these new roofing types are also added.

- 91 UBC - A new definition has been added for fire-retardant shakes and shingles to ensure that fire-retardant wood shakes and shingles have been treated in accordance with the standards.

Sec. 3203 Roof Covering Requirements - No changes other than 88 rewrite.

Sec. 3204 Roof Covering Classification

(d) - 91 UBC - The list of non-rated roof coverings has been expanded to include the new modified bitumen membrane assemblies.

Sec. 3205 Attics: Access, Draft Stops and Ventilation

(a) - 91 UBC - New wording permits attic access through walls as well as traditional locations. Also addressed are split level and multiple attic conditions.

(c) - 91 UBC - Two exceptions were added which provide alternative methods for calculating the net free ventilating area of an attic.

Sec. 3206 Smoke and Heat Venting

- SBC - An existing Seattle amendment to Item 1 has been deleted. The amendment is not used and return to the uniform language is preferred. Another existing Seattle amendment related to tempered glass is maintained in subsection (c).

Sec. 3207 Roof Drainage

(c) - 91 UBC - A minor revision to the second paragraph attempts to clarify that overflow drain lines should be separate from the roof drain lines.

- SBC - Existing Seattle amendments which clarify where the drain lines are connected, that strainers are to be provided for all drains and that drainage can not flow over public property are included in this section. In addition a new exception was added to clarify the size of drain lines and correlate the code with the Seattle Plumbing Code.

Sec. 3208 Roof Covering Materials and Application

- 91 UBC - Revisions were made to 3 subsections for the new roofing types discussed in 3202.

(b) - 91 UBC - A new Item 12 is added which requires the roofing system to be securely fastened to resist wind uplift forces specified in the revised 2311.

Table 32-A

- 91 UBC - References to Class B roofs for Group H-1 occupancies was deleted because of limitations prohibiting H-1 in combustible construction types.

- SBC - An existing Seattle amendment limiting roof coverings in the downtown fire district is now located in the footnotes to this table.

Table 32-B-1 - No changes other than 88 rewrite.

Table 32-B-2 - No changes other than 88 rewrite.

Table 32-C

- 91 UBC - A minor revision to the column headings to clarify that the listed is only for No. 1 wood shakes.

Table 32-D-1 - No changes other than 88 rewrite.

Table 32-D-2 - No changes other than 88 rewrite.

Table 32-E

- SBC - Provisions saying when vapor retarder are required are now in the table. Seattle amendment is maintained.

Table 32-F - No changes other than 88 rewrite.

Table 32-G - No changes other than 88 rewrite.

ANALYSIS OF REVISIONS - CHAPTER 33 EXITING

Sec. 3301 General

(b) - 91 UBC - The word "gates" has been added to the definition of exit. The definition has also been revised to clarify that elevators and escalators are not exits.

- 91 UBC - A definition of multi-theater complex is added for use in a new section in 3317.

(e) - 91 UBC - A new section is added which requires an exit determination for exterior yards and courts. Seattle did not adopt this in 1991 in order to give us time to refine it before state preemption occurs in 1992.

(g) 91 UBC - A new section is added to clearly state that elevators and escalators are not part of an exit system. - SBC - An amendment is added to allow the building official to approve of an elevator as an exit. This is specifically related to highrise.

Sec. 3302 Occupant Load - No changes.

Sec. 3303 Exits Required

(a) - 88 UBC - The first 5 paragraphs have been reformatted, hopefully more logically. There is also some revisions to the exceptions which bring the UBC closer to Seattle regulations, but not all the way.

- 91 UBC - An exception 6 is added to allow only one exit from elevator lobbies.

- SBC - The single exit exceptions are merged into one exception (No. 8). The 85 SBC single exit provisions exchanged sprinklering of the exit system (plus other standards) for the option of having only one exit. Under the 1988 UBC sprinklers are required in all residential buildings, but under a 13-R system, which does not result in a fully sprinklered building. The proposed exception limits single exit designs to buildings of 4 residential stories, it incorporates the limitations contained in the Director's rule, it would require the buildings to be sprinklered through-out and one hour construction. It limits buildings with multiple single exited parts.

- 88 UBC - In the 8th paragraph in the provisions for calculating occupant load in multi-story buildings, the word "into" has been substituted for "through". The

intent of this revision is to only add the occupant loads of upper stories if the occupants actually exit through a space, not because they are in the exit stairway.

(b) - 91 UBC - The subsection has been revised to simplify and clarify the method of calculating exit width. The change requires that a 50 percent greater multiplier be used for stairways than for other exits such as corridors, ramps and exit passageways since level and ramped egress facilities accommodate about 50 percent more people than do stairs in a given time period. As part of the revision the cascade provisions which required adding people from upper levels is eliminated.

(c) - SBC - The last sentence of Exception 1 to the first paragraph is reestablished but with a minimum 15 foot separation rather than the UBC 30 feet. The staff continues to see abuse of this provisions where stairways are proposed back to back, with common walls, or very close together, but they meet the technical requirements of distance in a corridor. While the rated construction of the stairways may prove adequate for a short fire, the proximity of the two stairs increases the risk that both will become damaged and unusable. A minimum dimension needs to be reestablished.

- 88 UBC - The last paragraph is revised by including a specification that when three exits are required, at least two will be separated by not less than 1/2 the diagonal of the building or area served.

- 91 UBC - The exception has been revised to limit its application to corridors which are 1 hr construction (based on Section 3305).

(d) - 88 UBC - The 3rd paragraph is revised to allow greater exit travel in open parking garages even for open stairways.

- 91 UBC - The first paragraph has been revised to clarify that only the last portion of the increased travel distance need be within a rated corridor when exceeding the maximum travel distance allowed in either a sprinklered or unsprinklered building. As an example, if the travel distance is 160 feet in an unsprinklered building, the last 10 feet must be in a rated corridor. This was a Seattle sponsored change. It allows the dropping of a local amendment which includes Table 33-B.

(e) - SBC - A provision is added to restrict the practice of designing space so that the only access to a second exit is through another exit enclosure. Staff and the Board did not feel that it was the intent of the UBC to allow this, but ICBO staff has approved such designs.

Sec. 3304 Doors

(b) - 88 UBC - Revised to establish maximum force required for opening exit doors.

(c) - 88 UBC - Exception 1 is revised to limit the use of key locking hardware to the main exit door of Group B occupancies.

(d) - 88 UBC - A 2nd paragraph is added which requires push-pad-type panic hardware to be used on balanced doors required to have panic hardware.

(e) - 88 UBC - This is a new subsection which allows exit doors in Group B-2 to be locked with listed egress-control devices. They have a delayed release and can only be used in sprinklered and smoke detected buildings. The devices are seen as a way to reduce thefts without impeding life safety.

(h) - 91 UBC - A new exception is added which permits the use of horizontal sliding doors as exits. This was promoted by the Won-door company. SBC proposes a revision which would allow their use in any location where the occupant load going through the door does not exceed 50.

(i) - 88 UBC - A sentence is added to permit sloping of exterior landings for drainage and requires other landings to be level.

The exception was revised to prohibit doors from swinging over exterior landings.

Sec. 3305 Corridors and Exterior Exit Balconies

(a) and (b) - 88 UBC - These sections have been revised so that corridors serving an occupant load of less than 10 must be at least 36 inches in width. This also applies to Group R occupancies.

(b) - 91 UBC - Revised to allow a 36-inch wide corridor to serve an occupant load of up to 49.

(e) - SBC - The provisions limiting the occupant load served by an extended dead-end corridor in an office occupancy was clarified.

(g) - 91 UBC - An exception 7 is added which allows partial height partitions to be placed within single-tenant office spaces without classifying the area formed by the partitions as a corridor. Height is limited to 3/4 of the ceiling height, but no higher than 6 feet.

- 91 UBC - A paragraph providing a reference to the Mechanical Code prohibition of the use of corridors for conveying air to or from rooms, is added. This allows the removal of a similar Seattle amendment.

(h) - 88 UBC - A statement prohibiting louvers in 20 minute doors/assemblies is added.

- 91 UBC - Revised to clarify that doors from a corridor to the exterior do not need to be rated.

- 91 UBC - Revised to indicate that windows of exterior exit balconies don't need to be protected only where people can exit in two directions. This was a Seattle sponsored change and replaces a Seattle amendment.

(i) - 88 UBC - Clarified to prohibit exterior exit balconies to be located in areas where openings are prohibited.

(j) - 91 UBC - This is a new section added to specifically indicate that elevators are required to be separated from corridors when the corridors are required to be of fire-resistive construction. The significant revisions occurring in this new subsection are contained in the exceptions which allow the omission of elevator lobbies on the street floor of office buildings when the entire street floor is protected with an automatic sprinkler system.

This section is the new location for the Seattle amendment allowing the waiving of the elevator lobbies where the hoistways are pressurized.

- 88 UBC - A provision allowing the Z corridor in office buildings is included (it was moved here from its 1988 location in (h).

Sec. 3306 Stairways

(a) - SBC - The Seattle amendment adding exception #2 has been revised to only permit the use of ladders when the area being served is less than 200 sq ft rather than the current 400. The intent of this provision was for small lofts, etc, and not whole areas of a dwelling unit. 400 feet is considered too large.

(b) - 91 UBC - Stairway width is now determined based on the provisions of 3303(b).

(c) - 88 UBC - Exception 2 has been revised in an attempt to address sloping sites where they connect to stairways, allowing a greater variance of riser height.

(g) - 91 UBC - The prior restrictions on maximum vertical distance between landings has been relocated to this section.

(j) - 88 UBC - Provisions between handrails and guardrails has been clarified.

- 88 UBC - Handrail height has been raised from a range of 30-34 to a range of 34-38 inches. Studies of stairway use show that the increase in height will improve stair safety. Measurement method is clarified. Minimum cross-section dimension of handrails was increased from 1-1/4 to 1-1/2 inch

- 88 UBC - Cross reference revised.

(k) - 88 UBC - "Except in Group R-3" was added for consistency with sec 3309.

- 91 UBC - A second exception is added to permit the omission of the protection of openings adjacent to exterior stairs for open parking garages (unless they need protection due to location near a property line.)

(l) - SBC - The word "roof" is added to clarify that the provision is talking about roof hatch. A SFD request.

- 91 UBC - A 4th paragraph has been added to require that stairways exiting the exterior of the building be provided with a means for emergency entry when the building is four or more stories in height. If exterior lock sets are provided to such stairways, Sec. 10.209 of the Fire Code would permit the chief to require a key box for entry keys. (A similar provision is added to (m)).

(m) - 88 UBC - Construction requirements for exterior stairways are now located in the construction chapters for each construction type. (A Seattle sponsored change.)

A provision is added to preclude exterior stairways to project into areas where openings are precluded.

(o) - 88 UBC - Minimum height of stairways increased from 6'6" to 6'8".

(p) - 88 UBC - Revised for consistency with the fire code.

Sec. 3307 Ramps

(b) - 91 UBC - Width of ramps will be determined by the new methodology established in 3303(b).

(h) - 91 UBC - Improved reference (A Seattle sponsored change.)

Sec. 3308 Horizontal Exit

(c) - 88 UBC - A provisions has been added requiring that in Group 1-1.1, 15 sq ft per ambulatory patient be used when determining the capacity of the area to which a horizontal exit leads. the provision recognizes that the 3 sq ft was not adequate. Also a sentence has been added to clarify that the occupant load which enters the area of refuge need not be added to the occupant load normally in the area when determining the capacity of exits from the area.

Sec. 3309 Stairway, Ramp and Escalator Enclosures

(a) - 88 UBC - Revised to prohibit open stairways in all Group H occupancies.

(b) - 88 UBC - An exception is added to allow the use of wired glass in stairway enclosures in parking garages to improve visibility and reduce assaults in garages. - SBC - The exception is amended to clarify that it is applicable to shafts of either one or two hour construction.

- 91 UBC - The requirement that a stairway or escalator ramp be enclosed in 2 hr construction for buildings more than 4 stories has been made more restrictive and now applies to building of 4 or more stories. - SBC - An amendment is added to return the requirement to more than 4 stories.

(c) - 88 UBC - A paragraph has been substituted for the first sentence which prohibited openings into stairway enclosures other than doors and exterior openings. This revision is similar to an existing Seattle amendment which is eliminated except for a provision allowing a runoff drain to go through a stairway which is not clearly allowed in the UBC language.

- SBC - The charging paragraph has been revised to clarify current Department practice of prohibiting elevators from opening into stairway enclosures.

- SBC - Exception No 2 has been revised to allow half of the required exits to go through a garage. The 85 SBC provision talked about one exit out of two required. We have had many examples where there were more than two exits. The provision is completely revised to be more clear.

(f) - 88 UBC - Ramps added to limitation of use under a stairway (or ramp).

Sec. 3310 Smokeproof Enclosures

(a) - 88 UBC - A reference is added to the openings into enclosures discussed above in 3309(c).

(b) - 88 UBC - The minimum air pressure required for stairway enclosures were reduced from .25 to .15 inch of water column based on study data.

- 91 UBC - The last sentence of the first exception was revised to clearly indicate that the mechanical equipment must be activated upon initiation of a signal from a smoke detector installed outside of the stairway enclosure. The exception was also revised to add that actuation of the sprinkler system should activate the mechanical system.

(c) - SBC - See revision to exception No 2 as described in 3309(c), above.

(g) - 88 UBC - Self-closing doors were added to the types of doors allowed in a mechanically ventilated smokeproof enclosure.

Sec. 3311 Exit Courts

(b) - 91 UBC - The first paragraph was revised to allow 36 inch wide exit courts for R-3 and M occupancies.

This exit width is consistent with the minimum exit widths generally required for R-3.

(d) - SBC - An exception is added to allow waiver of opening protection where two ways of exiting exist from the court. This is not allowed for single exit buildings. This reflects current practice of the department.

Sec. 3312 Exit Passageways - No Changes

Sec. 3313 Exit Illumination

(b) - 88 UBC - Revised to only require a second source of power when the occupant load exceeds 100 (and for all Group I).

- SBC - Revise to clarify application in open floor uses such as parking garages and warehouses where the exit path may not be obvious. Also revised to clarify the wattage requirements. Provisions requiring separate sources of power were strengthened.

Sec. 3314 Exit Signs

(a) - 91 UBC - The requirement as to when exit signs are to be provided has been revised so that it is based on when two or more exits are required rather than on the number of occupants. Exceptions have been included for dwelling units, daycare and I-1 and 2 occupancies where two exits are required at a very low occupant load. (Seattle did not sponsor the original change but submitted clean-up amendments to it.) Many of the Seattle amendments are dropped, however, the use of exit placards in certain locations is still allowed.

(c) - SBC - The wattage for fluorescent bulbs was reduced from 6 to 5 to reflect current technologies.

(d) - 88 UBC - The power supply provisions for exit signs were revised to be consistent with exit illumination.

(e) - 91 UBC - This is a new subsection. It requires the installation of floor level exit signs in interior exit corridors serving guest rooms in hotels. Such signs assist people unfamiliar with their exit paths when corridors become smoky, and visibility of high level signs becomes impaired. SBC - Seattle proposes to delete these provisions as excessive.

Sec. 3315 Aisles

- 91 UBC - Based on work of the Board for the Coordination of Model Codes (BCMC) this section was completely rewritten. The work is partially based on stair safety research and Canadian field studies of people movement through exit systems. Detailed changes described by ICBO are:

Sec. 3315 (b), (c), (d), (e), (f) and (g). The requirements for aisles have been extensively revised. They are based on data on stair safety research by Canadian field studies of people's movements. Significant changes include the following:

1. The allowable height of risers has been increased to 9 inches; however, when the height exceeds 7 inches, the width of the aisle must also be increased to compensate for a reduction in exiting speed due to the higher risers.

2. The factors in Section 3315 (c) are adjusted to be consistent with the revisions to Section 3303 (b).

3. Section 3315 (d) provides an exception to the 20-foot dead-end limit if there is another aisle within 24 seats from the dead-end aisle.

4. Section 3315 (f) provides conditions by which aisle slopes steeper than 1 vertical to 8 horizontal may be allowed. Riser heights on the aisle stairs may be increased to 9 inches and may be nonuniform provided a marking stripe is installed at the tread nosing to call attention to the variation. In order to clearly identify the variation, the marking stripe must be distinctly different from the contrasting marking stripe required on other treads.

5. Section 3315 (g) requires handrails at ramped aisles steeper than 1 vertical to 15 horizontal and when more than two steps are adjacent to each other. It has been found, based on research and field studies, that providing handrails in the middle of the aisle is most effective. Gaps or breaks between handrails allow slower walkers to ascend or descend aisle stairs at their own pace while faster walkers may maneuver through the gap between handrails to negotiate around the slower walkers.

