RULE-MAKING ORDER
(RCW 34.05.360)

CR-103 (10/1/89)

Agency: State Building Code Council

☒ Permanent Rule
☐ Emergency Rule

(1) Date of adoption: November 18, 1994

(2) Purpose: To amend and adopt the 1994 Uniform Fire Code and the 1994 Uniform Fire Code Standards, published by the International Fire Code Institute (WAC 51-34 and 51-35).

(3) Citation of existing rules affected by this order:
Repealed: ~~WAC 51-24 and 51-25~~ WB
Amended:
Suspended:

(4) Authority for adoption:
Statute: RCW 19.27
Other Authority:

(5 1) **PERMANENT RULE ONLY**
Pursuant to notice filed as WSR 94-16-113 and 94-18-093 on 8/2/94 and 9/2/94 (date).
Describe any changes other than editing from proposed to adopted version: None

(5 2) **EMERGENCY RULE ONLY**
Pursuant to RCW 34.05.350 the agency for good cause finds:
☐ (a) That immediate adoption, amendment, or repeal of a rule is necessary for the preservation of the public health, safety, or general welfare, and that observing the time requirements of notice and opportunity to comment upon adoption of a permanent rule would be contrary to the public interest.
☐ (b) That state or federal law or federal rule or a federal deadline for state receipt of federal funds requires immediate adoption of a rule.

Reasons for this finding:

(5 3) Any other findings required by other provisions of law as precondition to adoption or effectiveness of rule?
☐ Yes ☒ No If yes, explain:

(6) Effective date of rule:

Permanent Rules	Emergency Rules
☐ 31 days after filing	☐ Immediately
☒ Other (specify) 6/30/95 *	☐ Later (specify) _____

*(if less than 31 days after filing, specific finding in 5.3 under RCW 34.05.380(3) is required)

NAME (TYPE OR PRINT)
Gene Colin

SIGNATURE
Gene Colin

TITLE
Chair

DATE
12/21/94

CODE REVISER USE ONLY

CODE REVISER'S OFFICE
STATE OF WASHINGTON
FILED
DEC 21 1994
TIME 11:34
WSR 95-01-125

Chapter 51-34 WAC

STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE 1994 EDITION OF THE UNIFORM FIRE CODE

NEW SECTION

WAC 51-34-001 Authority. These rules are adopted under the authority of chapter 19.27 RCW.

NEW SECTION

WAC 51-34-002 Purpose. The purpose of these rules is to implement the provisions of chapter 19.27 RCW, which provides that the State Building Code Council shall maintain the State Building Code in a status which is consistent with the purpose as set forth in RCW 19.27.020. In maintaining the codes the Council shall regularly review updated versions of the codes adopted under the act, and other pertinent information, and shall amend the codes as deemed appropriate by the Council.

NEW SECTION

WAC 51-34-003 Uniform Fire Code. The 1994 edition of the Uniform Fire Code, including Appendix II-F, Protected Aboveground Tanks For Motor Vehicle Fuel-Dispensing Stations Outside Buildings, published by the International Fire Code Institute is hereby adopted by reference with the following additions, deletions, and exceptions.

NEW SECTION

WAC 51-34-007 Exceptions. The exceptions and amendments to the Uniform Fire Code contained in the provisions of chapter 19.27 RCW shall apply in case of conflict with any of the provisions of these rules.

NEW SECTION

WAC 51-34-008 Implementation. The Uniform Fire Code adopted by chapter 51-34 Washington Administrative Code (WAC) shall become effective in all counties and cities of this state on June 30, 1995.

NEW SECTION

WAC 51-34-0200 Article 2--Definitions and abbreviations.

NEW SECTION

WAC 51-34-0206 Section 206--E.

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER is a sprinkler listed for early suppression fast-response performance.

ELECTRIC BLASTING CAP is a shell containing a charge of detonating compound designed to be fired by an electric current.

ELECTRICAL CODE is the National Electrical Code promulgated by the National Fire Protection Association, as adopted in WAC 296-46, or the locally adopted Electrical Code.

ELECTRICAL FIRING UNIT is the source of electrical current used to ignite electric matches. Generally, the firing unit will have switches to control the routing of the current to various firework items and will have a test circuit and warning indicators.

ELECTROSTATIC FLUIDIZED BED is a container holding powder coating material which is aerated from below so as to form an air-supported expanded cloud of such material which is electrically charged with a charge opposite to the charge of the object to be coated. Such object is transported through the container immediately above the charged and aerated materials in order to be coated.

ENCAPSULATED is a method of packaging consisting of a plastic sheet completely enclosing the sides and top of a pallet load. The term encapsulated does not apply to banding or individual plastic-enclosed items inside a large nonplastic-enclosed container.

EXCESS FLOW CONTROL is a fail-safe system designed to shut off flow due to a rupture in pressurized piping systems.

EXCESS FLOW VALVE is a valve inserted into a compressed gas cylinder, portable tank or stationary tank that is designed to positively shut off the flow of gas in the event that its predetermined flow is exceeded.

EXECUTIVE BODY is the governing body of the jurisdiction adopting this code.

EXHAUSTED ENCLOSURE is a noncombustible enclosure which consists of a top, a back and two sides. The enclosure provides a means of local exhaust, but lacks the isolated environment provided by gas cabinets or gas rooms. Such enclosures include laboratory hoods, exhaust fume hoods and similar appliances and equipment used to locally retain and exhaust the gases, fumes, vapors and mists that could be released. Rooms or areas provided with general ventilation, in themselves, do not constitute exhausted enclosures. See the definition of GAS ROOM.

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, pressurized 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 PASSAGEWAY is an enclosed exit connecting a required exit or exit court with a public way.

EXPANDED PLASTIC is a foamed or cellular plastic material having a reduced density based on the presence of numerous small cavities or cells dispersed throughout the material.

EXPLOSION is an effect produced by the sudden violent expansion of gases, which may be accompanied by a shock wave or disruption, or both, of enclosing materials or structures. An explosion could result from

1. Chemical changes such as rapid oxidation, deflagration or detonation, decomposition of molecules and runaway polymerization (usually detonations);

2. Physical changes such as pressure tank ruptures; or

3. Atomic changes (nuclear fission or fusion).

EXPLOSIVE is

1. A chemical that causes a sudden, almost instantaneous release of pressure, gas and heat when subjected to sudden shock, pressure, or high temperatures, or

2. A material or chemical, other than a blasting agent, that is commonly used or intended to be used for the purpose of producing an explosive effect and is regulated by Article 77.

EXPLOSIVE MATERIALS are explosives, blasting agents and detonators including, but not limited to, dynamite and other high explosives; slurries, emulsions and water gels; black powder and pellet powder; initiating explosives; detonators or blasting caps; safety fuses; squibs; detonating cord; igniter cord; igniters and Class B (Explosives, Division 1.3 and some Division 1.2-see Appendix VI-E) special fireworks.

EXTENSION CORD is a portable flexible cord of any length which has one male connector on one end and one or more female connectors on the other, and no built-in overcurrent protection.

EXTRAHIGH-RACK COMBUSTIBLE STORAGE is storage on racks of Class I, II, III or IV commodities which exceed 40 feet (121 920

mm) in height and storage on racks of high-hazard commodities which exceed 30 feet (9144 mm) in height.

NEW SECTION

WAC 51-34-0216 Section 216--O.

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

OCCUPANCY CLASSIFICATION. For the purpose of this code, certain occupancies are defined as follows:

Group A Occupancies:

Group A Occupancies include the use of a building or structure, or a portion thereof, for the gathering together of 50 or more persons for purposes such as civic, social or religious functions; recreation, education or instruction; food or drink consumption; or awaiting transportation. A room or space used for assembly purposes by less than 50 persons and accessory to another occupancy shall be included as a part of that major occupancy. Assembly occupancies shall include the following:

Division 1. A building or portion of a building having an assembly room with an occupant load of 1,000 or more and a legitimate stage.

Division 2. A building or portion of a building having an assembly room with an occupant load of less than 1,000 and a legitimate stage.

Division 2.1. A 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 B or E Occupancies.

Division 3. A 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 B or E Occupancies.

Division 4. Stadiums, reviewing stands and amusement park structures not included within other Group A Occupancies.

Group B Occupancies:

Group B Occupancies shall include buildings, structures, or portions thereof, for office, professional or service-type transactions, which are not classified as Group H Occupancies. Such occupancies include occupancies for the storage of records and accounts, and eating and drinking establishments with an occupant load of less than 50. Business occupancies shall include, but not be limited to, the following:

1. Animal hospitals, kennels, pounds.
2. Automobile and other motor vehicle showrooms.
3. Banks.

4. Barber shops.

5. Beauty shops.

6. Car washes.

7. Civic administration.

8. Outpatient clinic and medical offices (where five or less patients in a tenant space are incapable of unassisted self-preservation).

9. Dry cleaning pick-up and delivery stations and self-service.

10 Educational occupancies above the 12th grade.

11. Electronic data processing.

12. Fire stations.

13. Florists and nurseries.

14. Laboratories--testing and research.

15. Laundry pick-up and delivery stations and self-service.

16. Police stations.

17. Post offices.

18. Print shops.

19. Professional services such as attorney, dentist, physician, engineer.

20. Radio and television stations.

21. Telephone exchanges.

Group E Occupancies:

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.

EXCEPTION: Family child day care homes as defined in WAC 51-30, Uniform Building Code, shall be considered Group R, Division 3 Occupancies.

Group F Occupancies:

Group F Occupancies shall include the use of a building or structure, or a portion thereof, for assembling, disassembling, fabricating, finishing, manufacturing, packaging, repair or processing operations that are not classified as Group H Occupancies. Factory and industrial occupancies shall include the following:

Division 1. Moderate-hazard factory and industrial occupancies shall include factory and industrial uses which are not classified as Group F, Division 2 Occupancies, but are not limited to facilities producing the following:

1. Aircraft.
2. Appliances.
3. Athletic equipment.
4. Automobiles and other motor vehicles.
5. Bakeries.
6. Alcoholic beverages.
7. Bicycles.
8. Boats.
9. Brooms and brushes.
10. Business machines.
11. Canvas or similar fabric.
12. Cameras and photo equipment.
13. Carpets and rugs, including cleaning.
14. Clothing.
15. Construction and agricultural machinery.
16. Dry cleaning and dyeing.
17. Electronics assembly.
18. Engines, including rebuilding.
19. Photographic film.
20. Food processing.
21. Furniture.
22. Hemp products.
23. Jute products.
24. Laundries.
25. Leather products.
26. Machinery.
27. Metal.
28. Motion pictures and television filming and videotaping.
29. Musical instruments.
30. Optical goods.
31. Paper mills or products.
32. Plastic products.
33. Printing or publishing.
34. Recreational vehicles.
35. Refuse incineration.
36. Shoes.
37. Soaps and detergents.
38. Tobacco.

39. Trailers.

40. Wood, distillation.

41. Millwork (sash and door).

42. Woodworking, cabinet.

Division 2. Low-hazard factory and industrial occupancies shall include facilities producing noncombustible or nonexplosive materials which, during finishing, packing or processing, do not involve a significant fire hazard, including, but not limited to, the following:

1. Nonalcoholic beverages.

2. Brick and masonry.

3. Ceramic products.

4. Foundries.

5. Glass products.

6. Gypsum.

7. Ice.

8. Steel products--fabrication and assembly.

Group H Occupancies:

Group H Occupancies shall include buildings or structures, or portions thereof, that involve the manufacturing, processing, generation or storage of materials that constitute a high fire, explosion or health hazard. Group H Occupancies shall be:

Division 1. Occupancies with a quantity of material in the building in excess of those listed in Table 8001.13-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 by Section 7801.3.2. 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 where combustible dust is manufactured, used or generated in such a manner that concentrations and conditions create a fire or explosion potential; occupancies with a quantity of material in the building in excess of those listed in Table 8001.13-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 or stored in normally open containers or systems, or

in closed containers or systems pressurized at more than 15-pounds-per-square-inch (103.4 kPa) gage.

EXCEPTION: Aerosols.

6. Class 3 oxidizers.

7. Class 3 water-reactive materials.

Division 3. Occupancies where flammable solids, other than combustible dust, are manufactured, used or generated.

Division 3 Occupancies also include uses in which the quantity of material in the building in excess of those listed in Table 8001.13-A, presents a high 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 or combustible liquids which are used or stored in normally closed containers or systems and containers or systems pressurized at 15-pounds-per-square-inch (103.4 kPa) gage or less, and aerosols.

4. Class III-B combustible liquids.

5. Pyrophoric liquids or solids.

6. Class 1 or 2 water-reactive materials.

7. Flammable solids in storage.

8. Flammable or oxidizing cryogenic fluids (other than inert).

9. Class 1 unstable (reactive) gas or Class 2 unstable (reactive) materials.

Division 4. Repair garages not classified as Group S, Division 3 Occupancies.

Division 5. Aircraft repair hangars not classified as Group S, Division 5 Occupancies and heliports.

Division 6. Semiconductor fabrication facilities and comparable research and development areas in which hazardous production materials (HPM) are used and the aggregate quantity of materials are in excess of those listed in Table 8001.13-A or 8001.13-B.

Division 7. Occupancies having quantities of materials in excess of those listed in Table 8001.13-B that are health hazards, including:

1. Corrosives.

2. Toxic and highly toxic materials.

3. Irritants.

4. Sensitizers.

5. Other health hazards.

Group I Occupancies:

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 children).

Hospitals, sanitariums, nursing homes with nonambulatory patients and similar buildings (each accommodating more than five patients).

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 patients or children).

Division 3. Mental hospitals, mental sanitariums, jails, prisons, reformatories and buildings where personal liberties of inmates are similarly restrained.

EXCEPTION: Group I Occupancies shall not include buildings used only for private residential purposes for a family group.

Group LC Occupancies:

Group LC Occupancies shall be:

Group LC Occupancies shall include buildings, structures, or portions thereof, used for the business of providing licensed care to clients in one of the following categories regulated by either the Washington Department of Health or the Department of Social and Health Services:

1. Adult family home.
2. Adult residential rehabilitation facility.
3. Alcoholism intensive inpatient treatment service.
4. Alcoholism detoxification service.
5. Alcoholism long term treatment service.
6. Alcoholism recovery house service.
7. Boarding home.
8. Group care facility.
9. Group care facility for severely and multiple handicapped children.
10. Residential treatment facility for psychiatrically impaired children and youth.

EXCEPTION: Where the care provided at an alcoholism detoxification service is acute care similar to that provided in a hospital, the facility shall be classified as a Group I, Division 1.1 hospital.

Group M Occupancies:

Group M Occupancies shall include buildings, structures, or portions thereof, used for the display and sale of merchandise, and involving stocks of goods, wares or merchandise incidental to such purposes and accessible to the public. Mercantile occupancies shall include, but are not limited to, the following:

1. Department stores.
2. Drug stores.
3. Markets.

4. Paint stores without bulk handling.

5. Shopping centers.

6. Sales rooms.

7. Wholesale and retail stores.

Group R Occupancies:

Group R Occupancies shall be:

Division 1. Hotels and apartment houses. Congregate residences (each accommodating more than 10 persons).

Division 2. Not used.

Division 3. Dwellings, family child day care homes as defined in WAC 51-30, Uniform Building Code, and lodging houses. Congregate residences (each accommodating 10 persons or less).

Group S Occupancies:

Group S Occupancies shall include the use of a building or structure, or a portion thereof, for storage not classified as a hazardous occupancy. Storage occupancies shall include the following:

Division 1. Moderate hazard storage occupancies shall include buildings or portions of buildings used for storage of combustible materials that are not classified as a Group S, Division 2 or as a Group H Occupancy.

Division 2. Low-hazard storage occupancies shall include buildings, structures, or portions thereof, used for storage of noncombustible materials, such as products on wood pallets or in paper cartons with or without single-thickness divisions, or in paper wrappings and shall include ice plants, power plants and pumping plants. Such products may have a negligible amount of plastic trim such as knobs, handles or film wrapping. Low-hazard storage occupancies shall include, but are not limited to, storage of the following items:

1. Beer or wine (in metal, glass or ceramic containers).

2. Cement in bags.

3. Cold storage and creameries.

4. Dairy products in nonwax-coated paper containers.

5. Dry-cell batteries.

6. Dryers.

7. Dry pesticides in a building not classified as a Group H Occupancy.

8. Electrical coils.

9. Electrical insulators.

10. Electrical motors.

11. Empty cans.

12. Foods in noncombustible containers.

13. Fresh fruits in nonplastic trays or containers.

14. Frozen foods.

15. Glass bottles (empty or filled with nonflammable liquids).

16. Gypsum board.

17. Inert pigments.

18. Meats.

19. Metal cabinets.

20. Metal furniture.

21. Oil-filled distribution transformers.

22. Stoves.

23. Washers.

Division 3. Division 3 Occupancies shall include repair garages where work is limited to exchange of parts and maintenance requiring no open flame or welding, motor vehicle fuel-dispensing stations, and parking garages not classified as Group S, Division 4 open parking garages or Group U private garages.

Division 4. Open parking garages as set forth in the Building Code. (See U.B.C. Section 311.)

Division 5. Aircraft hangars where work is limited to exchange of parts and maintenance requiring no open flame or welding and helistops.

Group U Occupancies:

Group U Occupancies shall include buildings or structures, or portions thereof, and shall be:

Division 1. Private garages, carports, sheds and agricultural buildings.

EXCEPTION: Where applicable in accordance with the Building Code (see U.B.C. Section 101.3 for agricultural buildings. See also U.B.C. Appendix Chapter 3).

Division 2. Fences over 6 feet (1829 mm) high, tanks and towers.

OIL-BURNING EQUIPMENT is an oil burner of any type together with its tank, piping, wiring, controls and related devices. Oil-burning equipment includes oil burners, oil-fired units and heating and cooking appliances but does not include equipment exempted by Section 6101.

OIL-FIRED UNIT is a heating appliance equipped with one or more oil burners and the necessary safety controls, electrical equipment and related equipment manufactured for assembly as a complete unit. Oil-fired unit does not include kerosene stoves or oil stoves.

OPEN BURNING is the burning of a bonfire, rubbish fire or other fire in an outdoor location where fuel being burned is not contained in an incinerator, outdoor fireplace, barbecue grill or barbecue pit. See WAC Chapter 173-425.

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. See also Section 203 for BLEACHERS.

OPERATING LINE is a group of separated operating buildings of specific arrangement used in the assembly, modification, reconditioning, renovation, maintenance, inspection, surveillance, testing or manufacturing of explosives.

ORGANIC COATING is a liquid mixture of binders, such as alkyd, nitrocellulose, acrylic or oil and flammable and combustible solvents such as hydrocarbon, ester, ketone or alcohol, which when spread in a thin film converts to a durable protective and decorative finish.

ORGANIC PEROXIDE is an organic compound that contains the bivalent -0-0- structure and which may be considered to be a structural derivative of hydrogen peroxide where one or both of the hydrogen atoms have been replaced by an organic radical. Organic peroxides can present an explosion hazard (detonation or deflagration) or they can be shock sensitive. They can also decompose into various unstable compounds over an extended period of time.

OSHA is the Occupational Safety and Health Administration.

OTHER HEALTH HAZARD MATERIAL is a hazardous material which affects target organs of the body, including, but not limited to, those materials which produce liver damage, kidney damage, damage to the nervous system, act on the blood to decrease hemoglobin function, deprive the body tissue of oxygen, or affect reproductive capabilities, including mutations (chromosomal damage) or teratogens (effects on fetuses).

OWNER includes persons having vested or contingent interest in the property in question and their duly authorized agents or attorneys, purchasers, devisees and fiduciaries.

OXIDIZER is a chemical other than a blasting agent or explosive that initiates or promotes combustion in other materials, thereby causing fire either of itself or through the release of oxygen or other gases.

NEW SECTION

WAC 51-34-0219 Section 219--R.

RACK STORAGE is a combination of vertical, horizontal and diagonal members that support stored materials. Racks are allowed to be fixed or portable. See Article 81.

RADIATION SOURCE MATERIALS, COMMON, are radioisotopes, other than fissile materials, commonly used in various medical and industrial testing and measuring situations.

RADIOACTIVE MATERIAL is a material or combination of materials that spontaneously emits ionizing radiation.

RAILWAY is a steam, electric or other railroad which carries passengers for hire.

REACTIVE MATERIAL is a material which can enter into a hazardous chemical reaction with other stable or unstable materials.

READY BOX is a storage container for aerial shells at the site of a fireworks display.

RECEPTACLE is an electrical outlet designed for use with a plug or connector for the purpose of supplying electrical power to an appliance.

RECREATIONAL FIRE is the burning of materials other than rubbish where fuel being burned is not contained in an incinerator, outdoor fireplace, barbecue grill or barbecue pit and with a total fuel area of 3 feet (914 mm) or less in diameter and 2 feet (610 mm) or less in height for pleasure, religious, ceremonial, cooking or similar purposes. See WAC Chapter 173-425.

REDUCED FLOW VALVE is a valve equipped with a restricted flow orifice and inserted into a compressed gas cylinder, portable tank or stationary tank that is designed to reduce the maximum flow from the valve under full flow conditions. The maximum flow rate from the valve is determined with the valve allowed to flow to atmosphere with no other piping or fittings attached.

REFINERY is a plant in which flammable or combustible liquids are produced on a commercial scale from crude petroleum, natural gasoline or other hydrocarbon sources.

REFRIGERANT is the fluid used for heat transfer in a refrigerating system; the refrigerant absorbs heat and transfers it at a higher temperature and a higher pressure, usually with a change of state.

REMOTE PUMPING SYSTEM. See PRESSURE DELIVERY SYSTEM.

REMOTE SOLVENT RESERVOIR is a liquid solvent container which is completely enclosed against evaporative losses to the atmosphere during nonuse periods, except for a solvent return opening not larger than 16 square inches (10 323 mm^2). Such return allows pump-cycled used solvent to drain back into the reservoir from a separate solvent sink or work area.

The reservoir is allowed to be integral to the parts-cleaning machine it services or separate and connected by hoses, tubing, piping or similar devices.

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

RETAIL DISPLAY AREA is the area of a Group M Occupancy open for the purpose of viewing or purchasing merchandise offered for sale. Individuals in such establishments are free to circulate among the items offered for sale which are typically displayed on shelves, racks or the floor.

RETAIL SALES OCCUPANCY is the occupancy or use of a building or structure or any portion thereof for displaying, selling or buying of goods, wares or merchandise.

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.

ROOM. See LIQUID STORAGE ROOM and see Section 7903.2.3 for construction requirements for rooms where flammable or combustible liquids are used, dispensed or mixed in quantities exceeding exempt amounts.

RUBBISH is waste material including, but not limited to, garbage, waste paper and debris from construction or demolition.

NEW SECTION

WAC 51-34-0223 Section 223--V.

VAPOR AREA is an area containing flammable vapors. The chief is authorized to determine the extent of the vapor area, taking into consideration the characteristics of the liquid, the degree of sustained ventilation and the nature of operations.

VAPOR BALANCE SYSTEM is a system designed to capture and retain, without processing, vapors displaced during the filling of tanks and containers or during the fueling of vehicles.

VAPOR PRESSURE is the pressure exerted by a volatile fluid as determined by U.F.C. Standard 2-5.

VAPOR-PROCESSING SYSTEM is a system designed to capture and process vapors displaced during filling operations at motor vehicle fuel-dispensing stations, bulk plants or terminals by use of mechanical or chemical means. Examples include systems using blower-assist for capturing vapors and refrigeration absorption and combustion systems for processing vapors.

VAPOR-PROCESSING UNIT is the actual vapor-processing equipment in one contiguous unit in an isolated or separated area. Vapor-processing units do not include in-line flame arresters, in-line fire checks, pressure vacuum valves, in-line check valves or flow regulators at the dispenser.

VAPOR-RECOVERY SYSTEM is a system designed to capture and retain, without processing, vapors displaced during filling operations at motor vehicle fuel-dispensing stations, bulk plants or terminals. Examples include balanced-pressure vapor displacement systems and vacuum-assist systems without vapor processing.

VAPOR-TRANSFER EQUIPMENT is the components of a vapor-processing system, a vapor balance system, or other approved system which is designed to capture, transfer and prevent emissions of vapors or liquids displaced during filling of tanks or containers or during the fueling of vehicles. Examples include the vapor/liquid-dispensing nozzle, vapor-transfer lines and tank vents.

VEHICLE FUELING APPLIANCE is a listed natural gas compressor package, not containing storage, designed for the unattended dispensing of natural gas into the fuel tanks of motor vehicles.

VENT-RELEASE CONTAINER is an aerosol container which is designed to provide a controlled venting of the base product and propellant at a nominal hydrostatic pressure of less than 210 psig (1447 kPa).

NEW SECTION

WAC 51-34-0900 Article 9--Fire department access and water supply.

NEW SECTION

WAC 51-34-0901 Section 901--General.

901.1 Scope. Fire department access and water supply shall be in accordance with Article 9.

For fire safety during construction, alteration or demolition of a building, see Article 87.

901.2 Permits and Plans.

901.2.1 Permits. A permit is required to use or operate fire hydrants or valves intended for fire-suppression purposes which are installed on water systems and accessible to public highways, alleys or private ways open to or generally used by the public. See Section 105, Permit f.1.

EXCEPTION: A permit is not required for persons employed and authorized by the water company which supplies the system to use or operate fire hydrants or valves.

901.2.2 Plans.

901.2.2.1 Fire hydrant systems. Plans and specifications for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

901.3 Timing of Installation. When fire protection, including fire apparatus access roads and water supplies for fire protection, is required to be installed, such protection shall be installed and made serviceable prior to and during the time of construction.

EXCEPTION: When alternate methods of protection, as approved by the chief, are provided, the requirements of Section 901.3 may be modified or waived.

901.4 Required Marking of Fire Apparatus Access Roads, Addresses and Fire Protection Equipment.

901.4.1 General. Marking of fire apparatus access roads, addresses and fire protection equipment shall be in accordance with Section 901.4.

901.4.2 Reserved.

901.4.3 Fire protection equipment and fire hydrants. Fire-protection equipment and fire hydrants shall be clearly identified

in a manner approved by the chief to prevent obstruction by parking and other obstructions.

When required by the chief, hydrant locations shall be identified by the installation of reflective markers.

See also Section 1001.7.

901.4.4 Premises identification. Approved numbers or addresses shall be placed on all new and existing buildings in such a position as to be plainly visible and legible from the street or road fronting the property. Numbers shall contrast with their background.

901.4.5 Street or Road Signs. When required by the chief, streets and roads shall be identified with approved signs.

901.5 Obstruction and Control of Fire Apparatus Access Roads and Fire Protection Equipment. See Sections 902.2.4 and 1001.7.

901.6 Fire Protection in Recreational Vehicle, Mobile Home and Manufactured Housing Parks, Sales Lots and Storage Lots. Recreational vehicle, mobile home and manufactured housing parks, sales lots and storage lots shall provide and maintain fire hydrants and access roads in accordance with Sections 902 and 903.

EXCEPTION: Recreational vehicle parks located in remote areas shall be provided with protection and access roadways as required by the chief.

NEW SECTION

WAC 51-34-0902 Section 902--Fire department access.

902.1 General. Fire apparatus access roads shall be provided and maintained in accordance with locally adopted street, road, and access standards.

902.2.4 Obstruction and control of fire apparatus access.

902.2.4.1 General. Entrances to roads, trails or other accessways which have been closed with gates and barriers in accordance with Section 902.2.4.2 shall not be obstructed by parked vehicles.

902.2.4.2 Closure of accessways. The chief is authorized to require the installation and maintenance of gates or other approved barricades across roads, trails or other accessways, not including public streets, alleys or highways.

When required, gates and barricades shall be secured in an approved manner. Roads, trails and other accessways which have been closed and obstructed in the manner prescribed by Section 902.2.4.2 shall not be trespassed upon or used unless authorized by the owner and the chief.

EXCEPTION: Public officers acting within their scope of duty.

Locks, gates, doors, barricades, chains, enclosures, signs, tags or seals which have been installed by the fire department or by its order or under its control shall not be removed, unlocked, destroyed, tampered with or otherwise molested in any manner.

EXCEPTION: When authorized by the chief or performed by public officers acting within their scope of duty.

902.3 Access to Building Openings.

902.3.1 Required access. Exterior doors and openings required by this code or the Building Code shall be maintained readily accessible for emergency access by the fire department.

An approved access walkway leading from fire apparatus access roads to exterior openings required by this code or the Building Code shall be provided when required by the chief.

902.3.2 Maintenance of exterior doors and openings. Exterior doors or their function shall not be eliminated without prior approval by the chief. Exterior doors which have been rendered nonfunctional and which retain a functional door exterior appearance shall have a sign affixed to the exterior side of such door stating THIS DOOR BLOCKED. The sign shall consist of letters having principal stroke of not less than ¾ inch (19.1 mm) wide and at least 6 inches (152.4 mm) high on a contrasting background. Required fire department access doors shall not be obstructed or eliminated. See Section 1207 for exit doors.

For access doors for high-piled combustible storage, see Section 8102.5.2.

902.3.3 Shaftway marking. Exterior windows in buildings used for manufacturing or for storage purposes which open directly on shaftways or other vertical means of communication between two or more floors shall be plainly marked with the word SHAFTWAY in red letters at least 6 inches (152.4 mm) high on a white background. Warning signs shall be easily discernible from the outside of the building. Door and window openings on such shaftways from the interior of the building shall be similarly marked with the word SHAFTWAY in a manner which is easily visible to anyone approaching the shaftway from the interior of the building, unless the construction of the partition surrounding the shaftway is of such distinctive nature as to make its purpose evident at a glance.

902.4 Key boxes. When access to or within a structure or an area is unduly difficult because of secured openings or where immediate access is necessary for life-saving or firefighting purposes, the chief is authorized to require a key box to be installed in an accessible location. The key box shall be of a type approved by the chief and shall contain keys to gain necessary access as required by the chief.

NEW SECTION

WAC 51-34-1000 Article 10--Fire-protection systems and equipment.

NEW SECTION

WAC 51-34-1003 Section 1003--Fire-extinguishing systems.

1003.1 Installation Requirements.

1003.1.1 General. Fire-extinguishing systems shall be installed in accordance with the Building Code and Section 1003.

Fire hose threads used in connection with fire-extinguishing systems shall be national standard hose thread or as approved by the chief.

The location of fire department hose connections shall be approved by the chief.

In buildings used for high-piled combustible storage, fire protection shall be in accordance with Article 81.

1003.1.2 Standards. Fire-extinguishing systems shall comply with the Building Code. (See U.B.C. Standard 9-1.)

EXCEPTIONS: 1. Automatic fire-extinguishing systems not covered by the Building Code 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, 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 chief.

3. Automatic sprinkler systems in Group R Occupancies four stories or less may be in accordance with the Building Code requirements for residential sprinkler systems. (See U.B.C. Standard 9-3.)

1003.1.3 Modifications. When residential sprinkler systems as set forth in the Building Code (see U.B.C. Standard 9-3) are provided, exceptions to, or reductions in, Building Code requirements based on the installation of an automatic fire-extinguishing system are not allowed.

1003.2 Required Installations.

1003.2.1 General. An automatic fire-extinguishing system shall be installed in the occupancies and locations as set forth in Section 1003.2.

For provisions on special hazards and hazardous materials, see Section 1001.9 and Articles 79, 80 and 81.

1003.2.2 All occupancies except Group R, Division 3 and Group U Occupancies. Except for Group R, Division 3 and Group U 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 (139.4 m^2) and there is not provided at least 20 square feet (1.86 m^2) of opening entirely above the adjoining ground level in each 50 lineal feet (15 240 mm) or fraction thereof or 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 (762 mm). Such openings shall be accessible to the fire department from the exterior and shall not be obstructed in a manner that firefighting 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 (22 860 mm) 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 is located more than 75 feet (22 860 mm) from openings required in Section 1003.2.2, the basement 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. See also Article 33.