(a) - SBC - Seattle's existing amendment to (a) which proscribed aisles requiring two ways to exit was deleted as unnecessary. UBC language was adequate.

(c) - SBC - A minor revision to clarify that this requirement applies to the assembly areas, not the full occupancy.

(h) - 88 UBC - Revised to require steps in aisles when the slope exceeds 1 in 8. SBC - The 1 in 5 slope is replaced to reflect needs of the theater design industry.

Sec. 3316 Seat Spacing

- 91 UBC - This section was also revised based on the BCMC work. It now blends into one set of provisions traditional seating and continental seating. It allows more extensive use of continental seating concepts.

(a) - 88 UBC - Now requires a minimum 33 inches between rows but allows the 12 inches between seat backs and the next row of seats to be measured with the seat up when the seats rise automatically.

(b) - 88 UBC - Clarifies exiting from theaters with continental seating.

Sec. 3317 Group A Occupancies

- 91 UBC - Former sections 3317 for Group A-1 and 3318 for all other A occupancies were merged into one section. The two had become very similar. There are no substantive changes in the merger.

(c) - 91 UBC - This is a new subsection which addresses multi-theater complexes and provides some exceptions from latching hardware between each auditorium and the common lobbies.

Sec. 3318 Group E Occupancies - No changes.

Sec. 3319 Group H Occupancies

- 88 UBC - Revised to provide specific standards to relate to the rewrite of Chapter 9 for H occupancies.

- 91 UBC - Revised to require panic hardware on all exit doors from H-1, 2 and 3 occupancies. This is needed because of the high fire and explosion danger in these occupancies.

Sec. 3320 Group I Occupancies

(b) - 88 UBC - The minimum width of exits within Group I Occupancies has been revised so that the 44-inch minimum width applies only to spaces occupied by bed or litter patients. Exits serving other spaces can be 32 inches.

(c) - 88 UBC - Revisions allow the elimination of walls between nursing stations and corridors, it also allows limited, "supervised" waiting areas in the corridors.

- 88 UBC - Door closers are no longer required for patient sleeping rooms, (however such rooms must now be sprinklered.) Some fire dampers have been waived, but not for smoke compartment penetrations. Tempered and laminated glass is to be allowed in corridors. Where wire glass is used, the total size of opening is not limited (although each panel is limited to 1,296 sq inches).

- 91 UBC - An exception was added to allow a narrower corridor for Group I, Division 1.2 occupancies - outpatient surgery centers.

(f) - 88 UBC - Now allows under specific conditions, the key locking of patient rooms.

- 91 UBC - Exception 2 has been revised to clarify when approved locks or safety devices are permitted, that is, when forcible restraint of personal liberties of inmates and patients is necessary. (A Seattle sponsored change.)

Sec. 3321 Special Hazards

(a) - 88 UBC - Provisions for a 6 inch sill has been eliminated for oil-fired furnace installations because other regulations make a large spill unlikely.

Sec. 3322 Reviewing Stands, Grandstands, Bleachers and Folding and Telescoping Seating

- 91 UBC - This historic sections of 3324 on Folding and Telescoping seats was merged into the section on reviewing stands, grandstands, and bleachers (now renumbered to 3322.) Most of 3324 was redundant with 3322 and there were many ambiguities. The merger is one bright example of the shortening of the code, as well as a clarification.

(e) - SBC - A revision allows a variation in rise and run the same as is allowed in the section on Aisles (3315).

Table 33-A

- 88 UBC - Waiting area, bowling alleys, courtrooms and exercise rooms have been added to the table.

- SBC - A revision to Item 21 is added to refer the use to exiting provisions contained in the electrical code which can have a significant impact on building design.

- 91 UBC - Item 14 is revised to include an occupant load factor of 10 for treatment rooms in hospitals, and nursing homes. It recognizes that treatment rooms are distinct from patient rooms.

- 91 UBC - The occupant load factor for retail stores has been made the same for all stories, rather than different for main floor, basement and upper stories. In multilevel mall situations, the distinction had become unworkable.

- SBC - A new item 16A is added to co-ordinate with Chapter 8 and the occupancy load requirements for Laboratories.

- SBC - A new footnote 9 is added to clarify that the barrier free exemption must remain based on an occupant load factor of 100 because cities are precluded from amending the state barrier free regulations.

Exhibits - No changes.

Analysis of Revisions - Chapter 34 - Sloped Glazing and Skylights

General: This chapter was revised in its entirety by ICBO. The requirement for screening under overhead glazing has been expanded to provide exceptions for specific physical arrangements. Design requirement have also been added to clarify that sloped glazing and skylights must be capable of resisting the tributary loads specified in Sec. 2305. A provision has been added permitting sizing limitations in Tables No 54-A and 54-B to be used in designing the glazing to resist the loads specified in Sec. 2305, provided the design loads are increased by a factor of 2.67.

Sec. 3401 Scope - No Changes since the 88 rewrite.

Sec. 3402 Allowable Glazing Materials - No Changes since the 88 rewrite.

Sec. 3403 Screening

- 91 UBC - A fourth exception has been added to permit, under certain conditions, the use of unscreened, fully tempered glass in skylights and sun spaces within dwelling units. This based on a survey by the glass industry showing a very low incidence of breakage. This exception is more specific than an existing Seattle amendment which has been deleted. It simply read "Screens may be omitted when tempered glass is used in skylights within individual dwelling units."

Sec. 3404 Framing

- SBC - An existing amendment restricting frames in the fire districts to noncombustible materials has been deleted.

Sec. 3405 Design Loads - No Changes since the 88 rewrite.

Sec. 3406 Floors and Sidewalks - No Changes since the 88 rewrite.

Analysis of Revisions - Chapter 35 - Sound Transmission Control

This is a Seattle Chapter adopted as a part of the last few editions of the code. There are no proposed changes to the regulations contained herein. The department reviewed whether to extend the requirements for sound transmission control to exterior walls and windows of apartment construction located either downtown or in the commercial zones. Recent changes in the insulation and other thermal performance standards of a building's envelop imposed by the State and Seattle Energy Codes has already improved the sound transmission control quality of exterior walls to a level comparable to that required between units. Additional exterior wall measures were felt to be inappropriate at this time.

Analysis of Revisions - Chapter 36 - Penthouses and Roof Structures

There are no changes of this chapter by either ICBO or by Seattle.

Analysis of Revisions - Chapter 37 - Chimneys, Fireplaces and Barbecues

- 88 UBC - The Title was revised by eliminating the words "masonry and concrete" to more accurately reflect the scope of the chapters provisions which include metal and factory built chimneys.

Sec. 3701 Scope - No Changes.

Sec. 3702 Definitions

- 88 UBC - The definition of factory-built chimney was revised to employ language consistent with that used in the nationally recognized standard used in testing factory built fireplaces.

Sec. 3703 Chimneys, General

(g) - 91 UBC - This section was revised to specify the accessibility of the cleanout opening required to be at the base of masonry chimneys.

(h) - 91 UBC - This new section revises existing provisions on spark arrestors It makes the requirement for spark arresters on chimneys serving solid-fuel-burning appliances a local decision. This includes fireplaces. Seattle has decided to not to require it and therefore it is shown crossed out.

Sec. 3704 Masonry Chimneys

(c) - 91 UBC - The first paragraph is revised to specify a minimum grout space for reinforcing steel in masonry chimneys and to provide space to install anchor straps. Further, it limits the slope of offsets permitted in vertical reinforcing to avoid stress concentration from abrupt sectional changes.

- 91 UBC - The third paragraph is revised to permit the use of alternate designs to the 2 by 4 inch tie connection to be fabricated with bolted anchorages to the structural frame. The last sentence requires seismic anchorage of metal chimneys. It is misplaced in this section on masonry chimneys. Seattle has moved it to 3706.

(d) - 91 UBC - The provision on offsets was altered to specify a more gentle transition in section from a fireplace to the chimney to avoid stress concentration from abrupt sectional changes.

(g) - 91 UBC - The provision was revised to preclude construction of chimneys have a large cleanout cavity in which a large volume of creosote can accumulate and result in a fire hazard.

Sec. 3705 Factory-built Chimneys and Fireplaces

- 88 UBC - The title of the section was expanded to include fireplaces. In general the text of the section was revised to clarify that it only applied to factory built chimneys and fireplaces.

(c) - 88 UBC - This subsection was added to indicate that multiple factory built chimneys can be installed in a common shaft.

Sec. 3706 Metal Chimneys

- SBC - New Seattle amendment relocating a UBC requirement for seismic anchorage of metal chimneys to the proper location.

Sec. 3707 Masonry and Concrete Fireplaces and Barbecues

- 88 UBC - The title was revised to insert "masonry and concrete" to indicate that the section is only applicable to structures of those materials. Any provisions on factory-built were moved to 3705.

(m) - 91 UBC - The title of the section has been changed to "Fire-blocking" to be consistent with changes in terminology in sec. 2516.

Table 37-A - No Changes.

Table 37-B - No Changes.

Sec. 3801 Scope

(c) - 88 UBC - the definitions for "fire department inlet connection" and "standpipe systems" have been revised to be consistent with UBC Std No 38-2. The major difference in the definitions is the reference to dry standpipe in connection with the definition of a Class I standpipe. Although not required, a Class I system may contain water.

(d) - 91 UBC - The revisions are to correlate to changes in the fire code and allow the building official needed flexibility for handling unusual designs and systems.

(e) - WASBC - The state of Washington has added this provision clarifying the placement of insulation near sprinkler heads. (Seattle language is slightly revised to clarify the application.)

(f) - 91 UBC - This is a new section and was revised based on a Seattle proposed amendment to the UBC. The intent of this section is to remind designers that two of the sprinkler systems designs are not designs that sprinkler throughout the building, therefore substitutions based on sprinklers throughout are not allowed.

Sec. 3802 Automatic Fire-Extinguishing Systems

General - SBC - The 85 SBC code section (h) in which Seattle added a number of additional sprinkler requirements has been replaced. The various requirements from that section have been distributed throughout Section 3802 to the location specific to the occupancy, or the general provisions. Some provisions were editorially revised for their new location.

(b) - SBC - Items #4 and 5 are relocated from the former subsection (h).

(c) - 88 UBC - The provision for dining and entertainment facilities has been changed to only address larger drinking establishments. This recognizes an assumption that people in a drinking establishment may have impaired reactions.

- 91 UBC - Added to the A occupancy sprinkler requirements are multi-theater complexes and amusement buildings.

- SBC - Included in this section are amendments which clarify the application to temporary amusement buildings such as charity haunted houses. See also Sections 610 and 402.

(d) - SBC - Item 2 is relocated from the former subsection (h).

(e) - SBC - Item No 3 is relocated from the former subsection (h).

(f) - 88 UBC - All H-1, 2 and 3 are now required to be sprinklered. Group H-4 (repair garages) are now required to be sprinklered over 3000 sq ft (whereas 85 code required sprinklers when over 1 story). This latter change was based on the use of open flame where flammable vapors may be present and the fact that the use has a poor fire record.

(g) - 88 UBC - Exception 1, which allowed sprinklers to be omitted in patient rooms has been deleted. Experience shows partial sprinkler systems offer marginal protection and are often overtaken by fires that start in unsprinklered areas.

(h) - 88 UBC - UBC adopted sprinklers for residential occupancies in excess of 2 stories or in excess of 15 units (also for hotels over 20 guest rooms.) See Seattle change.

- SBC - Incorporated into a revised section (h) is the sprinkler requirements for residential construction developed by the Fire Department and approved by the two advisory boards in the winter of 89/90 and approved by the City Council in October. There are two slight modifications to clarify the provisions.

- SBC - Existing provisions found in section (h) in the 1985 code have been relocated to other parts of 3802 and one provision has been moved to Chapter 5 because it is an occupancy separation exception. See Sec 503.

Sec. 3803 Sprinkler System Supervision Alarms

- 88 UBC - This section has been revised so that supervised sprinkler systems are required within Group I-1 when the number of heads is 20 or more.

- 91 UBC - The section was again revised for the 91 code to clarify that all valves controlling water supplies to sprinkler system, except underground valves

on the municipal system and water-flow switches, must be electrically supervised and monitored.

Sec. 3804 Permissible Sprinkler Omissions

Item 1 of this section has been revised by adding the phrase "or contains electrical equipment" to the end to specifically indicate that sprinklers should generally not be omitted from a room simply because it contains electrical equipment.

Sec. 3805 Standpipes

(c) The first paragraph is revised to require that outlets be provided at every floor landing, including landings below grade, when a Class I standpipe system is required. The second paragraph is revised to allow a single rather than three-way standpipe outlet above roofs.

Sec. 3806 Buildings Under Construction - No Changes.

Sec. 3807 Basement Pipe Inlets - No Changes.

Table 38-A

- 88 UBC - In the lines for Items 1 and 2 under the column for sprinklered buildings, the class of standpipe has been changed from III to I. Since the table does not require that hoses be provided for the standpipe required by Items I and 2, the revision results in consistency with provisions for Class I standpipes, the only class not requiring a hose.

- SBC - This table was revised to be consistent with the Fire Code.

Analysis of Revisions - Chapter 39 - Stages and Platforms

Sec. 3901 Scope

(b) - 88 UBC - Definitions were added for Batten, Drop, Leg Drop and Theater-in-the-round.

- 91 UBC - Definitions of Gridiron and Stage, Regular as part of an overall clarification of fire curtain requirements.

Sec. 3902 Platforms - No changes

Sec. 3903 Stages

(a) - 88 UBC - The second paragraph has been revised to provide for resilient stage floors.

(c) - 91 UBC - The area of a stage allowed before venting is required increased from 500 to 1000 sq ft. The change reflects other changes requiring most stages to now be sprinklered. Companion changes specified the location of vent controls.

- SBC - A minor change is made to allow doors which provide venting to open 90 rather than 115 degrees.

(d) - 88 UBC - Clarified to allow doors between the backstage and the orchestra pit without being limited to the 25 sq ft restriction. - WASBC - The state has deleted the provision as overly restrictive.

- 88 UBC - A new paragraph was added which allows an alternate to the asbestos proscenium curtains.

- 91 UBC - Revised to clarify regulations for proscenium walls and the related fire curtains. The code no longer requires the wall to extend 4 feet above the roof. Use of a water deluge system is also authorized.

Analysis of Revisions - Chapter 40 - Motion Picture Projection Rooms

This chapter received one change since the 1985 edition. That change is to Section 4005(b), projection booth ventilation. The ventilation requirements were reduced in recognition that cellulose nitrate film, which was highly volatile, is no longer used.

Analysis of Revisions - Chapter 42 - Interior Finishes

Sec. 4201 General

- 91 UBC - In the first paragraph, the second sentence was revised to change words "cemented" to "applied directly" to make the provisions more generic.

- SBC - A reference to limits in elevators, Chapter 51, is added.

Sec. 4202 Testing and Flame Spread Classification of Materials

(a) - 91 UBC - A reference to the new textile wall testing is added.

(b) - 88 UBC - Provisions for carpeting on walls has been relocated to sec. 4205.

Sec. 4203 Application of Controlled Interior Finish

- 91 UBC - Items 1 and 2 were revised to pick up new terminology "fire blocked" for consistency with section 2516(f). A reference is also provided.

- 91 UBC - Item 4 is revised to clarify the intent of the code with respect to materials that are less than 1/4 inch thick. - SBC - The Seattle amendment clarifies that it applies to finish materials.

Sec. 4204 Maximum Allowable Flame Spread - No Changes except to remove references to wall coverings which are now regulated by Section 4205.

Sec. 4205 Textile Wall Coverings

- 88 UBC - Textile wall coverings, such as carpet, are now regulated by this section. In addition to having a Class I flame-spread rating as required in the 85 code, they must be protected by sprinklers or meet the criteria of the new UBC standard 42-2. - SBC - The Seattle amendment prohibiting carpeting on walls of exit enclosures is restated in this new section.

Sec. 4206 Interior Floor Finishes

- SBC - This was section 4205 is the Seattle 85 code. It had addressed wall and floor finishes, but is revised to just address floors because of the adoption of the new textile wall covering standards by ICBO.

(a) - SBC - This is a new subsection, bringing in from the fire code the classification definitions for the radiant heat test. This clarifies the adoption of these standards.

(b) - SBC - Provisions regarding elevators are removed (see earlier reference to chapter 51). Provision are clarified that the limit is in stairways of non-combustible construction.

Table 42-A - No Changes.

Table 42-B

- 88 UBC - Class I interior finish materials are now required in "Other Exitways" in Group I Occupancies, but Class II are allowed in nonsprinklered I-2 and 3. In sprinklered I-2 and 3, Class III is allowed.