4. In protected combustible fiber storage vaults as defined in Article 2. See also Article 28.

5. Throughout all buildings with a floor level with an occupant load of 30 or more that is located 55 feet (16 764 mm) or more above the lowest level of fire department vehicle access.

EXCEPTIONS: 1. Airport control towers.
2. Open parking structures.
3. Group F, Division 2 Occupancies.

1003.2.3 Group A Occupancies.

1003.2.3.1 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 (465 m²). 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.

1003.2.3.2 Basements. An automatic sprinkler system shall be installed in basements classified as a Group A Occupancy when the basement is larger than 1,500 square feet (139 m²) in floor area.

1003.2.3.3 Exhibition and display rooms. An automatic sprinkler system shall be installed in Group A Occupancies which have more than 12,000 square feet (112 m²) of floor area which can be used for exhibition or display purposes.

1003.2.3.4 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.

1003.2.3.5 Multitheater complexes. An automatic sprinkler system shall be installed in every building containing a multitheater complex.

1003.2.3.6 Amusement buildings. An automatic sprinkler system shall be installed in all 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, 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 amusement building is less than 1,000 square feet (92.9 m²) and the exit travel distance from any point is less than 50 feet (15 240 mm).

1003.2.3.7 Stages. All stages shall be sprinklered. Such sprinklers shall be provided throughout the stage and in dressing rooms, workshops, storerooms and other accessory spaces contiguous to such stages.

EXCEPTIONS: 1. Sprinklers are not required for stages 1,000 square feet (92.9 m²) or less in area and 50 feet (1542 mm) or less in height where curtains, scenery or other combustible hangings are not retractable vertically. Combustible hangings shall be limited to a single main curtain, borders, legs and a single backdrop.

2. Under stage areas less than 4 feet (1219 mm) in clear height used exclusively for chair or table storage and lined on the inside with 5/8-inch (16 mm) Type X gypsum wallboard or an approved equal.

1003.2.4 Group E Occupancies.

1003.2.4.1 General. An automatic fire-extinguishing system shall be installed in all newly constructed buildings classified as Group E, Division 1 Occupancy. A minimum water supply meeting the requirements of UBC Standard 9-1 shall be required. The Chief may reduce fire flow requirements for buildings protected by an approved automatic sprinkler system.

For the purpose of this section, additions exceeding 60 percent of the value of such building or structure, or alterations and repairs to any portion of a building or structure within a twelve month period that exceeds 100 percent of the value of such building or structure shall be considered new construction. In the case of additions, area separation walls shall define separate buildings.

EXCEPTION: Portable school classrooms, provided:

1. Aggregate area of clusters of portable school classrooms does not exceed 5,000 square feet (465 m²); and
2. Clusters of portable school classrooms separated as required in Chapter 5 of the Building Code.

When not required by other provisions of this chapter, a fire-extinguishing system installed in accordance with UBC Standard 9-1 may be used for increases allowed in Chapter 5 of the Building Code.

1003.2.4.2 Basements. An automatic sprinkler system shall be installed in basements classified as Group E, Division 1 Occupancies.

1003.2.4.3 Stairs. An automatic fire sprinkler system shall be installed in enclosed usable space below or over a stairway in Group E, Division 1 Occupancies.

1003.2.5 Group H Occupancies.

1003.2.5.1 General. An automatic fire-extinguishing system shall be installed in Group H, Divisions 1, 2, 3 and 7 Occupancies.

1003.2.5.2 Group H, Division 4 Occupancies. 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 (279 m²).

1003.2.5.3 Group H, Division 6 Occupancies. 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 the Building Code (see U.B.C. Standard 9-1) for the occupancy hazard classifications as follows:

LOCATION	OCCUPANCY HAZARD CLASSIFICATION
Fabrication areas	Ordinary Hazard Group 2
Service corridors	Ordinary Hazard Group 2
Storage rooms without dispensing	Ordinary Hazard Group 2
Storage rooms with dispensing	Extra Hazard Group 2
Exit corridors	Ordinary Hazard Group 2[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.

1003.2.6 Group I Occupancies. An automatic sprinkler system shall be installed in Group I Occupancies. Listed quick response sprinklers shall be installed in light hazard areas in accordance with their listing.

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 the Building Code (see U.B.C. Standard 9-1).

1003.2.7 Group M Occupancies. An automatic sprinkler system shall be installed in retail sales rooms classified as Group M Occupancies where the floor area exceeds 12,000 square feet (1114.8 m^2) on any floor or 24,000 square feet (2229.7 m^2) on all floors or in Group M retail sales occupancies more than three stories in height. The area of mezzanines shall be included in determining the areas where sprinklers are required.

1003.2.8 Group R, Division 1 Occupancies. An automatic sprinkler system shall be installed throughout every apartment house three or more stories in height or containing 16 or more dwelling units, every congregate residence three or more stories in height or having an occupant load of 20 or more, and every hotel 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 room portions of the building.

1003.3 Sprinkler System Monitoring and Alarms.

1003.3.1 Where required. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically monitored where the number of sprinklers are:

1. Twenty or more in Group I, Divisions 1.1 and 1.2 Occupancies.

2. One hundred or more in all other occupancies.

Valve monitoring 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 monitoring station as defined by U.F.C. Standard 10-2 or, when approved by the building official with the concurrence of the chief, shall 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 monitored.

1003.3.2 Alarms. An approved audible sprinkler flow alarm shall be provided on the exterior of the building in an approved location. An approved audible sprinkler flow alarm to alert the occupants shall be provided in the interior of the building in a normally occupied location. Actuation of the alarm shall be as set forth in the Building Code. (See U.B.C. Standard 9-1.)

1003.4 Permissible Sprinkler Omissions. Subject to the approval of the building official and with the concurrence of the chief, sprinklers may be omitted in rooms or areas as follows:

1. 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.

2. 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.

3. 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.

4. Communication equipment areas under the exclusive control of a public communication utility agency, provided:

4.1 The equipment areas are separated from the remainder of the building by one-hour fire-resistive occupancy separation; and

4.2 Such areas are used exclusively for such equipment; and

4.3 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

4.4 Other approved fire-protection equipment such as portable fire extinguishers or Class II standpipes are installed in such areas.

5. Other approved automatic fire-extinguishing systems may be installed to protect special hazards or occupancies in lieu of automatic sprinklers.

NEW SECTION

WAC 51-34-1007 Section 1007--Fire alarm systems.

1007.1 General.

1007.1.1 Applicability. Installation and maintenance of fire alarm systems shall be in accordance with Section 1007.

1007.1.2 Testing. See Section 1001.4.

1007.1.3 Maintenance. See Section 1001.5.1.

1007.1.4 Problematic systems and systems out of service. In the event of temporary failure of the alarm system or an excessive number of accidental alarm activations, the chief is authorized to require the building owner or occupant to provide standby personnel as set forth in Section 2501.19 until the system is restored.

1007.1.5 Where new construction or modification is to be in compliance with adopted WAC 51-30, Chapter 11, alarm modifications shall be designed to be compatible with the requirements of Article 10, U.F.C.

1007.2 Required Installations.

1007.2.1 General.

1007.2.1.1 When required. An approved manual, automatic or manual and automatic fire alarm system shall be provided in accordance with Section 1007.2.

1007.2.1.2 Use of area separation walls to define separate buildings. For the purposes of Section 1007, area separation walls shall not define separate buildings.

1007.2.2 Group A Occupancies.

1007.2.2.1 General. Group A, Divisions 1, 2 and 2.1 Occupancies shall be provided with a manual fire alarm system in accordance with Section 1007.2.2.

EXCEPTIONS: 1. Manual fire alarm boxes are not required when an approved automatic fire-extinguishing system is installed which will immediately activate the prerecorded announcement upon water flow.
2. Group A Occupancy portions of Group E Occupancies are allowed to have alarms as required for the Group E Occupancy.

See also Section 1007.2.12.

1007.2.2.2 System initiation. Activation of the fire alarm shall immediately initiate an approved prerecorded message announcement using an approved electrically supervised voice communication or public address system which is audible above the ambient noise level of the occupancy.

EXCEPTION: When approved by the chief, the prerecorded announcement is allowed to be manually deactivated for a period of time not to exceed 3 minutes for the sole purpose of allowing a live voice announcement from an approved, constantly attended station.

1007.2.2.3 Emergency power. Voice communication and public address systems shall be provided with an approved emergency power source.

1007.2.3 Group B Occupancies. See Section 1007.2.12.

1007.2.4 Group E Occupancies.

1007.2.4.1 General. Group E Occupancies shall be provided with fire alarm systems in accordance with Section 1007.2.4. Group E, Division 1 Occupancies and Group E, Division 3 Occupancies having an occupant load of 50 or more shall be provided with an approved manual fire alarm system. When automatic sprinkler systems or smoke detectors provided in accordance with Section 1007.2.4.2 are installed, such systems or detectors shall be connected to the building fire alarm system, and the building fire alarm system shall be both automatic and manual. See also Section 1007.2.12.

1007.2.4.2 Smoke detectors.

1007.2.4.2.1 Increased travel distance. Smoke detectors shall be installed when required by the Building Code for increased in travel distance to exits. (See U.B.C. Section 1017.3.)

1007.2.4.2.2 Exits through adjoining rooms. Smoke detectors shall be installed when required by the Building Code to allow the only means of egress from a room to be through adjoining or intervening rooms. (See U.B.C. Section 1017.4.)

1007.2.4.3 Exterior alarm-signaling device. A alarm-signaling device shall be mounted on the exterior of the building.

1007.2.5 Group F Occupancies. See Section 1007.2.12.

1007.2.6 Group H Occupancies.

1007.2.6.1 General. Group H Occupancies shall be provided with fire alarm systems in accordance with Section 1007.2.6. See also Section 1007.2.12.

1007.2.6.2 Organic coatings. Organic coating manufacturing uses shall be provided with a manual fire alarm system. See Article 50.

1007.2.6.3 Group H, Division 6 Occupancies. Group H, Division 6 Occupancies shall be provided with a manual fire alarm system. See Article 51.

1007.2.6.4 Rooms used for storage, dispensing, use and handling of hazardous materials. When required by Article 80, rooms or areas used for storage, dispensing, use or handling of highly toxic compressed gases, liquid and solid oxidizers, and Class I, II, III or IV organic peroxides shall be provided with an automatic smoke-detection system.

1007.2.7 Group I Occupancies.

1007.2.7.1 Divisions 1.1, 1.2 and 2 Occupancies.

1007.2.7.1.1 System requirements. Group I, Divisions 1.1, 1.2 and 2 Occupancies shall be provided with an approved manual and automatic fire alarm system in accordance with Section 1007.2.7.1. See also Section 1007.2.12. Smoke detectors shall be provided in accordance with the Building Code as follows:

1. At automatic-closing doors in smoke barriers and one-hour fire-resistive occupancy separations (see U.B.C. Sections 308.2.2.1 and 308.8),

2. In waiting areas which are open to corridors (see U.B.C. Section 1019.3).

When actuated, alarm-initiating devices shall activate an alarm signal which is audible throughout the building.

EXCEPTION: Visual alarm-signaling devices are allowed to substitute for audible devices in patient use areas.

1007.2.7.1.2 Patient room smoke detectors. Smoke detectors which receive their primary power from the building wiring shall be installed in patient sleeping rooms of hospital and nursing homes. Actuation of such detectors shall cause a visual display on the corridor side of the room in which the detector is located and shall cause an audible and visual alarm at the respective nurses' station. When single-station detectors and related devices are combined with a nursing call system, the nursing call system shall be listed for the intended combined use.

EXCEPTION: In rooms equipped with automatic door closers having integral smoke detectors on the room side, the integral detector may substitute for the room smoke detector, provided it performs the required alerting functions.

1007.2.7.2 Division 3 Occupancies.

1007.2.7.2.1 General. Group I, Division 3 Occupancies shall be provided with a manual and automatic fire alarm system installed for alerting staff in accordance with Section 1007.2.7.2. See also Section 1007.2.12.

1007.2.7.2.2 System initiation. Actuation of an automatic fire-extinguishing system, a manual fire alarm box or a fire detector shall initiate an approved fire alarm signal which automatically notifies staff. Presignal systems shall not be used.

1007.2.7.2.3 Manual fire alarm boxes.

1. **General.** Manual fire alarm boxes need not be located in accordance with Section 1007.3.3.1 when they are provided at staff-attended locations having direct supervision over areas where manual fire alarm boxes have been omitted.

2. **Locking of manual fire alarm boxes.** Manual fire alarm boxes are allowed to be locked in areas occupied by detainees, provided that staff members are present within the subject area and have keys readily available to operate the manual fire alarm boxes.

1007.2.7.2.4 Smoke detection. An approved automatic smoke-detection system shall be installed throughout resident housing areas, including sleeping areas and contiguous day rooms, group activity spaces and other common spaces normally accessible to residents.

EXCEPTION: Other approved smoke-detection arrangements providing equivalent protection, such as placing detectors in exhaust ducts from cells or behind protective grilles, are allowed when necessary to prevent damage or tampering.

1007.2.7.2.5 Zoning and annunciation. Alarm and trouble signals shall be annunciated at an approved constantly attended location. Such signals shall indicate the zone of origin.

Separate zones shall be provided for individual fire-protection systems, buildings, floors, cell complexes and sections of floors compartmented by smoke-stop partitions.

1007.2.7.2.6 Monitoring. The fire alarm system shall be monitored by an approved central, proprietary or remote station service or by transmission of a local alarm which will give audible and visual signals at an approved constantly attended location.

1007.2.8 Group M Occupancies. See Section 1007.2.12.

1007.2.9 Group R, Division 1 Occupancies.

1007.2.9.1 System requirements.

1007.2.9.1.1 General. Group R Occupancies shall be provided with fire alarm systems in accordance with Section 1007.2.9. Group R, Division 1 Occupancies shall be provided with a 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. See also Section 1007.2.12.

EXCEPTIONS: 1. A manua. .e alarm system need not be provided in buildings not o .wo stories in height when all individual dwelling units and contiguous 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.

2. A separate fire alarm system need not be provided in buildings which are protected throughout by an approved supervised fire sprinkler system conforming with the Building Code and having a local alarm to notify all occupants.

1007.2.9.1.2 Manual fire alarm boxes. Manual fire alarm boxes are not required for interior corridors having smoke detectors as specified in Section 1007.2.9.1.3.

1007.2.9.1.3 Smoke detectors. Smoke detectors shall be provided in all common areas and interior corridors serving as a required exit for an occupant load of 10 or more.

1007.2.9.1.4 Heat detectors. Heat detectors shall be provided in common areas such as recreational rooms, laundry rooms, furnace rooms, and similar areas in accordance with U.F.C. Standard 10-3.

1007.2.9.1.5 Visual signaling devices. Guest rooms for persons with hearing impairments shall be provided with visible and audible alarm-indicating appliances, activated by both the in-room smoke detector and the building fire alarm system.

1007.2.9.2 Single-station smoke detectors. Approved single-station smoke detectors shall be installed in dwelling units, congregate residences and hotel or lodging house guest rooms in accordance with the Building Code.

Single-station smoke detectors shall not be connected to a fire alarm system. See also Section 1007.2.9.1.5.

EXCEPTION: Connection of such detectors for annunciation only.

1007.2.10 Group S Occupancies. See Section 1007.2.12.

1007.2.11 Group U Occupancies. No requirements.

1007.2.12 Special uses and conditions.

1007.2.12.1 Amusement buildings.

1007.2.12.1.1 General. An approved smoke-detection system shall be provided in amusement buildings in accordance with Section 1007.2.12.1.

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

1007.2.12.1.2 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 at a constantly supervised location from which the manual operation of systems noted in Section 1007.2.12.1.3 can be initiated.

1007.2.12.1.3 System response. 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 fire-detection device shall automatically:

1. Stop confusing sounds and other visual effects,

2. Activate approved directional exit marking, and

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

1007.2.12.1.4 Public address system. The public address system is also allowed to serve as an alarm.

1007.2.12.2 High-rise buildings.

1007.2.12.2.1 General. Group B office buildings and Group R, Division 1 Occupancies, each having floors used for human occupancy located more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access, shall be provided with an automatic fire alarm system and a communication system in accordance with Section 1007.2.12.2.

1007.2.12.2.2 Automatic fire alarm system. Smoke detectors shall be provided in accordance with Section 1007.2.12.2.2. Smoke detectors shall be connected to an automatic fire alarm system. The actuation of any detector required by Section 1007.2.12.2.2 shall operate the emergency voice alarm-signaling system and shall place into operation all equipment necessary to prevent the recirculation of smoke. Smoke detectors shall be located as follows:

1. In every mechanical equipment, electrical, transformer, telephone equipment, elevator machine or similar room, and in elevator lobbies. Elevator lobby detectors shall be connected to an alarm verification zone or be listed as a releasing device;

2. In the main return-air and exhaust-air plenum of each air-conditioning system. Such detectors shall be 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 is allowed to be used in each return-air riser carrying not more than 5,000 cubic feet per minute (2360 L/s) and serving not more than 10 air-inlet openings; and

4. For Group R, Division 1 Occupancies, in all interior corridors serving as a required exit for an occupant load of 10 or more.

1007.2.12.2.3 Emergency voice alarm-signaling system. The operation of any automatic fire detector, sprinkler or water-flow device shall automatically sound an alert tone followed by voice instructions giving appropriate information and directions on a general or selective basis to the following terminal areas:

1. Elevators,
2. Elevator lobbies,
3. Corridors,
4. Exit stairways,
5. Rooms and tenant spaces exceeding 1,000 square feet (93 m^2) in area,
6. Dwelling units in apartment houses, and
7. Hotel guest rooms or suites.

A manual override for emergency voice communication shall be provided for all paging zones.

The emergency voice alarm-signaling system shall be designed and installed in accordance with the Building Code and U.F.C. Standard 10-2.

1007.2.12.2.4 Fire department communication system. A two-way, approved 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 entries into enclosed stairways.

1007.2.12.3 Buildings with atriums. Actuation of an atrium smoke-control system required by the Building Code shall initiate an audible fire alarm signal in designated portions of the building.

1007.2.12.4 High-piled combustible storage uses. When required by Article 81, high-piled combustible storage uses shall be provided with an automatic smoke-detection system throughout.

1007.2.12.5 Special egress-control devices. When special egress-control devices are installed on exit doors, an automatic smoke-detection system shall be installed throughout the building. (See U.B.C. Section 1004.5.)

1007.2.12.6 Corridors in office uses. When required by the Building Code for corridors in lieu of one-hour corridor construction, smoke detectors shall be installed within office corridors in accordance with their listing. The actuation of any detector shall activate alarms audible in all areas served by the corridor. (See U.B.C. Section 1005.7, Exception 5.)

1007.2.12.7 Aerosol storage uses. When required by Article 88, aerosol storage rooms and general purpose warehouses containing aerosols shall be provided with an approved manual alarm system.

1007.2.12.8 Smoke-control systems. An approved automatic smoke-detection system shall be provided when required by the Building Code for automatic control of a smoke-control system. (See U.B.C. Section 905.9.)

1007.2.12.9 Accessible buildings.

1007.2.12.9.1 General. Alarm systems in buildings which are required to have accessible building facilities shall include both audible and visible alarms. All devices shall be listed or approved. The alarm devices shall be located in all accessible sleeping accommodations and common use areas, including toilet rooms and bathing facilities, hallways, and lobbies.

EXCEPTIONS: 1. Alarm systems in Group I, Division 1.1 and 1.2 Occupancies may be modified to suit standard health care design practice.
2. Visible alarms are not required in Group R, Division 1 apartment buildings.

1007.2.12.9.2 Alarms.

1007.2.12.9.2.1 Audible alarms. Audible alarms shall produce a sound in accordance with UFC Standard 10-1. Audible alarms shall exceed the prevailing equivalent sound level in the room or space by at least 15 decibels, or shall exceed any maximum sound level with a duration of 30 seconds by decibels, whichever is louder. Sound levels for alarm signals shall not exceed 120 decibels.

1007.2.12.9.2.2 Visible alarms. Visible alarm signal appliances shall be integrated into the building or facility alarm system. All devices shall be listed or approved. Where single-station

audible alarms are provided, single-station visible alarm signals shall be provided.

EXCEPTION: Visible alarms are not required in Group R, Division 1 apartment buildings.

Visible alarms shall be located per nationally recognized standards. NFPA 72, 1993 edition, and ANSI 117.1, 1992, shall be considered equivalent facilitation.

1007.2.12.9.2.3 Access to manual fire alarm systems. Manual fire alarm devices shall be mounted at least 36 inches (914.4 mm) and not more than 54 inches (1371.6 mm) above the floor where a parallel approach is provided. Where a parallel approach can not be provided the height shall not exceed 48 inches (1219.2 mm).

1007.3 General System Design and Installation Requirements.

1007.3.1 Design standards. Fire alarm systems, automatic fire detectors, emergency voice alarm communication systems and notification devices shall be designed, installed and maintained in accordance with U.F.C. Standards 10-2 and 10-3 and other nationally recognized standards.

1007.3.2 Equipment. Systems and components shall be listed and approved for the purpose for which they are installed.

1007.3.3 System layout and operation.

1007.3.3.1 Manual fire alarm boxes. When a manual fire alarm system is required, manual fire alarm boxes shall be distributed throughout so that they are readily accessible, unobstructed, and are located in the normal path of exit travel from the area and as follows:

1. At every exit from every level.

2. Additional fire alarm boxes shall be located so that travel distance to the nearest box does not exceed 200 feet (60 960 mm).

1007.3.3.2 Control units, annunciator panels and access keys. The alarm control unit, remote annunciator panel and access keys to locked fire alarm equipment shall be installed and maintained in a location approved by the chief.

1007.3.3.3 Alarm initiation and signal.

1007.3.3.3.1 General. When actuated, fire alarm-initiating devices shall activate an alarm signal which is audible throughout the building or in designated portions of the building when approved by the chief.

EXCEPTION: Single-station detectors in dwelling units, rooms used for sleeping purposes in hotel and lodging houses, and patient sleeping rooms in hospitals and nursing homes.

1007.3.3.3.2 Alarm signal. The alarm signal shall be keyed to one half to one second "on" and one second "off" for three cycles, immediately after which, when a voice alarm is required by Section 1007.2, a voice announcement shall be broadcast. The alarm signal shall be repeated for the duration that the fire alarm system is activated.

EXCEPTIONS: This alarm signal is not required for:
1. Group A Occupancies having a fire alarm signal in accordance with Section 1007.2.2.
2. Patient and inmate areas of Group I Occupancies.

1007.3.3.3.3 Audibility. The alarm signal shall be a distinctive sound which is not used for any other purpose other than the fire alarm. Alarm-signaling devices shall produce a sound that exceeds the prevailing equivalent sound level in the room or space by 15 decibels minimum, or exceeds any maximum sound level with a duration of 30 seconds minimum by 5 decibels minimum, whichever is louder. Sound levels for alarm signals shall be 120 decibels maximum.

1007.3.3.3.4 Visual alarms. Alarm systems shall include both audible and visual alarms. Alarm devices shall be located in hotel guest rooms as required by the Building Code (see U.B.C. Section 1105.4.6); accessible public- and common-use areas, including toilet rooms and bathing facilities; hallways; and lobbies. (See Council of American Building Officials/American National Standards Institute Standard A117.1-1992, Section 4-26.2, for additional information about visual signals.)

1007.3.3.4 Connections to other systems. A fire alarm system shall not be used for any purpose other than fire warning unless approved by the chief.

1007.3.3.5 Supervision. Means of interconnecting equipment, devices and appliances shall be supervised for the integrity of the interconnecting conductors or equivalent, as set forth in U.F.C. Standard 10-2.

1007.3.3.6 Monitoring.

1007.3.3.6.1 General. When required by the chief, fire alarm systems shall be monitored by an approved central, proprietary or remote station service or a local alarm which gives audible and visual signals at a constantly attended location.

1007.3.3.6.2 Automatic telephone dialing devices. Automatic telephone dialing devices used to transmit an emergency alarm shall not be connected to any fire department telephone number unless approved by the chief.

1007.3.3.7 Annunciation. Fire alarm systems shall be divided into alarm zones when required by the chief. When two or more alarm zones are required, visible annunciation shall be provided in a location approved by the chief.

1007.3.4 Acceptance test and certification.

1007.3.4.1 Acceptance test. Upon completion of the installation, a satisfactory test of the entire system shall be made in the presence of the chief. All functions of the system or alteration shall be tested.

1007.3.4.2 Certification. The permittee shall provide written certification to the chief that the system has been installed in accordance with the approved plans and specifications.

1007.3.4.3 Instructions. When required by the chief, operating, testing and maintenance instructions and "as-built" drawings and equipment specifications shall be provided at an approved location.

NEW SECTION

WAC 51-34-2500 Article 25--Places of assembly.

NEW SECTION

WAC 51-34-2501 Section 2501--General.

2501.1 Scope. Places of assembly shall be in accordance with Article 25.

2501.2 Definitions. For definitions of ASSEMBLY; BLEACHERS; DISPERSAL AREA, SAFE; FOLDING AND TELESCOPING SEATING; FOOTBOARDS; GRANDSTANDS; OPEN-AIR GRANDSTANDS AND BLEACHERS; PERMANENT STANDS; REVIEWING STANDS; SMOKE-PROTECTED ASSEMBLY SEATING and TEMPORARY SEATING FACILITIES, see Article 2.

2501.3 Permits and Plans. For permits to operate a place of assembly, operate a carnival or fair, use liquid- or gas-fueled vehicles or equipment for competition or display inside an assembly occupancy, or use candles or other open-flame devices in assembly areas, see Section 105, Permits cl., c.2, 1.2 and p.2.

Plans of carnival and fair grounds shall be submitted when required by the chief.

2501.4 Supervision and Communication System.

2501.4.1 Supervision. Places of assembly shall be under the constant supervision of a competent adult on the premises during the time that the premises are open to the public.

2501.4.2 Communication. When required by the chief, places of assembly shall be provided with a method for notifying the fire department in the event of an emergency. Such method can consist of a telephone, an alarm system connected to the fire department or other approved agency, or other approved means. Methods of notifying the fire department shall be readily available to the public.

2501.5 Decorative Materials. Combustible decorative materials shall be in accordance with Section 1103.3.3.

2501.6 Pyroxylin-coated Fabrics. Pyroxylin-coated fabrics used as a decorative material in accordance with Section 2501.6 or a surface covering on fixed furnishing, shall be limited in amount to the following:

1. Fabrics containing 1.4 ounces to 1.7 ounces of cellulose nitrate per square yard (47.59 g/m^2 to 57.6 g/m^2) shall not be used in excess of a total amount equivalent to 1 square foot of fabric surface to 15 cubic feet of room volume (0.22 m^2/m^3).

2. Fabrics containing 1.7 ounces or more of cellulose nitrate per square yard (57.6 g/m^2) shall not be used in excess of a total amount equivalent to 0.5 square feet of fabric surface to 15 cubic feet of room volume (0.11 m^2/m^3).

3. Measurement can be accomplished by folding a piece to five thicknesses and measuring to see if the thickness of five layers exceeds 1/8 inch (3.2 mm).

2501.7 Motion Picture Screens. In places of assembly, motion picture screens or screen masking shall be in accordance with Section 2501.5.

2501.8 Exit Doors.

2501.8.1 General. Exit doors shall comply with Sections 1207 and 2501.8.

2501.8.2 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 (25.4 mm) 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 is 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 metric ($0.28m^2$) per occupant are located between the stadium and the fence. Gates may be horizontal sliding or swinging and may exceed the 4-foot-width (1219 mm) limitation. The required dispersal area shall be located not less than 50 feet (15 240 mm) from the stadium.

2501.9 Aisles.

2501.9.1 General. Aisles leading to required exits shall be provided from all portions of buildings. Aisles located within an accessible route of travel shall also comply with the Building Code for accessibility (see U.B.C. Chapter 11).

2501.9.2 Width without fixed seats. The width of aisles in assembly occupancies without fixed seats shall comply with Section 2501.9.2. Aisle widths shall be provided in accordance with the following:

1. In areas serving employees only, the minimum aisle width may be 24 inches (610 mm) but not less than the width required by the number of employees served.

2. In assembly occupancies without fixed seats, the minimum clear aisle width shall be 36 inches (914 mm) where tables, counters, furnishings, merchandise or other similar obstructions are placed on one side of the aisle only and 44 inches (1118 mm) when such obstructions are placed on both sides of the aisle.

2501.9.3 Width with fixed seats. Aisles in assembly occupancies with fixed seats shall comply with Section 2501.9.3. 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 minimum clear width of aisles and other means of egress shall be in accordance with Table 2501-A or, for buildings providing smoke-protected assembly seating and for which an approved life-safety evaluation is conducted, in accordance with Table 2501-B. For Table 2501-B, the number of seats specified must be within a single assembly place, and interpolation shall be permitted between the specified values shown. For both tables, the

minimum clear widths shown shall be modified in accordance with the following:

1. **Factor *A*:** If risers exceed 7 inches (178 mm) in height, multiply the stair width in the tables by factor A, where:

$$A = 1 + \frac{(\text{riser height} - 7.0 \text{ inches})}{5}$$

For SI:

$$A = 1 + \frac{(\text{riser height} - 178 \text{ mm})}{127}$$

2. **Factor *B*:** Stairs not having a handrail within a 30-inch (760 mm) horizontal distance shall be 25 percent wider than otherwise calculated. Multiply by factor *B*, where $B = 1.25$.

3. **Factor *C*:** Ramps steeper than 1 in 10 slope where used in ascent shall be 10 percent wider than otherwise calculated. Multiply by factor *C*, where $C = 1.10$.

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 and not less than the following:

Forty-eight inches (1219 mm) for stairs having seating on both sides.

Thirty-six inches (914 mm) for stairs having seating on one side.

Twenty-three inches (584 mm) between a stair handrail and seating when the aisles are subdivided by the handrail.

Forty-two inches (1067 mm) for level or ramped aisles having seating on both sides.

Thirty-six inches (914 mm) for level or ramped aisles having seating on one side.

Twenty-three inches (584 mm) between a stair handrail and seating when an aisle does not serve more than five rows on one side.

2501.9.4 Aisle termination. Aisles shall terminate at a cross aisle, foyer, doorway or vomitory. Aisles shall not have a dead end greater than 20 feet (6096 mm) 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 (305 mm) plus 0.6 inch (15 mm) for each additional seat above seven in a row.

Each end of a cross aisle shall terminate at an aisle, foyer, doorway or vomitory.

2501.9.5 Ramp slope. The slope of ramped aisles shall not be more than 1 unit vertical in 8 units horizontal (12.5% slope). Ramped aisles shall have a slip-resistant surface.

EXCEPTION: When provided with fixed seating, theaters may have a slope not steeper than 1 unit vertical to 5 units horizontal (20% slope).

2501.9.6 Aisle steps.

2501.9.6.1 When prohibited. Steps shall not be used in aisles having a slope of 1 unit vertical to 8 units horizontal (12.5% slope) or less.

2501.9.6.2 When required. Aisles with a slope steeper than 1 unit vertical to 8 units horizontal (12.5% slope) shall consist of a series of risers and treads extending across the entire width of the aisle, except as provided in subsection 2501.9.5.

The height of risers shall not be more than 7 inches (178 mm) or less than 4 inches (102 mm) and the tread run shall not be less than 11 inches (279 mm). 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 (4.8 mm). 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 (25.4 mm) wide and a maximum of 2 inches (51 mm) 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 (229 mm) 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 (4.8 mm) 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.