- SBC - Footnote 2 is revised to clarify the column headers of Enclosed Vertical Exitways and other Exitways. The same footnote is also added to Table 42-C.

Table 42-C

- SBC - This table, added by Seattle, is revised to be more comprehensive, listing all occupancy classifications, revising the title to clarify its purpose and revising the footnotes to clarify their use.

Analysis of Revisions - Chapter 43 - Fire Resistive Standards

Sec. 4301 General

(b) - 91 UBC - This is a new subsection which contains definitions for the F and T ratings. These are new terms used in Sec. 4304(e) and 4305(c). The F and T ratings for through-penetration fire stops are established by testing under provisions of new UBC Standard 43-6. In essence, the F rating of a fire stop is an indication of the ability of the fire stop to prevent flame and hot gases from penetrating a fire-resistive assembly. The test subject is exposed to a fire environment which follows the temperature-time curve in UBC Standard 43-1 under a positive pressure of at least a 0.01 inch water column. The T rating of a through-penetration fire stop is a further evaluation of a fire stop to limit the temperature on the unexposed side of the materials to 325° above initial temperature. The T rating is required when a penetrating subject may be in contact with combustible materials on the unexposed side of the wall or floor.

Sec. 4302 Fire-resistive Materials and Systems

(a) - 91 UBC - The last paragraph has been revised to delete "by the person responsible for the structural design." This was felt to be overly restrictive. There is sufficient authority elsewhere in the code for the building official to require design by an architect or engineer.

(b) - 88 UBC - A new exception has been added which allows fire testing of bearing walls to continue after the first failure criterion of UBC Std No. 43-1 is reached if other than failure to sustain the applied load. This will allow a "structural fire-resistive rating" to be determined.

(d) - 88 UBC - The definitions of Grade A and B concrete have been replaced with carbonite, lightweight, sand-lightweight and siliceous aggregate concretes. The categories of concrete are thus defined according to their fire-resistive characteristics and are now consistent with industry used terms.

Sec. 4303 Protection of Structural Members

(b) - 88 UBC - A sentence has been added to item 6 to clearly indicate that access doors installed in fire-resistive ceilings shall be listed for that purpose.

- 91 UBC - Former provisions of Item 6 have been moved to 4305(b).

- 88 UBC - A second exception was added to allow waiver of fire dampers when the fire resistance of the assembly is not impaired.

Sec. 4304 Walls and Partitions

(e) - 88 UBC - A new paragraph is added at the end to of the section to clarify that firestopping material around penetrations through fire-resistive assemblies shall provide a seal to prevent the movement of hot flame and gases.

- 91 UBC - The subject in the subsection has been divided into two. Subsection (e) is now limited to the regulation of items which penetrate both surfaces of load-bearing fire-resistive walls and walls requiring protected openings. The requirement for protection of openings through bearing walls that are not required to have protected openings is new. Another difference between the new provisions on the 88 code is a requirement that test on through penetrations that are not larger than a 4-inch pipe size nor 16 sq inches be conducted under a positive pressure differential of at least 0.01 inch water column. Also, a T rating is required for fire stops in rated corridor walls if the penetrating item is not a fire-resistive assembly and is not larger than 4 inch nominal pipe size nor 16 sq inches in area. A T rating is required for penetrations through a wall when the penetration is below a ceiling and the penetrating item is larger than the 4 and 16 sizes.

(f) - 91 UBC - Application of the provision of this section are limited to penetrations of one membrane of a fire-resistive wall. The provisions are somewhat similar to the requirements for through penetrations when the penetrating item is larger than the 4 and 16 inch sizes; but a T rating is not required when the penetrating item is not larger than the 4 and 16 inch sizes. There is a limitation that the temperatures on the unexposed side of the fill material be such that hot gases will not ignite cotton waste.

Sec. 4305 Floor-Ceilings or Roof-Ceilings

- 91 UBC - This section has been reformatted by incorporating provisions which were under 4303(b)6.

(b) - 91 UBC - Exception 3 has been revised so that fie dampers are required in ceilings of fire-resistive corridors even though tests may indicate that the damper is not required to maintain the fire resistive rating of the ceiling. A ceiling damper is needed to inhibit the spread of smoke to the corridor.

(b) - 88 UBC - Exception 1 is revised for consistency with revised 4304(e), see above.

(c) - 91 UBC - This section contains significant changes including:

1. A specific reference has been added to indicate that the special provisions in Sec. 1706(c) apply to fire-resistive floors.

2. Openings in floors which are not specifically covered by Chapter 33 nor Sec. 1706(c) or Sec. 1715 generally must have an F rating, and in some cases a T rating.

Sec. 4306 Fire-resistive Assemblies for Protection of Openings

(e) - 88 UBC - Reference added to UBC standard 43-3. This is a companion code change to deleting 4306(k) - tin clad doors.

(i) - 88 UBC - Glass block assemblies have been specifically included in the section as qualifying for a fire-resistive rating when tested in accordance with UBC std 43-4.

(j) - 91 UBC - Item 1 has been revised by deleting a requirement that fire doors be installed at duct openings through area or occupancy separation walls that have a fire-resistive rating of 3 or 4 hours. Listed fire dampers having a three-hour fire-resistive rating are now available.

- 91 UBC - A 2nd exception has been added to Item 3 which will permit the omission of fire dampers in shaft walls when the opening is for a duct. However, application of this exception is allowed only when there is not more than one opening per floor level and when fire dampers are installed at floor levels above such openings.

Sec. 4307 Roof Coverings - No Changes.

Sec. 4308 Through Penetration Fire Stops

See discussion under 4301.

Sec. 4309 Smoke Dampers.

- 91 UBC - This is a new section. Smoke control is mentioned at least three parts of the code. ICBO felt it was timely to establish standards for smoke dampers. A new standard on smoke dampers 43-12 has been developed. The code requires dampers to have leakage ratings (although no leakage rating are specified anywhere in the code yet) and to have degradation test temperature rating of not less than 250°.

Table 43-A

- 88 UBC - References to perforated gypsum lath are deleted as the product is no longer produced.

- 88 UBC - Changes in terms to reflect new concrete terminology.

Table 43-B

- 88 UBC - Table 43-B was revised in 88 as follows:

Table No. 43-B. The table has been revised as follows:

1. A reference to Footnote 13 has been added next to Items 5-1.1, 5-1.2, 5-1.3 and 5-1.4, which would increase the fire resistance from two-hour concrete masonry units to four-hour when cores that are not solid grouted are filled with silicone-treated perlite loose-fill insulation conforming to a new U.B.C. Standard No. 43-10 or vermiculite loose-fill insulation conforming to U.B.C. Standard No. 43-11.

2. A reference to a new Footnote 14 in Items 5-1.1, 5-1.2 and 5-1.4 defines a procedure for determining the fire-resistive period of walls built with concrete masonry units manufactured with a blend of lightweight aggregates and sand aggregates.

3. Item 5-1.2 has been revised by reducing the minimum finished thicknesses for two-hour, three-hour, and four-hour assemblies and by adding slate to expanded clay and shale. These revisions are based on additional tests sponsored by the Expanded Shale Clay Slate Institute in 1970 and 1981 at Underwriters Laboratories and additional tests of walls at the National Research Council of Canada which show improvement in fire endurance over the 1930s and 1940s work by Carl A. Mensel and J. P. Thompson. It was upon their recommendations, in the early 1950s, that efforts were made to monitor the moisture content of concrete masonry walls in terms of relative humidity and to test at a given RH. It was also their suggestion that tests be reported in terms of the relationship of equivalent thickness to fire endurance.

4. See analysis to Table No 43-A, Item 1.

5. A reference to Footnote 16 has been added next to Items 14-1.1, 14-1.3, 14-1.4, 16-1.1, 16-1.2, 16-1.3, 16-1.5, 17.1.1, 17-1.2, 17-1.3, 17-1.5, 17-1.6, 17-1.7 and 17-1.8 to provide additional load restrictions for fire-resistive wood stud wall assemblies since the allowable unit stresses for compression perpendicular to grain for wood plates have been substantially increased from the values used in the original fire test. The stress increases were based only on strength criteria for structural design.

Therefore, F'_c, the allowable unit stress in compression parallel to grain adjusted for le/d ratio, must be reduced by 78 percent. For studs having slenderness ratios ranging from 0 to 33, F'_c is calculated based on a le/d of 33. For studs having a slenderness ratio greater than 33, F'_c is based on the actual le/d ratio calculated.

6. The revision deletes all references to parker nails in the code and standards, but adds a reference to wallboard nails, the properties of which are described in U.B.C. Standard No. 25-17, Table No. 25-17-I. The revision also retains the nails described in Table No. 47-G.

7. Footnote "a" to the table is updated by referencing the latest edition of the Gypsum Association's Fire Resistance Design Manual.

8. A revision to Footnote 12 is necessary to carry out the intent of Item No. 6 in this table.

Table 43-C

- 88 UBC - Table 43-C was revised for 88 as follows:

Table No. 43-C. The table has been revised as follows:

1. See analysis to Section 4302 (d) for revisions to Items 1-1.1, 2-1.1, 3-1.1 and 4-1.1.

2. See analysis to Table No. 43-A, Item 1.

3. See analysis to Table No. 43-B, Item 6

4. See analysis to Table No. 43-B, Item 6.

5. The code now specifies an assembly previously recognized through ICBO Evaluation Reports and the Gypsum Association Fire Resistance Design Manual.

6. Footnote "a" to the table is revised to reference the latest edition of the Gypsum Association's Fire Resistance Design Manual.

7. See analysis to Table No. 43-B, Item 6.

Analysis of Revisions - Chapter 44 - Protection of Pedestrians During Construction and Demolition

This chapter of the UBC has not been adopted by Seattle for a few editions but has been shown crossed out. Seattle language has been added, as in past years, to reference the Street Use regulations. For ease of reading the 1991 edition will only show the Seattle language. There is no change to it.

Analysis of Revisions - Chapter 45 - Permanent Occupancy of Public Property

For many editions Seattle has substantially revised Chapter 45. For the 1988/91 edition the format has been changed to show Chapter 45 as a completely Seattle chapter. The chapter contains the following sections. Provisions addressing awnings and canopies are moved to the new chapter 46. Otherwise Chapter 45 is the same as the 85 SBC except as noted below.

Sec. 4501 General

- SBC - A reference is added to the new Chapter 46.

Sec. 4502 Structural Building Overhangs

- SBC - Editorial revisions to Item 2 to clarify that the extension of 3 feet at roof level is a maximum limit.

Sec. 4503 Marquees

(b) - SBC - The street use limit of marquees staying 2 feet or farther from a curb is restated.

(e) - SBC - A new section is added to refer to Chapter 23 - Table 23-A for determination of marquee design loads.

Analysis of Revisions - Chapter 46 - Awnings

This chapter is new. The provisions have been taken from SBC chapter 4, chapter 45 and Director's Rule 40-86. The Land Use regulations found in the Director's Rule have not been added to the building code.

Sec 4602 - Gaps in the definitions of awning and marquee have been closed. The definition of fixed awning has been deleted since there are no code provisions specifically for them. A definitions of awning sign is added.

Sec. 4603 - 4606 - Requirements for permits, applications, inspections, maintenance of awnings and removal of awnings when a business closes are intended to reflect actual practice.

Sec. 4607 - Subsections (a), (b), (c) & (e) are taken from DR 40-86.

Sec. 4608 - (a) & (e) Load requirements are written to provide safety by requiring the awning to be attached to the structure of the building rather than the veneer. Wind and seismic loads need not be combined because of the relatively small danger presented.

(b) Pitch is required to prevent build-up of snow and water.

(c) This subsection is taken from DR 40-86.

(d) This subsection is taken from DR40-86, but has been revised to clarify that awnings may not be attached to parapets unless the parapet is designed according to chapter 23 or is specially braced to support the awning.

Analysis of Revisions - Chapter 47 - Installation of Wall and Ceiling Coverings

Sec. 4701 Scope - No Changes.

Sec. 4702 Materials - No Changes.

Sec. 4703 Vertical Assemblies - No Changes.

Sec. 4704 Horizontal Assemblies - No Changes.

Sec. 4705 Interior Lath - No Changes.

Sec. 4706 Exterior Lath

(e) - 91 UBC - Allows a reduced clearance between the weep screed and the ground or paved areas.

Sec. 4707 Interior Plaster - No Changes.

Sec. 4708 Exterior Plaster - No Changes.

Sec. 4709 Exposed Aggregate Plaster - No Changes.

Sec. 4710 Pneumatically Placed Plaster (Gunite) - No Changes.

Sec. 4711 Gypsum Wallboard

(a) - 88 UBC - The use of gypsum wallboard in showers and water closets is deleted from this section and moved to a new section 4712.

(e) - 88 UBC - This section has been revised to add an exception permitting the omission of joint treatment in fire-rated gypsum wallboard assemblies when joints occur over framing members.

Sec. 4712 Use of Gypsum in Showers and Water Closets

This is a new section specific to the use of gypsum wallboard in showers and water closets. It prohibits the use of water-resistant gypsum board over a vapor retarder in areas subject to continuous high humidity and on ceilings. The prohibition is a result of poor performance in these locations.

Sec. 4713 Softwood Plywood Paneling - No Changes.

Sec. 4714 Shear-resisting Construction with Wood Frame

(c) This section has been revised to clarify the requirements for sills, plates and marginal studs to be adequately connected to structural elements in a manner capable of resisting the design forces.

Table 47-A - No Changes.

Table 47-B

- 88 UBC - Revised to delete the use of perforated gypsum wallboard, it is no longer made.

Table 47-C - No Changes.

Table 47-D - No Changes.

Table 47-E - No Changes.

Table 47-F - No Changes.

Table 47-G

- 88 UBC - Deleted is the reference to parker nails but adds a reference to wallboard nails, the properties of which are described in UBC Std 25-17.

- 91 UBC - A new footnote is added which permits the use of a combination of nails and screws for installation of single-ply gypsum wallboard material. The footnote would permit the normal installation procedure of nailing the perimeter of the wallboard and then finishing the field attachment using screws.

Table 47-H

- 88 UBC - See change to Table 47-G.

Table 47-I

- 88 UBC - See changes to Table 47-B and G.

- 88 UBC - Footnote 1 has been revised as a part of the general revisions to the seismic provision of the code (see 2312). The revision reduces the allowable shear values in the table by 50 percent for dynamic loading due to earthquakes in Zones 3 and 4.

Table 47-J - No Changes.

Analysis of Revisions - Chapter 48 - Cellulose Nitrate

There are no changes to this chapter.

Analysis of Revisions - Chapter 49 - Signs

Sec. 4901 Purpose

- SBC - The purpose of the chapter is not to regulate only those signs visible from the public way.

Sec. 4902 Enforcement

(b) - SBC - A clarification is added which states that a sign unregulated by the Land Use Code may be regulated by the building code affects interior signs in covered malls.

Sec. 4904 Permits Required

(a) - SBC - Exception A in the 1985 code waives permit requirements if a sign is not visible from the public way. The revision for 1991 would require sign permits for signs in the interior of shopping malls such as Westlake and Northgate. The concern is proper mounting, anchoring and wiring. The City had some recent experience with Westlake signs dangerously mounted. These interior signs are put up by sign companies which are used to getting sign permits.

Sec. 4911 General Requirements

Various structural provisions were simplified.

(b) - SBC - Clearances from power lines were changed to conform with WAC 296-44-21253.

Table 49-A Regulating glass thickness on signs is deleted. Glass is no longer used on sign faces.

There are no other changes proposed in this Seattle Chapter

Analysis of Revisions - Chapter 50 - Prefabricated Construction

There are no changes to this chapter.

Analysis of Revision - Chapter 51 - ELEVATORS

1. SBC SEC. 5103(a) & (b) Codes Adopted by Reference
   Designation of code which is adopted by reference is updated to ANSI/ASME A17.1-1987.

2. SBC SEC. 5104 Definition of ANSI
   Changed year of ANSI code; added reference to Appendix H.

3. SBC SEC. 5104 Definition of Automatic Elevator
   This definition was added to clarify the term used in other sections of the chapter (e.g. sections 5111(cc), 5114(f), 5116(g) and 5118). It was taken from NEIEP Glossary of Elevator Terms.

4. SBC SEC. 5104 Definition of Conveyance Out of Service
   The definition has changed. The substantive requirements which were formerly found in this definition have been moved to section 5105.

5. SBC SEC. 5105 Authority to Disconnect Utilities, etc
   Material from the definition of conveyance out of service has been moved to subsection (b). It describes the procedure for removing a conveyance from service temporarily or permanently.

   Subsection (c) was added giving DCLU express authority to investigate accidents. It also requires DCLU to issue a report and make it available to the public.

6. SBC SEC. 5106(b) Exceptions Permits
   Exception 2 is new. It allows the building official to issue a single permit for alterations to more than one conveyance when the work does not require retesting of each conveyance.

   In exception 4, the references to ANSI Code have been changed to reflect revisions made by ANSI. In the 1985 Seattle Building Code, this exception refers to ANSI Rule 1200.2b. The new ANSI Code has deleted Rule 1200.2b, and moved those regulations to Rule 1202.4b for electric elevators, and to Rule 1203.2m for hydraulic.

7. SBC SEC. 5109 Certificates Required
   This section has been amended to give the building official authority to authorize temporary use of a conveyance which is under construction.

8. SBC SEC. 5111(c) Retrofit Requirement for Key Retainer Box

This has been changed to conform to section 5116(j). A window is no longer allowed and the label "For Fire Department Use" may no longer be on paper taped to the inside of the glass.

9. SBC SEC. 5111(d) Retrofit Requirement for Elevator Access Key

This also has been changed to conform to 5116(j). Keys must be kept in the key retainer box. The 24-hour staffed fire control center has been deleted.

10. SBC SEC. 5111(f) Retrofit Requirements for Elevator Exit Covers

In the 1985 SBC, this section required conformity with ANSI Rule 204.1.e3. The 1987 ANSI code changed this section. We have eliminated the reference to ANSI to avoid adopting the ANSI change in a retrofit section.

11. SBC SEC. 5111(l) Control and Operating Circuits and Overcurrent Protection

The title was changed from "Grounding and Overcurrent Protection" to better describe the contents of the section.

12. SBC SEC. 5111(o) Pit Access and Equipment

The title has been changed from "Access Ladders" to more accurately describe the contents of the section.

One new requirement has been added which is a general requirement for access to equipment for maintenance and inspection.

13. SBC SEC. 5111(w) Interior Alterations

The citation for increase in deadweight of cars has been corrected to 1202.4b.

14. SBC SEC. 5111(z) Machine Room Enclosures

The existing section refers to ANSI section 1203.2b, "Car Buffers and Bumpers". This is an apparent error. The proposed change refers to ANSI section 1206.2b "Maintenance of Machine Rooms."

15. SBC SEC. 5111(aa) Access to Overhead Sheave Spaces

The title has been changed from "Access for Maintenance".

16. SBC SEC. 5111(cc) Car Top Station

The 1985 code states that this section is to become effective 3 years after the effective date of the ordinance enacting the amendments to the 1985 UBC. The proposed change specifies November 19, 1990.

This section allows existing control stations to be of the plug-in type, but prohibits new plug-in modules.

17. SBC SEC. 5111(dd) Car Number Designation
The existing section requires that elevators be numbered. This change requires that escalators and other conveyances also be numbered. The numbers must be located adjacent to the stop switch at both the top and bottom of each escalator.

Reason: Many buildings have numerous escalators. Inspectors and owners could better communicate about problems with individual conveyances if each is identified by a number or number-letter combination.

18. SBC SEC. 5111(gg) Restricted Opening of Doors
This section requires that elevators in hotels and dormitories be retrofitted with devices which prevent opening of hoistway and car doors from inside the car when the car is not at a floor. This past year a death occurred in a Seattle hotel which might have been prevented had the elevator been equipped with restrictors.

19. SBC SEC. 5111(hh)
The text of Director's Rule 12-89 has been added to this section as a retrofit requirement for wheelchair lifts. It requires that lifts in public places be operable with a standard key. Existing lifts shall be in compliance within two years from the date the code becomes effective.

20. SBC SEC. 5113 No Requirements
This section has been deleted. All the provisions have been deleted or moved to other sections.

+The exemption for elevators with less than 25 feet of travel has been eliminated from this section. This was an exemption from sections 5114 and 5115, and so was moved there. (See numbers 19 and 23 below.)

+Subsection (b) set forth deadlines which have passed.

+Subsection (c), Nurses' Preemption, has been moved to section 5114(j).

+Subsection (d), Phase I Operating Instructions, has been moved to section 5114(k).

21. SBC SEC. 5114(a) Phase I Retrofit

The substance of this section has not been changed. It has been rewritten to include the exception formerly contained in section 5113 and to add a reference to the section of

ANSI A17.1 which governs Phase I. The section has been made consistent with section 5115.

22. SBC SEC. 5114(j) Nurses' Preemption
This subsection was moved from section 5113(c) without change.

23. SBC SEC. 5114(k) Phase I Operating Instructions
This topic was moved from section 5113. Instead of amending the ANSI Rule, one requirement has been added. The content of former section 5113(d) has not been changed.

24. SBC SEC. 5114(l) Latching
This requirement is new to the code. It requires that a car remain at the first level to which it is called on Phase I.

25. SBC SEC. 5115(a) Phase II Retrofit
The substance of this section has not been changed. It has been rewritten to state the exceptions more clearly and to add a reference to the section of ANSI A17.1 which governs Phase I. The section has been made consistent with section 5114.

26. SBC SEC. 5116(b) Material for Car Enclosures
The reference to the Fire Code has been changed to refer to Building Code Table 42-C. The distinction between flame spread and radiant flux has clarified.

27. SBC SEC. 5116 (d) Seismic
The first sentence has been changed to clarify that the seismic requirements of Appendix F to ANSI A17.1 are not adopted in Seattle. The reference to the 1981 ANSI code has been updated to 1987, the current version.

28. SBC SEC. 5116(e) Requirements to Accommodate the Handicapped
A reference to WAC 296-81-315 and -335 has been added. The 1985 code refers only to WAC 51-10 (Barrier-free Code) which does not have specific provisions about car size, etc. WAC chap. 296-81 contains many specific requirements.

29. SBC SEC. 5116(f) Hoistway Smoke Control
An exception was added to number 4 to allow ducts for pressurization of hoistways and machine room when properly separated from the room. Requirement number 6 was added to clarify that a pressurization system must be designed and installed so that it won't interfere with the operation of the elevator doors.

30. SBC SEC. 5116(g)3 Elevator Operation on Emergency Power
The definition of "group" has been revised to be consistent with section 5114(b).

31. SBC SEC. 5116(g)8 Operation on Emergency Power
The reference to ANSI A17.1 and A17.2-1979 (Inspection Manual) have been updated to the current versions.

32. SBC SEC. 5116(h) Multiple Hoistways.
The last two paragraphs of this section have been deleted and will be moved to section 1807, Special Provisions for Highrise Buildings. Substantive changes may be made to this section when section 1807 is considered.

33. **SBC SEC. 5116(i) New Subsection**
This section incorporates into Seattle's chapter a new provision of the UBC elevator chapter regarding the use of additional doors at hoistway openings. We commonly see these types of doors as substitutes for vestibules. The provisions found in the section in the 1985 edition have been moved to Sec. 5122.

34. SBC SEC. 5116(m) NEW SUBSECTION
This proposal revises ANSI Rule 805.1a "Starting Switch" to require that escalator start switches clearly designate the "up" and "down" directions.

Reason: A switch is useful to prevent reverse operation when restarting after testing.

35. SBC SEC. 5116(n) NEW SUBSECTION
The text of Director's Rule 12-89 has been added to this section as a retrofit requirement for wheelchair lifts. It requires that lifts in public places be operable with a standard key.

36. **SBC SEC. 5117(c) Central Control Stations for New Installations**
The words "24-hour staffed" were deleted.

37. SBC SEC. 5118 Phase I - New Installations
The Washington Administrative Code added a section effective January 1, 1988 which requires Phase I recall in all elevators with fully automatic open and close power operated doors. This requirement is reflected in section 5118.

New text has been added as the second paragraph of the 211.3a rule. This text is taken from Director's Rule 23-88 and was inadvertently omitted from the 1985 Building Code.

New text from the ANSI rule has been added to subsection (3). The new text requires that once an in-car stop switch has been rendered inoperative, it shall remain so during Phase I. All other emergency stop switches must remain operative.

In paragraph (5), a sentence has been removed. The sentence required that car door open buttons remain operative. ANSI has deleted this requirement. (See paragraph (8)).

Subsection (8) is also new text from ANSI.

38. SBC SEC. 5118 Smoke Detectors in Phase I - New Installations
The 1985 code contained a Seattle exception that did not require smoke detectors in elevator lobbies at unenclosed landings. The 1987 ANSI code integrated the exception into the body of the first paragraph of Rule 211.3b. The Seattle code has been changed to conform to this ANSI change. The Seattle code will also allow the Fire Department to approve a detection device other than a smoke detector.

The same language that added to section 5114(l), Latching, has been added at the end of this section.

39. SBC SEC. 5119(f) Phase II - New Installations
Changes have been made to conform to changes in the ANSI code. The former code stated that "means" shall be provided to cancel registered car calls. The change adds specifics about operation of the call cancel button.

40. SBC SEC. 5122(a) Pipes in Machine Rooms.
The existing provision contained in Section 5116(i) in the 1985 edition have been moved here to be in the same area as related provisions limiting pipes.

41. SBC SEC. 5122(c)(4) Pipes in Machine Rooms.
This is a new section to make the elevator chapter, Section 1719 and the related provisions of the Mechanical Code to be identical with respect to what is allowed and prohibited in machine rooms.

42. SBC SEC. 5122(c)(5) Sprinklers in Machine Rooms
This section has been rearranged, but only editorial changes have been made. The reference to ANSI Rule 210.5 in this subsection has been deleted because the ANSI Code has deleted this rule, probably because it is contained in the National Electrical Code.

43. SBC SEC. 5123 Access to Pits
The 1985 code required pit access ladders to be located within reach of access doors. The purpose of this requirement was so that a person on the ladder could open the door. However, unless the ladder is on the strike jamb side of the door, being near the door doesn't allow the person to open the door. Part 2 of the section is revised to require the pit ladder to be located within reach of the access door unlocking device.

44. SBC SEC. 5124 Car Emergency Signaling Devices
This section has been revised to reflect changes made by ANSI. The Seattle amendment retains the provision from the 1985 Seattle code which allows buildings without 24-hour attendants to use a phone connected to a central exchange.

45. SBC SEC. 5127 No Requirements
This section of the 1985 Seattle Code, titled "Construction of Cars" has been deleted. It amended ANSI Rule 701.1 which was totally revised and expanded in the 1987 ANSI Code. The changes which were made by the 1985 Seattle code have been added to the ANSI code.

46. SBC SEC. 5128 Guards at Ceiling Intersection for Escalators.
This section has been revised to conform to changes in ANSI Rule 802.3g which has been amended. The ANSI amendments do not change the substance of the section. The Seattle code has been reworked to conform to the new format of the ANSI section.

47. SBC SEC. 5129 Routine Inspections and Tests
The interval for routine inspections has been lengthened to one year. Routine inspections have been made part of the periodic inspections. The intent is to assure that the routine inspections will be performed by City inspectors, rather than inspectors employed by insurance companies as allowed by ANSI Rule 1000.1.

The 1985 Seattle code contained an exception which allowed the building official to authorize third persons to inspect elevators. The Seattle code has been changed to conform to changes in format made by ANSI.

48. SBC SEC. 5129 and 5133 Test Reports
These sections requires that test reports be signed by the firm and/or person performing tests. DCLU would like to be able to identify the person performing the test and the company for which that person works.

49. SBC SEC. 5130 Tests of Wooden Guide Rails
This section governs five-year inspection tests. ANSI requires annual tests for safeties on wooden guide rails with no load in the car. Seattle requires these tests at 5-year intervals with a rated load in the car, but does the tests with the car at rest so as not to damage the rails.

Analysis of Revisions - Chapter 52 - Light-Transmitting Plastics

There are limited changes to this chapter, all but one are made by ICBO to the uniform code.

Sec. 5206 - Roof Panels and 5207(a) Skylights

- 88 UBC - These section were amended to allow unprotected roof openings when located at a distance from the property line where unprotected wall openings are permitted.

- SBC - The provisions of Item 3 are revised to allow plastic roof panels under the same conditions and limitations as plastic skylights. Seattle had submitted a similar change to ICBO which was turned down because of a minor confusion. It is our intent to resubmit.

Sec. 5207 - Skylights.

General There are a few changes reflecting the change in the definition of Group H occupancies.

(a) - 91 UBC - A second exception has been added to Item 6 to permit skylights to be separated by less than 4 feet if they are in the same room or space. The spread of fire between adjacent skylights in the same room should not be any grater hazard than the hazards resulting from the construction allowed by Item 4 of this section.

Analysis of Revisions - Chapter 54 - Glass and Glazing

Sec. 5401 Scope

- 91 UBC - Item 1 is revised to limit the exclusion for R-3 and M occupancies where the basic wind speed is less than 80. -WASBC - The State changed this provision to apply to areas of wind speed of 80 or less.

Sec. 5402 Identification - No Changes.

Sec. 5403 Area Limitations

This section has been revised to clarify the design loadings to be used in selecting glazing in windows, curtain walls, skylights and other exterior applications. A paragraph has been added requiring glazing subject to ice or snow loads to be designed in accordance with Chapter 23. Table 54-A from the 85 code was deleted and replaced with Graph 54-1 permitting the selection of glazing thickness based on the area of the glazing and the wind pressure (determined in sec. 2311.)

Sec. 5404 Glazing Support

- 91 UBC - Simplified code requirements

Sec. 5405 Louvered Windows

- 91 UBC - Clarified to current terminology.

Sec. 5406 Safety Glazing

(d) - 91 UBC - Revised to exempt the outer pane of multiple glazing from safety glazing requirements when the primary risk is falling against the glass. Further it extends the safety glazing requirement to windows adjoining doors even though not totally in the plane of the door.

- 88 UBC - Item 2 has been revised to clearly indicate that glazed panels in swinging-types doors are to be considered hazardous locations.

- 91 UBC - Item 5 has been revised to exclude glazing more than 60 inches above the drain outlet of showers or bathtub enclosures from the hazardous locations, thereby allowing the use of other than safety glazing in these higher areas.

- 91 UBC - Item 7 has been revised by adding an Exception #5 to allow the use of glass block panels in areas where glazing is subject to human impact.

- 88 UBC - Item No 8 was added, which requires glazing in railing systems to comply with the hazardous location requirements.

(f) - 88 UBC - A new section was added to address the material selection and design of glass balusters and in-fill panels in railing systems.

Sec. 5407 Hinged Shower Doors - No Changes.

Sec. 5408 Racquetball and Squash Courts

- 88 UBC - This is a new section which addresses the testing of glazing used in areas frequently impacted by people during the course of play in racquetball and squash courts.

Graph No 54-1

- 88 UBC - Replaces the former Table 54-A

Table 54-A

- 88 UBC - Renumbered from 54-B and revised to reflect glass types currently available.

Analysis of Revisions - Chapter 55 - Transformer Vaults

This is a wholly Seattle chapter. The provisions were revised throughout to remove various references to City Light. These are replaced by a general reference (in Section 5501(a) to City Light having additional standards.

Analysis of Revisions - Chapter 56 - Covered Mall Buildings

This is a new chapter in the Uniform Building Code which used to be Appendix Chapter 7, Division I. It was moved into the main body of the UBC with the 1988 edition essentially unchanged. Many clarifying revisions were approved by ICBO in 1990. These are incorporated in the proposed adoption.

- SBC - Only one Seattle amendment is contemplated. It would be to Section 5601 (b) Scope. The concern is that as written, the provisions of this chapter could be misinterpreted to apply to common spaces in office buildings. Also of concern is the application of these special regulations in small buildings where the controls would be proportionally very costly and perhaps unwarranted. The revision clarifies the intent of the that Chapter 56 is optional. A similar proposal has been submitted to ICBO.

Analysis of Revisions - Chapter 57 - Numbering Buildings and Premises

This is wholly a Seattle Chapter. Limited changes are proposed. Otherwise the chapter is unchanged.

Sec. 5701 - SBC - Revise the first paragraph to remove archaic language.

The second paragraph is unchanged.

The third paragraph is reformatted to clarify the provision and its exception.

A new fourth paragraph is added which allows the building official to require the full street name to be posted where the addressing of a corner, or similar property, could be confusing.

The fifth paragraph is revised to increase the size of the numbers posted for addresses. Currently the law only requires 2 inch high numbers. These are unreadable from the street. The proposed revisions would increase the height to 3 inches for residential and 5 inches for commercial. This is consistent with the King County law.

The sixth paragraph is revised to require any address for a property on an easement to be posted at the entrance to the easement regardless of the use. Currently only houses must do such postings. Added to this paragraph is authority for the Department to name easements if clearer addressing will result.

Analysis of Revisions - Chapter 58 - Floating Homes

This is wholly a Seattle Chapter. Only one change is proposed. Otherwise the chapter is unchanged.