2501.9.7 Handrails. Handrails shall comply with the height, size and shape dimensions set forth in the Building Code (See U.B.C. Section 1006.9) and shall have rounded terminations or bends. Ramped aisles having a slope steeper than 1 unit vertical to 15 units horizontal (6.7 percent slope) 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 3½ inches (89 mm).

EXCEPTIONS: 1. Handrails may be omitted on ramped aisles having a slope not greater than 1 unit vertical in 8 units horizontal (12.5 percent slope) 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 (559 mm) and not more than 36 inches (914 mm) measured horizontally. Such handrails shall have an additional intermediate handrail located 12 inches (305 mm) below the main handrail.

2501.10 Seating.

2501.10.1 Spacing. When seating rows have 14 or less seats, the minimum clear width between rows shall not be less than 12 inches (305 mm) 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:

1. 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 (305 mm) between rows shall be increased by 0.3 inch (7.62 mm) for every additional seat beyond 14, but the minimum clear width need not exceed 22 inches (559 mm). If the aisles are dead ended, see Section 2501.9.4 for further limitations.

2. For rows of seating served by an aisle or a doorway at one end only, the minimum clear width of 12 inches (305 mm) between rows shall be increased by 0.6 inch (15 mm) for every additional seat beyond seven, but the minimum clear width need not exceed 22 inches (559 mm). 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 (9144 mm) from the point where the occupant is seated.

2501.10.2 Bonding of chairs. Loose seats, folding chairs or similar seating facilities that are not fixed to the floor shall be bonded together in groups of three or more.

EXCEPTIONS: 1. When not more than 300 such seats, chairs or facilities are provided, bonding is not required.
2. The bonding of chairs is not required when tables are provided, as when the occupancy is used for dining or similar purposes.

When bonding of chairs is required, aisles and exits shall be provided as required by Section 2501.9.3.

2501.10.3 Bleacher seats and grandstands. Bleacher seats and reviewing stands shall be in accordance with Sections 2502 and 2503.

2501.11 Use of Exit Ways. Interior and exterior stairways, smokeproof enclosures, hallways, corridors, vestibules, balconies and bridges leading to a stairway or an exit shall not be used in any way that will obstruct their use as an exit or that will present a hazardous condition.

2501.12 Ashtrays. Where smoking is allowed, approved noncombustible ashtrays or match receivers shall be provided on each table and at other convenient places.

2501.13 Fire Appliances. Fire appliances shall be kept in proper working condition. Extinguishers and hose and similar appliances shall be visible and accessible at all times. It shall be the duty of the owner and the occupant of each building or part of a building occupied as a place of assembly to properly train sufficient regular employees in the use of fire appliances. See also Section 1303.5.

2501.14 Plan of Exit Ways and Aisles. When required by the chief, a plan indicating the seating arrangements, location and width of exit ways and aisles shall be submitted for approval, and an approved copy of the plan shall be kept on display on the premises.

2501.15 Marking and Lighting of Exits. Exits in places of assembly shall be identified and lighted in accordance with Sections 1211 and 1212.

2501.16 Maximum Occupant Load.

2501.16.1 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 assembly purposes, shall have the capacity of the room posted in a conspicuous place on an approved sign near the main exit from the room. Such sign 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.

2501.16.2 Determination of occupant load. The number of persons in a building or portion thereof shall not exceed the amount determined as specified in the Building Code, except that where such additional exit facilities are provided the occupant load can be increased by not more than 10 percent, when approved by the chief, without being considered overcrowding.

2501.16.3 Overcrowding. Overcrowding and admittance of persons beyond the approved capacity of a place of assembly are prohibited. The chief, upon finding overcrowding conditions or obstructions in aisles, passageways or other means of egress, or upon finding a condition which constitutes a serious menace to life, is authorized to cause the performance, presentation, spectacle or entertainment to be stopped until such condition or obstruction is corrected.

2501.17 Candles and other open-flame devices. Candles and other open-flame devices shall not be used in places of assembly or in drinking or dining establishments.

EXCEPTIONS: 1. When used in conjunction with approved heating or cooking appliances in areas not accessible to the public.
2. When used in conformance with Section 2501.18.

2501.18 Requirements for Use of Candles and Other Open-flame Devices.

2501.18.1 General. The use of candles and other open-flame devices shall be in accordance with Section 2501.18.

2501.18.2 Flaming foods and beverages. The preparation of flaming foods or beverages shall be in accordance with the following:

1. Flammable liquids used in the preparation of flaming foods and beverages shall be dispensed from one of the following:

1.1 A 1-ounce (29.6 mL) container, or

1.2 A container not to exceed 1 quart (946.4 mL) with a controlled pouring device that will limit the flow to 1 ounce (29.6 mL).

2. Flaming foods or beverages shall be prepared only in the immediate vicinity of the table being served. They shall not be transported or carried while burning,

3. The person preparing the flaming foods or beverages shall have a wet cloth towel immediately available for use in smothering the flames in the event of an emergency,

4. The serving of flaming foods or beverages shall be done in a safe manner and shall not create high flames. The pouring, ladling or spooning of liquids is restricted to a maximum height of 8 inches (203.2 mm) above the receiving receptacle, and

5. Containers shall be secured to prevent spillage when not in use.

2501.18.3 Candles and other open-flame decorative lighting. Candles and other open-flame decorative lighting shall be in accordance with the following:

1. Class I and II liquids and LP-gas shall not be used,

2. Liquid- or solid-fueled lighting devices containing more than 8 ounces (236.6 mL) must self-extinguish and not leak fuel at a rate of more than ¼ teaspoon per minute (1.26 mL per minute) if tipped over,

3. The device or holder shall be constructed to prevent the spilling of liquid fuel or wax at the rate of more than 1/4 teaspoon per minute (1.26 mL per minute) when the device or holder is not in an upright position,

4. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees from vertical,

EXCEPTION: Units that self-extinguish if tipped over and that do not spill fuel or wax at the rate of more than 1/4 teaspoon per minute (1.26 mL per minute) if tipped over.

5. The flame shall be enclosed, except as follows:

5.1 Openings on the sides shall not be more than 3/8 inch (9.5 mm) in diameter.

5.2 Openings on the top and the distance to the top shall be such that a single layer of tissue paper placed on the top will not ignite in 10 seconds.

6. Chimneys shall be made of noncombustible materials. Such chimneys shall be securely attached to the open-flame device,

EXCEPTION: The chimney need not be attached to any open-flame device that will self-extinguish if the device is tipped over.

7. Fuel canisters shall be safely sealed for storage,

8. Storage and handling of combustible liquid shall be in accordance with Article 79,

9. Shades, if used, shall be made of noncombustible materials and securely attached to the open-flame device holder or chimney,

10. Candelabra with flame-lighted candles shall be securely fastened in place to prevent overturning and located away from occupants using the area and away from possible contact of drapes, curtains or other combustibles, and

11. When, in the opinion of the chief, adequate safeguards have been taken, hand-held flame-lighted candles can be allowed. Hand-held candles shall not be passed from one person to another while lighted.

2501.18.4 Theatrical performances. When approved by the chief, open-flame devices used in conjunction with theatrical performances are allowed to be used when adequate safety precautions have been taken.

2501.19 Standby Personnel. When, in the opinion of the chief, it is essential for public safety in a place of assembly or any other place where people congregate, due to the number of persons, or the nature of the performance, exhibition, display, contest or activity, the owner, agent or lessee shall employ one or more qualified persons, as required and approved by the chief, to be on

duty at such place. Such individuals shall be subject to the chief's orders at all times when so employed and shall be in uniform and remain on duty during the times such places are open to the public, or when such activity is being conducted. Before each performance or the start of such activity, such individuals shall inspect the required fire appliances provided to see that they are in proper place and in good working order, and shall keep diligent watch for fires during the time such place is open to the public or such activity is being conducted and take prompt measures for extinguishment of fires that may occur. Such individuals shall not be required or permitted, while on duty, to perform any other duties than those herein specified.

NEW SECTION

WAC 51-34-5200 Article 52--Motor vehicle fuel-dispensing stations.

NEW SECTION

WAC 51-34-5201 Section 5201--General.

5201.1 Scope. Automotive, marine and aircraft motor vehicle fuel-dispensing stations shall be in accordance with Article 52 and U.F.C. Standard 52-1. Such operations shall include both public accessible and private operations. Flammable and combustible liquids and LP-gas shall also be in accordance with Articles 79 and 82.

EXCEPTIONS: Class II or III liquids may be transferred from tank vehicles into fuel tanks of motor vehicles when approved by the chief, and under the following conditions:

1. Only diesel fuel will be allowed and each premises shall require a separate permit issued in accordance with Section 105,
2. Tank vehicles shall meet the requirements of DOT and U.F.C. Standard 79-4 and as approved by the chief,
3. The tank vehicle, while in service, shall not be left unattended,
4. A fire extinguisher with a classification of 2A-20BC shall be readily available at the fueling site,
5. There shall be signs stating "NO SMOKING OR OPEN FLAME WITHIN 25 FEET (7620 mm)" readily visible at the fueling site,
6. There shall be adequate lighting for night time operations,
7. For other than marine motor vehicles, the fuel hose shall not exceed 50 feet (15 240 mm) in length,
8. Approved automatic closing nozzles without a latch open device shall be used,
9. Communication devices shall be available in accordance with Section 5201.6.3,
10. Tank vehicles shall have emergency shut off valves as approved by the chief,
11. Dispensing shall be done in accordance with Section 7903.3.3,
12. At least 20 feet (6096 mm) from any source of ignition,
13. The applicant shall comply with all applicable federal, state and local environmental laws and regulations as a condition of permit,
14. The private fueling area shall be located on an area graded in a manner to direct the spill away from buildings, storage and property lines.

5201.2 Definitions. For definitions of CNG, COMBUSTIBLE LIQUID, FLAMMABLE LIQUID and MOTOR VEHICLE FUEL-DISPENSING STATION, see Article 2.

5201.3 Permits and Plans.

5201.3.1 Permits. Permits are required for motor vehicle fuel-dispensing stations. See Section 105, Permit m.4.

5201.3.2 Plans and specifications. Plans and specifications shall be submitted for review and approval prior to the installation or construction of a motor vehicle fuel-dispensing station. A site plan shall be submitted which illustrates the location of flammable liquid, LP-gas or CNG storage vessels, and their spatial relation to each other, property lines and building openings. Both aboveground and underground storage vessels shall be shown on plans. For each type of station, plans and specifications shall include, but not be limited to, the following:

1. **Flammable and Combustible Liquids:** the type and design of underground and aboveground liquid storage tanks; the location and design of the fuel dispensers and dispenser nozzles; the design and specifications for related piping, valves and fittings; the location and classification of electrical equipment, including emergency fuel shutdown devices; and specifications for fuel storage and venting components.

2. **Liquefied Petroleum Gas:** equipment and components as required in U.F.C. Standard 82-1; the location and design of the LP-gas dispensers and dispenser nozzles; the design, specifications and location for related piping, valves and fittings; the location and classification of electrical equipment, including emergency fuel shutdown devices; and specifications for fuel storage and pressure-relief components.

3. **Compressed Natural Gas:** when provided, the location of CNG compressors; the location and design of CNG dispensers and vehicle fueling connections; the design, specification and location for related piping, valves and fittings; the location and classification of electrical equipment, including emergency fuel shutdown devices; and specifications for fuel storage and pressure-relief components.

5201.4 Location of Dispensing Operations and Storage Vessels.

5201.4.1 Dispensing operations.

5201.4.1.1 General. Flammable and combustible liquids, CNG and LP-gas shall not be dispensed in buildings and dispensers for such products shall not be located in buildings.

EXCEPTIONS: 1. Dispensing of flammable and combustible liquids inside buildings in accordance with Section 5202.
2. Dispensing of compressed natural gas (CNG) in accordance with Section 5204.

See Sections 5202, 5203 and 5204 for additional requirements.

5201.4.1.2 Dispensing devices. Dispensing devices shall be located as follows:

1. Ten feet (3048 mm) or more from property lines,

2. Ten feet (3048 mm) or more from buildings having combustible exterior wall surfaces or buildings having noncombustible exterior wall surfaces that are not part of a one-hour fire- resistive assembly,

EXCEPTION: Weather protection shelters constructed in accordance with Uniform Fire Code Standard 52-1.

3. Such that all portions of the vehicle being fueled will be on the premises of the motor vehicle fuel-dispensing station,

4. Such that the nozzle, when the hose is fully extended, will not reach within 5 feet (1524 mm) of building openings, and

5. Twenty feet (6096 mm) or more from fixed sources of ignition.

5201.4.1.3 Bulk plants. Motor vehicle fuel-dispensing stations located at bulk plants shall be separated by a fence or similar barrier from the area in which bulk operations are conducted. See also Section 5202.3.1.

5201.4.2 Storage Vessels. Storage vessels for LP-gas and CNG shall be located 20 feet (6096 mm) or more from aboveground tanks containing flammable or combustible liquids.

5201.5 Installation of Dispensing Devices.

5201.5.1 Protection of dispensers. Dispensing devices shall be protected against physical damage from vehicles by mounting on a concrete island 6 inches (152.4 mm) or more in height or by other approved methods.

5201.5.2 Dispenser installation. Dispensing devices shall be secured in an approved manner. Dispensers shall not be secured to the island using piping or conduit.

5201.5.3 Emergency shutdown devices. Emergency shutdown devices shall be provided for all fuel dispensers. Emergency shutdown devices for exterior fuel dispensers shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from, dispensers. For interior fuel-dispensing operations, the emergency shutdown devices shall be installed at approved locations. Activation of the emergency shutdown devices shall stop the transfer of fuel to the dispensers and close all valves which supply fuel to the dispensers. Such devices shall be distinctly labeled EMERGENCY FUEL SHUTDOWN DEVICE. Signs shall be provided in approved locations.

5201.5.4 Dispenser electrical disconnects. An electrical disconnect switch shall be provided for all dispensers in accordance with the Electrical Code. The disconnect shall be placed in the OFF position before repairing dispensers and before closing a motor vehicle fuel-dispensing station.

5201.6 Supervision of Dispensing Operations.

5201.6.1 General. The dispensing of fuel into the fuel tanks of automobile, marinecraft or aircraft, or portable containers shall be under the supervision of a qualified attendant at all times.

EXCEPTION: Unsupervised dispensing of flammable and combustible liquids, LP-gas and CNG as a motor fuel is allowed in accordance with Sections 5201.6.3, 5202, 5203 and 5204.

5201.6.2 Attendants. The attendant's primary function shall be to supervise, observe and control the dispensing of motor fuels. The attendant shall prevent the dispensing of flammable and combustible liquids and flammable gases into containers not in compliance with this code, control sources of ignition, give immediate attention to accidental spills or releases, and be prepared to use fire extinguishers. A method of communicating with the fire department shall be provided for the attendant.

5201.6.3 Unsupervised dispensing. Unsupervised dispensing is allowed when the owner or operator provides, and is accountable for, daily site visits, regular equipment inspection and maintenance, conspicuously posted instructions for the safe operation of dispensing equipment, and posted telephone numbers for the owner or operators. A sign, in addition to the signs required by Section 5201.8 shall be posted in a conspicuous location reading:

IN CASE OF FIRE, SPILL OR RELEASE
1. Use emergency pump shutoff!
2. Report the accident!
Fire Department Telephone No._____
Facility address_____

During hours of operation, stations having unsupervised dispensing shall be provided with a fire alarm transmitting device. A telephone not requiring a coin to operate is acceptable.

5201.7 Sources of Ignition. Electrical equipment shall be in accordance with the Electrical Code.

Smoking and open flames shall be prohibited in areas where fuel is dispensed. The engines of vehicles being fueled shall be stopped.

5201.8 Signs. Signs prohibiting smoking, prohibiting dispensing into unapproved containers and requiring vehicle engines to be stopped during fueling shall be conspicuously posted within sight of each dispenser.

5201.9 Fire Protection. Portable fire extinguishers shall be provided as set forth in U.F.C. Standard 10-1.

5201.10 Clearance from Combustible Materials. Weeds, grass, brush, trash and other combustible materials shall be kept not less than 10 feet (3048 mm) from fuel storage vessels and fuel-handling equipment.

5201.11 Maintenance. Fueling systems shall be maintained in proper operating condition.

NEW SECTION

WAC 51-34-5204 Section 5204--Compressed natural gas motor vehicle fuel-dispensing stations.

5204.1 General. Automotive, marine and aircraft motor vehicle fuel-dispensing stations utilizing CNG shall be in accordance with Section 5204.

5204.2 Standards. Compressed natural gas motor vehicle fuel-dispensing operations and facilities shall be in accordance with U.F.C. Standard 52-1.

5204.3 Approvals.

5204.3.1 General. Storage vessels and equipment used for the storage, compression or dispensing of CNG shall be approved or listed in accordance with Section 5204.3.

5204.3.2 Approved equipment. Containers; compressors; pressure-relief devices, including pressure-relief valves; and pressure regulators and piping used for CNG shall be approved.

5204.3.3 Listed equipment. Hoses, hose connections, dispensers, gas-detection systems and electrical equipment used for CNG shall be listed. Vehicle fueling connections shall be listed and labeled.

5204.4 Attendants. Motor vehicle fueling operations shall be conducted by qualified attendants or in accordance with Section 5204.6 by persons trained in the proper handling of CNG.

5204.5 Location of Dispensing Operations and Equipment.

5204.5.1 General. Compression, storage and dispensing equipment shall be located aboveground.

5204.5.2 Maximum capacity within established limits. Within the limits established by law restricting the storage of CNG for the protection of heavily populated or congested commercial areas, the aggregate capacity of any one installation shall not exceed 183,000 cubic feet (5 181 974 L).

5204.5.3 Location on property. In addition to the requirements of Section 5201.4, compression, storage and dispensing equipment shall be installed as follows:

1. Not beneath power lines,

2. Ten feet (3048 mm) or more from the nearest building or property line which could be built on, public street, sidewalk, or source of ignition, and

3. Twenty-five feet (7620 mm) or more from the nearest rail of any railroad track and 50 feet (15 240 mm) or more from the nearest rail of any railroad main track or any railroad or transit line where power for train propulsion is provided by an outside electrical source such as third rail or overhead catenary.

4. Fifty feet (15 240 mm) or more from the vertical plane below the nearest overhead wire of a trolley bus line.

EXCEPTION: Vehicle Fueling Appliances located in accordance with Uniform Fire Code Standard 52-1.

5204.6 Private Fueling of Motor Vehicles. Self-service CNG-dispensing systems, including key, code and card lock dispensing systems, shall be limited to the filling of permanently mounted fuel containers on CNG-powered vehicles.

In addition to the requirements in Section 5201.6, self-service CNG-dispensing systems shall be in accordance with the following:

1. The system shall be provided an emergency shutoff switch located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from dispensers, and

2. The owner of the dispensing facility shall ensure the safe operation of the system and the training of users.

5204.7 Pressure Regulators. Pressure regulators shall be designed, installed or protected so their operation will not be affected by the elements (freezing rain, sleet, snow or ice), mud or debris. This protection is allowed to be integral with the regulator.

5204.8 Valves. Gas piping to equipment shall be provided with a remote, readily accessible manual shutoff valve.

5204.9 Emergency Shutdown Equipment. An emergency shutdown device shall be located within 100 feet (30 480 mm) of, but not less than 20 feet (6096 mm) from, dispensers and shall also be provided in the compressor area. Upon activation, the emergency shutdown shall automatically shut off the power supply to the compressor and close valves between the main gas supply and the compressor and between the storage containers and dispensers.

5204.10 Discharge of CNG from Motor Vehicle Fuel Storage Containers.

5204.10.1 Applicability. The discharge of CNG from motor vehicle fuel cylinders for the purposes of maintenance, cylinder certification, calibration of dispensers or other activities shall be in accordance with Section 5204.10.

5204.10.2 Methods.

5204.10.2.1 General. The discharge of CNG from motor vehicle fuel cylinders shall be accomplished through a use-closed transfer system or an approved method of atmospheric venting.

5204.10.2.2 Use-closed transfer system. A documented procedure which explains the logical sequence for discharging the cylinder shall be provided to the chief for review and approval. The procedure shall include what actions the operator will take in the event of a low-pressure or high-pressure natural gas release during the discharging activity. A drawing illustrating the arrangement of piping, regulators and equipment settings shall be provided to the chief for review and approval. The drawing shall illustrate the piping and regulator arrangement and shall be shown in spatial relation to the location of the compressor, storage vessels and emergency shutdown devices.

5204.10.2.3 Atmospheric venting.

5204.10.2.3.1 Plans and specifications. A drawing illustrating the location of the vessel support, piping, the method of grounding and bonding, and other requirements specified herein shall be provided to the chief for review and approval.

5204.10.2.3.2 Cylinder stability. A method of rigidly supporting the vessel during the venting of CNG shall be provided. The selected method shall provide not more than two points of support and shall prevent the horizontal and lateral movement of the vessel. The system shall be designed to prevent the movement of the vessel based on the highest gas-release velocity through valve orifices at the vessel's rated pressure and volume. The structure or appurtenance shall be constructed of noncombustible materials.

5204.10.2.3.3 Separation. The structure or appurtenance used for stabilizing the cylinder shall be separated from the site equipment, features and exposures and shall be located in accordance with Table 5204.10-A.

5204.10.2.3.4 Grounding and bonding. The structure or appurtenance used for supporting the cylinder shall be grounded in accordance with the Electrical Code. The cylinder valve shall be bonded prior to the commencement of venting operations.

5204.10.2.3.5 Vent tube. A vent tube which will divert the gas flow to atmosphere shall be installed on the cylinder prior to the commencement of venting and purging operation. The vent tube shall be constructed of pipe or tubing materials in accordance with Article 90, Standard No. a.1.5.

Piping materials specified in Section 2-8.4 of U.F.C. Standard 52-1 shall not be used. The vent tube shall be capable of dispersing the gas a minimum of 10 feet (3048 mm) above grade level. The vent tube shall not be provided with a rain cap or other feature which would limit or obstruct the gas flow.

At the connection fitting of the vent tube and the CNG cylinder, a listed bidirectional detonation flame arrester shall be provided.

5204.10.2.3.6 Signage. Approved NO SMOKING signs shall be posted within 10 feet (3048 mm) of the cylinder support structure or appurtenance. Approved CYLINDER SHALL BE BONDED signs shall be posted on the cylinder support structure or appurtenance.

NEW SECTION

WAC 51-34-6100 Article 61--Oil-burning equipment.

NEW SECTION

WAC 51-34-6103 Section 6103--Permits. See Section 105.8 for permits. A permit is required to remove, abandon, place temporarily out of service or otherwise dispose of a combustible liquids tank.

NEW SECTION

WAC 51-34-6104 Section 6104--Electrical wiring and equipment. Electrical wiring and equipment used in connection with oil-burning equipment shall be installed in accordance with the Electrical Code.

NEW SECTION

WAC 51-34-6105 Section 6105--Fuel oil. The fuel oil used in a burner shall be of a type approved for the burner and in accordance with the burner manufacturer's recommendations.

NEW SECTION

WAC 51-34-6106 Section 6106--Abandonment of tanks. Tanks and piping serving oil-burning equipment which have been out of service for a period of one year shall be removed from the ground or abandoned in place in accordance with Section 7902.1.7 of this code.

NEW SECTION

WAC 51-34-6107 Section 6107--Portable unvented oil-burning heating appliances and unvented decorative gas logs and fireplaces.

6107.1 General. The design, construction and use of portable unvented oil-burning heating appliances shall be in accordance with Section 6107 and other applicable provisions of this code.

6107.2 Equipment. Portable unvented oil-burning heating appliances shall be listed and shall be limited to a fuel tank capacity of 2 gallons (7.6 L).

EXCEPTION: Appliances approved for temporary use during construction processes are allowed to have a greater fuel tank capacity, provided such capacity does not exceed the terms of the listing of the appliance.

6107.3 Location. The use of listed portable unvented oil-burning heating appliances shall be limited to supplemental heating in Groups S, Divisions 3, 4, and 5 and Group U Occupancies.

EXCEPTIONS:
1. When approved by the chief, portable unvented oil-burning heating appliances may be used in any occupancy during construction when such use is necessary for the construction and the use does not represent a hazard to life or property.
2. Approved, unvented portable oil-fueled heaters may be used as a supplemental heat source in any Group B, F-2, M, R or U Occupancy provided that such heaters shall not be located in any sleeping room or bathroom, and shall comply with RCW 19.27A.080, 19.27A.090, 19.27A.100, 19.27A.110, and 19.27A.120.
3. Approved, unvented decorative gas logs and decorative fireplaces may be installed, used, maintained and permitted to exist in any Group I or R Occupancy, except bathrooms and bedrooms. An unvented decorative gas log is a listed natural or liquefied petroleum gas burning log with an open flame consisting of a metal frame or base supporting simulated logs which is designed so that its primary function lies in the aesthetic effect of the logs and flame. An unvented decorative fireplace is a listed unvented gas log permanently installed in a freestanding enclosure or zero clearance enclosure designed and approved for installation in walls or other building structures. Unvented decorative gas logs and fireplaces shall:
    1. Be equipped with an approved oxygen-depletion sensor,
    2. Be listed,
    3. Not be installed in any room which does not have an alternative primary source of heat,
    4. Have free air volume of at least 50 cubic feet (1.4 m^3) for each 1,000 Btu (2.2 mm^2/W) of thermal output,
    5. Be permanently installed, and
    6. Not be equipped with or connected to any automatic ignition or shut-off device except the oxygen-depletion sensor.

6107.4 Fuel. The grade and type of fuel shall be in accordance with the listing for the appliance. Storage and handling of fuel shall be in accordance with Article 79.

NEW SECTION

WAC 51-34-7800 Article 78--Fireworks and pyrotechnic special effects material.

NEW SECTION

WAC 51-34-7802 Section 7802--Fireworks.

7802.1 General. Storage, use and handling of fireworks shall be in accordance with Chapter 70.77 RCW and local ordinances consistent with Chapter 70.77 RCW.

NEW SECTION

WAC 51-34-7900 Article 79--Flammable and combustible liquids.

NEW SECTION

WAC 51-34-7902 Section 7902--Storage.

7902.1 General.

7902.1.1 Applicability. Storage of flammable and combustible liquids in containers, cylinders and tanks shall be in accordance with Sections 7901 and 7902.

For motor vehicle fuel-dispensing stations, see Article 52.

7902.1.2 Change of tank contents. Tanks subject to change in contents shall be in accordance with Section 7902.1.8. Prior to a change in contents, the chief is authorized to require testing of a tank.

7902.1.3 Labeling and signs.

7902.1.3.1 Smoking and open flames. Signs shall be posted in storage areas prohibiting open flames and smoking. See also Section 7901.9.

7902.1.3.2 Labe_ or placard. Tanks over 10ᴜ gallons (378.5 L) in capacity permanently installed or mounted and used for the storage of Class I, II or III-A liquids shall bear a label or placard identifying the material therein in accordance with U.F.C. Standard 79-3.

EXCEPTIONS: 1. Tanks of 300 gallons (1135.5 L) capacity or less located on private property and used for heating and cooking fuels in single-family dwellings.
2. Tanks located underground.

7902.1.4 Sources of ignition. Smoking and open flames are prohibited in storage areas. See also Section 7901.10.

7902.1.5 Explosion control. Explosion control, equivalent protection devices or suppression systems, or a barricade shall be provided in accordance with the Building Code when Class I liquids are stored inside buildings in excess of the exempt amounts, or where explosive vapor-air mixtures could develop under normal operating conditions.

EXCEPTION: Class I-B and I-C liquids when provided with continuous ventilation at the rate set forth in Section 8003.1.8.

See also Sections 7902.5.11.7, 7902.5.12.7, 7903.2.3.4.3 and 7903.2.3.5.3.

7902.1.6 Separation from incompatible materials and accumulation of combustibles. Storage of flammable and combustible liquids shall be separated from incompatible hazardous materials in accordance with Section 8001.9.8.

Grass; weeds; combustible materials; and waste Class I, II and III-A liquids shall not be accumulated in an unsafe manner at a storage site.

7902.1.7 Abandonment and status of tanks.

7902.1.7.1 General. Tanks taken out of service as a result of a property's being abandoned or its use being changed shall be removed or abandoned in place in accordance with Section 7902.1.7.2.3 or 7902.1.7.3.3. The time schedules stipulated shall not apply.

In other cases, tanks taken out of service shall be safeguarded or removed in accordance with Section 7902.1.7.

7902.1.7.2 Underground tanks.

7902.1.7.2.1 Temporarily out of service. Underground tanks temporarily out of service shall have the fill line, gage opening, vapor return and pump connection secure against tampering. Vent lines shall remain open and be maintained in accordance with Sections 7902.1.10 and 7902.2.6.

7902.1.7.2.2 Out of service 90 days. Underground tanks not used for a period of 90 days shall be safeguarded in accordance with the following or removed in accordance with Section 7902.1.7.4:

1. Flammable or combustible liquids shall be removed from the tank,

2. All piping, including fill line, gage opening, vapor return and pump connection, shall be capped or plugged and secured from tampering, and

3. Vent lines shall remain open and be maintained in accordance with Section 7902.1.10 and 7902.2.6.

7902.1.7.2.3 Underground tanks out of service for one year. Underground tanks which have been out of service for a period of one year shall be removed from the ground in accordance with Section 7902.1.7.4 and the site shall be restored in an approved manner. When the chief determines that the removal of the tank is not necessary, abandonment in place is allowed.

7902.1.7.2.4 Tanks abandoned in place. Tanks abandoned in place shall be abandoned as follows:

1. Flammable and combustible liquids shall be removed from the tank and connected piping,

2. The suction, inlet, gage, vapor return and vapor lines shall be disconnected,

3. The tank shall be filled completely with an inert solid material approved by the chief,

4. Remaining underground piping shall be capped or plugged, and

5. A record of tank size, location and date of abandonment shall be retained.

7902.1.7.2.5 Reinstallation of underground tanks. Tanks which are to be reinstalled for flammable or combustible liquid service shall comply with all of the provisions of Article 79 and shall be tested in a manner approved by the chief.

7902.1.7.3 Aboveground tanks.

7902.1.7.3.1 Temporarily out of service. Aboveground tanks temporarily out of service shall have all connecting lines isolated from the tank and secured against tampering.

7902.1.7.3.2 Out of service 90 days. Aboveground tanks not used for a period of 90 days shall be safeguarded in accordance with Section 7902.1.7.2.2 or removed in accordance with Section 7902.1.7.4.

7902.1.7.3.3 Aboveground tanks out of service one year. Aboveground tanks which have been out of service for a period of one year shall be removed in accordance with Section 7902.1.7.4.

EXCEPTION: Tanks located at refineries, bulk plants and terminals that are in operation.

7902.1.7.4 Removing tanks.

7902.1.7.4.1 General. Removal of aboveground and underground tanks shall be in accordance with all of the following:

1. Flammable and combustible liquids shall be removed from the tank and connecting piping,

2. Piping at tank openings which is not to be used further shall be disconnected,

3. Piping shall be removed from the ground,

EXCEPTION: Piping is allowed to be abandoned in place when the chief determines that removal is not practical. Abandoned piping shall be capped and safeguarded as required by the chief.