Sec. 5802 - SBC - Revised to delete detailed limitations and exceptions on the location of floating home moorages. These provisions have been replaced by moorage location restrictions contained in the Land Use Code. This section now simply provides a reference.

Analysis of Revisions, Chapter 59 - Waterfront Structures.

General - This was chapter 56 in the 1985 Seattle Building Code. It is relocated to 59 due to a new UBC chapter 56.

Sec. 5901 Scope - No Changes.

Sec. 5902 Definitions - No Changes.

Sec. 5903 Allowable Area and Height for Waterfront Structures

- SBC - The 1985 code was more generous to B occupancies located on the waterfront than in other areas of the city. It was more restrictive to other occupancies located there because it did not allow them to use the section 506 area increases (for sprinklers and public ways). This change no longer allows waterfront Group B occupancies to categorically be of unlimited area. The former section was added to the code when the most common Group B occupancies on the central waterfront were low occupant load uses such as warehouses and processing plants. The economy of the waterfront has changed, so that now the most common B occupancies are higher occupant load uses, such as shops and restaurants. This code change treats Group B occupancies similarly to Group A occupancies.

Sec. 5904 Location on Property

- SBC - Exception 1 was revised to waive the opening protection and fire resistance required because of property lines when two buildings are on the same property, have a 16 foot wide deck between them and have a draft stop below the deck in the space between the buildings. The previous section required walls to extend to water level. This requirement was too extreme because it wasn't limited to exterior walls or bearing walls. The revision uses the draft stop requirement already found in the chapter to provide similar protection.

Sec. 5905 Substructure - No Changes.

Sec. 5906 Superstructure

Sec. 5907 Width of Piers - No Changes.

Seattle
Department of Construction and Land Use

Dennis J. McLerran, Director
Norman B. Rice, Mayor

1991 SEATTLE AMENDMENTS TO THE 1991 UNIFORM MECHANICAL CODE

AUGUST, 1991

ANALYSIS OF REVISIONS

This is a chapter by chapter analysis of the revisions proposed for the adoption of the 1991 Seattle Mechanical Code. The code includes changes from the 1985 Seattle Mechanical Code as a result of changes in the 1988 and 1991 editions of the Uniform Mechanical Code. There are also changes proposed to the Seattle amendments. Changes are also incorporated from the Washington State Ventilation and Indoor Air Quality Code, the Seattle Energy Code and the Seattle Building Code. Each change is noted as to its source.

- 88 UMC -Are changes to UMC provisions from the 85 UMC and contained in the 88 UMC.

- 91 UMC -Are changes to UMC provisions from the 88 UMC and contained in the 91 UMC.

- WSVC -Are changes incorporated into the proposed Seattle Mechanical Code to adopt provisions required by the Washington State Ventilation and Indoor Air Quality Code as adopted by the Washington State Building Code Council.

- SMC -Are changes proposed to the Seattle Mechanical Code which are either new amendments or revisions to existing amendments.

- SEC -Are changes incorporated into the proposed Seattle Mechanical Code to adopt provisions required by the Seattle Energy Code.

- SBC -Are changes incorporated into the proposed Seattle Mechanical Code to adopt provisions required by the Seattle Building Code.

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Seattle
Department of Construction and Land Use

Dennis J. McLerran, Director
Norman B. Rice, Mayor

1991 SEATTLE AMENDMENTS TO THE 1991 UNIFORM MECHANICAL CODE

SIGNIFICANT CHANGES

Chapter 4 Definitions -- Several changes concerning chapters 1-3, 6 and 10.1.

Chapter 5 Equipment -- Revision of language regarding headroom clearance in garages and equipment in hoistways, elevator machine rooms or machinery spaces.

Chapter 6 Combustion Air -- Many changes from four sources: 1988 UMC, 1991 UMC, WSVC, staff and Building Code Advisory Board Mechanical Code Committee (MCC).

Chapters 7/12 Heating/Cooling Systems -- 1991 UMC changes and deletion of Seattle requirement that equipment meet ASHRAE Standard 62.

Chapter 9 Appliance Venting -- Many changes per staff and 1988/1991 UMC.

Chapter 10 Ducts -- Changes concerning corridors used to convey air; gypsum products; combustibles within ducts or plenums; and equipment in stair enclosures, elevator shafts or dumbwaiter shafts.

Chapter 10.1 Ventilation and Indoor Air Quality -- New chapter from Washington State Ventilation and Indoor Air Quality Code (residential requirements) and from 1991 Seattle Energy Code (commercial requirements).

Chapter 11 Ventilation and Product Conveying Systems -- Changes concerning gypsum products; combustibles within ducts or plenums; and equipment in hoistways, elevator mechanical rooms or elevator machinery spaces.

Chapter 15 Mechanical Refrigerating Equipment -- Changes regarding refrigeration machinery rooms.

Chapter 20 Commercial Hoods and Kitchen Ventilation -- Fire-extinguishing equipment section greatly expanded per 1988 UMC.

Appendix B-Chapter 21 Steam and Hot-water Boilers -- Changes from 1991 UMC, MCC, staff.

smcmem

Analysis of Revisions - Chapter 1-3 - Administrative, Organization and Enforcement, Permits and Inspections

Chapters 1-3 are entirely Seattle amendments. Some changes were made to the mechanical code to make it more consistent with Seattle amendments to the building code.

Sec. 301 **PERMITS**

Sec. 301(b,c) **Exempted Work** - SMC. Change two sections, one for mechanical and one for refrigeration.

Reason: Editorial.

Sec. 301(d) **Special Flood Hazard** - SMC. New Section.

Reason: New Seattle Floodplain Development Ordinance required by FEMA, and added in 1989 by amendatory ordinance.

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Analysis of Revisions - Chapter 4 - Definitions and Abbreviations

Sec. 403 (New) - ACCESSIBLE - 91 UMC.
ACCESSIBLE, READILY - 91 UMC.

Reason: To provide a definition for "accessible" as is used in Chapter 5, 7, 9, 10, 11, 12, and 13. The change also moves definition of "readily accessible" from Section 420 to Section 403.

The relocation of terms is beneficial because it brings together related definitions which will facilitate use and understanding of the code. The definitions are consistent with those used in the Uniform Plumbing Code.

(New) - ADDITION. - Also APPROVED. - SBC.

Reason: To be consistent with Seattle Building Code.

(New) - AIR, TRANSFER. Also AIR, VENTILATION and AMCA and ASHRAE - WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(New) - AUTOMATIC - SEC

Reason: To be consistent with Seattle Energy Code.

(Change) - EXHAUST AIR, MAKEUP AIR, OUTSIDE AIR, RETURN AIR, SUPPLY AIR. 88 UMC.

Reason: New definitions for exhaust air, makeup air, outside air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air", which had a definition unique to the Uniform Mechanical Code.

Sec. 404 (New) - BACK-DRAFT DAMPER. Also BAROMETRIC DAMPER. WSVC.

Reason: To be consistent with Washington Ventilation Code.

(Change) - BUILDING OFFICIAL. SBC.

Reason: To be consistent with SBC.

Sec. 405 (New) - CFM. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Sec. 405 (Change) - Chimney, Residential Appliance-type.- 91 UMC

Reason: Residential-type chimneys referenced in Table No. 9-A, Chimney Selection Chart, are available in two varieties, an HT and a non-HT. The HT chimney has been tested to a maximum flue gas temperature of 2100°F while the non-HT chimney has only been tested to a flue gas temperature of 1700°F. Research conducted at the National Bureau of Standards (NBS) and at the Consumer Product Commission (CPSC) indicates that chimneys tested to 1700°F are not adequate for use with closed-combustion wood-burning appliances. This is because chimneys attached to wood-burning appliances are likely to be involved in chimney fires.

The NBS work documented the temperatures obtained on the chimney liner during chimney fires. Excluding the most severe chimney fire data, the average of the maximum flue liner temperature obtained at NBS with three chimneys was 1650°F. Comparing this temperature with the liner temperature obtained during CPSC laboratory tests using the 1700°F. UL fire test illustrates the problem. When the flue gas temperature was 1700°F. in the gas generator as specified in UL 103, the liner temperature was only 1208°F. Thus, since the chimney fire can produce 1650°F. and the 1700°F. test produces only 1208°F. on the liner, the integrity of a regular residential-type and building heating appliance chimney tested to 1700°F. has not been evaluated at temperatures forseeable during its use with a wood-burning appliance. Testing the chimney to the HT specifications of 2100°F. in the flue gas generator solves this problem.

Underwriters Laboratory has revised its Standard UL 103, Chimneys Factory-Built, to allow a manufacturer to have a chimney listed to either the HT or the non-HT specifications. The National Fire Protection Association has revised its code, NFPA 211, Chimneys, Fireplaces, Vents and Solid Fuelburning Appliances, in the 1988 edition to require the use of HT chimneys for closed-combustion wood-burning appliances. The ICBO Evaluation Service, Inc., acceptance criteria for solid-fuel-burning heating appliances has also adopted a requirement for HT chimneys for use with closed-combustion appliances. Participation in this program, however, is voluntary. The severity of the problem dictates a need for mandatory, uniform policy. Addition of these specifications of the ICBO code would provide this type of protection.

Analysis of Revisions - Chapter 4 - Definitions and Abbreviations (Cont.)

(New) - CLOSED COMBUSTION SOLID-FUEL BURNING APPLIANCE. 91 UMC.

Reason: See reason for the definition of Chimney, Residential Appliance-type.

Sec. 406 (New) - DEHUMIDISTAT. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(New) - DISTRICT HEATING PLANT. 88 UMC.

Reason: This definition was added as a companion change to Sec. 607(a) (91 UMC), where the term is used.

Sec. 407 (Change) - DUCT SYSTEMS. 91 UMC. Delete Low-pressure Systems, Medium-pressure Systems, High pressure Systems and last sentence.

Reason: To remove the terminology "low", "medium", and "high" static pressures as identified regimes in duct design for conforminity with the current SMACNA practice in U.M.C. Standard No. 10-2. The current practice is to identify duct systems by static design pressure alone.

(Change) - DWELLING UNIT. SBC.

Reason: To be consistent with Seattle Building Code.

Sec. 408 (Change) - FIREPLACE. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Sec. 410 (New) - HABITABLE SPACE. Also HEAT RECOVERY VENTILATION SYSTEM and HVAC AND HVI. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(Change) - HEATING SYSTEM. 88 UMC.

Reason: New definitions for exhaust air, makeup air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air", which had a definition unique to the Uniform Mechanical Code.

Sec. 414 (New) - LINE CONTACT INSTALLATION. 88 UMC.

Reason: This definition has been added as clarification for the term formerly used in Section 504. A change in that section deleted the terminology, but it is still used in furnace listings compiled by the American Gas Association.

(New) - LOW-PRESSURE-HOT-WATER-HEATING BOILER. 91 UMC.

Reason: Moved from Appendix B Chapter 21. Editorial.

(New) - LOW-PRESSURE STEAM HEATING BOILER. 91 UMC.

Reason: Moved from Appendix B Chapter 21. Editorial.

Sec. 415 (New) - MACHINERY ROOM. Also REFRIGERATION MACHINERY ROOM. SMC.

Reason: To guide code users to Sec. 1507, 1508, 1509 requirements for a refrigeration machinery room. The word "refrigeration" was added before "machinery room" in Sec. 603(c), 1507, 1508, 1509, 1601 in the 1988 UMC for clarity.

(New) - MANUAL. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Sec. 418 (Change) - PLENUM. 91 UMC.

Reason: Part of the revisions to Section 1002(a).

(Change) - PLENUM. Also PORTABLE COOLING UNIT. 88 UMC.

Reason: New definitions for exhaust air, outside air, return air and supply air were substututed to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Analysis of Revisions - Chapter 4 - Definitions and Abbreviations (Cont.)

Sec. 418 (Change) - PORTABLE HEATING APPLIANCE. 88 UMC.

Reason: The definition was revised in 1985 and has been further revised to limit application of the term to heating appliances having either a self-contained fuel supply or a factory-installed-power supply cord. Appliances receiving fuel through connectors, piping, tubing, etc., will be classified as installed as used in Section 807(c).

(New) - POWER BOILER PLANT. 88 UMC.

Reason: This definition was transferred from Appendix B.

Sec. 420 (New) R VALUE - WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Sec. 421 (New) - SHAFT. 91 UMC.

Reason: Part of the shaft construction and penetration revisions throughout the building code. The definition is the same as that included in the Uniform Building Code.

(New) - SHAFT ENCLOSURE. 91 UMC.

Reason: Part of the shaft construction and penetration revisions throughout the building code. The definition is the same as that included in the Uniform Building Code.

(New) - SMOKE DETECTOR. 88 UMC.

Reason: This definition has been added because U.B.C. Standard No. 43-6 was deleted. The definition is the same as that included in the Uniform Building Code.

(New) - SOLID FUEL BURNING APPLIANCE. ALSO SOURCE SPECIFIC VENTILATION SYSTEM AND SYSTEM. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(New) - SUBSTANTIALLY AIRTIGHT DUCTS. SMC.

Reason: Term is used in Sec. 1002(d). Definition is needed.

Analysis of Revisions - Chapter 4 - Definitions and Abbreviations (cont.)

Sec. 422 (New) - TERMINAL ELEMENT. Also THERMAL RESISTANCE. WSVC.

Reason: To be consistent with Washington State

Sec. 423 (New) - UNCONDITIONED SPACE. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(New) - UNUSUALLY TIGHT CONSTRUCTION. 88 UMC.

Reason: The added definition for "Unusually Tight Construction" is applicable specifically in Sections 601(a) and 607(b)1.

Sec. 424 (Change) - VENTILATING CEILING. SMC

Reason: The words "containing many small apertures" were deleted because they do not describe a ventilating ceiling.

(New) - VENTILATION. Also VENTILATION, MECHANICAL and VENTILATION, NATURAL. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

(New) VENTILATION EFFECTIVENESS. SEC.

Reason: To be consistent with Seattle Energy Code.

Sec. 425 (Change) - WATER HEATER. SMC. Add "potable".

Reason: To be consistent with UPC and ASME Standard.

(New) WHOLE HOUSE VENTILATION SYSTEM. Also WOOD STOVE. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Sec. 426 (New) ZONE. WSVC.

Reason: To be consistent with Washington State Ventilation Code.

Analysis of Revisions - Chapter 5 - Heating, Ventilating and Cooling Equipment - General

Sec. 503 **TYPE OF FUEL AND FUEL CONNECTION**

Sec. 503(a) **GENERAL** - 91 UMC Add 12 words before exceptions.

Reason: The intent of the proposed change is to clarify that the gas shutoff valve is in the same room or space as the appliance. The increase in specificity removes consideration of measurements through walls, partitions or floors. The proposed change does not alter the intent of the code provision because location of the valve in the same room or space with the appliance has been the way the provision has been applied.

Sec. 503(c) **Gas-burning Appliances** EXCEPTION 1 - 91 UMC. Add three words. Exception 4 - Delete 24 words.

Reasons: To coordinate with the Uniform Plumbing Code.

Sec. 505 **ACCESS** - SMC. Add sentence.

Reason: Refers to Sec. 710 to call attention to access for equipment installed on roofs.

Sec. 507 **LABELING** - 88 UMC

The words "approved agency" were changed to "organization" in Sec. 507(a)(b)(c).

Reason: Editorial.

Sec. 507(a) **Fuel-burning Appliances** - 91 UMC. Add Item #7.

Reason: To require that listed clearances to combustible surfaces be identified on the nameplate for fuel-burning appliances as currently required for electric heating appliances.

Sec. 508 **LOCATION**

Sec. 508(a) **GENERAL** - SMC. Add paragraph.

Reason: Refers to Sections 1004(f), 1104, 1105 which have been reworded to incorporate DR 28-87 and for consistency with the SBC.

Sec. 508(b) **Special Hazards** - SMC. Reword.

Reason: Clarity.

Sec. 509 **ELECTRICAL CONNECTIONS** - SMC. Add 4 words to second sentence.

Reason: Clarity.

Sec. 510 **CONDENSATE WASTES** - 88 UMC

Reference to new subsection (c) was added to Sec. 510(a). Text was revised.

Reason: Provisions for disposing of condensate from fuel-burning condensing appliances have been added.

TABLE NO. 5-A STANDARD INSTALLATION CLEARANCES IN INCHES FOR UNLISTED HEAT-PRODUCING APPLIANCES - 91 UMC. Deletions.

Reason: The expressions regarding venting are all inappropriate in the table and should be removed for consistency with Section 807(c). All references to venting are removed in the revised version.

Analysis of Revisions - Chapter 6 - Combustion Air

Sec. 601 **General**

Sec. 601(a) **Air Supply** - WSVC. Add last sentence to first paragraph.