4. Tank openings shall be capped or plugged, leaving a 1/8-inch to 1/4-inch-diameter (3.2 mm to 6.4 mm) opening for pressure equalization, and

5. Tanks shall be purged of vapor and inerted prior to removal.

7902.1.7.4.2 Disposal. Tanks shall be disposed of in accordance with federal, state and local regulations.

7902.1.8 Design, construction and general installation requirements for tanks, containers and equipment.

7902.1.8.1 Portable tanks, containers and equipment.

7902.1.8.1.1 General. Portable tanks, containers and equipment used or intended to be used for the storage of flammable or combustible liquids shall be of an approved type. Containers and portable tanks shall be designed and constructed in accordance with nationally recognized standards. See Article 90, Standards u.1.2 and u.1.12 and U.F.C. Standard 79-5. The capacity of individual containers and portable tanks for liquids shall be in accordance with Table 7902.1-A.

EXCEPTION: Medicines, beverages, foodstuffs and cosmetics when packaged according to commonly accepted practices for retail sales.

7902.1.8.1.2 Use of tank cars and tank vehicles as storage tanks. Tank cars and tank vehicles shall not be used as storage tanks.

7902.1.8.1.3 Plastic containers. Plastic containers shall not be used for storage of Class I or II liquids unless such containers are listed and approved for such storage or the containers are stored in liquid storage rooms or liquid storage warehouses. See Sections 7902.5.11 and 7902.5.12.

See also Section 7902.5.10.2.2 for additional limitations.

7902.1.8.2 Tanks.

7902.1.8.2.1 General. The design, fabrication and construction of tanks shall be in accordance with recognized good engineering practice and nationally recognized standards. See Article 90, Standards a.3.1, a.3.2, a.3.3, a.3.4, a.3.5, a.4.8, u.1.3, u.1.5, u.1.7 and u.1.13.

7902.1.8.2.2 Use of tanks cars and tank vehicles as storage tanks. Tank cars and tank vehicles shall not be used as storage tanks.

7902.1.8.2.3 Pressure limitations for tanks. Tanks shall be designed for the pressures to which they are subjected as follows:

1. Atmospheric tanks shall not exceed operating pressures of 1 psig (6.89 kPa) and shall not exceed 2.5 psig (17.2 kPa) under emergency venting conditions. Such tanks shall not be used for the storage of a liquid at a temperature at or above its boiling point,

2. Low-pressure tanks and pressure vessels are allowed to be used as atmospheric tanks,

3. Pressure vessels are allowed to be used as low-pressure tanks,

4. The normal operating pressure of any tank or pressure vessel shall not exceed the design pressure, and

5. Unless otherwise approved by the chief, fired and unfired pressure vessels shall be designed and constructed in accordance with nationally recognized standards. See Article 90, Standard a.3.4 and a.5.1.

7902.1.8.2.4 Locations subject to flooding. Where a tank is located in an area that is subject to flooding, uplift protection shall be provided. See Appendix II-B.

7902.1.8.2.5 Acceptance testing. Prior to being put into service, tanks shall be tested in accordance with nationally recognized standards.

7902.1.8.2.6 Product compatibility. Tank construction materials shall be compatible with the liquid to be stored. The chief is authorized to require that evidence be submitted to substantiate that the properties of the liquid are compatible with the tank.

7902.1.8.2.7 Use of combustible materials in tank construction. Tanks constructed of combustible materials shall be subject to the approval of the chief and limited to:

1. Installation underground,

2. Case where required by the properties of the liquid stored,

3. Storage of Class III-B liquids aboveground in areas not potentially exposed to a spill or leak of Class I or II liquid, or

4. Storage of Class III-B liquids inside a building protected by an approved automatic fire-extinguishing system.

7902.1.8.2.8 Use of concrete in tank construction. Unlined concrete tanks are allowed for storing liquids having a gravity of 40 degrees API or heavier. Concrete tanks with special linings are allowed for other services, provided the design is in accordance with approved engineering practices. See also Section 7902.1.8.2.11.

7902.1.8.2.9 Tank linings. Tanks are allowed to have combustible or noncombustible linings.

7902.1.8.2.10 Tanks containing liquids with high specific gravity and low temperature liquids. Special engineering consideration shall be used if the specific gravity of the liquid to be stored exceeds that of water or if the tank is designed to contain liquid temperature below 0°F. (-17.8°C.).

7902.1.8.2.11 Existing oil storage reservoirs. Existing oil storage reservoirs with a concrete lining and with a combustible roof covering and built prior to the adoption of requirements set forth in Section 7902.1.8 are allowed to be continued for the storage of petroleum products with a flash point in excess of 150°F. (65.6°C.).

7902.1.9 Seismic design. In areas subject to earthquakes, the tank supports and connections shall be designed to resist damage as a result of seismic activity in accordance with the Building Code.

7902.1.10 Tank vents for normal venting.

7902.1.10.1 General. Tank vents for normal venting shall be installed and maintained in accordance with Section 7902.1.10. See Section 7902.2.6 for emergency vents.

7902.1.10.2 Vent lines. Vent lines from tanks shall not be used for purposes other than venting unless approved by the chief.

7902.1.10.3 Vent line flame arresters and venting devices. Vent line flame arresters and venting devices shall be installed in accordance with their listings.

Use of flame arresters in piping systems shall be in accordance with nationally recognized standards. See Article 90, Standard a.3.17.

7902.1.10.4 Vent pipe outlets. Vent pipe outlets for tanks storing Class I, II, or III-A liquids shall be located such that the vapors are released at a safe point outside of buildings and not less than 12 feet (3658 mm) above the adjacent ground level. Vapors shall be discharged upward or horizontally away from closely adjacent walls to assist in vapor dispersion. Vent outlets shall be located such that flammable vapors will not be trapped by eaves or other obstructions and shall be at least 5 feet (1524 mm) from building openings or property lines of properties that can be built on.

7902.1.10.5 Installation of vent piping. Vent piping shall be constructed in accordance with Section 7901.11. Vent pipes shall be installed such that they will drain toward the tank without sags or traps in which liquid can collect. Vent pipes shall be installed in such a manner as to not be subject to physical damage or vibration.

7902.1.10.6 Manifolding. Tank vent piping shall not be manifolded unless required for special purposes such as vapor recovery, vapor conservation or air pollution control. Manifolded vent pipes shall be adequately sized to prevent system pressure limits from being exceeded when manifolded tanks are subject to the same fire exposure.

Vent piping for tanks storing Class I liquids shall not be manifolded with vent piping for tanks storing Class II or III liquids unless positive means are provided to prevent the vapors from Class I liquids from entering tanks storing Class II or III liquids, to prevent contamination and possible change in classification of the less volatile liquid.

7902.1.10.7 Vent sizing. Tank venting systems shall be provided with sufficient capacity to prevent blowback of vapor or liquid at the fill opening while the tank is being filled. Vent pipes shall not be less than 1 ¼-inch (31.8 mm) nominal inside diameter. The capacity of the vent shall be based on the filling or withdrawal rate, whichever is greater, and the vent line length. Unrestricted vent piping sized in accordance with Table 7902.1-B is acceptable to prevent back-pressure development in tanks from exceeding 2.5 psig (17.2 kPa). Where tank-venting devices are installed in vent lines, their flow capacities shall be determined in accordance with nationally recognized standards. See Article 90, Standard a.3.11.

7902.1.10.8 Additional requirements for aboveground tanks.

7902.1.10.8.1 General. Atmospheric storage tanks shall be adequately vented to prevent the development of vacuum or pressure sufficient to distort the roof of a cone roof tank or exceed the design pressure in the case of other atmospheric tanks as a result of filling or emptying and atmospheric temperature changes.

Normal vents shall be sized in accordance with nationally recognized engineering standards or shall be at least as large as the filling or withdrawal connection, whichever is larger, but not less than 1 1/4-inch (31.8 mm) nominal inside diameter. See Article 90, Standard a.3.11.

If a tank or pressure vessel has more than one fill or withdrawal connection and simultaneous filling or withdrawal can be made, the vent size shall be based on the maximum anticipated simultaneous flow.

7902.1.10.8.2 Low-pressure tanks and pressure vessels. Low-pressure tanks and pressure vessels shall be adequately vented to prevent pressure or vacuum from exceeding the design pressure of the tank or vessel as a result of filling or emptying and atmospheric temperature changes. Protection shall also be provided to prevent over pressure from pumps discharging into the tank or vessel when the pump discharge pressure can exceed the design pressure of the tank or vessel.

7902.1.10.8.3 Vent outlets and drains. For tanks designed to vent at pressures greater than 2.5 psig (17.2 kPa), vent outlets and drains shall discharge in a manner which prevents localized overheating of or flame impingement on any part of the tank.

7902.1.10.8.4 Tanks and pressure vessels containing Class I liquids. Tanks and pressure vessels storing Class I-A liquids shall be equipped with venting devices which shall normally be closed, except when venting under pressure or vacuum conditions. Tanks and pressure vessels storing Class I-B or I-C liquids shall be equipped with venting devices which shall be normally closed except when venting under pressure or vacuum conditions, or with listed flame arresters.

EXCEPTIONS:
1. Tanks of 3,000-barrel (476 960 L) capacity or less containing crude petroleum in crude producing areas are allowed to have open vents.
2. Outside aboveground atmospheric tanks under 1,000-gallon (3785 L) capacity are allowed to have open vents.
3. Flame arresters or venting devices with integral flame arresters need not be provided for Class I-B and I-C liquids where conditions are such that their use could, in case of obstruction, result in tank damage.

Liquid properties justifying the omission of such devices include, but are not limited to, condensation, corrosiveness, crystallization, polymerization, freezing or plugging. When any of these conditions exist, consideration shall be given to heating, use of devices employing special materials of construction, the use of liquid seals or inerting in accordance with nationally recognized standards for explosion-prevention systems. See Section 101.3.

4. Vent pipes 2 inches (50.8 mm) or less in nominal inside diameter and longer than 10 feet (3048 mm) are allowed to have open vents.

5. Tanks storing gasoline are allowed to have open vents provided the vent pipes do not exceed a 3-inch (76.2 mm) nominal inside diameter.

7902.1.10.9 Additional requirements for underground tanks.

7902.1.10.9.1 General. Tank-venting systems located on underground tanks shall be in accordance with Section 7902.1.10.9.

7902.1.10.9.2 Vent pipes, outlets and devices. Vent pipes shall not be obstructed by devices provided for vapor recovery or other

purposes unless the tank and associated piping and equipment are otherwise protected to limit back-pressure development to less than the maximum working pressure of the tank and equipment by providing pressure/vacuum vents, rupture discs or other tank-venting devices installed in the tank vent lines. Vent outlets and devices shall be protected to minimize the possibility of blockage from weather, snow, dirt or insect nests.

7902.1.10.9.3 Tanks containing Class I liquids. Tanks containing Class I-A liquids shall be equipped with pressure/vacuum venting devices with integral flame arresters which shall be normally closed except when venting under pressure or vacuum conditions. Tanks storing Class I-B or I-C liquids shall be equipped with pressure/vacuum venting devices or with listed flame arresters.

EXCEPTIONS: 1. Vent pipes 2 inches (50.8 mm) or less in nominal inside diameter and longer than 10 feet (3048 mm) shall not be obstructed by devices that will reduce their capacity and, thus, cause extensive back pressure.
2. Tanks storing gasoline are not required to have pressure/vacuum venting devices except as required for excessive back pressure, or flame arresters, provided the vent does not exceed a 3-inch (76.2 mm) nominal inside diameter.

7902.1.10.9.4 Condensate tanks. Condensate tanks, if utilized, shall be installed and maintained in a manner which will preclude the blocking of the vapor-return piping by liquid. Condensate tanks shall be located such that they will not be subjected to physical damage. The vent pipe shall enter the tank through the top of the tank. The lower end of vent pipes shall not extend into the tank more than 1 inch (25.4 mm).

7902.1.10.9.5 Manifolding. Manifolded vent pipes shall be adequately sized to prevent system pressure limits from being exceeded when manifolded tanks are filled simultaneously. Float-type check valves installed in tank openings connected to manifold vent piping to prevent product contamination are allowed, provided that the static head imposed at the bottom of the tank will not exceed 10 psig (68.9 kPa) if the fill or vent pipe is filled with liquid when the valves are closed.

EXCEPTION: For motor vehicle fuel-dispensing stations, the capacity of manifolded vent piping shall be sufficient to discharge vapors generated when two manifolded tanks are simultaneously filled.

7902.1.11 Tank vents for emergency venting.

7902.1.11.1 Stationary aboveground tanks. Stationary aboveground tanks shall be provided with emergency venting. For requirements see Section 7902.2.6.

7902.1.11.2 Portable tanks. Portable tanks shall be provided with one or more devices installed in the top with sufficient emergency venting capacity to limit internal pressure under fire-exposure conditions to 10 psig (68.9 kPa) or 30 percent of the bursting pressure of the tank, whichever is greater. The total venting capacity shall not be less than that specified in Sections 7902.2.6.3.1 and 7902.2.6.3.3. At least one pressure-actuated vent having a minimum capacity of 6,000 cubic feet (169.9 m^3) of free air per hour at 14.7 psia (101.3 kPa) and 60°F. (15.6°C.) shall be used. It shall be set to open at not less than 5 psig (34.5 kPa). If fusible vents are used, they shall be actuated by elements that operate at a temperature not exceeding 300°F. (148.9°C.). When used for paints, drying oils and similar materials where plugging of the pressure-actuated vent can occur, fusible vents or vents of the type that soften to failure at a maximum of 300°F. (148.9°C.)

under fire exposure are allowed for the entire emergency venting requirement.

7902.1.12 Tank openings other than vents.

7902.1.12.1 Inside buildings.

7902.1.12.1.1 General. Connections for tank openings shall be liquid tight. Openings to tanks shall be located outside of buildings at a location free from sources of ignition and not less than 10 feet (3048 mm) away from building openings or of lines of property that can be built on. Such openings shall be provided with a liquid-tight cap which shall be closed when not in use and shall be properly identified.

For top-loaded tanks, a metallic fill pipe shall be designed and installed to minimize the generation of static electricity by terminating the pipe within 6 inches (152.4 mm) of the bottom of the tank, and it shall be installed in a manner which avoids excessive vibration.

7902.1.12.1.2 Vapor recovery. Tank openings provided for the purposes of vapor recovery shall be protected against possible vapor release by means of a spring-loaded check valve or dry-break connections, or other approved device, unless the opening is pipe connected to a vapor-processing system. Openings designed for combined fill and vapor recovery shall also be protected against vapor release unless connection of the liquid delivery line to the fill pipe simultaneously connects the vapor-recovery line. Connections shall be vapor tight.

7902.1.12.1.3 Valves for tank connections. Connections to tanks inside of buildings through which liquid can normally flow shall be provided with an internal or an external valve located as close as practical to the shell of the tank.

For connections to tanks containing Class I or II liquids inside of buildings, such valve or an additional adjacent valve shall be either:

1. Normally closed and remotely activated,

2. Automatic-closing and heat-activated, or

3. As an alternate to valving an approved device on each liquid-transfer connection below the liquid level, except for connections used for emergency disposal, to provide for quick cutoff of flow in the event of fire in the vicinity of the tank is allowed.

7902.1.12.1.4 Overflow protection. Tanks storing Class I, II and III-A liquids inside buildings shall be equipped with a device or other means to prevent overflow into the building. Suitable devices include, but are not limited to, a float valve, a preset meter on the fill line, a valve actuated by the weight of the tank contents, a low head pump which is incapable of producing overflow or a liquid-tight overflow pipe at least one pipe size larger than the fill pipe discharging by gravity back to the outside source of liquid or to an approved location.

7902.1.12.1.5 Piping, valves and fittings. Connections, fittings and other appurtenances shall be installed in accordance with Section 7901.11.

7902.1.12.1.6 Manual gaging. Openings for manual gaging, if independent of the fill pipe, shall be provided with a liquid-tight cap or cover. Covers shall be kept closed when not gaging. If inside a building, such openings shall be protected against liquid overflow and possible vapor release by means of a spring-loaded check valve or other approved device.

7902.1.12.2 Underground.

7902.1.12.2.1 Piping, valves and fittings. Connections, fittings and other appurtenances shall be installed in accordance with Section 7901.11.

7902.1.12.2.2 Manual gaging. Openings for manual gaging, if independent of the fill pipe, shall be provided with a liquid-tight cap or cover. Covers shall be kept closed when not gaging. If inside a building, such openings shall be protected against liquid overflow and possible vapor release by means of a spring-loaded check valve or other approved device.

7902.1.12.2.3 Fill pipe and discharge lines. Fill pipe and discharge lines shall enter tanks only through the top. Fill lines shall be sloped toward the tank. Underground tanks for Class I liquids having a capacity of more than 1,000 gallons (3785 L) shall be equipped with a tight fill device for connecting the fill hose to the tank.

Overfill protection shall be provided in accordance with Section 7902.6.5.

For Class I liquids other than crude oil, gasoline and asphalt, the fill pipe shall be designed and installed in a manner which will minimize the possibility of generating static electricity by terminating within 6 inches (152.4 mm) of the bottom of the tank.

7902.1.12.2.4 Location of connections that are made or broken. Filling, withdrawal and vapor-recovery connections for Class I, II and III-A liquids which are made and broken shall be located outside of buildings at a location away from sources of ignition and not less than 5 feet (1524 mm) away from building openings. Such connections shall be closed and liquid tight when not in use and shall be properly identified.

7902.1.12.2.5 Protection against vapor release. Tank openings provided for purposes of vapor recovery shall be protected against possible vapor release by means of a spring-loaded check valve or drybreak connection, or other approved device, unless the opening is pipe-connected to a vapor-processing system. Openings designed for combined fill and vapor recovery shall also be protected against vapor release unless connection of the liquid delivery line to the fill pipe simultaneously connects the vapor-recovery line. Connections shall be vapor tight.

7902.1.12.3 Exterior aboveground. Openings for manual gaging on tanks storing Class I liquids shall be provided with a vapor-tight cap or cover. Such covers shall be closed when not gaging. See also Section 7902.2.7.

7902.1.13 Supports, foundations and anchorage.

7902.1.13.1 General. Supports, foundations and anchorage for aboveground tanks shall be in accordance with Section 7902.1.13.

7902.1.13.2 Tanks at grade. Tanks shall rest on the ground or on foundations made of concrete, masonry, piling or steel. Tank foundations shall be designed to minimize the possibility of uneven settling of the tank and to minimize corrosion in any part of the tank resting on the foundation.

7902.1.13.3 Tanks above grade. Tanks shall be securely supported. Supports for tanks storing Class I, II or III-A liquids shall be of concrete, masonry or protected steel. Single wood timber supports, not cribbing, laid horizontally, are allowed for outside aboveground tanks when the bottom of the tank is not more than 12 inches (304.8 mm) above grade.

7902.1.13.4 Fire protection of steel supports. Steel supports or piling for aboveground tanks storing Class I, II or III-A liquids shall have a fire-resistance rating of not less than two hours, except that solid web steel saddles need not be protected if the bottom of the tank is less than 12 inches (304.8 mm) above grade. At the discretion of the chief, water-spray protection in accordance with U.F.C. Standard 79-2 or the Building Code or equivalent may be used. See U.B.C. Standard 9-1.

7902.1.13.5 Design of supports. The design of the supporting structure for tanks shall be in accordance with well-established engineering principles of mechanics and shall be in accordance with the Building Code.

7902.1.14 Stairs, platforms and walkways. Stairs, platforms and walkways shall be of noncombustible construction and shall be designed and constructed in accordance with the Building Code.

7902.2 Stationary Aboveground Tanks Outside of Buildings.

7902.2.1 General. Stationary aboveground tanks outside of buildings shall be in accordance with Sections 7902.1 and 7902.2.

7902.2.2 Tank locations.

7902.2.2.1 Locations where aboveground tanks are prohibited. Storage of Class I and II liquids in aboveground tanks outside of buildings is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. (See sample adoption ordinance, Section 4.)

7902.2.2.2 Location of tanks with pressures 2.5 psig (17.2 kPa) or less. Aboveground tanks operating at pressures not exceeding 2.5 psig (17.2 kPa) for storage of Class I, II or III-A liquids, which are designed with a weak roof-to-shell seam or equipped with emergency venting devices limiting pressures to 2.5 psig (17.2 kPa), shall be located in accordance with Table 7902.2-A.

EXCEPTIONS: 1. Vertical tanks having a weak roof-to-shell seam and storing Class III-A liquids are allowed to be located at one half the distances specified in Table 7902.2-A, provided that the tanks are not within a diked area or drainage path for a tank storing Class I or II liquids.

2. Liquids with boilover characteristics and unstable liquids. See Sections 7902.2.2.4 and 7902.2.2.5.

7902.2.2.3 Location of tanks with pressures exceeding 2.5 psig (17.2 kPa). Aboveground tanks for the storage of Class I, II or III-A liquids operating at pressures exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting allowing pressures to exceed 2.5 psig (17.2 kPa) shall be located in accordance with Table 7902.2-B.

EXCEPTION: Liquids with boilover characteristics and unstable liquids. See Sections 7902.2.2.4 and 7902.2.2.5.

7902.2.2.4 Location of tanks for boilover liquids. Aboveground tanks for storage of liquids with boilover characteristics shall be located in accordance with Table 7902.2-C.

7902.2.2.5 Location of tanks for unstable liquids. Aboveground tanks for the storage of unstable liquids shall be located in accordance with Table 7902.2-D.

7902.2.2.6 Location of tanks for Class III-B liquids. Aboveground tanks for the storage of Class III-B liquids, excluding unstable liquids, shall be located in accordance with Table 7902.2-E, except when located within a diked area or drainage path for a tank or tanks storing Class I or II liquids. When a Class III-B liquid storage tank is within the diked area or drainage path for a Class I or II liquid, distances required by Section 7902.2.2.2 shall apply.

7902.2.2.7 Reduction of separation distances to adjacent property. Where two tank properties of diverse ownership have a common boundary, the chief is authorized to, with the written consent of the owners of the two properties, apply the distances in Sections 7902.2.2.2 through 7902.2.2.6 assuming a single property.

7902.2.3 Separation and orientation of tanks.

7902.2.3.1 Separation between adjacent tanks containing stable liquids. The separation between tanks containing stable liquids shall be in accordance with Table 7902.2-G. When tanks are in a diked area containing Class I or II liquids, or in the drainage path of Class I or II liquids, and are compacted in three or more rows or in an irregular pattern, the chief is authorized to require greater separation than that specified in Table 7902.2-G or other means to make tanks in the interior of the pattern accessible for firefighting purposes.

7902.2.3.2 Separation between adjacent tanks containing unstable liquids. The separation between tanks containing unstable liquids shall not be less than one half the sum of their diameters.

7902.2.3.3 Separation between adjacent tanks containing flammable or combustible liquids and LP-gas. The minimum horizontal separation between an LP-gas container and a Class I, II or III-A liquid storage tank shall be 20 feet (6096 mm) except in the case of Class I, II or III-A liquid tanks operating at pressures exceeding 2.5 psig (17.2 kPa) or equipped with emergency venting allowing pressures to exceed 2.5 psig (17.2 kPa), in which case the provisions of Section 7902.2.3.1 shall apply.

Suitable means shall be provided to prevent the accumulation of Class I, II or III-A liquids under adjacent LP-gas containers such as by dikes, diversion curbs or grading. When flammable or combustible liquid storage tanks are within a diked area, the LP-gas containers shall be outside the diked area and at least 10 feet (3048 mm) away from the center line of the wall of the diked area.

EXCEPTIONS: 1. Liquefied petroleum gas containers of 125-gallons (473 L) or less capacity installed adjacent to fuel-oil supply tanks of 660-gallons (2498 L) or less capacity.

2. Horizontal separation is not required between aboveground LP-gas containers and underground flammable and combustible liquid tanks.

7902.2.3.4 Orientation of horizontal pressure tanks. Where end failure of horizontal pressure tanks and vessels can expose

property, the tank shall be placed with the longitudinal axis parallel to the nearest important exposure.

7902.2.4 Foam fire protection.

7902.2.4.1 Required systems. When required by the chief, foam fire protection shall be provided for aboveground tanks, other than pressure tanks operating at or above 1 psig (6.89 kPa), when such tank, or group of tanks spaced less than 50 feet (15 240 mm) apart measured shell to shell, has a liquid surface area in excess of 1,500 square feet (139.4 m^2), and is

1. Used for the storage of Class I or II liquids,

2. Used for storage of crude oil,

3. Used for in-process products and is located within 100 feet (30 480 mm) of a fired still, heater, related fractioning or processing apparatus or similar device at a processing plant or petroleum refinery as herein defined, or

4. Considered by the chief as presenting an unusual exposure hazard because of topographical conditions; nature of occupancy, proximity on the same or adjoining property, and height and character of liquids to be stored; and degree of private fire protection to be provided and facilities of the fire department to cope with flammable liquid fires.

7902.2.4.2 Installation. Where foam fire protection is required, installation shall be in accordance with U.F.C. Standard 79-1.

7902.2.4.3 Foam storage. Where foam fire protection is required, foam-producing materials shall be stored on the premises.

EXCEPTIONS: Storage of foam-producing materials off the premises is allowed as follows:
1. Such materials stored off the premises shall be of the proper type suitable for use with the equipment at the installation where required,
2. Such materials shall be immediately available at the storage location at all times,
3. Adequate loading and transportation facilities shall be provided,
4. The time required to deliver such materials to the required location in the event of fire shall not exceed two hours, and
5. At the time of a fire, these off-premises supplies shall be accumulated in sufficient quantities before placing the equipment in operation to ensure foam production at an adequate rate without interruption until extinguishment is accomplished.

7902.2.5 Inerting of tanks with boilover liquids. Liquids with boilover characteristics shall not be stored in fixed roof tanks larger than 150 feet (45 720 mm) in diameter unless an approved inerting system is provided on the tank.

7902.2.6 Emergency relief venting for stationary tanks.

7902.2.6.1 General. Stationary tanks shall be equipped with adequate additional venting that will relieve excessive internal pressure caused by exposure to fires.

EXCEPTION: Tanks larger than 12,000-gallon (45 420 L) capacity storing Class III-B liquids and not within the diked area or the drainage path of Class I or II liquids do not require emergency relief venting.

7902.2.6.2 Type of venting device. Aboveground storage tanks shall be provided with construction or devices that will relieve excessive internal pressure caused by exposure fires.

In a vertical tank, construction methods such as floating roofs, lifter roofs, weak roof-to-shell seams or other approved pressure-relieving construction are allowed as methods providing emergency relief venting. Weak roof-to-shell seams shall be constructed to fail before any other seam.

Devices such as self-closing manhole covers, covers using long bolts that allow the cover to lift under internal pressure, and an additional or larger relief valve or valves are allowed for emergency relief venting. Such devices shall be approved relief- or pressure/vacuum-venting devices or other devices approved by the chief.

7902.2.6.3 Venting sizing.

7902.2.6.3.1 General. Where emergency relief venting is provided solely by pressure-relieving devices, the total venting capacity of both normal and emergency vents shall be enough to prevent rupture of the shell or bottom of the tank, if vertical, or of the shell or heads, if horizontal. If unstable liquids are stored, the effects of heat or gas resulting from polymerization, decomposition, condensation or self-reactivity shall be taken into account.

The total capacity of both normal and emergency venting devices shall not be less than that derived from Table 7902.2-H, except as provided in Sections 7902.2.6.3.3 and 7902.2.6.3.4. The wetted area of the tank shall be calculated on the basis of 55 percent of the total exposed area of a sphere or spheroid, 75 percent of the total exposed area of a horizontal tank and the first 30 feet (9144 mm) above grade of the exposed shell area of a vertical tank.

See Appendix VI-B for the square footage of typical tank sizes.

7902.2.6.3.2 Tanks and storage vessels over 1 psig (6.89 kPa). For tanks and storage vessels designed for pressures over 1 psig (6.89 kPa), the total rate of venting shall be determined in accordance with Table 7902.2-H, except that when the exposed wetted area of the surface is greater than 2,800 square feet (260.1 m²), the total rate of venting shall be in accordance with Table 7902.2-I or calculated by the following formula:

$$CFH = 1{,}107\ A^{0.82}$$

For SI:

$$CMH = 220\ A^{0.82}$$

WHERE:

CFH = venting requirement, in cubic feet of free air per hour ($CMH = m^3/hr$).

A = exposed wetted surface, in square feet (m^2).

The foregoing formula is based on $Q = 21{,}000\ A^{0.82}$ (For SI: $Q = 43{,}198\ A^{0.82}$).

7902.2.6.3.3 Emergency relief vents. The total emergency relief venting capacity for a specific stable liquid can be determined by the following formula:

$$CFH = \frac{1{,}337\ V}{L\sqrt{M}}$$

For SI:

$$CMH = \frac{743.4\ V}{L\sqrt{M}}$$

WHERE:

CFH = venting requirement, in cubic feet of free air per hour ($CMH = m^3/hr$).

V = cubic feet (m^3) of free air per hour from Table 7902.2-H.

L = latent heat of vaporization of specific liquid, in Btus per pound (cal/g).

M = molecular weight of specific liquids.

7902.2.6.3.4 Reductions in required venting for stable liquids. For tanks containing stable liquids, a reduction in the required airflow rate in Sections 7902.2.6.3.1 and 7902.2.6.3.3 is allowed. Such reduction shall be calculated by multiplying the required airflow rate in Sections 7902.2.6.3.1 or 7902.2.6.3.3 by the appropriate factor listed in the following schedule when protection is provided as indicated. Only one factor can be used for any one tank.

1. 0.5 For drainage in accordance with requirements for remote impounding in Section 7902.2.8.2 for tanks over 200 square feet (18.6 m^2) of wetted area.

2. 0.3 For water spray in accordance with U.F.C. Standard 79-2 and drainage in accordance with requirements for remote impounding in Section 7902.2.8.2.

3. 0.3 For insulation in accordance with the following:

3.1 Remain in place under fire-exposure conditions,

3.2 Withstand dislodgment when subjected to hose stream impingement during fire exposure, and

EXCEPTION: The requirement may be waived by the chief where use of solid hose streams is not contemplated or would not be practical.

3.3 Maintain a maximum conductance value of 4.0 Btus per hour per square foot per degree Fahrenheit [81.8 kJ/(hr x m^2 x °C.)] when the outer insulation jacket or cover is at a temperature of 1,660°F. (904°C.) and when the mean temperature of the insulation is 1,000°F. (538°C.).

4. 0.15 For water spray with insulation in accordance with U.F.C. Standard 79-2 and drainage in accordance with requirements for remote impounding in Section 7902.2.8.2.

7902.2.6.4 Venting device capacity.

7902.2.6.4.1 Identification. Commercial tank venting devices shall bear a stamp indicating the opening pressure, the pressure at which the valve reaches the full-open position and the flow capacity at the latter pressure. If the start-to-open pressure is

less than 2.5 psig (17.2 kPa) and the pressure at full-open position is greater than 2.5 psig (17.2 kPa), the flow capacity at 2.5 psig (17.2 kPa) shall also be stamped on the venting device. The flow capacity shall be expressed in cubic feet per hour of air at 60°F. and 14.7 psia (m^3 of air/hr at 15.6°C. and 101.3 kPa).

7902.2.6.4.2 Determination of capacity. The flow capacity of tank venting devices under 8 inches (203 mm) in nominal pipe size shall be determined by actual test of each type and size of vent. These flow tests shall be conducted by a qualified impartial outside agency or by the manufacturer when certified by a qualified impartial observer. Calculation of the flow capacity of tank venting devices 8 inches (203 mm) nominal pipe size and larger, including manhole covers with long bolts or equivalent, is allowed provided that the opening pressure is actually measured, the rating pressure and corresponding free orifice area are stated, the work "calculated" appears on the nameplate, and the computation is based on a flow coefficient of 0.5 applied to the rated orifice area.

Calculations shall be performed using the following formula:

$$CFH = 1.667 C_f A \sqrt{P_t - P_a}$$

For SI:

$$CMH = 0.1467 C_f A \sqrt{P_t - P_a}$$

WHERE:

CFH = venting requirement in cubic feet of free air per hour (CMH = m^3/hr).
C_f = 0.5 (the flow coefficient)
A = the orifice area in square inches (mm^2).
P_t = the absolute pressure inside the tank in inches of water (kPa).
P_a = the absolute atmospheric pressure outside the tank in inches of water (kPa).

7902.2.6.5 Termination of vent outlets.

7902.2.6.5.1 General. Emergency vents shall not discharge inside a building.

7902.2.6.5.2 Tanks with pressures exceeding 2.5 psig (17.2 kPa). The outlets of vents and vent drains on tanks equipped with emergency venting that allows pressures to exceed 2.5 psig (17.2 kPa) shall be arranged to discharge in a manner which prevents localized overheating of, or flame impingement on, any part of the tank if vapors from such vents are ignited.

7902.2.7 Tank openings other than vents.

7902.2.7.1 General. Connections to aboveground tanks through which liquid can normally flow shall be provided with internal or external valves located as close as practical to the shell of the tank. See also Section 7902.1.12.

Connections below the liquid level through which liquid does not normally flow shall be provided with a liquid-tight closure, such as a valve, plug or blind, or a combination of these.

7902.2.7.2 Fill pipe openings. For top-loaded tanks, metallic fill pipes shall be designed and installed to minimize the generation of static electricity by terminating the pipe within 6 inches (152.4 mm) of the bottom of the tank and shall be installed to avoid excessive vibration.

For Class I-B and I-C liquids, other than crude oils and asphalts, fill pipes shall be designed and installed in a manner which minimizes the possibility of generating static electricity.

Filling and withdrawal connections for Class I, II and III-A liquids which are made and broken shall be located outside of buildings at a location away from sources of ignition and not less than 5 feet (1524 mm) away from building openings. Such connections for any liquid shall be closed, liquid tight when not in use and properly identified.

7902.2.7.3 Openings for vapor recovery. Vapor-recovery systems shall be in accordance with Section 5202.12.

7902.2.7.4 Piping, valves and fittings. Connections, fittings or other appurtenances shall be installed in accordance with Section 7901.11.

7902.2.8 Drainage control and diking.

7902.2.8.1 General. The area surrounding a tank or group of tanks shall be provided with drainage control or shall be diked to prevent accidental discharge of liquid from endangering adjacent tanks, adjoining property or reaching waterways.

EXCEPTION: The chief is authorized to alter or waive these requirements when determined by the chief that such tank or group of tanks does not constitute a hazard to other tanks, waterways or adjoining property, after consideration of special features such as topographical conditions, nature of occupancy and proximity to buildings on the same or adjacent property, capacity and construction of proposed tanks and character of liquids to be stored, and nature and quantity of private and public fire protection provided.

7902.2.8.2 Drainage system. Where protection of adjacent tanks, adjoining property or waterways is by means of a natural or constructed drainage system, such system shall comply with the following:

1. Drainage shall be provided at a slope of not less than 1 percent away from the tank toward an impounding basin or an approved means of disposal. This termination area and the route of the drainage system shall be so located that a fire occurring in the drainage system will not endanger pumps, manifolds, control valves, electrical equipment, public utilities, fire-protection equipment, tanks, adjoining property or fire apparatus access roads, and

2. Impounding basins and approved means of disposal shall be designed to retain a spill from the largest capacity tank draining into a basin plus the design discharge from fire protection systems including monitor nozzles, as specified in U.F.C. Standard 79-1, Chapter 3, which flow into a basin. Impounding basins and the route of a drainage system shall be located such that a fire occurring in a drainage system will not endanger pumps, manifolds, control valves, electrical equipment, public utilities, fire-

protection equipment, tanks, adjoining properties or fire apparatus access roads.

7902.2.8.3 Diked areas.

7902.2.8.3.1 General. Where protection of adjacent tanks, adjoining property or waterways is accomplished by retaining the liquid around the tank by means of a diked area, such diked areas shall comply with Section 7902.2.8.3.

7902.2.8.3.2 Volumetric capacity. The volumetric capacity of the diked area shall not be less than the greatest amount of liquid that can be released from the largest tank within the diked area. The capacity of the diked area enclosing more than one tank shall be calculated by deducting the volume of the tanks other than the largest tank below the height of the dike.

7902.2.8.3.3 Walls. Walls of the diked area shall be of earth, steel, concrete or solid masonry designed to be liquid tight and to withstand a full hydrostatic head. Earthen walls 3 feet (914.4 mm) or more in height shall have a flat section at the top not less than 2 feet (609.6 mm) wide. The slope shall be consistent with the angle of repose of the material of which the walls are constructed.

The walls of the diked area shall be restricted to an average height of 6 feet (1828.8 mm) above the interior grade, except when dikes are higher than an average of 6 feet (1828.8 mm) above interior grade, provisions shall be made for normal and necessary emergency access to tanks, valves and other equipment and safe egress from the diked enclosure, as follows:

1. Where the average height of the dike containing Class I liquids is over 12 feet (3657.6 mm) measured from interior grade or where the distance between a tank and the top inside edge of the dike wall is less than the height of the dike wall, provisions shall be made for normal operation of valves and for access to tank roofs without entering below the top of the dike. These provisions are allowed to be met through the use of remotely operated valves, elevated walkways or similar arrangements,

2. Piping passing through dike walls shall be designed to prevent excessive stresses as a result of settlement or fire exposure, and

3. The minimum distance between tanks and the toe of the interior dike walls shall be 5 feet (1524 mm), and diked areas containing two or more tanks shall comply with Section 7902.2.8.3.4.

7902.2.8.3.4 Diked areas containing two or more tanks. Diked areas containing two or more tanks shall be subdivided by drainage channels leading to an impounding basin or by intermediate curbs or spill dikes in order to prevent spills from endangering adjacent tanks within the diked area. Intermediate curbs and spill dikes shall not be less than 18 inches (457.2 mm) in height.

7902.2.8.3.5 Protection of piping from exposure fires. Piping shall not pass through adjacent diked areas or impounding basins, unless provided with a sealed sleeve or otherwise protected from exposure to fire.

7902.2.8.3.6 Removing water from diked area. Provision shall be made for draining or removing excess water from a drainage system or diked area. Such drains shall not discharge to adjoining property, natural water courses, public sewers or public drainage channels unless the drain is designed to prevent the release of flammable or combustible liquids. A valve operable from outside the dike shall be provided in the dike system and shall normally be kept closed. Control of drainage shall be accessible under fire conditions.

7902.2.8.3.7 Combustible materials in diked areas. Diked areas shall be kept free of combustible materials, drums and barrels.

7902.2.8.3.8 Equipment, controls and piping in diked areas. Pumps, manifolds, and fire-protection equipment or controls shall not be located within diked areas or drainage basins or in a location where such equipment and controls would be endangered by fire in the diked area or drainage basin. Piping aboveground shall be minimized and located as close as practical to the shell of the tank in diked areas or drainage basins.

7902.3 Container and Portable Tank Storage Outside of Buildings.

7902.3.1 General. Storage of flammable and combustible liquids in closed containers and portable tanks outside of buildings shall be in accordance with Sections 7902.1 and 7902.3. See also Section 7902.1.8.1 for capacity limits for containers and portable tanks.

7902.3.2 Plans. See Section 7901.3.2. Storage shall be in accordance with approved plans.

7902.3.3 Location on property.

7902.3.3.1 General. Outdoor storage of liquids in containers and portable tanks shall be in accordance with Table 7902.3-A. Storage of liquids near buildings located on the same property shall be in accordance Section 7902.3.3.

When two or more classes of materials are stored in a single pile, the quantity in the pile shall not exceed the smallest of maximum quantities for the classes of material stored.

Storage of containers or portable tanks shall be provided with fire apparatus access roads in accordance with Section 902.2.

The storage area shall be protected against tampering or trespassers where necessary and shall be kept free of weeds, debris and other combustible materials not necessary to the storage.

7902.3.3.2 Storage adjacent to buildings. A maximum of 1,100 gallons (4163.5 L) of liquids stored in closed containers and portable tanks is allowed adjacent to a building located on the same premises and under the same management, provided that:

1. The building does not exceed one story in height. Such building shall be of fire-resistive construction with noncombustible exterior surfaces or noncombustible construction and shall be devoted principally to the storage of liquids, or

2. The exterior building wall adjacent to the storage area shall have a fire-resistance rating of not less than two hours, having no openings to abovegrade areas within 10 feet (3048 mm) horizontally of such storage and no openings to belowgrade areas within 50 feet (15 240 mm) horizontally of such storage.

The quantity of liquids stored adjacent to a building protected in accordance with Item 2 is allowed to exceed 1,100 gallons (4163.5 L), provided that the maximum quantity per pile does not exceed 1,100 gallons (4163.5 L) and each pile is separated by a 10-foot-minimum (3048 mm) clear space along the common wall.

Where the quantity stored exceeds 1,100 gallons (4163.5 L) adjacent to a building complying with Item 1, or the provisions of Item 1 cannot be met, a minimum distance in accordance with the column for distance to property line that can be built on in Table 7902.3-A shall be maintained between buildings and the nearest container or portable tank.

7902.3.4 Spill control, drainage control and secondary containment. Storage areas shall be provided with spill control, drainage control and secondary containment as set forth in Section 7901.8.

EXCEPTION: Containers stored on approved containment pallets in accordance with Section 7901.8.5.

7902.3.5 Security. Storage areas shall be protected against tampering or trespassers by fencing or other control measures.

7902.3.6 Protection from vehicles. Guard posts or other means shall be provided to protect exterior storage tanks from vehicular damage. When guard posts are installed, the posts shall be installed in accordance with Section 8001.9.3.

7902.3.7 Clearance from combustibles. The storage area shall be kept free of weeds, debris and combustible materials not necessary to the storage. The area surrounding an exterior storage area shall be kept clear of such materials for a minimum distance of 15 feet (4572 mm).

7902.3.8 Weather protection. For weather protection for outdoor storage, see Section 8003.1.20.

7902.3.9 Empty containers and tank storage. The storage of empty tanks and containers previously used for the storage of flammable or combustible liquids, unless free from explosive vapors, shall be stored as required for filled containers and tanks. Tanks and containers when emptied shall have the covers or plugs immediately replaced in openings.

7902.4 Stationary Aboveground Tank Storage inside Buildings.

7902.4.1 General. Storage of flammable and combustible liquids in stationary aboveground tanks inside of buildings shall be in accordance with Sections 7902.1 and 7902.4.

7902.4.2 Where allowed. Stationary tanks for the storage of flammable and combustible liquids shall be in rooms or buildings complying with the Building Code.

Rooms or buildings used for storage of Class I, II or III liquids shall be in accordance with Section 7902.5.7.

Rooms or buildings used for dispensing, use, mixing and handling of Class I, II or III liquids shall be in accordance with Section 7903.2.1.6.

7902.4.3 Openings for manual gaging. Openings for manual gaging, if independent of the fill pipe, shall be provided with a liquid-tight cover. Covers shall be kept closed when not in use. Such openings shall be protected against liquid overflow and possible

vapor release by means of a spring-loaded check valve or other approved devices.

7902.5 Container and Portable Tank Storage inside Buildings.

7902.5.1 General.

7902.5.1.1 Applicability. Storage of flammable and combustible liquids inside buildings in drums or other containers and portable tanks shall be in accordance with Sections 7902.1 and 7902.5.

EXCEPTIONS: 1. Liquids in the fuel tanks of motor vehicles, aircraft, boats, or portable or stationary engines.
2. The storage of distilled spirits and wines in wooden barrels or casks.

7902.5.1.2 Fire protection.

7902.5.1.2.1 Portable fire extinguishers. Approved portable fire extinguishers shall be provided in accordance with U.F.C. Standard 10-1, except as specified in Section 7902.5.11.5.2.

7902.5.1.2.2 Water supply. The water supply shall be sufficient to deliver the specified fire-protection demand, including at least 500 gallons per minute (31.5 L/s) for inside and outside hose lines.

7902.5.2 Capacity limits for containers and portable tanks. Containers shall not exceed 60 gallons (227.1 L) capacity. Portable tanks shall not exceed 660 gallons (2498 L) capacity. See Section 7902.1.8.1. Tanks exceeding 660 gallons (2498 L) capacity shall be in accordance with Sections 7902.2, 7902.4 or 7902.6.

7902.5.3 Empty containers and portable tanks. Empty tanks and containers previously used for the storage of flammable or combustible liquids, unless free from explosive vapors, shall be stored as required for filled tanks and containers.

Tanks and containers, when emptied, shall have the covers or plugs immediately replaced in openings.

7902.5.4 Incompatible materials. Materials which will react with water or other liquids to produce a hazard shall not be stored in the same room with flammable or combustible liquids. See also Section 7902.1.6.

7902.5.5 Storage near exits. Class I, II or III-A liquids, including stock for sale, shall not be stored near exit doorways, stairways or in a location that would impede egress.

7902.5.6 Shelf storage.

7902.5.6.1 General. Shelving shall be of substantial construction, adequately braced and anchored. For seismic requirements, see the Building Code.

7902.5.6.2 Displacement protection. Shelves shall be of sufficient depth and provided with a lip or guard to prevent individual containers from being easily displaced.

EXCEPTION: Shelves in storage cabinets or on laboratory furniture specifically designed for such use.

7902.5.6.3 Manner of storage. Shelf storage of flammable and combustible liquids shall be maintained in an orderly manner.

7902.5.7 Quantity limits for storage.

7902.5.7.1 Exempt amounts for control areas. For occupancies other than Group M Occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the exempt amounts set forth in Table 7902.5-A and shall not exceed the additional limitations set forth in Section 7902.5.7.2.

For Group M Occupancy wholesale and retail sales uses, indoor storage of flammable and combustible liquids shall not exceed the exempt amounts set forth in Table 7902.5-B.

See Article 51 for storage of hazardous production material flammable and combustible liquids in Group H, Division 6 Occupancies.

7902.5.7.2 Occupancy quantity limits. The following limits for quantities of stored flammable or combustible liquids shall not be exceeded:

1. **Group A Occupancies:**

Quantities in Group A Occupancies shall not exceed amounts necessary for demonstration, treatment, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

2. **Group B Occupancies:**

Quantities in drinking, dining, office and school uses within Group B Occupancies shall not exceed amounts necessary for demonstration, treatment, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

3. **Group E Occupancies:**

Quantities in Group E Occupancies shall not exceed amounts necessary for demonstration, treatment, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

4. **Group F Occupancies:**

Quantities in dining, office and school uses within Group F Occupancies shall not exceed amounts necessary for demonstration, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

5. **Group I Occupancies:**

Quantities in Group I Occupancies shall not exceed amounts necessary for demonstration, treatment, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

6. **Group M Occupancies:**

Quantities in dining, office and school uses within Group M Occupancies shall not exceed amounts necessary for demonstration, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

See Section 7902.5.7.1 for exempt amounts for wholesale and retail sales uses.

7. **Group R Occupancies:**

Quantities in Group R Occupancies shall not exceed amounts necessary for maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

8. **Group S Occupancies:**

Quantities in dining and office uses within Group S Occupancies shall not exceed amounts necessary for demonstration, laboratory work, maintenance purposes and operation of equipment and shall not exceed quantities set forth in Table 7902.5-A.

7902.5.7.3 Quantities exceeding limits for control areas. Quantities exceeding quantities allowed in control areas set forth in Sections 7902.5.7.1 and 7902.5.7.2 shall be in liquid storage rooms or liquid storage warehouses in accordance with Sections 7902.5.11 and 7902.5.12.

7902.5.8 Special provisions for liquids used for maintenance and operation of equipment. In all occupancies, quantities of flammable and combustible liquids in excess of 10 gallons (37.85 L) used for maintenance purposes and the operation of equipment shall be stored in liquid storage cabinets in accordance with Section 7902.5.9. Quantities not exceeding 10 gallons (37.85 L) are allowed to be stored outside of a cabinet when in approved containers located in private garages or other approved locations.

In Groups A, B, E, F, I, M, R and S Occupancies, quantities of flammable and combustible liquids used for demonstration, treatment and laboratory work exceeding 10 gallons (37.85 L) shall be stored in liquid storage cabinets in accordance with Section 7902.5.9. Quantities not exceeding 10 gallons (37.85 L) shall be in approved locations.

7902.5.9 Liquid storage cabinets.

7902.5.9.1 General. When other sections of this code require that liquid containers are stored in storage cabinets, such cabinets and storage shall be in accordance with Section 7902.5.9.

7902.5.9.2 Quantities. The combined quantity of Class I and II liquids in a cabinet shall not exceed 60 gallons (227.1 L), and the total quantities of all liquids shall not exceed 120 gallons (454.2 L).

7902.5.9.3 Construction.

7902.5.9.3.1 Labeling. Cabinets shall be provided with a conspicuous label in red letters on contrasting background which reads FLAMMABLE--KEEP FIRE AWAY.

7902.5.9.3.2 Doors. Doors shall be well fitted, self-closing and equipped with a latch.

7902.5.9.3.3 Bottom. The bottom of the cabinet shall be liquid tight to a height of at least 2 inches (50.8 mm).

7902.5.9.3.4 Materials. Cabinets shall be constructed of wood or metal and approved by the chief. Cabinets shall be listed or constructed in accordance with the following:

1. Unlisted metal cabinets shall be constructed of steel having a thickness of not less than 0.044 inch (1.12 mm) (18 gage). The cabinet, including the door, shall be double walled with 1 1/2-

inch (38.1 mm) a..space between the walls. Jc..nts shall be riveted or welded and shall be tightfitting.

2. Unlisted wooden cabinets, including doors, shall be constructed of not less than 1-inch (25.4 mm) exterior grade plywood. Joints shall be rabbited and shall be fastened in two directions with wood screws. Door hinges shall be of steel or brass. Cabinets shall be painted with an intumescent-type paint.

7902.5.9.4 Number of cabinets.

7902.5.9.4.1 Group A Occupancies. Group A Occupancies shall not contain more than one cabinet.

7902.5.9.4.2 Other occupancies. In occupancies other than Group A Occupancies, a room shall not contain more than three cabinets.

EXCEPTION: Cabinets in groups not exceeding three are allowed in the same room, provided they are separated from other cabinets by not less than 100 feet (30 480 mm).

7902.5.10 Storage in control areas.

7902.5.10.1 General. Storage in control areas shall be in accordance with the following:

1. Class I liquids shall not be stored in basements,

2. Containers having less than 30-gallon (113.6 L) capacity shall not be stacked more than 3 feet (914.4 mm) or two containers high, whichever is greater, unless stacked on fixed shelving or otherwise satisfactorily secured. Containers having a capacity of 30 gallons (113.6 L) or more shall not be stored more than one container high. Containers shall be stored in an upright position,

3. Containers on shelves shall be stored in accordance with Table 7902.5-C. Combustible commodities shall not be stored above flammable or combustible liquids,

4. Piles shall not be closer than 3 feet (914.4 mm) to the nearest beam, chord, girder or other obstruction and shall be 3 feet (914.4 mm) below sprinkler deflectors or discharge orifices of water spray or other overhead fire-protection systems, and

5. In areas that are not accessible to the public, Class I, II and III-A liquids shall not be stored in the same pile or rack section as ordinary combustible commodities unless such materials are packaged together as kits.

7902.5.10.2 Group M Occupancy wholesale and retail sales uses.

7902.5.10.2.1 General. Flammable and combustible liquids in Group M Occupancy wholesale and retail sales uses shall be in accordance with Section 7902.5.10.2.

7902.5.10.2.2 Container type. Containers for Class I liquids shall be metal.

EXCEPTION: In sprinklered buildings an aggregate quantity of 120 gallons (454.2 L) of water miscible Class I-B and I-C liquids is allowed in nonmetallic containers, each having a capacity of 16 ounces (0.473 L) or less.

See also Section 7902.1.8.1.3.

7902.5.10.2.3 Container capacity. Containers for Class I liquids shall not exceed 5-gallon (18.9 L) capacity.

7902.5.10.2.4 Fire protection and storage arrangement. Fire protection and container storage arrangement shall be in accordance with Table 7902.5-C and the following:

1. Combustible commodities shall not be stored above flammable or combustible liquids,

2. Storage on shelves shall not exceed 6 feet (1828.8 mm) in height, and shelving shall be metal,

3. Storage on pallets or in piles greater than 4 feet 6 inches (1371.6 mm) in height, or where the ceiling exceeds 18 feet (5486.4 mm) in height, shall be protected in accordance with Table 7902.5-F, and the storage heights and arrangement shall be limited to those specified in Table 7902.5-D, and

4. Storage on racks greater than 4 feet 6 inches (1371.6 mm) in height, or where the ceiling exceeds 18 feet (5486.4 mm) in height, shall be protected in accordance with Tables 7902.5-H, 7902.5-I and 7902.5-J as appropriate, and the storage heights and arrangements shall be limited to those specified in Table 7902.5-E.

7902.5.10.2.5 Storage plan. When required by the chief, aisle and storage plans shall be submitted in accordance with Section 8003.1.6.

7902.5.11 Liquid storage rooms.

7902.5.11.1 General. Quantities of liquids exceeding those set forth in Section 7902.5.7 for storage in control areas shall be stored in a liquid storage room complying with Section 7902.5.11 and constructed and separated as required by the Building Code.

7902.5.11.2 Quantities and arrangement of storage.

7902.5.11.2.1 General. The quantity limits and arrangements of liquid storage in liquid storage rooms shall be in accordance with Table 7902.5-D or 7902.5-E and Section 7902.5.11.2.

7902.5.11.2.2 Mixed storage. When two or more classes of liquids are stored in a pile or rack section:

1. The quantity in that pile or rack shall not exceed the smallest of the maximum quantities for the classes of liquids stored in accordance with Table 7902.5-D or 7902.5-E, and

2. The height of storage in that pile or rack shall not exceed the smallest of the maximum heights for the classes of liquids stored in accordance with Table 7902.5-D or 7902.5-E.

7902.5.11.2.3 Separation and aisles. Piles shall be separated from each other by at least 4-foot (1219.2 mm) aisles. Aisles shall be provided so that all containers are 12 feet (3657.6 mm) or less from an aisle. Where the storage of liquids is on racks, a minimum 4-foot-wide (1219.2 mm) aisle shall be provided between adjacent rows of racks and adjacent storage of liquids. Main aisles shall be a minimum of 8 feet (2438.4 mm) wide.

Additional aisles shall be provided for access to doors, required windows and ventilation openings, standpipe connections, mechanical equipment, and switches. Such aisles shall be at least 3 feet (914.4 mm) in width, unless greater widths are required for separation of piles or racks, in which case the greater width shall be provided.

7902.5.11.2.4 Stabilizing and supports. Containers and piles shall be separated by pallets or dunnage to provide stability and to prevent excessive stress to container walls. Portable tanks stored over one tier high shall be designed to nest securely without dunnage. See U.F.C. Standard 79-5 for requirements for portable tank design. Shelving, racks, dunnage, scuffboards, floor overlay and similar installations shall be of noncombustible construction or of wood not less than 1-inch (25.4 mm) nominal thickness. Adequate material-handling equipment shall be available to handle tanks safely at upper tier levels.

7902.5.11.3 Spill control, drainage control and secondary containment. Liquid storage rooms shall be provided with spill control, drainage control and secondary containment in accordance with Section 7901.8.

7902.5.11.4 Ventilation. Liquid storage rooms shall be ventilated in accordance with Section 8003.1.8.

7902.5.11.5 Fire protection.

7902.5.11.5.1 Fire-extinguishing systems. Liquid storage rooms shall be protected by automatic sprinkler systems installed in accordance with the Building Code (see U.B.C. Standard 9-1) and Table 7902.5-F, 7902.5-G, 7902.5-H, 7902.5-I or 7902.5-J. In-rack sprinklers shall also comply with U.F.C. Standard 81-2.

Automatic foam-water systems and automatic aqueous film forming foam (AFFF)-water sprinkler systems may be used only when approved by the chief.

7902.5.11.5.2 Portable fire extinguishers. One or more portable fire extinguisher having a rating of not less than 20-B shall be located not less than 10 feet (3048 mm) or more than 50 feet (15 240 mm) from any Class I or II liquid storage area located outside of a liquid storage room.

One or more portable fire extinguishers having a rating of not less than 20-B shall be located outside of, but not more than 10 feet (3048 mm) from, the door opening into a liquid storage room.

7902.5.11.6 Basement storage. Class I liquids shall not be stored in basements.

7902.5.11.7 Explosion control. See Section 7902.1.5.

7902.5.12 Liquid storage warehouses.

7902.5.12.1 General. Buildings used for storage of flammable or combustible liquids in quantities exceeding those set forth in Section 7902.5.7 for control areas and Section 7902.5.11.2 for liquid storage rooms shall comply with Section 7902.5.12 and shall be constructed and separated as required by the Building Code.

7902.5.12.2 Quantities and storage arrangement.

7902.5.12.2.1 General. The total quantities of liquids in a liquid storage warehouse are not limited. The arrangement of storage shall be in accordance with Table 7902.5-D or 7902.5-E.

7902.5.12.2.2 Mixed storage. Mixed storage shall be in accordance with Section 7902.5.11.2.2.

7902.5.12.2.3 Separation and aisles. Separation and aisles shall be in accordance with Section 7902.5.11.2.3.

7902.5.12.2.4 Stabilizing and supports. Stabilizing and supports shall be in accordance with Section 7902.5.11.2.4.

7902.5.12.3 Spill control, drainage control and secondary containment. Liquid storage warehouses shall be provided with spill control, drainage control and secondary containment as set forth in Section 7901.8.

7902.5.12.4 Ventilation. Liquid storage warehouses shall be ventilated in accordance with Section 8003.1.8.

7902.5.12.5 Fire protection.

7902.5.12.5.1 Fire-extinguishing systems. Liquid storage warehouses shall be protected by automatic sprinkler systems installed in accordance with the Building Code (see U.B.C. Standard 9-1) and Table 7902.5-F, 7902.5-G, 7902.5-H, 7902.5-I or 7902.5-J. In-rack sprinklers shall also comply with U.F.C. Standard 81-2.

Automatic foam-water systems and automatic aqueous film forming foam-water sprinkler systems may only be used when approved by the chief.

7902.5.12.5.2 Warehouse hose lines. In liquid storage warehouses, either 1½-inch (38.1 mm) lined or 1-inch (25.4 mm) hard rubber hand hose lines shall be provided in sufficient number to reach all liquid storage areas. See also Section 1001.9.

7902.5.12.6 Basement storage. Class I liquids shall not be stored in basements.

7902.5.12.7 Explosion control. See Section 7902.1.5.

7902.6 Underground Tank Storage.

7902.6.1 General. Underground storage of flammable and combustible liquids in tanks shall be in accordance with Sections 7902.1 and 7902.6.

7902.6.2 Contents. Underground tanks shall not contain petroleum products containing mixtures of a nonpetroleum nature, such as ethanol or methanol blends, without evidence of compatibility.

7902.6.3 Location. Flammable and combustible liquid storage tanks located underground, either outside or under buildings, shall be in accordance with the following:

1. Tanks shall be located with respect to existing foundations and supports such that the loads carried by the latter cannot be transmitted to the tank,

2. The distance from any part of a tank storing liquids to the nearest wall of a basement, pit, cellar or property line shall not be less than 3 feet (914.4 mm), and

3. A minimum distance of 1 foot (304.8 mm), shell to shell, shall be maintained between underground tanks.

7902.6.4 Depth and cover. Excavation for underground storage tanks shall be made with due care to avoid undermining of foundations of existing structures. Underground tanks shall be set on firm foundations and surrounded with at least 6 inches (152.4 mm) of noncorrosive inert material such as clean sand or gravel well tamped in place or in accordance with the manufacturer's installation instructions. Tanks shall be covered with a minimum

of 2 feet (609.6 mm) of earth or shall be covered by not less than 1 foot (304.8 mm) of earth, on top of which shall be placed a slab of reinforced concrete not less than 4 inches (101.6 mm) thick.

When underground tanks are, or are likely to be, subjected to traffic, they shall be protected against damage from vehicles passing over them by at least 3 feet (914.4 mm) of earth cover, or 18 inches (457.2 mm) of well-tamped earth plus 6 inches (152.4 mm) of reinforced concrete, or 8 inches (203.2 mm) of asphaltic concrete. When asphaltic or reinforced concrete paving is used as part of the protection, it shall extend at least 1 foot (304.8 mm) horizontally beyond the outline of the tank in all directions.

For tanks built in accordance with Section 7902.1.8, the burial depth and the height of the vent line shall be such that the static head imposed at the bottom of the tank will not exceed 10 psig (68.9 kPa) if the fill or vent pipe is filled with liquid.

If the depth of cover exceeds 7 feet (2133.6 mm) or the manufacturer's specifications, reinforcements shall be provided in accordance with the tank manufacturer's recommendations.

Nonmetallic underground tanks shall be installed in accordance with the manufacturer's instructions. The minimum depth of cover shall be as specified above in Section 7902.6.4.

7902.6.5 Overfill protection.

7902.6.5.1 General. Fill pipes shall be equipped with a spill container and an overfill prevention system as specified in Section 7902.6.5.

7902.6.5.2 Spill containers. A spill container shall be provided for each fill pipe to collect liquids spilled by overfilling during tank-filling operations. Containers are allowed to be constructed of single-wall construction. Containers shall have a capacity of not less than five gallons (18.9 L) and shall be equipped with a drain valve which drains a spill into the primary tank.

7902.6.5.3 Overfill prevention system. An overfill prevention system shall be provided for each tank. The system shall either:

1. Have an alarm which provides an audible and visual signal when the quantity of liquid in the tank reaches 90 percent of tank capacity,

2. Automatically shut off the flow when the quantity of liquid in the tank reaches 95 percent of tank capacity, or

3. Reduce the flow rate to not more than 15 gallons per minute (0.95 L/s) so that, at the reduced flow rate, the tank will not overfill for 30 minutes, and automatically shut-off flow into the tank so that none of the fittings on the top of the tank are exposed to product due to overfilling.

7902.6.6 Inventory control. Daily inventory records shall be maintained for underground storage tank systems in accordance with Section 5202.3.9.

7902.6.7 Locations subject to flooding. Where a tank could become buoyant due to a rise in the level of the water table or due to location in an area that is subject to flooding, the tank shall be anchored in place. See Appendix II-B or manufacturer's installation instructions.

7902.6.8 Leaking tanks. Leaking tanks shall be handled in accordance with WAC 173-360-325.

7902.6.9 Used tanks. Reinstallation of used tanks is allowed when such tanks comply with the requirements of Sections 7902.1.8 and 7902.6.15. See also Section 7902.6.16.4.

7902.6.10 Tank lining. Steel tanks are allowed to be lined only for the purpose of protecting the interior from corrosion or providing compatibility with a material to be stored. Only those liquids tested for compatibility with the lining material are allowed to be stored in lined tanks. Lining of leaking underground storage tanks shall be done in accordance with the provisions of WAC 173-360-325.

Tank opening, cleaning, preparation, inspection, lining, closing and testing shall be in accordance with U.F.C. Standard 79-6.

For permits to alter a tank, see Section 105, Permit f.3.6.

Interior-lined underground tanks shall be protected from corrosion in accordance with Section 7902.6.15.

7902.6.11 Secondary containment. An approved method of secondary containment shall be provided for underground tank systems, including tanks, piping and related components, where a leak from such a system would pose an immediate hazard to persons or property, as determined by the chief. See Appendix II-G.

7902.6.12 Leak detection required. Underground storage tank systems shall be provided with an approved method of detecting leaks from any component of the system which normally contains liquid.

7902.6.13 Leak-detection installation and maintenance. Leak-detection devices and methods shall be in accordance with nationally recognized standards. See Article 90, Standard u.3.2. Such devices shall be inspected and tested at least annually, and the test results maintained for at least one year.