Reason: To be consistent with Washington Ventilation Energy Code.

Sec. 601(a) **Air Supply** - 88 UMC. SMC. Add second paragraph.

Reason: Requires that combustion air for new equipment be obtained from outdoors.

Sec. 602 **COMBUSTION AIR OPENINGS**

Sec. 602(a) **Location** - 91 UMC. Reword.

Reason: Current Uniform Mechanical Code wording implies that the upper and lower combustion air openings only need to be one-half in size of the actual total area required. Table No. 6-A substantiates that this is not the case. The proposed wording does eliminate a potential or actual source of misinterpretation.

Sec. 602(b) **Dampers Prohibited** - 88 UMC. Add last sentence.

Reason: In addition to revision in the language to promote better understanding of the existing requirements, an alternate method of supplying combustion air in cold-climate areas have been added. The alternate involves the use of power-actuated moveable louvers interlocked with the appliance fuel-supply valve and requires prior approval of the system. The alternate is intended for use in cold climate areas where continuously open louvers are not acceptable.

WSVC. Add Exception.

Reason: Refers to new Chapter 10.1 to be consistent with Washington State Ventilation Code.

Sec. 602(c) **Louvers, Grilles and Screens** - 88 UMC. Add two sentences.

Reason: The addition to this subparagraph is recognition of the use of louvers and grilles in combustion air openings and that they exert a blocking effect on openings. This change brings the ICBO combustion air requirements closer to those used in the Uniform Plumbing Code and the National Fuel Gas Code.

Sec. 603 **SOURCE OF COMBUSTION AIR**

Sec. 603(a)2 **Air From Outside** - 88 UMC. Add 16 words.

Reason: The revision to Item 2 is a precautionary measure to assure that attic-ventilating openings remain open when combustion air is taken from an attic.

Sec. 603(a)2C **Air From Outside** - 91 UMC. Add two words.

Reason: Increased depths of attic insulation are being specified as a result of the energy conservation ethic. The revision indicates that if attic insulation will be deeper than the ceiling joists, the combustion air sleeve must extend above the surface of the insulation.

Sec. 603(b)1 **Under-floor Supply** - SMC. Add two words.

Reason: To distinguish air required for equipment combustion from air required for under-floor areas.

Sec. 603(d) **Interior Spaces** - 88 UMC. Revise.

Reason: This section now contains the requirements that were previously part of Section 601(a)1 and 3.

Sec. 604(b) **Dampers** - WSVC. Add sentence.

Reason: Refers to new Chapter 10.1 to be consistent with Washington State Ventilation Code.

Sec. 605 **GRAVITY-TYPE WARM-AIR FURNACES** - 88 UMC. Change circulating air to cold air.

Reason: The changes result from the new terminology for exhaust air, makeup air, outside air, return air and supply air. New definitions were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 607 **AREA OF COMBUSTION AIR OPENINGS - 91 UMC.** Revise.

Reason: This section was amended to provide a more easily understood tabulation of combustion air opening sizes in Table No. 6-A to replace the text of Section 607. Also, the revision recognizes that screens, grilles or louvers on combustion air openings do reduce the effective area.

TABLE NO. 6-A SIZE OF COMBUSTION AIR OPENINGS OR DUCTS - 91 UMC. New table.

Reason: To provide an alternate in tabular form to the rather involved text of Section 607.

Analysis of Revisions - Chapter 7 - Warm-Air Heating Systems

Sec. 704(1) **PROHIBITED INSTALLATIONS EXCEPTION** - 88 UMC. Add sentence referring to Chapter 6.

Reason: The exception to Item 1 was revised to permit the installation of replacement furnaces in closets having lesser depth than prescribed, provided the installation does not interfere with the flow of combustion air and with listed clearances to combustible construction.

Sec. 706 **RETURN AND OUTSIDE AIR** - 88 UMC. Change title and reword entire section.

Reason: New definitions for exhaust air, makeup air, outside air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 706(f) 1, 2, 6 **Prohibited Sources** - 91 UMC. Change.

Reason: Section 706(f) and 1206(b) play the same role for heating systems (Chapter 7) and cooling systems (Chapter 12). The two sections should be identical. If a source of air is not good for a heating system, it is not any better for a cooling system and vice-versa. The proposal, rather than making the two sections identical, places all the provisions in Section 706(f) and reduces Section 1206(b) to a reference. This shortens the code and eases future updates. The suggested changes to Items 1, 2 and 7 are clarifications of the general provisions of those items and will be helpful in enforcement of these provisions.

Sec. 706(g) **Screen** - 91 UMC. Change.

Section 1206(d) and 706(g) serve the same function and have the same standard, but are organized very differently. The format of Section 1206(d) is better code language. Section 706(g) should be changed to be identical with 1206(d). Also suggested is a small revision to the exception. As worded in the 1988 edition, it appears that only screens with 1-inch openings can be used versus other sizes such as 1/2 inch or 3/4 inch.

Sec. 706(i) **Exhaust Outlets** - SMC. Change "openable" to "operable".

Reason: To be consistent with 1107(j) and 1206(h).

Sec. 707 **AIR SUPPLY** - 88 UMC. Change title and reword entire section.

Reason: New definitions for exhaust air, makeup air, outside air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 708 **ATTIC FURNACE** - 88 UMC. Reword first and third paragraphs and third paragraph EXCEPTION

Reason: The first paragraph was revised to eliminate the special listing requirements for furnaces installed in attics. See analysis to Sections 414 and 504. Permission to install upright furnaces in attics and furred spaces was added, provided that the required clearances are observed.

The section has been revised by adding an exception to the requirement for a 30-by 30-inch attic access opening for the purpose of recognizing construction employing roof trusses spaced 24 inches on center.

Sec. 710 **FURNACES INSTALLED ON ROOFS OR EXTERIOR WALLS OF BUILDINGS**

Sec. 710(f) **Catwalk** - 88 UMC. Reword.

Reason: The requirement for catwalks on roofs was revised for consistency with the roof slope criterion employed in Subsection (e).

Sec. 710(h) **Access** - 91 UMC. Reword EXCEPTIONS. Add Exception 3.

Reason: 1. The current code requires that furnaces located on the roof be readily accessible. Section 420 defines "readily accessible" as ". . . without requiring those to whom ready access is requisite to climb over or remove obstacles, or to resort to the use of portable access equipment.

It seems more appropriate to add an exception to the access requirements clarifying when you do not need permanent ladders.

2. The exceptions are relocated to clarify that they are exceptions to the readily accessible requirement rather than exceptions to the ladder construction requirements.

3. The wording of the proposed code revision is amended to reference permanent ladders.

Analysis of Revisions

Chapter 8 - Vented Decorative Appliances, Floor Furnaces, Vented Wall Furnaces, Unit Heaters and Room Heaters

Sec. 806 **UNIT HEATERS**

Sec 806(f) **Unit Heaters Installed in Group B Occupancies** - 88 UMC. Change "recirculating air" to "return air".

Reason: New definition for exhaust air, makeup air, outside air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 807 **ROOM HEATERS**

Sec. 807(c) **Unvented** - 88 UMC. Add last sentence.

Reason: Revisions have been made to except unvented portable portable oil-fired heating appliances used for supplemental heating in Group B and Group M Occupancies which are regulated under Uniform Fire Code Section 61.106.

Sec. 807(d) **Overhead Radiant Heaters** - 88 UMC. Add new subsection title and delete "ventilation" in #2.

Reason: The revision redesignates the material pertaining to overhead radiant heaters as a separate Subsection (d) so that the applicability is clear. The word "ventilation" occurring in two places in Item 2, has been deleted to clarify the intended manner of installation of unvented overhead heaters.

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Analysis of Revisions - Chapter 9 - Venting of Appliances

Sec. 903 INSTALLATION AND CONSTRUCTION REQUIREMENTS

Sec. 903(a) **General** - 91 UMC. Add second sentence to refer to Sec. 913.

Reason: While the Uniform Mechanical Code does not have the construction standards for masonry chimneys, it does have specific standards located in Section 913 which might be overlooked. By taking out all reference as in the original proposal, the reader is left wondering where to find the construction standards. Section 913(a) provides them. Even the committee in their reason for approval felt it was necessary to say where these provisions were. Why not provide the reader of the code with the same help?

Sec. 903(b) **Dampers** - 88 UMC. Add "vent" and "devices" to second paragraph.

Reason: The revision was to free thermostatically actuated vent dampers from the requirement because they require heat from the burner to open.

Sec. 904 **LOCATION AND SUPPORT OF VENTING SYSTEMS OTHER THAN MASONRY CHIMNEYS** - 91 UMC. Delete "exhaust duct".

Reason: The words "exhaust duct" were deleted from Sec. 904, where inappropriate, and added to Sec. 1104, 1105, and 1903(a). The intent is not to allow any type of exhaust duct to extend into or through any air duct or plenum. This requirement more suitably belongs in the corresponding sections.

Sec. 906 **VENT TERMINATION**

Type B or BW - 91 UMC. Reword.

Reason: The provision was amended to provide guidance on vent terminations, which is consistent with the standard under which they are tested and listed, namely, UL441.

Sec. 906(d) **Type B or BW** - 88 UMC. Change graph to table.

Reason: The editorial revision of Figure No. 1 is to display the requirements in tabular rather than graphic form for greater specificity.

Sec. 906(f) **Vent Terminals** - 88 UMC. Change "forced air inlets" to "outside- or makeup-air inlet".

Reason: New definitions for exhaust air, makeup air, return air and supply air were substituted to reconcile terminololgy employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 906(g) **Outdoor Appliances with Integral Vents** - 91 UMC. Change second sentence.

To clarify that the required separation for vent terminals applies only to openable windows. A fixed window is not an opening into the building.

88 UMC. Add two sentences to end of paragraph.

Reason: The section was revised to delineate the limitations applicable to appliances having integral vents.

Sec. 907(3) **Vents for all Wall Furnaces Requiring a Type BW Gas Vent** - 91 UMC. Add sentence.

Reason: When a BW vent is installed in a wall that has building paper on either or both sides, the plasterers have a tendency to push the paper against the vent and thereby reduce the required clearance to combustibles. The plaster on perforated and metal lath will also touch against the vent and cause cracking in the plaster.

Sec. 907(5) **Vents for Wall Furnaces Requiring a Type BW Gas Vent** - 91 UMC. Add EXCEPTION.

Reason: The metal sleeve or attic shield is installed to keep debris from falling into the open stud bay when the ceiling plate is cut out. If a fire stop is used at this location, the stud bay will already be closed off and the metal sleeve is not necessary.

Sec. 908 **SIZE OF GRAVITY VENTING SYSTEM** - 88 UMC. Change title and reword section.

Reason: The section was revised to recognize that the minimum area of a listed power venting system may be smaller than the 7 square inches specified as a minimum for gravity venting systems.

Analysis of Revisions - Chapter 9 - Venting of Appliances (cont.)

Sec 910(2) **EXISTING VENTING SYSTEMS** - 88 UMC. Add 14 words to end of sentence.

Reason: Revision is for clarity and specificity.

Sec. 912 **TYPES OF CHIMNEYS** - (a)Factory-built Chimneys - 91 UMC. Delete exception.

Reason: To eliminate a conflict with the terms of listing for facory-built chimneys as set forth in UL Standard 103.

Sec. 915 **CONNECTORS**

Sec. 915(a) **General** - 88 UMC. Add new sentence at paragraph third from last.

The section was revised to indicate at least one approved means for joining a single-wall vent connector to a listed double-wall gas vent.

Sec. 916 **MECHANICAL DRAFT SYSTEMS**

Sec. 916(b) **Positive Pressure Systems** - 88 UMC. Add "static".

Reason: Clarity.

Sec.916(d)(e) **Interlock Controls and Exit Terminals** - 88 UMC. Change "mechanical draft system(s)" to "forced-draft or induced- draft system(s)".

Reason: The revision relates to the change made in Section 916(b) to assure that the so-called new generation of appliance designs is safe with types of venting systems specified in the code.

Sec. 916(e) **Exit Terminals** - SMC. Change "7" feet to "10" feet.

Reason: To be consistent with Seattle Land Use Code and other sections in the mechanical code.

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Table 9-A **CHIMNEY SELECTION CHART** Types of Appliances to be used with Each Type Chimney - 88 UMC.

Column II (C) - change "50 Psig" to "1000 F flue gas temperature".

Column IV (16) - change "50-lb-per sq.-in. gage pressure except pressing machine boilers" to "1000 F flue gas temperature".

Reason: The revisions update the Uniform Mechanical Code for consistency with other nationally recognized standards. The determinant of chimney selection is more appropriately flue gas temperatures rather than steam pressures.

Analysis of Revisions - Chapter 10 - Ducts

Sec. 1002 - MATERIAL

Sec. 1002(a) General - 88 UMC. Revise terminology.

Reason: New definitions for exhaust air, makeup air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air," which had a definition unique to the Uniform Mechanical Code.

Second Paragraph - 88 UMC. Revise second paragraph.

Reason: A new second paragraph which incorporates prohibition on use of one-hour corridors as air-handling plenums was removed from Sections 706(b) and 1206(b). and moved to Sec. 1002.

Second Paragraph - SMC. Add three exceptions.

Reason: The intent of the code requirement is that a corridor cannot be used as a supply plenum. Sometimes this code section is interpreted as not allowing corridors to be ventilated. Corridors need to be ventilated for odor control in an efficient, cost-effective manner. Hallway doors to rooms are usually undercut, which allows air from the hall to enter the rooms under the hallway doors. UMC language prohibits the use of corridors to convey air to the rooms. The concern from ICBO staff is that smoke would enter rooms under doors. The three proposed exceptions address smoke control.

Fourth Paragraph - SMC. Reword last sentence.

Reason: UMC language is vague and difficult to enforce. The proposed language allows the design professional to determine when gypsum products can be used in ducts and plenums. The design professional determines if there will be adverse effects from temperature or moisture.

Fifth, Sixth, Seventh Paragraphs - SMC. Delete new 1991 UMC language which does not allow exhaust ducts to extend into or through ducts or plenums. Add references to Sections 904 and 1104 instead.

Reason: In some circumstances environmental air ducts should be allowed to extend into or through ducts or plenums. The concern is not fire but air contamination. The proposed exception addresses air contamination.

Eighth Paragraph - 91 UMC. New subtitle.

Reason: Editorial

Eighth Paragraph - 88 UMC. New reference to U.B.C. Standard No. 42-1.

Reason: Revise to cite U.B.C. Standard No. 42-1 as the approved method for testing for surface-burning characterics.

Exceptions - SMC. New Exception 7.

Reason: New exception allows plastic piping, such as that used for condensate piping and HVAC equipment, in ventilating ceilings.

Sec. 1004 **INSTALLATION OF DUCTS**

Sec. 1004(a) **Metal Ducts** - SMC. Move paragraph from Sec. 1004(c).

Reason: Paragraph should not be under (c), which describes metal duct protection, because the paragraph describes fire-proofing protection. The paragraph belongs in (a), which describes general installation requirements for metal ducts.

Sec. 1004(b) **Factory-made Air Ducts** - 91 UMC. Add "with at least 4 inches of separation from earth."

Reason: To require the same clearance from the ground that is required for metal ducts.

Sec. 1004(d) **Support of Ducts** - 88 UMC. Reword and refer to new Table 10-F.

Reason: The section has been revised by adding a new Subsection (d) and Table No. 10-F specifying how factory-made air ducts may be supported when the manufacturer's installation instructions fail to specify requirements.

Sec. 1004(f) **Installation of Ducts in Hoistways, Elevator Machine Rooms and Elevator Machinery Spaces** - SMC. Reword.

Reason: Incorporate DR 28-87 and consistency with the SBC.

FIRE DAMPERS

Sec. 1006(e) **Connection** - 91 UMC. New subsection.

Reason: The additional requirement for attachment of ducts indicates the expected performance of the connection.

Sec. 1009 AUTOMATIC SHUTOFFS

Sec.1009(a)(c) When Required and Smoke Detection - 91 UMC. Revise.

Reason: The revision is an editorial reformatting of existing provisions. The main thrust of this is to (a) determine when shutoffs are required and (b) where the smoke detectors are to be located. Smoke detectors in the supply duct will detect filter fires as well as smoke being drawn into the building from outside. The fire records contain numerous instances where buildings have had to be evacuated because smoke from a nearby fire made the building untenable. Clean up of this smoke can be very expensive.

Sec. 1009(b) When Required - SMC. Move from within text of (a) to new paragraph (b).

Reason: Editorial.

Sec. 1009(c) Smoke Detection - SMC. New second paragraph.