7902.6.14 Leak reporting. Any consistent or accidental loss of liquid, or other indication of a leak from a tank system, shall be reported immediately to the fire department.

7902.6.15 Corrosion protection.

7902.6.15.1 General. Underground tanks and piping shall be properly designed, installed and maintained, and protected from corrosion in accordance with Section 7902.6.15.2 or 7902.6.15.3.

EXCEPTION: If conditions, based on adequate proof, warrant the deletion of the corrosion-protection requirements, the chief may waive the corrosion-protection requirements.

See Article 90, Standards a.3.10, n.1.2, s.1.1, u.1.14 and u.2.1.

7902.6.15.2 Cathodic protection. Cathodic protection systems provided for corrosion protection shall be in accordance with recognized standards. See WAC 173-360-320.

7902.6.15.3 Corrosion-resistant materials. Corrosion-resistant materials of construction, such as special alloys; nonmetallic, reinforced plastic coatings; composites; or equivalent systems, may be used when approved.

7902.6.15.4 Testing of corrosion protection. New underground steel tanks and piping shall be tested by the structure-to-soil-potential method after the system is in operation. The tank manufacturer shall provide a structure lead and a test station. The criteria for adequate corrosion protection shall be in accordance with recognized standards. Testing shall be done at installation and not less than once every five years thereafter by qualified persons approved by the chief.

EXCEPTION: Approved and listed composite fiberglass-reinforced plastic tanks.

7902.6.16 Testing of underground tanks.

7902.6.16.1 General. Before being covered or placed in use, tanks and piping connected to underground tanks shall be tested for tightness in the presence of the chief. For pipe testing, see Section 7901.11.10. The system shall not be covered until it has been approved.

7902.6.16.2 New tanks. New underground tanks shall be tested for tightness hydrostatically or pneumatically at not less than 3 pounds per square inch (20.7 kPa) and not more than 5 pounds per square inch (34.5 kPa) for 30 minutes. Pneumatic testing shall not be used on a tank containing flammable or combustible liquids or vapors.

When secondary containment tanks are required in accordance with Section 7902.6.11, they shall be tested in accordance with the manufacturer's instructions. Both the primary and secondary containment shall be tested.

7902.6.16.3 Existing tanks and piping. Existing underground storage tanks and piping shall be tested for leakage at the owner's or operator's expense when the chief has reasonable cause to believe that a leak exists. Orders by the chief requiring testing on underground tanks or piping shall indicate that the test be completed by a specified date. Tanks shall be emptied of flammable or combustible liquids, and piping and other equipment shall not be used if required tests are not completed within the specified time.

When testing is required, owners or operators shall provide the chief with data setting forth the method of testing that is to be used and shall submit the name of a qualified individual who will conduct the test. The method of testing to be used shall consider the effects of temperature, pressure and other variables and shall establish conclusively whether the tank or piping is leaking. Pneumatic testing shall not be used for tanks.

Devices used for final testing of tanks shall be capable of detecting leaks as small as 0.05 gallon per hour (0.19 L/hr). Leaking piping and equipment shall not be used until repaired or replaced.

The chief is authorized to require that the test be conducted in the chief's presence.

7902.6.16.4 Used tanks. Used tanks intended for flammable or combustible liquid service shall be tested as required for new tanks.

NEW SECTION

WAC 51-34-7904 Section 7904--Special operations.

7904.1 General. The following special operations shall be in accordance with Sections 7901, 7902 and 7903 except as provided in Section 7904.

1. Storage and dispensing of flammable and combustible liquids on farms and construction sites.

2. Well drilling and operating.

3. Bulk plants or terminals.

4. Loading and unloading of tank vehicles and tank cars.

5. Tank vehicles and tank vehicle operation.

6. Refineries.

7904.2 Storage and Dispensing of Flammable and Combustible Liquids on Farms and Construction Sites.

7904.2.1 General. Permanent and temporary storage and dispensing of Class I and II liquids for private use on farms and rural areas and at construction sites, earth-moving projects, gravel pits or borrow pits shall be in accordance with Section 7904.2.

EXCEPTION: Storage and use of fuel-oil and containers connected with oil-burning equipment regulated by Article 61 and the Mechanical Code.

7904.2.2 Combustibles and open flames near tanks. Storage areas shall be kept free of weeds and extraneous combustible material. Open flames and smoking are prohibited in flammable or combustible liquid storage areas.

7904.2.3 Marking of tanks and containers. Tanks and containers for the storage of liquids aboveground shall be conspicuously marked with the name of the product which they contain and FLAMMABLE--KEEP FIRE AND FLAME AWAY. Tanks shall bear the additional marking KEEP 50 FEET (15.2 Meters) FROM BUILDINGS.

7904.2.4 Containers for storage and use. Metal containers used for storage of Class I or II liquids shall be in accordance with DOT requirements or shall be of an approved design.

Discharge devices shall be of a type that does not develop an internal pressure on the container. Pumping devices or approved self-closing faucets used for dispensing liquids shall not leak and shall be well maintained. Individual containers shall not be interconnected and shall be kept closed when not in use.

Containers stored outside and inside of buildings shall be in accordance with Section 7902 and the Building Code.

7904.2.5 Permanent and temporary tanks for storage and use.

7904.2.5.1 General. The capacity of permanent aboveground tanks containing Class I or II liquids shall not exceed 1,100 gallons (4163.9 L). The capacity of temporary aboveground tanks containing Class I or II liquids shall not exceed 10,000 gallons (37 854 L). Tanks shall be of single-compartment design, constructed in accordance with Section 7902.1.2.

7904.2.5.2 Fill opening security. Fill openings shall be equipped with a locking closure device. Fill openings shall be separate from vent openings.

7904.2.5.3 Vents. Each tank shall be provided with a free-opening vent of a size not less than specified in Table 7904.2-A to relieve vacuum or pressure which could develop in normal operation or from a fire exposure. Venting shall be in accordance with Section 7902.1.10.

Vents shall be arranged to discharge in a manner which prevents localized overheating or flame impingement on any part of the tank in the event vapors from such vents are ignited.

7904.2.5.4 Location.

7904.2.5.4.1 General. Tanks containing Class I or II liquids shall be kept outside of and at least 50 feet (15 240 mm) from buildings and combustible storage. Additional distance shall be provided when necessary to ensure that vehicles, equipment and containers being filled directly from such tanks will not be less than 50 feet (15 240 mm) from structures, haystacks or other combustible storage.

7904.2.5.4.2 Locations where aboveground tanks are prohibited. The storage of Class I and II liquids in aboveground tanks is prohibited within the limits established by law as the limits of districts in which such storage is prohibited. (See sample adoption ordinance, Section 4.)

7904.2.5.5 Type of tank.

7904.2.5.5.1 General. Tanks shall be provided with top openings only or shall be elevated for gravity discharge.

7904.2.5.5.2 Tanks with top openings only. Tanks with top openings only shall be mounted as follows:

1. On well-constructed metal legs connected to shoes or runners designed so that the tank is stabilized and the entire tank and its supports can be moved as a unit, or

2. For stationary tanks, on a stable base of timbers or blocks approximately 6 inches (152.4 mm) in height which prevents the tank from contacting the ground.

Tanks with top openings only shall be equipped with a tightly and permanently attached, approved pumping device having an approved hose of sufficient length for filling vehicles, equipment or containers to be served from the tank. Either the pump or the hose shall be equipped with a padlock to its hanger to prevent tampering. An effective antisiphoning device shall be included in the pump discharge unless a self-closing nozzle is provided. Siphons or internal pressure discharge devices shall not be used.

7904.2.5.5.3 Tanks for gravity discharge. Tanks with a connection in the bottom or the end for gravity dispensing liquids shall be mounted and equipped as follows:

1. Supports to elevate the tank for gravity discharge shall be of adequate strength and designed to provide stability, and

2. Bottom or end openings for gravity discharge shall be equipped with a valve located adjacent to the tank shell which will

close automatically in the event of fire through the operation of an effective heat-actuated releasing device. If this valve cannot be operated manually, it shall be supplemented by a second manually operated valve. The gravity discharge outlet shall be provided with an approved hose equipped with a self-closing valve at the discharge end of a type that can be padlocked to its hanger.

7904.2.6 Spill control, drainage control and diking. Indoor storage and dispensing areas shall be provided with spill control and drainage control as set forth in Section 7901.8. Outdoor storage areas shall be provided with drainage control or diking as set forth in Section 7902.2.8.

7904.2.7 Portable fire extinguishers. Portable fire extinguishers with a minimum rating of 20-B:C shall be provided when required by the chief.

7904.2.8 Dispensing from tank vehicles.

7904.2.8.1 General. When approved by the chief, liquids used as fuels may be transferred from tank vehicles into the tanks of motor vehicles or special equipment, provided:

1. The tank vehicle's specific function is that of supplying fuel to motor vehicle fuel tanks,

2. The dispensing line does not exceed 50 feet (15 240 mm) in length,

3. The dispensing nozzle is an approved type,

4. The dispensing hose is properly placed on the approved reel or in a compartment provided before the tank vehicle is moved,

5. Signs prohibiting smoking or open flame within 25 feet (7 620 mm) of a tank vehicle or the point of refueling are prominently posted on the tank vehicle,

6. Electrical devices and wiring in areas where fuel dispensing is conducted are in accordance with the Electrical Code,

7. Vapor-recovery systems are provided in accordance with Section 5202.12,

8. Tank vehicle dispensing equipment is operated only by designated personnel who are trained to handle and dispense motor fuels, and

9. Provisions are made for controlling and mitigating unauthorized discharges.

7904.2.8.2 Location. Dispensing from tank vehicles shall be conducted at least 50 feet (15 240 mm) from structures or combustible storage.

7904.3 Well Drilling and Operating.

7904.3.1 General. Wells for oil and natural gas shall be drilled and operated in accordance with Section 7904.3.

7904.3.2 Location.

7904.3.2.1 Storage tanks and sources of ignition. Well heads shall not be located within 25 feet (7 620 mm) of storage tanks or boilers, fired heaters, open-flame devices or other sources of

ignition. Smoking is prohibited at wells or tank locations except as designated and in posted areas approved by the chief.

EXCEPTION: Engines used in the drilling, production and serving of wells.

7904.3.2.2 Streets and railways. Wells shall not be drilled within 75 feet (22 860 mm) of any dedicated public street, highway or nearest rail of an operating railway.

7904.3.2.3 Buildings. Wells shall not be drilled within 100 feet (30 480 mm) of buildings not necessary to the operation of the well.

Wells shall not be drilled within 300 feet (91 440 mm) of buildings used as a place of assembly, institution or school.

When wells are existing, buildings shall not be constructed within the distances set forth in Section 7904.3 for separation of wells and buildings.

7904.3.3 Waste Control.

7904.3.3.1 Discharge on a street or water channel. Liquids containing crude petroleum or its products shall not be discharged into or on streets, highways, drainage canals or ditches, storm drains, or flood-control channels.

7904.3.3.2 Discharge and combustible materials on ground. The surface of the ground under, around or near wells, pumps, boilers, oil storage tanks or buildings shall be kept free of oil, waste oil, refuse or waste material.

EXCEPTION: Material within an oil sump or tank.

7904.3.3.3 Clearing around wells and tanks. Land within 25 feet (7620 mm) of wells, flammable or combustible liquid tanks, or other appurtenances to such wells shall be kept free of dry weeds, grass, rubbish or other combustible material at all times. When, in the opinion of the chief, the distance is not sufficient to provide reasonable fire safety, a greater distance may be required, not to exceed the height of a derrick or greatest dimension of a tank.

7804.3.4 Sumps.

7904.3.4.1 Maximum width. Sumps or other basins for the retention of oil or petroleum products shall not exceed 12 feet (3658 mm) in width.

7904.3.4.2 Backfilling. Sumps or other basins for the retention of oil or petroleum products larger than 6 feet by 6 feet by 6 feet (1829 mm by 1829 mm by 1829 mm) shall not be maintained longer than 60 days after the cessation of drilling operations.

7904.3.4.3 Security. Sumps, diversion ditches and depressions used as sumps shall be securely fenced or covered.

7904.3.5 Prevention of blowouts. Adequate protection shall be provided to control and prevent the blowout of a well. Protection equipment shall meet federal, state and other applicable jurisdiction requirements.

7904.3.6 Storage tanks. Storage of flammable or combustible liquids in tanks shall be in accordance with Section 7902. Each oil storage tank or group of tanks shall have posted in a conspicuous place on or near such tank or tanks an approved sign with the name of the owner or operator, name or number of lease and

the telephone number where a responsible person can be reached at any time.

7904.3.7 Soundproofing. Where soundproofing material is required during field operations, such material shall be noncombustible.

EXCEPTION: Fire-retardant treated material may be used and maintained when approved by the chief.

7904.3.8 Signs. Well locations shall have posted in a conspicuous place an approved sign with the name of the owner or operator, name or number of the lease, and number of the well. Such signs shall be maintained on the premises from the time materials are delivered for drilling purposes until the well is abandoned.

7904.3.9 Field loading racks. Field loading racks shall be in accordance with Section 7904.5.

7904.4 Bulk Plants or Terminals.

7904.4.1 General. Portions of properties where flammable and combustible liquids are received by tank vessels, pipelines, tank cars or tank vehicles and are stored or blended in bulk for the purpose of distributing such liquids by tank vessels, pipelines, tank cars, tank vehicles or containers shall be in accordance with Section 7904.4.

7904.4.2 Buildings.

7904.4.2.1 Construction. Buildings shall be constructed in accordance with the Building Code.

7904.4.2.2 Exits. Rooms in which liquids are stored, used or transferred by pumps shall have exits arranged to prevent occupants from being trapped in the event of fire.

7904.4.2.3 Heating. Rooms in which Class I liquids are stored or used shall be heated only by means not constituting a source of ignition, such as steam or hot water. Rooms containing heating appliances involving sources of ignition shall be located and arranged to prevent entry of flammable vapors.

7904.4.3 Ventilation.

7904.4.3.1 General. Ventilation shall be provided for rooms, buildings and enclosures in which Class I liquids are pumped, used or transferred. Design of ventilation systems shall consider the relatively high specific gravity of the vapors. When natural ventilation is used, adequate openings in outside walls at floor level, unobstructed except by louvers or coarse screens, shall be provided. Where natural ventilation is inadequate, mechanical ventilation shall be provided in accordance with the Mechanical Code.

7904.4.3.2 Basements and pits. Class I liquids shall not be stored or used within a building having a basement or pit into which flammable vapors can travel, unless such area is provided with ventilation designed to prevent the accumulation of flammable vapors therein.

7904.4.3.3 Dispensing of Class I liquids. Containers of Class I liquids shall not be drawn from or filled within buildings unless a provision is made to prevent the accumulation of flammable vapors in hazardous concentrations. Where mechanical ventilation is required, it shall be kept in operation while flammable vapors could be present.

7904.4.4 Storage. Storage of Class I, II and III-A liquids in bulk plants shall be in accordance with applicable provisions of Article 79.

7904.4.5 Wharves.

7904.4.5.1 General. Wharves, including piers, bulkheads and other structures over or contiguous to navigable water having a primary function of transferring liquid cargo in bulk between shore installations and tank vessels, ships, barges, lighter boats or other mobile floating craft, shall be in accordance with Section 7904.4.5.

EXCEPTION: Marine motor vehicle fuel-dispensing stations. See Section 5202.11.

7904.4.5.2 Transferring times. Package cargo of liquids, including full and empty drums, bulk fuel and stores, shall only be transported over a wharf during cargo transfer at such times and places as agreed on by the wharf superintendent and the senior deck officer on duty.

7904.4.5.3 Transferring locations. Wharves at which liquid cargoes are to be transferred in bulk quantities to or from tank vessels shall be at least 100 feet (30 480 mm) from bridges over a navigable waterway, or from an entrance to or superstructure of vehicular or railroad tunnels under a waterway. The termination of fixed piping used for loading or unloading at a wharf shall be at least 200 feet (60 960 mm) from bridges or from entrances to or superstructures of tunnels.

7904.4.5.4 Cargo vessels and transfer equipment. Substructure and decking shall be substantially designed for the use intended. Decking shall be constructed of materials which will afford the desired combination of flexibility, resistance to shock, durability, strength and fire resistance. Heavy timber construction is acceptable.

Installation of tanks used exclusively for ballast water or Class II or III liquids on suitably designed wharves is allowed.

Loading pumps capable of building up pressures in excess of the safe working pressure of cargo hose or loading arms shall be provided with bypasses, relief valves or other arrangements to protect the loading facilities against excessive pressure. Relief devices shall be tested at not more than yearly intervals to determine that they function satisfactorily at the pressure at which they are set.

Pressure hoses and couplings shall be inspected at intervals appropriate to the service. With the hose extended, hose and couplings shall be tested using in-service maximum operating pressures. Hoses showing material deteriorations, signs of leakage, or weakness in its carcass or at the couplings shall be withdrawn from service and repaired or discarded.

7904.4.5.5 Piping, valves and fittings. Piping, valves and fittings shall be in accordance with Section 7901.11, except as follows:

1. Flexibility of piping shall be assured by appropriate layout and arrangement of piping supports so that motion of the wharf structure resulting from wave action, currents, tides or the

mooring of vessels will not subject the pipe to repeated strain above the elastic limit.

2. Pipe joints depending on the friction characteristics of combustible materials or grooving of pipe ends for mechanical continuity of piping shall not be used.

3. Swivel joints are allowed in piping to which hoses are connected and for articulated swivel-joint transfer systems. Swivel joints shall be designed such that the mechanical strength of the joint will not be impaired if the packing material were to fail.

4. Piping systems shall contain a sufficient number of valves to operate the system properly and to control the flow of liquid in normal operation and in the event of physical damage.

5. In addition to the requirements of Item 4, each line conveying Class I and II liquids leading to a wharf shall be provided with a readily accessible block valve located on shore near the approach to the wharf and outside of any diked area. Where more than one line is involved, the valves shall be grouped in one location.

6. Means of easy access shall be provided for cargo line valves located below the wharf deck.

7. Piping on wharves shall be adequately bonded and grounded if Class I and II liquids are transported. If excessive stray currents are encountered, insulating joints shall be installed. Bonding and grounding connections on all piping shall be located on the wharf side of hose riser insulating flanges, if used, and shall be accessible for inspection.

8. Hose or articulated swivel-joint pipe connections used for cargo transfer shall be capable of accommodating the combined effects of change in draft and maximum tidal range, and mooring lines shall be kept adjusted to prevent surge of the vessel from placing stress on the cargo transfer system.

9. Hoses shall be supported to avoid kinking and damage from chafing.

7904.4.5.6 Loading and unloading. Loading or discharging shall not commence until the wharf superintendent and officer in charge of the tank vessel agree that the tank vessel is properly moored and connections are properly made.

7904.4.5.7 Mechanical work. Mechanical work shall not be performed on the wharf during cargo transfer, except under special authorization by the chief based on a review of the area involved, methods to be employed and precautions necessary.

7904.4.6 Sources of ignition. Class I, II or III-A liquids shall not be used, drawn or dispensed where flammable vapors can reach a source of ignition. Smoking is prohibited except in designated locations. NO SMOKING signs shall be conspicuously posted where hazard from flammable vapors is normally present.

7904.4.7 Drainage control. Loading and unloading areas shall be provided with drainage control in accordance with Section 7901.8.

7904.4.8 Fire protection.

7904.4.8.1 General. Fire protection shall be in accordance with Articles 9 and 10 and Section 7904.4.8.

7904.4.8.2 Portable fire extinguishers. Suitable portable fire extinguishers with a rating of not less than 20-B shall be located within 75 feet (22 860 mm) of those portions of the facility where fires are likely to occur, such as hose connections, pumps and separator tanks.

7904.4.8.3 Fire hoses. Where piped water is available, ready-connected fire hose in a size appropriate for the water supply shall be provided so that manifolds where connections are made and broken can be reached by at least one hose stream.

7904.4.8.4 Obstruction of equipment. Material shall not be placed on wharves in such a manner which would obstruct access to firefighting equipment or important pipeline control valves.

7904.4.8.5 Fire apparatus access. Where the wharf is accessible to vehicle traffic, an unobstructed roadway to the shore end of the wharf shall be maintained for access of firefighting apparatus. See Section 902.

7904.4.9 Overfill protection of Class I liquids. Manual and automatic systems shall be provided to prevent overfill during the transfer of Class I liquids from mainline pipelines and marine vessels in accordance with nationally recognized standards. See Article 90, Standard a.3.19.

7904.5 Loading and Unloading of Tank Vehicles and Tank Cars.

7904.5.1 General.

7904.5.1.1 Applicability. Tank vehicle and tank car loading and unloading shall be in accordance with Section 7904.5.

7904.5.1.2 Fire protection. Fire protection shall be provided in accordance with Article 10. Approved portable fire extinguishers shall be provided in accordance with U.F.C. Standard 10-1. Extinguishers having a minimum rating of 40-B shall be provided at each loading rack. Suitable fire-control devices, such as small hose or portable fire extinguishers, shall be available to protect locations where fires are likely to occur. The chief is authorized to require additional fire-control equipment where an unusual exposure hazard exists. Such additional fire-control equipment shall be sufficient to extinguish a fire in the largest tank. The design and amount of such equipment shall be in accordance with approved engineering standards.

7904.5.1.3 Spill control and drainage control. Areas where tank vehicle and tank car loading racks are located shall be provided with spill control and drainage control as set forth in Section 7901.8.

7904.5.2 Tank vehicle loading racks.

7904.5.2.1 Construction. Loading racks shall be constructed of noncombustible materials.

7904.5.2.2 Location. Loading racks dispensing Class I, II or III-A liquids shall be separated from tanks, warehouses or other plant buildings, and nearest property line of a property that can be built on by a clear distance of not less than 25 feet (7620 mm), measured from the nearest fill stem. Buildings for pumps or for

shelter of loading personnel are allowed to be part of the loading rack.

7904.5.2.3 Static protection. Loading racks shall be equipped with protection to prevent the accumulation of static charges during truck-filling operations. Bonding facilities shall be provided during the loading of tank vehicles through open domes where Class I liquids are loaded, or where Class II and III liquids are loaded into vehicles which could contain vapors from previous cargoes of Class I liquids.

Protection shall consist of a metallic bond wire permanently electrically connected to the fill stem or to some part of the rack structure in electrical contact with the fill stem. The fill stem pipe assembly shall form a continuous electrically conductive path downstream from the point of bonding. The free end of such bond wire shall be provided with a clamp or equivalent device for convenient attachment to some metallic part in electrical contact with the cargo tank of the tank vehicle. Protection shall consist of a flexible bond wire of adequate strength for the intended service and the electrical resistance shall not exceed 1 megohm.

Such bonding connection shall be fastened to the vehicle or tank before dome covers are raised and shall remain in place until filling is completed and all dome covers have been closed and secured.

EXCEPTIONS: 1. Where vehicles are loaded exclusively with products not having a static-accumulating tendency, such as asphalts, cutback asphalts, most crude oils, residual oils and water-soluble liquids.
2. When Class I liquids are not handled at the loading facility and the tank vehicles loaded are used exclusively for Class II and III liquids.
3. Where vehicles are loaded or unloaded through closed top or bottom connections whether the hose or pipe is conductive or nonconductive.

Filling through open domes into the tanks of tank vehicles that contain vapor-air mixtures within the flammable range, or where the liquid being filled can form such a mixture, shall be by means of a downspout which extends to near the bottom of the tank.

7904.5.2.4 Drag chains. Drag chains or similar devices on tank vehicles shall not be used to meet the requirement of Section 7904.5.2.3 for static protection.

7904.5.2.5 Smoking. Approved signs which read NO SMOKING shall be maintained at entrance gates of bulk plants and near each loading rack.

7904.5.2.6 Security. Loading rack or properties on which a loading rack is located shall be surrounded by a fence not less than 5 feet (1524 mm) in height, constructed of wire mesh, solid metal sheathing or masonry. Tank vehicles shall not be loaded or unloaded unless such vehicles are entirely within the fenced area. Tank vehicles shall not be backed into or from the premises of a bulk plant.

EXCEPTION: Existing installations where adequate public safety exists due to isolation, natural barriers or other factors as determined by the chief.

7904.5.2.7 Top loading. When top loading a tank vehicle with Class I and II liquids without vapor control, valves used for the final control of flow shall be of the self-closing type and shall be manually held open except where automatic means are provided for shutting off the flow when the vehicle is full. Self-closing valves shall not be tied or locked in the open position.

When top loading a tank vehicle with vapor control, flow control shall be in accordance with Section 7904.5.2.8.

7904.5.2.8 Bottom loading. When bottom loading a tank vehicle with or without vapor control, a positive means shall be provided for loading a predetermined quantity of liquid, together with an automatic secondary shutoff control to prevent overfilling. The connecting components between the loading rack and the tank vehicle required to operate the secondary control shall be functionally compatible.

When bottom loading a tank vehicle that is equipped for vapor control and vapor control is not used, the tank shall be vented to the atmosphere to prevent pressurization of the tank. Such venting shall be at a height equal to or greater than the top of the cargo tank on the vehicle.

When bottom loading a tank vehicle, the coupling between the liquid loading hose or pipe and the truck piping shall be a dry disconnect coupling.

Connections to the plant vapor-control system shall be designed to prevent the escape of vapor to the atmosphere when not connected to a tank vehicle.

Vapor-processing equipment shall be separated from aboveground tanks, warehouses, other plant buildings, loading and unloading facilities or nearest line of adjoining property that can be built on by a distance of at least 25 feet (7620 mm). Vapor-processing equipment shall be protected from physical damage by remote location, guardrails, curbs or fencing.

7904.5.2.9 Switch loading. Tanks which have previously contained Class I liquids shall not be loaded with Class II or III liquids until such tanks and all piping, pumps, hoses and meters connected thereto have been completely drained and flushed.

7904.5.2.10 Electrical. Wiring and electrical equipment located within 25 feet (7620 mm) of any portion of the loading rack shall be designed, operated and installed such that it does not create an ignition hazard.

7904.5.3 Tank Car Loading Racks.

7904.5.3.1 Construction. Construction shall be in accordance with Section 7904.5.2.1.

7904.5.3.2 Location. Location shall be in accordance with Section 7904.5.2.2.

7904.5.3.3 Static protection. Where the resistance of a tank car to ground through the rails is 25 ohms or greater, bonding shall be provided in accordance with Section 7904.5.2.3.

7904.5.3.4 Stray current protection. Tank car loading facilities where Class I, II or III-A liquids are loaded or unloaded through open domes shall be protected against stray currents by permanently bonding the pipe to at least one rail and to the rack structure. Multiple pipes entering the rack area shall be permanently electrically bonded together. In areas where excessive stray currents are known to exist, all pipes entering the rack area shall be provided with insulating sections to electrically isolate the rack piping from the pipe lines.

7904.5.3.5 Smoking. Smoking controls shall be in accordance with Section 7904.5.2.5.

7904.5.3.6 Security. Loading racks or properties on which a loading rack is located shall be surrounded by a fence not less than 5 feet (1524 mm) in height, constructed of wire mesh, solid metal sheathing or masonry. Tank cars shall not be loaded or unloaded unless such tank cars are entirely within such enclosure.

EXCEPTION: Existing installations where adequate public safety exists due to isolation, natural barriers or other factors as determined by the chief.

7904.5.3.7 Switch loading. Switch loading shall be in accordance with Section 7904.5.2.9.

7904.5.4 Liquid transfer.

7904.5.4.1 Transfer apparatus. Transfer apparatus shall be of an approved type.

7904.5.4.2 Destination of liquids off loaded from tank vehicles and tank cars.

7904.5.4.2.1 General. Class I, II or III liquids shall be transferred from a tank vehicle or tank car only into an approved atmospheric tank or approved portable tank, except as provided in Sections 7904.5.4.2.2 through 7904.5.4.6.

7904.5.4.2.2 Marine craft and special equipment. Liquids intended for use as motor fuels are allowed to be transferred from tank vehicles into the fuel tanks of marine craft and special equipment under the following conditions and when approved by the chief, and when:

1. The tank vehicle's specific function is that of supplying fuel to fuel tanks and each premises shall require a separate permit issued in accordance with Section 105,

2. The operation shall be performed only where the general public has no access or where there is no unusual exposure to life and property,

3. The dispensing line shall not exceed 50 feet (15 240 mm) in length, and

4. The dispensing nozzle is approved.

7904.5.4.2.2.1 Vehicle fueling. When approved by the chief, dispensing of motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles is allowed in accordance with Article 52 and Sections 7904.2 and 7904.5.4.2.2.

7904.5.4.2.3 Emergency refueling. When approved by the chief, dispensing of motor vehicle fuel from tank vehicles into the fuel tanks of motor vehicles is allowed during emergencies. Dispensing from tank vehicles shall be in accordance with Sections 7904.2.8 and 7904.6.

7904.5.4.2.4 Aircraft fueling. Transfer of liquids from tank vehicles to the fuel tanks of aircraft is allowed in accordance with Section 2402.

7904.5.4.2.5 Fueling of vehicles at farms, construction sites and similar areas. Transfer of liquids from tank vehicles to motor vehicles for private use on farms and rural areas and at

construction sites, earth moving projects, gravel pits and borrow pits is allowed in accordance with Section 7904.2.8.

7904.5.4.2.6 Disabled vehicles. When a tank vehicle or tank is disabled through accident or mechanical failure and it becomes necessary to remove the cargo at that location, such cargo is allowed to be transferred to another tank vehicle or tank car.

7904.5.4.3 Time limit for unloading. Tank vehicles and tank cars shall be unloaded as soon as possible after arrival at point of delivery and shall not be used as storage tanks. Tank cars shall be unloaded only on private sidings or railroad siding facilities equipped for transferring the liquid between tank cars and permanent storage tanks. Unless otherwise approved by the chief, a tank car shall not be allowed to remain on a siding at the point of delivery for more than 24 hours while connected for transfer operations.

7904.5.4.4 Unloading inside buildings. Tank vehicles or tank cars shall not be located inside of a building while unloading Class I, II or III-A liquids, unless approved by the chief.

EXCEPTION: Tank vehicles are allowed under canopies of automotive motor vehicle fuel-dispensing stations.

7904.5.4.5 Vehicle motor shut-down. See Section 7904.6.3.3.

7904.5.4.6 Attendant required. The operator or other competent person shall be in attendance at all times while a tank vehicle or tank car is discharging cargo. When practical, the tank vehicle or tank car shall be positioned such that the operating controls and the discharging end of the hoses are both in view of the operator or other competent person.

7904.5.4.7 Chock blocks. At least two chock blocks not less than 5 inches by 5 inches by 12 inches (127 mm by 127 mm by 304.8 mm) in size and dished to fit the contour of tires shall be used during unloading operations of tank vehicles.

7904.6 Tank Vehicles and Tank Vehicle Operation.

7904.6.1 General. Tank vehicles shall be designed, constructed, equipped and maintained in accordance with U.F.C. Standard 79-4 and Section 7904.6.

7904.6.2 Full trailers and semitrailers.

7904.6.2.1 Attachments. Trailers shall be firmly and securely attached to the vehicle drawing them in a manner conforming with accepted engineering practice.

7904.6.2.2 **Brakes.** Full trailers and semitrailers shall be equipped with reliable brakes on all wheels, and adequate provisions shall be made for their efficient operation from the driver's seat of the vehicle drawing the trailer or semitrailer.

7904.6.2.3 Trailer connections. Trailer connections shall prevent the towed vehicle from whipping or swerving from side to side dangerously or unreasonably and shall cause the trailer to follow substantially in the path of the towing vehicle.