Reason: Automatic shutoffs are required to shut down air moving equipment when smoke is detected in return or supply air ducts. Smoke detectors shall be installed in the main return-air duct.

Systems that do not have return-air ducts have no choice but to install smoke detectors in each room served by the return-air duct. This is expensive and is difficult to install. The new Seattle language provides an alternate for systems without return-air ducts, by allowing smoke detectors to be installed at the exhaust or relief.

Table 10-B Construction Details for Round and Flat-Oval Ducts Low, Medium and High Pressure - 91 UMC. Revise first column.

Reason: Clarification.

Table 10-F Alternate Supports for Factory-Made Ducts - 88 UMC. New table.

Reason: Specifies how factory made air ducts may be supported when there are no manufacturer's installation instructions.

91 UMC. Revise the third entry to "1½".

Reason: To provide supports which do not tend to deform flexible factory-made air duct, and to extend the support interval.

Analysis of Revisions - Chapter 11 - Ventilation Systems and Product-Conveying Systems

Sec. 1101 **SCOPE** - WSVC. Change reference from "Seattle Energy Code" to "Seattle Mechanical Code, Chapter 10.1".

Reason: Ventilation and indoor air quality issues are in SMC.

Sec. 1102 **DEFINITIONS** Flammable Vapor or Fumes - 88 UMC. New definition.

Reason: Term used in text and needs definition.

Sec. 1104 **ENVIRONMENTAL AIR DUCT SYSTEMS**

First Paragraph - SMC. Add "or motorized" before dampers, third sentence.

Reason: Provides another option for designer.

First Paragraph - 88 UMC. Add sentence.

Reason: The section has been revised by adding a sentence clarifying that HVAC ducts which may be used for smoke removal in an emergency need not be designed as product-conveying ducts.

Third Paragraph - SMC. Delete Uniform Code language. Add Seattle language.

Reason: UMC language is vague and difficult to enforce. The proposed language allows the design professional to determine when gypsum products can be used in ducts and plenums. The design professional determines if there will be adverse effects from temperature or moisture.

Fourth Paragraph - 91 UMC. Add sentence.

Reason: The words "exhaust duct" were deleted from Sec. 904, where inappropriate, and added to Sec. 1104, 1105, and 1903(a). The intent is not to allow any type of exhaust duct to extend into or through andy air duct or plenum. This requirement more suitably belongs in the corresponding sections.

Fourth Paragraph - SMC. Add three exceptions.

Reason: In some circumstances environmental air ducts should be allowed to extend into or through ducts or plenums. The concern is not fire but air contamination. The proposed exception addresses air contamination.

Sixth Paragraph - SMC. Add new paragraph.

Reason: Requirement was deleted from chapter 10 and moved to Chapter 11 where it is more appropriate.

Seventh Paragraph - SMC. Add paragraph.

Reason: Incorporates DR28-87. To be consistent with the SBC.

Sec. 1105(a) **DESIGN OF PRODUCT-CONVEYING VENTILATION SYSTEMS**
First Paragraph -General - 91 UMC. Add sentence.

Reason: The words "exhaust duct" were deleted from Sec. 904, where inappropriate, and added to Sec. 1104, 1105, and 1903(a). The intent is not to allow any type of exhaust duct to extend into or through any air duct or plenum. This requirement more suitably belongs in the corresponding sections.

First Paragraph - General - 88 UMC. Add EXCEPTION.

Reason: The purpose of the revision is to insert an exception allowing ducts carrying a low concentration of flammable fumes or flammable dusts to pass through other spaces in a building, even when the mixture transported does not qualify as non-flammable.

Fourth Paragraph - General - SMC. Add new paragraph.

Reason: Incorporates DR28-97. To be consistent with the SBC.

Sec. 1105(c) **DESIGN OF PRODUCT-CONVEYING VENTILATION SYSTEMS**
Makeup Air - SMC. Reword Seattle language.

Reason: Clarity. New references to other sections are more specific than previous Seattle wording.

Sec. 1107 **PRODUCT CONVEYING DUCTS**

Sec. 1107(b) **Materials** - 91 UMC. Add paragraph to EXCEPTION 2.

Reason: The second exception was amended to provide guidance to building officials on the characteristics of nonmetallic factory-made ducts suitable for use in conveying corrosives.

Analysis of Revisions - Chapter 11 - Ventilation Systems and Product-Conveying Systems (cont.)

Sec. 1107(c) Construction - 88 UMC. Change exception #1.

Reason: The previous wording of the exception would indicate that a Class 1 duct could be constructed of gypsum products, which directly conflicts with Section 1107(b) which states that product-conveying ducts shall be of metal. The revised wording refers to tables specifically governing metal duct construction

Sec. 1107(j)3 Exhaust Outlets - SMC. Change "5 feet" to "3 feet.

Reason: To be consistent with 1991 UMC and 1991 UBC Code Changes.

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Analysis of Revisions - Chapter 12 - Cooling

Sec. 1205 **CONDENSATE CONTROL** - SMC. Add "structural".

Reason: Clarity.

Sec. 1206 **RETURN AIR AND OUTSIDE AIR** - 88 UMC. Change title and reword entire section from "circulating air".

Reason: New definitions for exhaust air, makeup air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air" which had a definition unique to the Uniform Mechanical Code.

Sec. 1206(b) **Prohibited Sources** - 91 UMC. Change section.

Reason: Sections 706(f) and 1206(b) play the same role for heating systems (Chapter 7) and cooling systems (Chapter 12). The two sections should be identical. If a source of air is not good for a heating system, it is not any better for a cooling system and vice-versa. The proposal, rather than making the two sections identical, places all the provisions in Section 706(f) and reduces Section 1206(b) to a reference. This shortens the code and eases future updates.

Sec. 1206(d) **Screen** - 91 UMC. Change.

Reason: Section 1206(d) and 706(g) serve the same function and have the same standard, but are organized very differently. The format of Section 1206(d) is better code language. Section 706(g) should be changed to be identical with Section 1206(d). Also suggested is a small revision to the exception. As worded in the 1988 edition, it appears that only screens with 1-inch openings can be used versus other sizes such as 1/2 inch or 3/4 inch.

Sec. 1206(e) **Exhaust Outlets** - SMC. Change "5 feet to 3 feet" and "openable window" to "operable opening".

Reason: To be consistent with 1991 UMC and 1991 UBC code.

Sec. 1206(f) Separation - SMC. Delete.

Reason: Combustion air is not needed for cooling equipment.

Analysis of Revisions - Chapter 13 - Evaporative Cooling Systems

Sec. 1301 **General** - 88 UMC. Change "circulating air" to "outside air".

Reason: New definitions for exhaust air, makeup air, outside air, return air and supply air were substituted to reconcile terminology employed in the Uniform Mechanical Code with that used by the heating, ventilating and air conditioning industries, contractors and engineers and particularly to discontinue use of the term "circulating air," which had a definition unique to the Uniform Mechanical Code.

Analysis of Revisions - Chapter 14 - REFRIGERATION - Absorption Refrigerating Equipment

Sec. 1404(4) Location - 88 UMC. Change.

Reason: Deletion of the prohibition on locating absorption refrigeration equipment under a stairway is an editorial correction for consistency with changes made during the previous (1982-1985) cycle to Section 704. See also analysis to Section 802. With the deletion of Item 4 as it appeared in the 1985 edition, the existing Item 5 was redesignated Item 4 and the revised wording from Section 704 is used here also.

Analysis of Revisions - Chapter 15 - Mechanical Refrigerating Equipment

SMC. Editorial changes were made to seven sections that use Seattle language - the meaning did not change - these changes are marked "SMC" in the right margin.

88 UMC. The word "refrigeration" was added before "machinery room" throughout the chapter

Reason: Clarity.

Sec. 1508 - Emergency Refrigeration Machinery Room Ventiliation - SMC. Revise.

Reason: Section 1508 was reworded to require ventilation for refrigeration machinery rooms and allow emergency and required (24-hour) ventilation systems to be combined (they may use the same fan). Allows ventilation systems to be switched off when the refrigeration machinery room is not occupied.

Sec. 1509 - Equipment in a Refrigeration Machinery Room - SMC. Revise.

Reason: Former Exception No. 9 should not be an item in the electrical equipment paragraph and is moved to second paragraph.

Sec. 1512 - Refrigerant Containers and Receivers - SMC. Delete Seattle language at first paragraph.

Reason: Criteria for Specific Standards should not be in code text.

Sec. 1515 - Pressure-Relief Valves - Compressors - 88 UMC. New last paragraph.

Reason: The section was revised to provide a termination for the compressor pressure-relief valve, which is consistent with the termination location specified in Section 1517 for pressure vessels.

SMC. Add "operable" before "window". Also Sec. 1517(d).

Reason: To be consistent with 1988 UMC and 1991 UMC.

Sec. 1516 Pressure Relief Devices - Pressure Vessels - SMC. Delete last sentence, fourth paragraph.

Reason: Covered in Sec. 1517.

Analysis of Revisions - Chapter 16 - Storage of Refrigerants

NO CHANGES

Analysis of Revisions - Chapter 17 - Cooling Towers

NO CHANGES

Analysis of Revisions - Chapter 18 - MISCELLANEOUS - Incinerators

NO CHANGES

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Analysis of Revisions - Chapter 19 - Miscellaneous Heat-producing Appliances

Sec 1903 - (a, b, c, d) **CLOTHES DRYER** - 88 UMC. Revise

Reason: The basic change is that a 4-inch-diameter moisture-exhaust duct discharging outside the building is required when a compartment or space is designated for a domestic clothes dryer. The moisture-exhaust duct length and number of fittings are restricted based on ANSI Standard Z21.5.1 used to evaluate clothes dryers. By reference to Uniform Mechanical Code Section 1104, the moisture-exhaust duct must be of metal with a smooth interior surface. Guidance for installation of commercial clothes dryers has been added.

Sec. 1903(a) **Moisture Exhaust Ducts** - 91 UMC. Add sentence.

Reason: The words "exhaust duct" were deleted from Sec. 904, where inappropriate, and added to Sec. 1104, 1105, and 1903(a). The intent is not to allow any type of exhaust duct to extend into or through any air duct or plenum. This requirement more suitably belongs in the corresponding sections.

SMC. Delete requirement for removable lint strainer.

Reason: All dryers are now equipped with such strainers.

Sec. 1904 (a,b,d) **Direct Gas-fired Makeup Air Heaters and Industrial Air Heaters** - 91 UMC. Revise

Reason: The revisions recognize a newly introduced gas-fired industrial air heater manufactured to a new listing standard, ANSI Z83.18. The industrial heater can obtain its return air from both the building and outdoors.

Sec. 1905(e)2 **SMALL CERAMIC KILNS** - Installations Inside Buildings - Hoods - 91 UMC. Add EXCEPTION.

Reason: Extensive testing by the Edward Orion Jr. Ceramic Foundation indicates that a far more effective method of removing fumes and vapors from electric kilns would be to place the interior of the kiln under a vacuum and collect the fumes at the bottom of the kiln. Then taking these fumes and mixing them with a larger amount of room air, through the plenum chamber, to cool these gases before exiting these directly to the outdoors, thus eliminating any entry of these fumes into the room environment.

Several years of design and test work have led to the manufacture of such a system that not only conveys odors and fumes to the out-of-doors but adds to the quality of the fired ware, and is safer to operate as no contact with the hot kiln lid is now necessary. There are currently six kiln manufacturers who are either manufacturing or using this control for electric kiln ventilation.

When venting with a hood or overhead system you must prop the lid of the kiln open for the first part (1000°F.) of your firing to allow for sufficient oxygen inside the kiln. If a kiln is not properly vented, the available oxygen will soon be used up during the process of firing. Thus, proper burn out of the organic material will be prevented, leaving behind carbon in the ware, which will produce unacceptable results. By propping the lid open during the firing, you are allowing all the fumes and vapor to escape from the kiln and pollute the surrounding air. Hoods cannot effectively capture all of these fumes that now have entered into the atmosphere of the room.

It should be noted that makeup air requirements for a gravity ventilation system are difficult to determine since the height of the vertical duct and the difference in temperature between the air within the duct and the air outside determines the flow. The discharge volume is always known for any mechanical system.

This method is becoming very popular with schools and institutions across the country for three reasons. First, it directly addresses the rising concerns of health and proper kiln ventilations, and secondly, it actually improves the results of the fired ware. Third, this system was submitted to Underwriters Laboratories for testing and evaluation and is not UL listed.

In summary, by implementing this concept of kiln ventilation the chamber is operating under negative pressure, taking in oxygen (makeup air) through the top holes in the kiln lid, thus allowing for proper oxidation of the organic material being fired. These fumes are then drawn down and out through the bottom of the kiln and mixed with a larger amount of room air to cool the gases before exiting out the duct to the outdoors, thus preventing these fumes and vapors from ever reaching into the atmosphere of the room.

Analysis: This is an improved version of code change M1905(e)-89-1, which was considered in 1989. It specifically applied to electric kilns and as the proponents' reason indicates, improves the quality of the fired ware. Use of a mechanically ventilated kiln probably results in a somewhat safer installation from the viewpoint of personnel who may be exposed to the fumes from the firing of more rapid dilution.

Analysis of Revisions Chapter 20 - Commercial Hoods and Kitchen Ventilation

88 UMC. Change "Type I ducts" to "grease ducts" and "Type II ducts" to "nongrease ducts" throughout the chapter.

Reason: These changes were made to emphasize the applicability of each requirement. Section 2002 (a) 2 deals with exhaust ducts which do not handle grease-laden vapors; for example, those serving a Type II kitchen hood. The changes were almost editorial but contribute to ease of understanding and more uniform enforcement.

Sec. 2001 **DEFINITIONS.** SMC. Delete "GREASE COLLECTOR"

Reason: Same as "Grease Extractor".

Sec. 2001 **DEFINITIONS.** SMC. Expand definition of HOOD Type II.

Reason: The small amount of grease generated in a 6 KW roasting oven is equal to a pizza oven allowed by the UMC to use a Type II hood.

Sec. 2002 **KITCHEN VENTILATION SYSTEMS**

Sec. 2002(a)3 **Corrosion Protection -** 88 UMC. Change "and" to "or".

Reason: The section was revised to indicate that either condition requires corrosion protection.

Sec. 2002(b) **Prevention of Grease Accumulation -** 88 UMC. Add one sentence to end of first paragraph and add "approved" to item #3.

Reason: The section was revised to recognize the use of vertically discharging fans for handling grease-laden vapors.

Sec. 2002(i) **Exhaust Outlets -** SMC. Change "40 inches" to "2 feet".

Reason: To be consistent with the Uniform Mechanical Code.

Sec. 2002(i) **Exhaust Outlets** - Exception 2. SMC - Add eight words.

Reason: Limits total amount of grease being recirculated in the space.

Sec. 2003 **HOOD**

Sec. 2003(a) **Where Required** - SMC. Add "above 140° F maximum water temperature at middle of first sentence.

Reason: Heat and steam generated from low temperature dish washing equipment is not a hazard and does not need a hood.

SMC. Add "Residential type equipment installed in offices, churches, nursing homes," at beginning of EXCEPTION.

Reason: Residential type equipment is smaller than and is used less often than commercial equipment, is less of a fire hazard and does not need a hood.

Sec. 2003(d) **Clearances for Type I Hood** - SMC. Change "6 inches" to "3 inches" in first paragraph.

Reason: Other agencies no longer require 6 inches.

Sec. 2003(g)1 **Capacity of Hoods** - 88 UMC. Add "solid-fuel"

Reason: Item 1 of this section was revised to require a separate hood and duct system only over charcoal or solid-fuel fired charbroilers. Other charbroiler designs employing gas or electric heat sources do not require a separate hood or duct system, but do require the highest ventilation volume specified.

Sec. 2003(i) **Makeup Air** - SMC. Add "to the space" to third sentence.

Reason: Emphasizes that makeup air to the space must be capable of being heated. Makeup air to the hood does not need to be heated.

88 UMC. Add the words "and doors".

Reason: The wording was revised to specify that doors shall not be used to admit makeup air to kitchens.

Sec. 2003(j) **Exhaust Outlet** - 88 UMC. New EXCEPTION added.

Sec. 2004 **MOTORS, FANS, SAFETY DEVICES**

Sec. 2004(a) **General** - SMC. Add new second sentence.

Reason: Fans must continue to run so that fire suppression chemicals can be drawn into the exhaust system to extinguish the fire and evacuate smoke from the kitchen.

Sec. 2004(b) **Fire-extinguishing Equipment for Protection of Kitchen Grease Hoods and Ducts** - 88 UMC. Reword and enlarge.

Reason: The change represents a comprehensive and detailed exposition of fire-extinguishing equipment required for kitchen grease hoods and ducts. It was developed in cooperation with the Uniform Fire Code Committee in order to consolidate in one place all requirements for new construction: it will be maintained by the Uniform Fire Code Committee in the future.

The section as published in the 1986 Supplement was revised by deleting the reference to portable extinguishers in Item 5 because the requirement was not readily enforceable by building departments. A requirement was placed in the Uniform Fire Code to replace the one deleted by this change.

The section was further revised to substitute the words "wet chemical" for "liquid agent other than water" in three places, that is (b)3D, and (b)4D and (b)4E because wet chemical is the correct current usage.

Analysis of Revisions - Appendix A - Uniform Mechanical Code Standards

Appendix A-10-2 - 88 UMC. - Amended.

Reason: The standard was amended for conformity with SMAC-NA's 1985 HVAC Duct Construction Standard. The text of the standard containing performance requirements was not revised, but revised tables were inserted based on both experimental observations and calculations based on the strength of materials. By updating the standard, inconsistencies with the source documents now being used by the industry are avoided.

Analysis of Revisions - Appendix B Chapter 21 - Steam and Hot-water Boilers - Steam and Hot-water Piping (Hydronics)

Sec. B2102 **SCOPE -** SMC. Reword Exception No. 1.

Reason: Conformity with State law and clarity.

Sec. B2104 **DEFINITIONS -** 91 UMC. Revise five definitions: **AUTOMATIC BOILER, HOT-WATER HEATING BOILER, MINIATURE BOILER, POWER BOILER, STEAM HEATING BOILER.**

Reasons:

AUTOMATIC BOILER - Existing reference to Table No. 21-B is incorrect.

HOT-WATER-HEATING BOILER; STEAM HEATING BOILER- Jurisdictional requirements are based upon terminology established by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Reference: ASME Section IV, Article 1.

MINIATURE BOILER - Jurisdictional requirements are based upon terminology and limits established by the American Society of Mechanical Engineers Boiler and Pressure Vessel Code. Reference: ASME Section 1, Part PMB.

POWER BOILER - As outlined in the Purpose Section 2101, this chapter provides standards for regulating and controlling steam and hot-water boilers. By including the definition of "Power Boiler", the requirements of ASME Section I regarding organic fluid vaporizers are excluded from this chapter.

STEAM HEATING BOILER - See reason for HOT WATER-HEATING BOILER above.

SMC. Add new definition for POOL HEATER.

Reason: Term is used in revision of Sec. 2102

Exception No. 1. Needs definition.

Sec. B2105 **PERMIT REQUIRED -** 91 UMC. Revise.

Reason: For consistency with the accepted format employed in U.M.C. Section 301 and U.A.C. Section 301.

Sec. B2106 DETAILED REQUIREMENTS

Sec. B2106(a) Safety Requirements - 88 UMC. Reword.

Reason: This section was revised to clarify that the construction of boilers and pressure vessels is regulated by Appendix Chapter 21.

Sec. B2106(a) Stack Dampers - SMC. Add four words after welded.

Reason: Many manufacturers "permanently affix" baffles by methods other than welding (riveting, bolts and nuts, etc.). These are acceptable methods.

EXPANSION TANKS

Sec. B2107(c) Closed Type Systems - 91 UMC. Change "50 psig" to "30 psig".

Reason: The proposed change is in accordance with the nationally recognized standard, ASME Boiler and Pressure Vessel Code Section IV.

Sec. B2111 LOW WATER CUTOFF - 91 UMC. Reword.

Reason: Provisions for accepting a flow switch in lieu of a low-water cutoff as described in Table No. 21-C, Note 8, and ASME Boiler and Pressure Vessel Code Section IV, were not adequately described. Also, jurisdictional requirements exempt Group R Occupancies not to exceed four units.

Sec. B2112(1) COMBUSTION REGULATORS: SAFETY VALVES - SMC. Add EXCEPTION.

Reason: Conformity with State law.

Sec. B2112(2) COMBUSTION REGULATORS: SAFETY VALVES - 91 UMC. Revise.

Reason: Nationally recognized standards (i.e., ASME Boiler and Pressure Code Sections I, IV, VIII, Division 1) specifically describe detailed requirements.

Sec. B2112(3)

COMBUSTION REGULATORS: SAFETY VALVES - SMC. Add EXCEPTION.

Reason: Conformity with State law.

Sec. 2114

CLEARANCE FOR ACCESS - 88 UMC. Reword.

Reason: The change clarifies the need for clearances around all sides of a boiler for inspection, repair, maintenance and cleaning.

Sec. B2119

DRAINAGE - 88 UMC. Reword.

Reason: The revision provides a practical means of draining water from a boiler.

Table B21-C Footnote 10

88 UMC. Revise.

Reason: The revision replaces the words "not operating" with "not firing" to clarify the intended meaning.

Analysis of Revisions - Appendix B - Chapter 22 - Fuel Gas Piping

Sec. B2202 **DEFINITIONS** - 88 UMC. Delete second paragraph.

Liquefied Petroleum Gas Facilities - 88 UMC. Move to definition section.

Reason: The section was revised to relocate the definition of "liquefied petroleum gas facilities" in the definitions paragraph in an appropriate location so that it can be found easily.

The following sections have additions or new wording to conform with Chapter 12 and Appendix E of the 1988 Uniform Plumbing Code.

Sec. B2203 **PERMITS** - 88 UMC. Reword.

Sec. B2206(b) **Accessibility for Inspection** - 88 UMC. New section.

Sec. B2206(c)2 **Inspections. Final piping inspection** - 88 UMC. Add "CO_2 or nitrogen" to first and fourth sentence, second paragraph.

Sec. B2213 **INSTALLATION OF GAS PIPING**

Sec. B2213(e) **Corrosion Isolation** - 88 UMC. New section.

Sec. B2213(m) **Tracer for Nonmetallic Buried Piping** - 88 UMC. Change "one" to "each".

Analysis of Revisions - Appendix B - Chapter 23- Hydronic Panel Heating Systems

NO CHANGES

Analysis of Revisions - Appendix B - Chapter 24 - Process Piping
88 UMC. New Chapter.

NOT ADOPTED

Analysis of Revisions - Appendix B - Chapter 25 - Water Heaters

GENERAL

Sec. B2501 SMC. Change "200°F" to "210°F".

Reason: To be consistent with 1988 Uniform Plumbing Code Sec. 1302(j) definition of water heater.

Analysis of Revisions - Appendix C - Chapter 9 - Reference Standards - 88 UMC. Revise dates.

Reason: Revised dates for three UL reference standards were submitted prior to availability of the 1985 edition of the Uniform Mechanical Code; these dates appear in the first printing. Staff also updated a number of other references as a part of a comprehensive review of standards prior to printing in 1985 code.

91 UMC. Revise dates for two ANSI Standards: Z83.18-1987 and Z83.4-1985.

Reason: Editorial.

Analysis of Revisions - Appendix D - Unit Conversion Tables

NO CHANGES

City of Seattle

Executive Department-Office of Management and Budget

Andrew J. Lofton, Director
Norman B. Rice, Mayor

September 4, 1991

The Honorable Mark Sidran
City Attorney
City of Seattle

Dear Mr. Sidran:

The Mayor is proposing to the City Council that the enclosed legislation be adopted.

REQUESTING DEPARTMENT	Construction and Land Use
SUBJECT:	AN ORDINANCE relating to the Seattle Building Code repealing ordinances 113700 and 113701, revising Section 22.100.010 of the Seattle Municipal Code; adopting Chapters 4 through 30, 32 through 43, 47, 48, 50, 52, 53, 54 and 56 of the 1991 Uniform Building Code, adopting Chapter 35 contained in the Appendix of the 1991 Uniform Building Code; adopting the Uniform Building Code Standards, amending the adopted Uniform Building Code and Standards.

Pursuant to the City Council's S.O.P. 100-014, the Executive Department is forwarding this request for legislation to your office for review and drafting. It is my understanding that Margaret Klockers of your office has already reviewed a draft prepared by the department.

After reviewing this request and any necessary redrafting of the enclosed legislation, return the legislation to OMB **by noon on September 9**. Any specific questions regarding the legislation can be directed to Desiree Leigh at 684-8087.

Sincerely,

Norman B. Rice
Mayor

by
Andrew J. Lofton / DDL
ANDREW J. LOFTON
Budget Director

AL/dl/rsq

Enclosure

cc: Director, DCLU

TIME AND DATE STAMP

SPONSORSHIP

THE ATTACHED DOCUMENT IS SPONSORED FOR FILING WITH THE CITY COUNCIL BY THE MEMBER(S) OF THE CITY COUNCIL WHOSE SIGNATURE(S) ARE SHOWN BELOW:

Sam Smith-KW

FOR CITY COUNCIL PRESIDENT USE ONLY

COMMITTEE(S) REFERRED TO:

PRESIDENT'S SIGNATURE

C. S. 20.28

STATE OF WASHINGTON - KING COUNTY

12472
City of Seattle

—ss.

No.

Affidavit of Publication

The undersigned, on oath states that he is an authorized representative of The Daily Journal of Commerce, a daily newspaper, which newspaper is a legal newspaper of general circulation and it is now and has been for more than six months prior to the date of publication hereinafter referred to, published in the English language continuously as a daily newspaper in Seattle, King County, Washington, and it is now and during all of said time was printed in an office maintained at the aforesaid place of publication of this newspaper. The Daily Journal of Commerce was on the 12th day of June, 1941, approved as a legal newspaper by the Superior Court of King County.

The notice in the exact form annexed, was published in regular issues of The Daily Journal of Commerce, which was regularly distributed to its subscribers during the below stated period. The annexed notice, a

ORD: 116012

was published on

01/16/92

The amount of the fee charged for the foregoing publication is the sum of $, which amount has been paid in full.

C. Trend

Subscribed and sworn to before me on

01/16/92

Jennifer A. Nicholson

Notary Public for the State of Washington,
residing in Seattle

City of Seattle Ordinances

City of Seattle

ORDINANCE 116032

AN ORDINANCE relating to the Seattle Building Code, repealing Section 22.100.010 (Ordinances 113700 and 113701), and adding a new Section 22.100.010; adopting Chapters 4 through 30, 32 through 41, 47, 48, 50, 52, 53, 54 and 56 of the 1991 Uniform Building Code; adopting Chapter 15 contained in the Appendix of the 1991 Uniform Building Code; adopting the 1991 Uniform Building Code Standards; amending the adopted Uniform Building Code and Standards by: adding new Chapters 1, 2 and 3 related to administration, permitting and enforcement; amending Chapter 4, Definitions; amending certain provisions of Chapters 5 through 12 regulating occupancies; amending certain provisions of Chapters 17 through 22 regulating types of construction; amending certain provisions of Chapters 23 through 28 regulating engineering standards for the quality and design of materials of construction; amending certain provisions of Chapter 29 regulating foundations and retaining walls; amending certain provisions of Chapter 30 regulating veneer; amending certain provisions of Chapter 32 regulating roof construction; amending certain provisions of Chapter 33 regulating exits; amending certain provisions of Chapter 35 regulating sound transmission; amending certain provisions of Chapter 36 regulating penthouses; amending certain provisions of Chapter 37 regulating chimneys and fireplaces; amending certain provisions of Chapter 38 regulating fire-extinguishing systems; amending certain provisions of Chapter 39 regulating stages and platforms; amending certain provisions of Chapter 47 regulating interior finishes; amending certain provisions of Chapter 48 regulating light-transmitting plastic; amending Chapter 53, relating to energy conservation; amending certain provisions of Chapter 54 regulating glass and glazing; amending certain provisions of Chapter 56 regulating covered mall buildings; repealing Table No. 21-C; and adding a new Chapter 16, establishing a downtown fire district; adding a new Chapter 44 referencing the Street Use Ordinance; adding a new Chapter 45 regulating structural projections into the public right-of-way; adding a new Chapter 46 regulating awnings; adding a new Chapter 49 regulating signs; adding a new Chapter 51 regulating elevators and escalators; adding a new Chapter 55 regulating transformer vaults; adding a new Chapter 57 establishing the city's address system; adding a new Chapter 58 regulating floating homes, and adding a new Chapter 59 regulating waterfront structures; as required and allowed by the State Building Code Act, Chapter 19.27 of the Revised Code of Washington.

Section 1. Section 22.100.010 of the Seattle Municipal Code adopting the 1985 Uniform Building Code and Uniform Building Code Standards (Ordinance 113700 as amended by Ordinance 113701) is hereby repealed, and new Section 22.100.010 is added to the Seattle Municipal Code to read as follows:

22.100.010. Adoption of the Uniform Building Code

The Uniform Building Code, 1991 Edition, excepting Chapters 1, 2, 3, 31, 44, 45, 51, Tables No. 5-A, 21-C and 26-A-3 and including Appendix Chapter 15 and the Uniform Building Code Standards, 1991 Edition, as published by the International Conference of Building Officials, one copy of each which is filed with the City Comptroller in C.F. 296633/296634, are hereby adopted and by this reference made a part of this subtitle. The Uniform Building Code and Uniform Building Code Standards, 1991 Editions, together with the amendments and additions thereto adopted shall constitute the Seattle Building Code.

Section 2. The Uniform Building Code, 1991 Edition, is amended by adding new Chapters 1, 2, and 3 as follows:

Chapter 1

TITLE, SCOPE AND GENERAL

TITLE

Sec. 101. This subtitle shall be known as the "Seattle Building Code" and may be so cited, and is referred to herein as "this building code" or "this code."

alterations or repairs may mean any one of the following and as determined by the building official:

(i) Extensive structural repair.

(ii) Remodeling to substantially extend the useful physical and/or economic life of the building or significant portion of the building, such as a complete floor except for typical office tenant remodeling.

(iii) A change in occupancy that is more hazardous than the existing occupancy, based on life and fire risk. See Table 5-E. A change of tenant does not necessarily constitute a change of occupancy.

(iv) Reoccupancy of a building that has been substantially vacant for more than 12 months.

B. Fire and Life Safety Regulations. Any building or structure to which additions, or substantial alterations or repairs are made shall be required to conform only with the requirements of Section 1807 (when applicable) and Chapters 16, 17, 38, 42 and 43 for new buildings or structures.

C. Seismic Regulations. The provisions of Part III of Chapter 23 Earthquake Regulations, shall apply to all buildings or structures to which additions, alterations or repairs are made, except as follows:

(i) Where alterations or repairs are made to buildings constructed prior to July 26, 1967, such buildings need comply only with earthquake-resistive requirements as specified in Section 2336, except that in lieu of the requirements set forth in Section 2317(b)9, the building official may accept an opinion submitted by a licensed structural engineer that the existing floors, walls, roof and other resisting elements, when interconnected to provide sufficient transfer of stresses, are able to withstand lateral seismic forces at least equal to those experienced in the seismic disturbance in Seattle on April 13, 1949.

(ii) The building official may waive requirements of Section 2336 when it can be demonstrated to his/her satisfaction that there is sufficient strength and safety in the existing construction to resist the lateral forces at least equal to those experienced in the seismic disturbance in Seattle on April 13, 1949, provided the requirements of Section 2317 are met.

(iii) The building official may further require, as he/she deems necessary, a comprehensive report by a licensed structural engineer of an investigation and structural analysis of the building for the purpose of determining conformance of the building to the structural requirements of this building code. This requirement shall also apply to Section 303 as conditions may require.

D. Other Structural Work. All other structural work shall comply with the requirements of Chapters 21 through 32.

7. Damaged Buildings. When a building is damaged, by fire or other means, in excess of 60 percent of its value, as determined by the assessed value per King County records or an appraised value made by a recognized appraisal agency approved by the building official, the entire building, when repaired, shall conform to the requirements of this building code.

8. Radon Resistive Construction Requirements. The requirements of Section 1710 shall apply to all Group R buildings to which either an addition or substantial alteration is made except where the basement, foundation or crawl space is not being altered or expanded.

(d) Maintenance. 1. General. All buildings or structures, both existing and new, and all parts thereof shall be maintained in a safe and sanitary condition. All devices or 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 good working order. The owner or a designated agent shall be responsible for such maintenance of buildings and structures.

The means of exit, fire escapes, sprinkler systems, standpipes, occupancy or area separations, fire doors, construction to segregating dangerous uses and all other parts of the building or equipment thereof which are intended to assist in the extinguishing of fire, or to prevent the origin or spread of fire or to safeguard life or property from fire, shall be maintained in a usable and safe condition. It shall be unlawful to fail to so maintain these parts of the building or equipment or to fail to immediately comply with any lawful notice or order of the fire chief or the building official.

EXCEPTIONS: 1. The building official may modify the requirements of this subsection where all or a portion of a building is unoccupied, closed off and reasonably secure from unlawful entry.