7904.6.3 Operation of tank vehicles.

7904.6.3.1 Vehicle maintenance. Tank vehicles shall not be operated unless they are in proper repair and free of accumulation of grease, oil or other flammables, and leaks.

7904.6.3.2 Leaving vehicle unattended. The driver, operator or attendant of a tank vehicle shall not leave the vehicle while it is being filled or discharged. The delivery hose, when attached to a tank vehicle, shall be considered to be a part of the tank vehicle.

7904.6.3.3 Vehicle motor shutdown. Motors of tank vehicles or tractors shall be shut down during the making or breaking of hose connections. If loading or unloading is performed without the use of a power pump, the tank vehicles or tractor motor shall be shut down throughout such operations.

7904.6.3.4 Bonding. Bonding shall be in accordance with Section 7904.5.2.3.

7904.6.3.5 Outage. A cargo tank or compartment thereof used for the transportation of flammable or combustible liquids shall not be loaded to absolute capacity. The vacant space in a cargo tank or compartment thereof used in the transportation of flammable or combustible liquids shall not be less than 1 percent. Sufficient space shall be left vacant to prevent leakage from or distortion of such tank or compartment by expansion of the contents due to rise in temperature in transit.

7904.6.3.6 Overfill protection. The driver, operator or attendant of a tank vehicle shall, before making delivery to a tank, determine the unfilled capacity of such tank by a suitable gaging device. To prevent overfilling, the driver, operator or attendant shall not deliver in excess of that amount.

7904.6.3.7 Securing hatches. During loading, hatch covers shall be secured on all but the receiving compartments.

7904.6.3.8 Simultaneous delivery. Simultaneous delivery to underground tanks from two or more discharge hoses shall be made by means of mechanically tight connections between the hose and fill pipe.

7904.6.3.9 Covers closed in transit. Dome covers shall be closed and latched while the tank vehicle is in transit.

7904.6.3.10 Liquid temperature. Materials shall not be loaded into or transported in a tank vehicle at a temperature above the material's ignition temperature unless safeguarded in an approved manner.

7904.6.3.11 Low vapor-pressure liquids. Flammable and combustible liquids with a vapor pressure of 40 psi (275.8 kPa) absolute or less at 100°F. (37.8°C.) shall be loaded into cargo tanks designed and constructed in accordance with Section 7904.6.1.

7904.6.3.12 Bonding of fill stem. Cargo tanks shall be bonded to the fill stem or some part of the rack structure which is electrically interconnected with the fill-stem piping.

EXCEPTIONS:
1. Tank vehicles used for asphalt.
2. Tank vehicles loading flammable or combustible liquids through bottom connections.
3. Tank vehicles used exclusively for transporting Class III liquids when loaded at locations where Class I and II liquids are not handled.

7904.6.3.13 Bonding to underground tanks. An external bond-wire connection or bond-wire integral with a hose shall be provided for the transferring of flammable liquids through open connections into underground tanks.

7904.6.4 Smoking. Smoking by tank vehicle drivers, helpers or other personnel is prohibited while they are driving, making deliveries, filling or making repairs to tank vehicles.

7904.6.5 Parking.

7904.6.5.1 General. Parking of tank vehicles shall be in accordance with Section 7904.6.5.

EXCEPTION: In cases of accident, breakdown or other emergencies, tank vehicles are allowed to be parked and left unattended at any location while the operator is obtaining assistance.

7904.6.5.2 Unattended parking.

7904.6.5.2.1 Parking near residential, educational and institutional occupancies and other high risk areas. Tank vehicles shall not be left unattended at any time on residential streets, or within 500 feet (152.4 m) of a residential area, apartment or hotel complex, educational facility, hospital, or care facility. Tank vehicles shall not be left unattended at any other place that would, in the opinion of the chief, present an extreme life hazard.

7904.6.5.2.2 Parking on thoroughfares. Tank vehicles shall not be left unattended on a street, highway, avenue or alley.

EXCEPTIONS: 1. The necessary absence in connection with loading or unloading the vehicle. During actual fuel transfer, Section 7904.6.3.2 shall apply. The vehicle location shall be in accordance with Section 7904.6.5.2.1.

2. Stops for meals during the day or night, if the street is well lighted at the point of parking. The vehicle location shall be in accordance with Section 7904.6.5.2.1.

7904.6.5.2.3 Durations exceeding one hour. Tank vehicles parked at any one point for longer than one hour shall be located off of streets, highways, avenues or alleys, and

1. Inside of a bulk plant and either 25 feet (7620 mm) or more from the nearest property line or within a building approved for such use, or

2. At other approved locations not less than 50 feet (15 240 mm) from buildings other than those approved for the storage or servicing of such vehicles.

7904.6.6 Garaging. Tank vehicles shall not be parked or garaged in buildings other than those specifically approved for such use by the chief.

7904.6.7 Fire protection. Tank vehicles shall be equipped with a fire extinguisher having a minimum rating of 2-A, 20-B:C.

During unloading of the tank vehicle, the fire extinguisher shall be out of the carrying device on the vehicle and shall be 15 feet (4572 mm) or more from the unloading valves.

7904.7 Refineries.

7904.7.1 General. Plants and portions of plants in which flammable liquids are produced on a commercial scale from crude petroleum, natural gasoline or other hydrocarbon source shall be in accordance with Section 7904.7.

7904.7.2 Corrosion protection. Aboveground tanks and piping systems shall be protected against corrosion. See Article 90, Standard a.3.6.

7904.7.3 Inspection, repair, alteration or reconstruction of tanks and piping. The inspection, repair, alteration or reconstruction, including welding, cutting and hot tapping, of aboveground storage

tanks and piping that have been placed in service shall be in accordance with nationally recognized standards. See Article 90, Standards a.3.7, a.3.14 and a.3.18.

7904.7.4 Cleaning of tanks. The safe entry and cleaning of petroleum storage tanks shall be conducted in accordance with nationally recognized standards and practices. See Article 90, Standard a.3.15.

7904.7.5 Asphalt products and residua derived from crude petroleum products. When asphalt products and residua derived from crude petroleum products are stored in heated tanks at refineries and bulk storage facilities in tank vehicles, such products shall be handled in accordance with nationally recognized standards. See Article 90, Standard a.3.16.

NEW SECTION

WAC 51-34-8000 Article 80--Hazardous materials.

NEW SECTION

WAC 51-34-8001 Section 8001--General.

8001.1 Scope.

8001.1.1 General. Prevention, control and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials and information needed by emergency response personnel shall be in accordance with Article 80.

EXCEPTIONS: 1. Off-site hazardous materials transportation in accordance with DOT requirements.
2. The quantities of alcoholic beverages, medicines, foodstuffs and cosmetics, containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, in retail sales occupancies are unlimited when packaged in individual containers not exceeding 4 liters.

8001.1.2 Material classification. Hazardous materials are those chemicals or substances defined as such in Article 2. See Appendix VI-A for the classification of hazard categories and hazard evaluations.

The classification system referenced in Section 8002 shall apply to all hazardous materials, including those materials regulated elsewhere in this code.

Mixtures shall be classified in accordance with hazards of the mixture as a whole. Mixtures shall be classified by a qualified organization, individual or testing laboratory approved by the chief.

8001.1.3 Application. Section 8001 shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that when specific requirements are provided in other articles, those specific requirements shall apply.

When a material has multiple hazards, all hazards shall be addressed.

The provisions of Article 80 related to health hazards as classified in Section 8002 are waived when the chief has determined that such enforcement is preempted by other codes, statutes or ordinances. The details of any action granting such a waiver shall be recorded and entered in the files of the code enforcement agency.

8001.1.4 Existing buildings. For existing buildings, see Section 102.

8001.1.5 Retail and wholesale storage and display. For retail and wholesale storage and display of nonflammable solid and nonflammable or noncombustible liquid hazardous materials in Group M retail sales occupancies, see Section 8001.12.

8001.2 Definitions.

8001.2.1 General. For definitions of BARRICADE; BULK OXYGEN SYSTEM; CARCINOGEN; CEILING LIMIT, CHEMICAL, C.F.R.; CHEMICAL NAME; COMMON RADIATION SOURCE MATERIAL; COMPRESSED GAS; COMPRESSED GAS CONTAINER; COMPRESSED GAS SYSTEM; CONTINUOUS GAS-DETECTION SYSTEM; CONTROL AREA; CYLINDER; CORROSIVE; DEFLAGRATION; DETACHED STORAGE; DETONATION; DOT; EXCESS FLOW CONTROL; EXCESS FLOW VALVE; EXPLOSION; EXPLOSIVE; FISSILE MATERIAL; FLAMMABLE GAS; FLAMMABLE LIQUEFIED GAS; FLAMMABLE SOLID; HANDLING; HAZARDOUS MATERIAL; HEALTH HAZARD; HIGHLY TOXIC MATERIAL; HIGHLY VOLATILE LIQUID; IDLH; INERT GAS; IRRITANT; MATERIAL SAFETY DATA SHEET; NESTING; NORMAL TEMPERATURE AND PRESSURE (NTP); ORGANIC PEROXIDE; OSHA; OXIDIZER; PERMISSIBLE EXPOSURE LIMIT (PEL); PEROXIDE-FORMING CHEMICAL; PHYSICAL HAZARD; PORTABLE TANKS; PRIMARY CONTAINMENT; PROPRIETARY INFORMATION; PYROPHORIC; REDUCED FLOW VALVE; RETAIL SALES OCCUPANCY; SCAVENGED GAS; SECONDARY CONTAINMENT; SEGREGATED; SENSITIZER; SEPARATE GAS STORAGE ROOM; SIMPLE ASPHYXIANT GAS; STATIONARY TANK; STORAGE FACILITY; TOXIC MATERIAL; UNAUTHORIZED DISCHARGE; UNSTABLE MATERIAL, UNSTABLE (reactive) LIQUID; USE; USE, CLOSED SYSTEM; USE, OPEN SYSTEM; and WATER-REACTIVE MATERIAL, see Article 2.

8001.2.2 Limited application. For the purpose of Article 80, certain terms are defined as follows:

CONTAINER is any vessel of 60 United States gallons (227.1 L) or less capacity used for transporting or storing hazardous materials.

OUTDOOR AREA is a single, contiguous property exterior to buildings or without buildings thereon which is under the ownership or control of a single person. See also definition of PERSON in Section 217.

8001.3 Permits.

8001.3.1 General. Permits are required to store, dispense, use or handle hazardous material in excess of quantities specified in Section 105, Permit h.1.

A permit is required when a material is classified as having more than one hazard category if the quantity limits are exceeded in any category.

Permits are required to install, repair, abandon, remove, place temporarily out of service, close or substantially modify a storage facility or other area regulated by Article 80. See also Section 8001.11.

EXCEPTIONS: 1. Routine maintenance.
2. For emergency repair work performed on an emergency basis, application for permit shall be made within two working days of commencement of work.

Permittee shall apply for approval to close storage, use or handling facilities at least 30 days prior to the termination of the storage, use or handling of hazardous materials. Such application shall include any change or alteration of the facility closure plan filed pursuant to Section 8001.11. This 30-day period may be waived by the chief if there are special circumstances requiring such waiver.

8001.3.2 Hazardous materials management plan. When required by the chief, each application for a permit shall include a hazardous materials management plan (HMMP). The location of the HMMP shall be posted adjacent to permits when an HMMP is provided. The HMMP shall include a facility site plan designating the following:

1. Storage and use areas,

2. Maximum amount of each material stored or used in each area,

3. Range of container sizes,

4. Locations of emergency isolation and mitigation valves and devices,

5. Product conveying piping containing liquids or gases, other than utility-owned fuel gas lines and low-pressure fuel gas lines, and

6. On and off positions of valves for valves which are of the self-indicating type.

The plans shall be legible and approximately to scale. Separate distribution systems are allowed to be shown on separate pages.

See also Appendix II-E.

EXCEPTION: When an HMMP is required, the applicant may submit the report(s) used for compliance with requirements of 40 CFR "Hazardous Chemical Reporting and Community Right-to-Know Regulations" under Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA).

8001.3.3 Hazardous materials inventory statement. When required by the chief, each application for a permit shall include a hazardous materials inventory statement (HMIS). See also Appendix II-E.

8001.4 Systems, Equipment and Processes.

8001.4.1 General. Containers, cylinders and tanks utilized for storage, dispensing, use or handling of hazardous materials shall be in accordance with Section 8001.4.

8001.4.2 Design and construction of containers, cylinders and tanks. Containers, cylinders and tanks shall be designed and constructed in accordance with nationally recognized standards. See Article 90 and Section 101.3. Containers, cylinders, tanks and

other means used for transporting hazardous materials shall be of an approved type.

8001.4.3 Piping, tubing, valves and fittings.

8001.4.3.1 General. Piping, tubing, valves and fittings conveying hazardous materials shall be installed in accordance with approved standards and shall be in accordance with Section 8001.4.3.

8001.4.3.2 Design and construction. Piping, tubing, valves, fittings and related components used for hazardous materials shall be in accordance with the following:

1. Piping, tubing, valves, fittings and related components shall be designed and fabricated from materials compatible with the material to be contained and shall be of adequate strength and durability to withstand the pressure, structural and seismic stress, and exposure to which they are subject,

2. Piping and tubing shall be identified in accordance with nationally recognized standards (see Article 90, Standard a.2.1) to indicate the material conveyed,

3. Emergency shutoff valves shall be identified and the location shall be clearly visible and indicated by means of a sign, and

4. Backflow-prevention or check valves shall be provided when the backflow of hazardous materials could create a hazardous condition or cause the unauthorized discharge of hazardous materials.

8001.4.3.3 Additional regulations for supply piping for health hazard materials. Supply piping and tubing for gases and liquids having a health hazard ranking of 3 or 4 in accordance with U.F.C. Standard 79-3 shall also be in accordance with the following:

1. Piping and tubing utilized for the transmission of highly toxic or toxic material shall have welded or brazed connections throughout unless an exhausted enclosure is provided if the material is a gas, or the piping is provided with a receptor for containment if the material is a liquid,

EXCEPTION: Nonmetallic piping with approved connections.

2. Piping and tubing shall not be located within exit corridors, within any portion of an exit required to be enclosed in fire-resistive construction, or above areas not classified as Group H Occupancies,

EXCEPTION: Piping and tubing within the space defined by the walls of exit corridors and floor or roof above or in concealed space above other occupancies when installed in accordance with the Building Code as required for Group H, Division 6 Occupancies. See U.B.C. Section 307.11.6.2.

3. Where gases or liquids are carried in pressurized piping above 15 psig (103.4 kPa), excess flow control shall be provided. Where the piping originates from within a hazardous material storage room or area, the excess flow control shall be located within the storage room or area. Where the piping originates from a bulk source, the excess flow control shall be located as close to the bulk source as practical, and

4. Readily accessible manual or automatic remotely activated fail-safe emergency shutoff valves shall be installed on supply piping and tubing at the following locations:

4.1 The point of use, and

4.2 The tank, cylinder or bulk source.

8001.4.3.4 Flammable, oxidizing and pyrophoric gases. Low melting point materials, such as aluminum, copper and some brass alloys or materials which soften on fire exposure, such as nonmetallic materials, or nonductile materials, such as cast iron, shall not be used for piping, valves or fittings conveying flammable, pyrophoric or oxidizing gases unless they are in accordance with one of the following:

1. Suitably protected against fire exposure by fire-resistive construction, gas cabinets, automatic fire sprinklers or other approved methods,

2. Located so that any release resulting from failure will not unduly expose persons, buildings or structures, or

3. Located where leakage can readily be controlled by operation of an accessible, remotely located valve or valves.

8001.4.4 Suitability of equipment, machinery and processes. Equipment, machinery and processes utilized for dispensing, use or handling of hazardous materials shall be approved, listed, or designed and constructed in accordance with approved standards for the intended use. Such equipment, machinery and processes shall be maintained in an operable condition.

8001.4.5 Installation of tanks.

8001.4.5.1 Underground tanks.

8001.4.5.1.1 General. Underground tanks used for the storage of liquid hazardous materials shall be located and protected in accordance with Section 7902.6.11.

8001.4.5.1.2 Secondary containment. Secondary containment shall be provided for new installations of underground tanks.

8001.4.5.2 Aboveground tanks. Aboveground stationary tanks used for the storage of hazardous materials shall be located and protected in accordance with the requirements for outdoor storage of the particular material involved and shall be marked as required by Section 8003.1.2.

8001.4.6 Empty containers and tanks. Empty containers and tanks previously used for the storage of hazardous materials shall be free from residual material and vapor as defined by DOT, the Resource Conservation and Recovery Act (RCRA) or other regulating authority or maintained as specified for the storage of the hazardous material.

8001.4.7 Maintenance.

8001.4.7.1 General. Defective containers, cylinders and tanks shall be removed from service, repaired or disposed of in an approved manner. Equipment, machinery and processes found to be defective shall be replaced, repaired or removed from service. See also Section 8001.4.4.

8001.4.7.2 Tanks out-of-service for 90 days. Stationary tanks not used for a period of 90 days shall be properly safeguarded or removed in a manner approved by the chief. Such tanks shall have

the fill line, gauge opening and pump connection secured against tampering. Vent lines shall be properly maintained.

Tanks which are to be placed back in service shall be tested in a manner approved by the chief.

8001.4.7.3 Defective containers and tanks. Defective containers and tanks shall be removed from service, repaired or disposed of in an approved manner.

8001.5 Release of Hazardous Materials.

8001.5.1 General. Hazardous materials shall not be released into a sewer, storm drain, ditch, drainage canal, lake, river or tidal waterway, or upon the ground, sidewalk, street, highway or into the atmosphere.

EXCEPTIONS: 1. Pesticide products and materials intended for use in weed abatement, erosion control, soil amendment or similar applications when applied in accordance with the manufacturer's instructions, label directions and in accordance with nationally recognized standards.

2. Materials released in accordance with federal, state or local governing regulations or permits of the jurisdictional Air Quality Management Board with a National Pollutant Discharge Elimination System Permit, with waste discharge requirements established by the jurisdictional Water Quality Control Board or with local sewer pretreatment requirements for publicly owned treatment works.

8001.5.2 Unauthorized discharges.

8001.5.2.1 Records. Accurate records shall be kept of the unauthorized discharge of hazardous materials by the permittee.

8001.5.2.2 Notification. The chief shall be notified immediately when an unauthorized discharge becomes reportable under state, federal or local regulations.

8001.5.2.3 Preparation. Provisions shall be made for controlling and mitigating unauthorized discharges.

8001.5.2.4 Control. When an unauthorized discharge due to primary container failure is discovered, the involved primary container shall be repaired or removed from service.

8001.5.2.5 Responsibility for cleanup. The person, firm or corporation responsible for an unauthorized discharge shall institute and complete all actions necessary to remedy the effects of such unauthorized discharge, whether sudden or gradual, at no cost to the jurisdiction.

When deemed necessary by the chief, cleanup may be initiated by the fire department or by an authorized individual or firm. Costs associated with such cleanup shall be borne by the owner, operator or other person responsible for the unauthorized discharge.

8001.6 Material Safety Data Sheets. Material safety data sheets (MSDS) shall be readily available on the premises for hazardous materials regulated by Article 80. See also Section 8001.3.2.

8001.7 Identification Signs. Visible hazard identification signs as specified in U.F.C. Standard 79-3 shall be placed at entrances to locations where hazardous materials are stored, dispensed, used or handled in quantities requiring a permit. Signs shall be provided at specific entrances designated by the chief.

EXCEPTION: The chief may waive this requirement in special cases when consistent with safety if the owner or operator has submitted a hazardous materials management plan and hazardous materials inventory statement. See Appendix II-E and Sections 8001.3.2 and 8001.3.3.

Individual containers, cartons or packages shall be conspicuously marked or labeled in accordance with nationally recognized standards. See also Section 8003.1.2.

Rooms or cabinets containing compressed gases shall be conspicuously labeled COMPRESSED GAS.

8001.8 Construction Requirements.

8001.8.1 General. Buildings, or portions thereof, in which hazardous materials are stored, handled or used shall be constructed in accordance with the Building Code.

8001.8.2 Control areas.

8001.8.2.1 Construction requirements. Control areas shall be separated from each other by not less than a one-hour fire-resistive occupancy separation.

8001.8.2.2 Number. The number of control areas in buildings or portions of buildings used for retail or wholesale sales shall not exceed two. The number of control areas in buildings with other uses shall not exceed four.

8001.9 General Safety Precautions.

8001.9.1 Personnel training and written procedures.

8001.9.1.1 General. Persons responsible for the operation of areas in which hazardous materials are stored, dispensed, handled or used shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of fire, leak or spill.

8001.9.1.2 Fire department liaison. Responsible persons shall be designated and trained to be liaison personnel for the fire department. These persons shall aid the fire department in preplanning emergency responses and identification of the locations where hazardous materials are located and shall have access to material safety data sheets and be knowledgeable in the site emergency response procedures.

8001.9.2 Security. The storage, dispensing, use and handling areas shall be secured against unauthorized entry and safeguarded with such protective facilities as public safety requires.

8001.9.3 Protection from vehicles. Guard posts or other approved means shall be provided to protect storage tanks and connected piping, valves and fittings; dispensing areas; and use areas subject to vehicular damage. When guard posts are installed, the posts shall be:

1. Constructed of steel not less than 4 inches (101.6 mm) in diameter and concrete filled,

2. Spaced not more than 4 feet (1219 mm) between posts on center,

3. Set not less than 3 feet (914 mm) deep in a concrete footing of not less than a 15-inch (381 mm) diameter,

4. Set with the top of the posts not less than 3 feet (914 mm) above ground, and

5. Located not less than 5 feet (1524 mm) from the tank.

8001.9.4 Electrical wiring and equipment. Electrical wiring and equipment shall be installed in accordance with the Electrical Code.

8001.9.5 Static accumulation. When processes or conditions exist where a flammable mixture could be ignited by static electricity, means shall be provided to prevent the accumulation of a static charge.

8001.9.6 Protection from light. Materials which are sensitive to light shall be stored in containers designed to protect them from such exposure.

8001.9.7 Shock padding. Materials which are shock sensitive shall be padded, suspended or otherwise protected against accidental dislodgment and dislodgment during seismic activity. For seismic requirements and the seismic zone in which the material is located, see the Building Code.

8001.9.8 Separation of incompatible materials. Incompatible materials in storage and storage of materials incompatible with materials in use shall be separated when the stored materials are in containers having a capacity of more than 5 pounds (2.268 kg) or ½ gallon (1.89 L). Separation shall be accomplished by:

1. Segregating incompatible materials storage by a distance of not less than 20 feet (6096 mm),

2. Isolating incompatible materials storage by a noncombustible partition extending not less than 18 inches (457.2 mm) above and to the sides of the stored material,

3. Storing liquid and solid materials in hazardous materials storage cabinets (see Section 8003.1.10), or

4. Storing compressed gases in gas cabinets or exhausted enclosures in accordance with Sections 8003.3.1.3.2 and 8003.3.1.3.3.

Materials which are incompatible shall not be stored within the same cabinet or exhausted enclosure.

8001.10 Handling and Transportation.

8001.10.1 General. Handling and transportation of hazardous materials in exit corridors or exit enclosures shall be in accordance with Section 8001.10. See also Section 8001.4.

Hazardous materials gas containers, cylinders and tanks in transit shall have their protective caps in place. Containers, cylinders and tanks of highly toxic or toxic compressed gases shall have their valve outlets capped or plugged with an approved closure device. See also Sections 7401.7 and 7403.3.

8001.10.2 Required use of carts and trucks. Liquids in containers exceeding 5 gallons (18.9 L) in an exit corridor or exit enclosure shall be transported on a cart or truck. Containers of hazardous materials having a hazard ranking of 3 or 4 in accordance with U.F.C. Standard 79-3 transported within exit corridors or exit enclosures shall be on a cart or truck. When carts and trucks are required for transporting hazardous materials, they shall be in accordance with Section 8001.10.3.

EXCEPTIONS: 1. Two hazardous materials liquid containers, which are hand carried in acceptable safety carriers.
2. Single drums not exceeding 55 gallons (208.2 L), which are transported by suitable drum trucks.

3. Contain. .d cylinders of compressed gases, which are transporte. .pproved hand trucks, and containers and cylinders not exceeding 25 pounds (11.3 kg), which are hand carried.
4. Solid hazardous materials not exceeding 100 pounds (45.4 kg), which are transported by approved hand trucks, and a single container not exceeding 50 pounds (22.7 kg), which is hand carried.

8001.10.3 Carts and trucks.

8001.10.3.1 General. Carts and trucks required by Section 8001.10.2 to be used to transport hazardous materials shall be in accordance with Section 8001.10.3.

8001.10.3.2 Design. Carts and trucks used to transport hazardous materials shall be designed to provide a stable base for the commodities to be transported and shall have a means of restraining containers to prevent accidental dislodgment. Compressed gas cylinders placed on carts and trucks shall be individually restrained.

8001.10.3.3 Speed-control devices. Carts and trucks shall be provided with a device which will enable the operator to safely control movement by providing stops or speed-reduction devices.

8001.10.3.4 Construction. Construction materials for hazardous materials carts or trucks shall be compatible with the material transported. The cart or truck shall be of substantial construction.

8001.10.3.5 Spill control. Carts and trucks transporting liquids shall be capable of containing a spill from the largest single container transported.

8001.10.3.6 Attendance. Carts and trucks used to transport materials shall not obstruct or be left unattended within any part of an exit.

8001.10.3.7 Incompatible materials. Incompatible materials shall not be transported on the same cart or truck.

8001.11 Facility Closure.

8001.11.1 Temporarily out-of-service facilities. Facilities which are temporarily out of service shall continue to maintain a permit and be monitored and inspected.

8001.11.2 Permanently out-of-service facilities. Facilities for which a permit is not kept current or is not monitored and inspected on a regular basis shall be deemed to be permanently out of service and shall be closed in accordance with Section 8001.11.3.

8001.11.3 Plan. The permit holder or applicant shall submit a plan to the fire department to terminate storage, dispensing, handling or use of hazardous materials at least 30 days prior to facility closure. The plan shall demonstrate that hazardous materials which were stored, dispensed, handled or used in the facility have been transported, disposed of or reused in a manner that eliminates the need for further maintenance and any threat to public health and safety. Such plan shall be submitted in accordance with Section 8001.3.1.

8001.12 Retail and Wholesale Storage and Display.

8001.12.1 General. The aggregate quantity of nonflammable solid and nonflammable or noncombustible liquid hazardous materials within a single control area of a Group M retail or wholesale sales

occupancy is allowed to exceed the exempt amounts specified in Section 8001.13 when in accordance with Section 8001.12. The maximum quantity allowed within a single control area of a retail or wholesale sales occupancy shall be the greater of the exempt amount derived from Section 8001.13 or the amount derived from the formula:

$$E_R = E \times R \times A$$

For **SI:**

$$E_R = 10.8 \times E \times R \times A$$

WHERE:

E_R = exempt amount allowed in a single control area of a retail or wholesale sales occupancy.

E = exempt amount specified in Section 8001.13.

R = multiplier for retail or wholesale sales occupancies from Table 8001.12-A.

A = area of the hazardous material retail display or storage in square feet (m^2).

8001.12.2 Maximum area. The maximum aggregate floor area "A" for hazardous material retail or wholesale display or storage over which the multiplier is applied shall not exceed 1,500 square feet (139.4 m^2) per control area.

8001.12.3 Storage and display areas.

8001.12.3.1 General. The area of storage or display shall also be in accordance with Section 8001.12.3.

8001.12.3.2 Density. Display of solids shall not exceed 200 pounds per square foot (976.4 kg/m^2) of floor area actually occupied by solid merchandise. Display of liquids shall not exceed 20 gallons per square foot (76 L/m^2) of floor area actually occupied by liquid merchandise.

8001.12.3.3 Height. Display height shall not exceed 6 feet (1829 mm).

8001.12.3.4 Container location. Individual containers less than 5 gallons (19 L) or less than 25 pounds (11.3 kg) shall be stored on pallets, racks or shelves.

8001.12.3.5 Racks and shelves. Storage racks and shelves shall be in accordance with Section 8003.1.4.

8001.12.3.6 Container type. Containers shall be approved for the use intended.

8001.12.3.7 Container size. Individual containers shall not exceed 100 pounds (45.4 kg) or a 5-gallon (19 L) capacity.

8001.12.3.8 Incompatible materials. Incompatible materials shall be separated in accordance with Section 8001.9.8.

8001.12.3.9 Floors. Floors shall be in accordance with Section 8003.1.18.

8001.12.3.10 Aisles. Aisles 4 feet (1219 mm) in width shall be maintained on three sides of the display area.

8001.12.3.11 Signs. Hazard identification signs shall be provided in accordance with Section 8001.7.

8001.13 Exempt Amounts.

8001.13.1 General. Exempt amounts shall be as specified in Section 8001.13.2 and Tables 8001.13-A through 8001.13-D. Storage, dispensing, use and handling of hazardous materials in quantities exceeding exempt amounts shall be in accordance with Sections 8001, 8003 and 8004.

Storage, dispensing, use and handling of hazardous materials in quantities not exceeding exempt amounts shall be in accordance with Section 8001.

Where exempt amounts are indicated in pounds (kilograms), a conversion of 10 pounds per gallon (1.2 kg/L) shall be used.

For retail and wholesale display, see Section 8001.12.

8001.13.2 Special limitations for indoor storage and use by occupancy.

8001.13.2.1 General. Quantities of hazardous materials shall be limited within occupancies in accordance with Sections 8001.13.2 and 8001.13.3.

8001.13.2.2 Group A Occupancies.

8001.13.2.2.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used within Group A Occupancies.

EXCEPTION: Cylinders not exceeding 20 cubic feet (0.57 m³) at NTP are allowed within gas cabinets or fume hoods.

8001.13.2.2.2 Liquid and solid oxidizers. Class 4 liquid and solid oxidizers shall not be stored or used in Group A Occupancies.

EXCEPTION: Class 4 liquid and solid oxidizers are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.2.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used in Group A Occupancies.

EXCEPTION: Unclassified detonatable and Class I organic peroxides are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.2.4 Unstable (reactive) materials. Class 3 and 4 unstable (reactive) materials shall not be stored or used in Group A Occupancies.

EXCEPTION: Class 3 and 4 unstable (reactive) materials are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.2.5 Flammable and oxidizing gases. Except for cylinders not exceeding 250 cubic feet (7.1 m³) at NTP used for maintenance purposes, patient care or operation of equipment, flammable and oxidizing gases shall not be stored or used in Group A Occupancies.

The aggregate quantities of gases used for maintenance purposes and operation of equipment shall not exceed the exempt amounts listed in Table 8001.13-A.

8001.13.2.3 Groups B, F, M and S Occupancies.

8001.13.2.3.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used in offices, retail sales or classroom portions of Group B, F, M or S Occupancies.

EXCEPTION: When within classrooms of Group B Occupancies, cylinders not exceeding 20 cubic feet (0.57 m³) at NTP are allowed in gas cabinets or fume hoods.

8001.13.2.3.2 Liquid and solid oxidizers. Class 4 liquid and solid oxidizers shall not be stored or used in offices, retail sales or classroom portions of Group B, F, M or S Occupancies.

EXCEPTION: When within classrooms of Groups B, F and M Occupancies, Class 4 liquid and solid oxidizers are allowed when stored in hazardous materials storage cabinets. Hazardous material storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.3.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used in offices, classrooms and retail sales portions or Group B, F, M or S Occupancies.

EXCEPTION: When within classrooms of Groups B, F and M Occupancies, undetonatable and Class I organic peroxides are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.3.4 Unstable (reactive) materials.

8001.13.2.3.4.1 Offices. Class 3 and 4 unstable (reactive) materials shall not be stored or used in offices of Group B, F, M or S Occupancies.

8001.13.2.3.4.2 Classrooms. Class 3 and 4 unstable (reactive) materials shall not be stored or used in classrooms of Group B, F or M Occupancies.

EXCEPTION: Class 3 and 4 unstable (reactive) materials are allowed when stored within hazardous materials storage cabinets. Hazardous material storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.3.4.3 Retail sales. Class 4 unstable (reactive) materials shall not be stored or used in retail sales portions of Group M Occupancies.

8001.13.2.3.5 Flammable and oxidizing gases. Except for cylinders not exceeding 250 cubic feet (7.08 m³) at NTP used for maintenance purposes, patient care or operation of equipment, flammable and oxidizing gases shall not be stored or used in Group B, F, M or S Occupancies.

The aggregate quantities of gases used for maintenance purposes, patient care and operation of equipment shall not exceed the exempt amounts listed in Table 8001.13-A. Medical gas system supply cylinders shall be located in medical gas storage rooms in gas cabinets as set forth in Section 7404.2.

8001.13.2.4 Group E Occupancies.

8001.13.2.4.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used in Group E Occupancies.

EXCEPTION: Cylinders not exceeding 20 cubic feet (0.57 m³) at NTP are allowed within gas cabinets or fume hoods.

8001.13.2.4.2 Liquid and solid oxidizers. Class 4 liquid and solid oxidizers shall not be stored or used in Group E Occupancies.

EXCEPTION: Class 4 liquid and solid oxidizers are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.4.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used in Group E Occupancies.

EXCEPTION: Unclassified detonatable and Class I organic peroxides are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.4.4 Unstable (reactive) materials. Class 3 and 4 unstable (reactive) materials shall not be stored or used in Group E Occupancies.

EXCEPTION: Class 3 and 4 unstable (reactive) materials are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.4.5 Flammable and oxidizing gases. Except for cylinders not exceeding 250 cubic feet (7.08 m^3) at NTP used for maintenance purposes or operation of equipment, flammable and oxidizing gases shall not be stored or used in Group E Occupancies.

The aggregate quantities of gases used for maintenance purposes and operation of equipment shall not exceed the exempt amounts listed in Table 8001.13-A.

8001.13.2.5 Group I Occupancies.

8001.13.2.5.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used within Group I Occupancies.

EXCEPTION: Cylinders not exceeding 20 cubic feet (0.57 m^3) at NTP are allowed within gas cabinets or fume hoods in quantities up to the exempt amount.

8001.13.2.5.2 Liquid and solid oxidizers.

8001.13.2.5.2.1 Class 4. Class 4 liquid and solid oxidizers shall not be stored or used in Group I Occupancies.

EXCEPTION: Class 4 liquid and solid oxidizers are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.5.2.2 Class 3. A maximum of 200 pounds (90.7 kg) of solid or 2 gallons (7.57 L) of liquid Class 3 oxidizer is allowed in Group I Occupancies when such materials are necessary for maintenance purposes or operation of equipment. The oxidizers shall be stored in approved containers and in a manner approved by the chief.

8001.13.2.5.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used in Group I Occupancies.

EXCEPTION: Unclassified detonatable and Class I organic peroxides are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.5.4 Unstable (reactive) materials. Class 3 and 4 unstable (reactive) materials shall not be stored or used in Group I Occupancies.

EXCEPTION: Class 3 and 4 unstable (reactive) materials are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.5.5 Flammable and oxidizing gases. Except for cylinders not exceeding 250 cubic feet (7.08 m^3) at NTP used for maintenance purposes, patient care or operation of equipment, flammable and oxidizing gases shall not be stored or used in Group I Occupancies.

The aggregate quantities of gases used for maintenance purposes, patient care and operation of equipment shall not exceed

the exempt amounts listed in Table 8001.13-A. Medical gas system supply cylinders shall be located in medical gas storage rooms or gas cabinets as set forth in Section 7404.2.

8001.13.2.6 Group R Occupancies.

8001.13.2.6.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used in Group R Occupancies.

8001.13.2.6.2 Liquid and solid oxidizers.

8001.13.2.6.2.1 Class 4. Class 4 liquid and solid oxidizers shall not be stored or used within Group R Occupancies.

8001.13.2.6.2.2 Class 3. A maximum of 200 pounds (90.7 kg) of solid or 20 gallons (7.57 L) of liquid Class 3 oxidizers is allowed in Group R Occupancies when such materials are necessary for maintenance purposes or operation of equipment. The oxidizers shall be stored in approved containers and in a manner approved by the chief.

8001.13.2.6.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used within Group R Occupancies.

8001.13.2.6.4 Unstable (reactive) materials. Class 3 and 4 unstable (reactive) materials shall not be stored or used within Group R Occupancies.

8001.13.2.6.5 Flammable and oxidizing gases. Except for cylinders not exceeding 250 cubic feet (7.08 m^3) at NTP used for maintenance purposes or operation of equipment, flammable and oxidizing gases shall not be stored or used in Group R Occupancies.

The aggregate quantities of gases used for maintenance purposes and operation of equipment shall not exceed the exempt amounts listed in Table 8001.13-A.

8001.13.2.7 Group U Occupancies.

8001.13.2.7.1 Toxic and highly toxic compressed gases. Toxic and highly toxic compressed gases shall not be stored or used within Group U Occupancies.

EXCEPTION: Cylinders not exceeding 20 cubic feet (0.57 m^3) at NTP are allowed within gas cabinets or fume hoods.

8001.13.2.7.2 Liquid and solid oxidizers.

8001.13.2.7.2.1 Class 4. Class 4 liquid and solid oxidizers shall not be stored or used in Group U Occupancies.

EXCEPTION: Class 4 liquid and solid oxidizers are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.7.2.2 Class 3. A maximum of 200 pounds (90.7 kg) of solid or 2 gallons (7.57 L) of liquid Class 3 oxidizer is allowed in Group U Occupancies when such materials are necessary for maintenance purposes or operation of equipment. The oxidizers shall be stored in approved containers and in a manner approved by the chief.

8001.13.2.7.3 Organic peroxides. Unclassified detonatable and Class I organic peroxides shall not be stored or used in Group U Occupancies.

EXCEPTION: Unclassified . atable and Class I organic peroxides are allowed when sto. ithin hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.2.7.4 Unstable (reactive) materials. Class 3 and 4 unstable (reactive) materials shall not be stored or used in Group U Occupancies.

EXCEPTION: Class 3 and 4 unstable (reactive) materials are allowed when stored within hazardous materials storage cabinets. Hazardous materials storage cabinets shall comply with Section 8003.1.10 and shall not contain other storage.

8001.13.3 Special requirements for toxic liquids. The exempt amount for toxic liquids with vapor pressures in excess of 1 psia (6.89 kPa) at 77°F. (25°C.) shall be the exempt amount listed for highly toxic liquids.

8001.14 Regulations for Specific Hazardous Materials in Quantities not Exceeding Exempt Amounts.

8001.14.1 General. Hazardous materials stored, dispensed, used or handled in quantities not exceeding exempt amounts set forth in Section 8001.13 shall be in accordance with Section 8001.14.

8001.14.2 Flammable gases.

8001.14.2.1 Emergency shutoff. Compressed gas systems conveying flammable gases shall be provided with emergency shutoff capability in accordance with Section 8004.1.14.

8001.14.2.2 Ignition source control. Ignition sources in areas containing flammable gases shall be controlled in accordance with Section 8003.1.3.

NO SMOKING signs shall be posted in areas containing flammable gases in accordance with Section 8003.1.2.

8001.14.2.3 Liquefied flammable gases and flammable gases in solution. Containers of liquefied flammable gases and flammable gases in solution shall be positioned in accordance with Section 8004.1.15.

8001.14.3 Oxidizing gases.

8001.14.3.1 Emergency shutoff. Compresses gas systems conveying oxidizing gases shall be provided with emergency shutoff capability in accordance with Section 8004.1.14.

8001.14.3.2 Ignition source control. Ignition sources in areas containing oxidizing gases shall be controlled in accordance with Section 8003.1.3.

8001.14.4 Pyrophoric gases.

8001.14.4.1 Emergency shutoff. Compressed gas systems conveying pyrophoric gases shall be provided with emergency shutoff capability in accordance with Section 8004.1.14.

NEW SECTION

WAC 51-34-8003 Section 8003--Storage.

8003.1 General.

8003.1.1 Applicability. Storage of hazardous materials where the aggregate quantity is in excess of the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8001 and 8003.

Storage of hazardous materials where the aggregate quantity does not exceed the exempt amounts set forth in Section 8001.13 shall be in accordance with Section 8001.

For display and storage in retail and wholesale sales occupancies, see Section 8001.12.

Hazardous materials regulated by other articles are not required to be in accordance with Section 8003 unless specifically indicated in Section 8003.

8003.1.2 Signs. In addition to the hazard identification signs required by Section 8001.7, stationary aboveground tanks shall be placarded with hazard identification signs as specified in U.F.C. Standard 79-3 for the specific material contained.

Signs prohibiting smoking shall be provided in storage areas and within 25 feet (7620 mm) of outdoor storage areas.

Signs shall not be obscured or removed.

Signs shall be in English as a primary language or in symbols allowed by this code.

Signs shall be durable. The size, color and lettering shall be in accordance with nationally recognized standards.

8003.1.3 Sources of ignition. Smoking shall be prohibited in rooms where hazardous materials are stored or within 25 feet (7620 mm) of outdoor storage areas.

Open flames and high-temperature devices shall not be used in a manner which creates a hazardous condition. Energy-consuming equipment listed for use with the hazardous material stored is allowed.

8003.1.4 Shelving. Shelving shall be of substantial construction, adequately braced and anchored. For seismic requirements and the seismic zone in which the shelving is located, see the Building Code.

Shelves shall be provided with a lip or guard when used for the storage of individual containers.

EXCEPTION: Shelving in hazardous materials storage cabinets or laboratory furniture specifically designed for such use.

Shelf storage of hazardous materials shall be maintained in an orderly manner.

8003.1.5 Maximum quantity on site. The storage of hazardous materials shall be in accordance with local zoning regulations.

8003.1.6 Storage plan. A storage plan shall be provided for all storage facilities. The plan shall indicate the intended storage arrangement, including the location and dimensions of aisles.

8003.1.7 Spill control, drainage control and secondary containment.

8003.1.7.1 General. Rooms, buildings or areas used for the storage of solid and liquid hazardous materials shall be provided with a means to control spillage and to contain or drain off

spillage and fire-protection water discharged in the storage area in accordance with Section 8003.1.7.

EXCEPTIONS: 1. Liquids that are a gas at NTP.
2. Outdoor storage of containers on approved containment pallets in accordance with Section 8003.1.7.5 do not require spill control, drainage control or secondary containment.
3. Storage of flammable solids.

8003.1.7.2 Spill control. Floors shall be sloped; constructed with sumps and collection systems; recessed a minimum of 4 inches (101.6 mm); provided with a liquid-tight raised sill to a minimum height of 4 inches (101.6 mm) to prevent the flow of liquids to adjoining areas; or otherwise constructed to contain a spill from the largest single container or tank. Except for surfacing, the sill shall be constructed of noncombustible material, and the liquid-tight seal shall be compatible with the material stored. When liquid-tight sills are provided, they are not required at door openings which are provided with an open-grate trench that connects to an approved drainage system.

8003.1.7.3 Drainage control.

8003.1.7.3.1 General. Rooms, buildings or areas shall be provided with a drainage system to direct the flow of liquids to an approved location, or the room, building or area shall be designed to provide secondary containment for the hazardous materials and fire-protection water.

8003.1.7.3.2 Slope. A slope to drain not less than 1 percent shall be provided.

8003.1.7.3.3 Capacity for fire-extinguishing water. Drains from the area shall be sized to carry the automatic fire-extinguishing system design flow rate over the system design area.

8003.1.7.3.4 Materials. Materials of construction for the drainage system shall be compatible with the stored materials.

8003.1.7.3.5 Incompatible materials. Incompatible materials shall be separated from each other in drain systems. Incompatible materials are allowed to be combined when they have been rendered acceptable by an approved means for discharge into the public sewer.

8003.1.7.3.6 Termination. Flow from the drainage system shall be directed to an approved location.

Drainage of spillage and fire-protection water is allowed to be directed to a neutralizer or treatment system which complies with the following:

1. The system shall be designed to handle the maximum worst case spill from the single largest container plus the volume of fire-protection water from the system over the minimum design area for a period of 20 minutes, and

2. The system shall be designed to overflow from the neutralizer or treatment system so that liquid leakage and fire-protection water is directed to a safe location away from the building, valves, means of egress, adjoining property and fire department access roadways.

8003.1.7.4 Secondary containment. Drains shall be directed to containment systems or other locations designed as secondary containment for the hazardous materials liquids and fire-protection

water, or the building, room or area shall be designed to provide secondary containment of hazardous material liquids and fire-protection water through the use of recessed floors or liquid-tight raised sills.

EXCEPTIONS:
1. The provisions of Section 8003.1.7.4 may be waived when the chief has determined that such enforcement is preempted by other codes, statutes or ordinances. See Section 8001.1.3.
2. Outdoor storage of oxidizers.
3. Outdoor storage of organic peroxides.
4. Storage of pyrophoric solids.
5. Storage of corrosive solids.
6. Storage of carcinogen, irritant, sensitizer and other health hazard solids.

Secondary containment shall be designed to retain the spill from the largest single container plus the design flow rate of the automatic fire-extinguishing system for the area of the room or area in which the storage is located or the system design area, whichever is smaller. The containment capacity shall be capable of containing the flow for a period of 20 minutes.

Overflow from the secondary containment system shall be provided to direct liquid leakage and fire-protection water to a safe location away from the building, valves, means of egress, fire access roadway, adjoining property or storm drains.

If the storage area is open to rainfall, the secondary containment shall be designed to accommodate the volume of a 24-hour rainfall as determined by a 25-year storm. Where curbs are used, provisions shall be made for draining accumulations of groundwater or rainwater.

A monitoring method capable of detecting hazardous material leakage from the primary containment into the secondary containment shall be provided. Visual inspection of the primary containment shall be used unless other means of monitoring are approved by the chief. Where secondary containment is subject to the intrusion of water, a monitoring method for such water shall be provided. When monitoring devices are provided, they shall be connected to distinct visual or audible alarms.

8003.1.7.5 Containment pallets. When used as a substitute for spill control, drainage control and secondary containment for outdoor storage in accordance with Section 8003.1.7.1, Exception 2, containment pallets shall comply with the following:

1. A liquid-tight sump accessible for visual inspection shall be provided,

2. The sump shall be designed to contain not less than 66 gallons (249.8 L),

3. Exposed surfaces shall be compatible with material stored, and

4. Containment pallets shall be protected to prevent collection of rainwater within the sump.

8003.1.8 Ventilation.

8003.1.8.1 General. Indoor storage areas and storage buildings shall be provided with mechanical exhaust ventilation or natural ventilation where natural ventilation can be shown to be acceptable for the materials as stored.

EXCEPTION: Storage areas for flammable solids. See also Article 76.

8003.1.8.2 System requirements. Exhaust ventilation systems shall comply with all of the following:

1. Installation shall be in accordance with the Mechanical Code,

2. Mechanical ventilation shall be at a rate of not less than 1 cubic foot per minute per square foot (5.1 l/s per m^2) of floor area over the storage area,

3. Systems shall operate continuously unless alternate designs are approved by the chief,

4. A manual shutoff control shall be provided outside of the room in a position adjacent to the access door to the room or in a location approved by the chief. The switch shall be of the break-glass type and shall be labeled VENTILATION SYSTEM EMERGENCY SHUTOFF,

5. Exhaust ventilation shall be arranged to consider the density of the potential fumes or vapors released. For fumes or vapors that are heavier than air, exhaust shall be taken from a point within 12 inches (304.8 mm) of the floor,

6. The location of both the exhaust and inlet air openings shall be arranged to provide air movement across all portions of the floor or room to prevent the accumulation of vapors, and

7. Exhaust ventilation shall not be recirculated within the room or building if the materials stored are capable of emitting hazardous vapors.

8003.1.9 Separation of incompatible hazardous materials. See Section 8001.9.8.

8003.1.10 Hazardous materials storage cabinets.

8003.1.10.1 General. When storage cabinets are used to comply with Article 80, such cabinets shall be in accordance with Section 8003.1.10.

EXCEPTION: Compressed gases shall be stored in cabinets or exhausted enclosures designed in accordance with Section 8003.3.1.3.2 or 8003.3.1.3.3.

Cabinets shall be conspicuously labeled in red letters on contrasting background HAZARDOUS--KEEP FIRE AWAY.

8003.1.10.2 Construction. Cabinets shall be constructed of metal. The interior of cabinets shall be treated, coated or constructed of materials that are nonreactive with the hazardous material stored. Such treatment, coating or construction shall include the entire interior of the cabinet. Cabinets shall either be listed as suitable for the intended storage or constructed in accordance with the following:

1. Cabinets shall be of steel having a thickness of not less than 0.044 inch (1.12 mm) (18 gage). The cabinet, including the door, shall be double walled with 1½-inch (38.1 mm) airspace between the walls. Joints shall be riveted or welded and shall be tightfitting. Doors shall be well fitted, self-closing and equipped with a self-latching device, and

2. The bottoms of cabinets utilized for the storage of liquids shall be liquid tight to a minimum height of 2 inches (50.8 mm).

For requirements regarding electrical equipment and devices within cabinets used for the storage of hazardous gases or liquids, see the Electrical Code.

8003.1.11 Fire-extinguishing systems. Indoor storage areas and storage buildings shall be protected by an automatic sprinkler system. The design of the sprinkler system shall not be less than that required by the Building Code for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (278.7 m^2). See U.B.C. Standard 9-1. Where the materials or storage arrangement requires a higher level of sprinkler system protection in accordance with nationally recognized standards, the higher level of sprinkler system protection shall be provided.

EXCEPTION: Approved alternate automatic fire-extinguishing systems are allowed.

8003.1.12 Explosion control. Indoor storage rooms, areas and buildings containing the following materials shall be provided with explosion control in accordance with the Building Code:

1. Highly toxic flammable or toxic flammable gases when not stored in gas cabinets, exhausted enclosures or gas rooms (see Section 8003.1.3).
2. Combustible dusts. See Article 76.
3. Class 4 oxidizers.
4. Unclassified detonatable and Class I organic peroxides.
5. Pyrophoric gases.
6. Class 3 and 4 unstable (reactive) materials.
7. Class 2 and 3 water-reactive solids and liquids.

8003.1.13 Standby power. When mechanical ventilation, treatment systems, temperature control, alarm, detection or other electrically operated systems are required, such systems shall be connected to a secondary source of power to automatically supply electrical power in the event of loss of power from the primary source. See the Electrical Code.

EXCEPTIONS: Storage areas for:
1. Class 1 and 2 oxidizers.
2. Class III, IV and V organic peroxides.

8003.1.14 Limit controls.

8003.1.14.1 General. Limit controls shall be provided in accordance with Section 8003.1.14.

8003.1.14.2 Liquid-level limit control. Atmospheric tanks with a capacity exceeding 500 gallons (1893 L) used for the storage of hazardous materials liquids shall be equipped with a liquid-level limit control to prevent overfilling of the tank.

EXCEPTIONS: 1. Tanks monitored by a system which will limit net contents by weight.
2. Atmospheric tanks used for storage of Class II, III, IV and V organic peroxides.

8003.1.14.3 Temperature control. Materials which must be stored at temperatures other than normal ambient temperatures to prevent a hazardous reaction shall be stored in an area provided with a means to maintain the temperature within a safe range. Redundant temperature control equipment which will operate upon failure of the primary temperature control system shall be provided. Alternate means which prevent a hazardous reaction are allowed.

8003.1.14.4 Pressure control. Stationary tanks used for the storage of hazardous materials liquids which can generate pressures exceeding the tank design limits due to exposure fires or internal reaction shall have some form of construction or device that will relieve excessive internal pressure. Such relief devices shall vent to an approved location or to an exhaust scrubber or treatment system when specified in Sections 8003.2 through 8003.15.

8003.1.15 Emergency alarm. An approved emergency alarm system shall be provided in buildings, rooms or areas used for storage of hazardous materials. Emergency alarm-initiating devices shall be installed outside of each interior exit door of storage buildings, rooms or areas. Activation of an emergency alarm-initiating device shall sound a local alarm to alert occupants of an emergency situation involving hazardous materials.

8003.1.16 Supervision. Emergency alarm, detection and automatic fire-extinguishing systems required by Section 8003 shall be supervised by an approved central, proprietary or remote station service or shall initiate an audible and visual signal at a constantly attended on-site location.

8003.1.17 Clearance from combustibles. The area surrounding an outdoor storage area or tank shall be kept clear of combustible materials and vegetation for a minimum distance of 30 feet (9144 mm).

8003.1.18 Noncombustible floor. Except for surfacing, floors of storage areas shall be of noncombustible construction.

8003.1.19 Professional engineer. The chief is authorized to require design submittals to bear the stamp of a professional engineer.

8003.1.20 Weather protection. When overhead noncombustible construction is provided for sheltering outdoor hazardous material storage areas, such storage shall not be considered indoor storage when all of the following conditions are met:

EXCEPTIONS: Storage of explosive, detonatable or pyrophoric materials shall be considered as indoor storage.
1. Supports shall be of noncombustible construction,
2. Supports and walls shall not obstruct more that 25 percent of the perimeter of the storage area, and
3. The distance to buildings, property lines, streets, alleys, public ways or exits to a public way shall not be less than the distance required for an outdoor hazardous material storage area without weather protection.

8003.1.21 Required detached storage. Group H Occupancies containing quantities of hazardous materials in excess of those set forth in Table 8003.1-A shall be in buildings used for no other purpose, shall not exceed one story in height and shall be without basements, crawl spaces or other under-floor spaces.

8003.2 Explosives and Blasting Agents. Storage of explosives and blasting agents shall be in accordance with Article 77. Storage of fireworks shall be in accordance with Article 78.

Storage of explosives, blasting agents, blackpowder and fireworks shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.3 Toxic and Highly Toxic Compressed Gases.

8003.3.1 Indoor storage.

8003.3.1.1 General. Indoor storage of toxic and highly toxic compressed gases in amounts exceeding the exempt amounts set forth

in Section 8001.3 shall be in accordance with Sections 8003.1, 8003.3.1 and 8003.3.3.

8003.3.1.2 Fire-extinguishing system. In addition to Section 8003.1.11, the following requirements shall apply:

1. Gas cabinets, exhausted enclosures and gas rooms for the storage of cylinders shall be internally sprinklered, and

2. Alternate fire-extinguishing systems shall not be used for storage areas, gas cabinets, exhausted enclosures or gas rooms.

8003.3.1.3 Ventilation and storage arrangement.

8003.3.1.3.1 Ventilated area. Cylinders shall be stored within gas cabinets, exhausted enclosures or gas rooms.

EXCEPTION: Toxic gas cylinders having an aggregate capacity not exceeding the exempt amounts set forth in Table 8001.13-B when Footnote 6 is not applied.

Portable and stationary tanks shall be stored within gas rooms or exhausted enclosures. The room or area in which gas cabinets or exhausted enclosures are located shall be provided with exhaust ventilation that is independent of the ventilation required for gas cabinets and exhausted enclosures.

8003.3.1.3.2 Gas cabinets. Gas cabinets shall comply with all of the following:

1. Operate at negative pressure in relation to the surrounding area,

2. Be provided with self-closing limited access ports or noncombustible windows to give access to equipment controls. The average velocity at the face of access ports or windows shall not be less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.76 m/s) at any point of the access port or window,

3. Be connected to an exhaust system,

4. Be provided with self-closing doors, and

5. Be constructed of not less than 0.097-inch (2.46 mm) (12 gage) steel.

8003.3.1.3.3 Exhausted enclosures. Exhausted enclosures shall be designed to:

1. Operate at a negative pressure in relation to the surrounding area, and

2. Provide an average velocity at the face of the enclosure of not less than 200 feet per minute (1.02 m/s) with a minimum of 150 feet per minute (0.76 m/s) at any point.

8003.3.1.3.4 Gas rooms. Gas rooms shall be designed to:

1. Operate at a negative pressure in relation to the surrounding area, and

2. Direct the exhaust ventilation to an exhaust system.

8003.3.1.3.5 Treatment systems.

8003.3.1.3.5.1 General. Treatment systems shall be utilized to handle the accidental release of gas. Treatment systems shall be

utilized to process all exhaust ventilation to be discharged from gas cabinets, exhausted enclosures and gas rooms.

8003.3.1.3.5.2 Design. Treatment systems shall be capable of diluting, adsorbing, absorbing, containing, neutralizing, burning or otherwise processing the entire contents of the largest single tank or cylinder of gas stored or used. When a total containment system is utilized, the system shall be designed to handle the maximum anticipated pressure of release to the system when it reaches equilibrium.

8003.3.1.3.5.3 Performance. Treatment systems shall be designed to reduce the maximum allowable discharge concentration of the gas to one-half IDLH at the point of discharge to the atmosphere. When more than one gas is emitted to the treatment system, the treatment system shall be designed to handle the worst-case release based on the release rate, the quantity and the IDLH for all the gases stored or used.

8003.3.1.3.5.4 Sizing. Treatment systems shall be sized to process the maximum worst-case release of gas based on the maximum flow rate of release from the largest cylinder or tank utilized. The entire contents of tanks and cylinders shall be considered.

8003.3.1.3.5.5 Stationary tanks. Stationary tanks shall be labeled with the maximum rate of release for the gas contained based on valves or fittings that are inserted directly into the tank. If multiple valves or fittings are provided, the maximum flow rate of release for the valve or fitting with the highest flow rate shall be indicated. If liquefied gases are in contact with valves or fittings, the liquid flow rate shall be utilized for purposes of computation. Flow rates indicated on the label shall be converted to cubic feet per minute (L/s) of gas at normal temperature and pressure.

8003.3.1.3.5.6 Portable tanks and cylinders. For portable tanks and cylinders, the maximum flow rate of release shall be calculated based on assuming the total release from the cylinder or tank within the time specified in Table 8003.3-A. When portable tanks or cylinders are equipped with approved excess flow or reduced flow valves, the worst-case release shall be determined by the maximum achievable flow from the valve as determined by the valve manufacturer or the gas supplier. Reduced flow and excess flow valves shall be permanently marked by the manufacturer to indicate the maximum design flow rate. Such markings shall indicate the flow rate for air under standard conditions.

8003.3.1.4 Emergency power. Emergency power shall be provided in lieu of standby power for:

1. Exhaust ventilation, including the power supply for treatment systems,
2. Gas-detection systems,
3. Emergency alarm systems, and
4. Temperature-control systems.

8003.3.1.5 Limit controls. In addition to the limit controls required by Section 8003.1.14, excess flow control shall be provided for stationary tanks which are piped for filling or dispensing.

8003.3.1.6 Gas detection. A continuous gas-detection system shall be provided to detect the presence of gas at or below the permissible exposure limit or ceiling limit. The detection system shall initiate a local alarm and transmit a signal to a constantly attended control station.

The alarm shall be both visual and audible and shall be designed to provide warning both inside and outside of the storage area. The audible alarm shall be distinct from all other alarms.

EXCEPTIONS: 1. Signal transmission to a constantly attended control station need not be provided when not more than one cylinder is stored.

2. A continuous gas-detection system need not be provided for toxic gases when the physiological warning properties for the gas are at a level below the accepted permissible exposure limit for the gas.

The gas-detection system shall be capable of monitoring the room or area in which the gas is stored at or below the permissible exposure limit or ceiling limit and the discharge from the treatment system at or below one-half the IDLH limit.

8003.3.1.7 Smoke detection. An approved supervised smoke-detection system shall be provided in rooms or areas where highly toxic compressed gases are stored indoors. Activation of the detection systems shall sound a local alarm.

8003.3.1.8 Maximum number of cylinders per gas cabinet. The number of cylinders contained in a single gas cabinet shall not exceed three.

EXCEPTION: Cabinets containing cylinders not exceeding 1 pound (0.4536 kg) net contents each shall be limited to a maximum of 100 cylinders.

8003.3.2 Outdoor storage.

8003.3.2.1 General. Outdoor storage of highly toxic or toxic compressed gases in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1, 8003.3.2 and 8003.3.3.

8003.3.2.2 Distance from storage to exposures.

8003.3.2.2.1 General. Outdoor storage of highly toxic or toxic compressed gases shall comply with the Building Code and Section 8003.3.2.2.

8003.3.2.2.2 Distance limitation to exposures. Outdoor storage of highly toxic or toxic compressed gases shall not be within 75 feet (22 860 mm) of a building, property line, street, alley, public way or exit to a public way unless the storage is shielded by a structure having a minimum fire-resistive rating of two hours and which interrupts the line of sight between the storage and the exposure. The protective structure shall be at least 5 feet (1524 mm) from exposures. The protective structure shall not have more than two sides at approximately 90-degree directions, or three sides with connecting angles of approximately 135 degrees.

EXCEPTION: Gases in gas cabinets complying with Section 8003.3.1.3.2 and located 5 feet (1524 mm) or more from buildings and 25 feet (7620 mm) from exits. Section 8003.3.2.2.3 shall not apply.

8003.3.2.2.3 Openings in exposed buildings. When the storage area is located closer than 75 feet (22 860 mm) to a building, openings into a building other than piping shall not be above the height of the top of the shielding structure or within 50 feet (15 240 mm) horizontally from the storage area whether or not shielded by a protective structure.

8003.3.2.2.4 Air intakes. The storage area shall not be within 75 feet (22 860 mm) of air intakes.

8003.3.2.3 Canopies. Portable tanks and cylinders stored outside of buildings shall be stored under a canopy of noncombustible construction. Such storage shall not be considered indoor storage. See also Section 8003.1.20.

EXCEPTION: Portable tanks and cylinders used for storing anhydrous ammonia (fertilizer grade).

An automatic fire-sprinkler system shall be provided for canopies used for storage of highly toxic or toxic compressed gases.

EXCEPTION: Where water is incompatible with the hazardous material stored, the chief may approve alternate fire suppression methods to an automatic fire-sprinkler system.

8003.3.2.4 Piping and controls. In addition to the requirements of Section 8001.4.3, piping and controls on stationary tanks shall be in accordance with all of the following:

1. Pressure-relief devices shall be vented to a treatment system designed in accordance with Section 8003.3.1.3.5,

2. Where filling or dispensing connections are provided, they shall have a means of local exhaust. Such exhaust shall be designed to capture fumes and vapors. The exhaust shall be directed to a treatment system designed in accordance with Section 8003.3.1.3.5, and

3. Stationary tanks shall be provided with a means of excess flow control on tank inlet and outlet connections.

EXCEPTIONS: 1. Inlet connections that are designed to preclude backflow.
2. Pressure-relief devices.

8003.3.3 Special provisions.

8003.3.3.1 Seismic protection. Stationary tanks and associated piping systems shall be seismically braced in accordance with the Building Code.

8003.3.3.2 Security. See Section 8001.9.2.

8003.3.3.3 Leaking cylinders. One or more gas cabinets or exhausted enclosures shall be provided to handle leaking cylinders.

EXCEPTIONS: A cabinet or exhausted enclosure need not be provided for leaking cylinders if:
1. All cylinders are stored within gas cabinets or exhausted enclosures, or
2. Approved containment vessels are provided in accordance with all of the following:
2.1 Containment vessels shall be capable of fully containing a release,
2.2 Trained personnel shall be available at an approved location, and
2.3 Containment vessels shall be capable of being transported to the leaking cylinder.

Gas cabinets or exhausted enclosures shall be located as follows:

1. Within or adjacent to outdoor storage areas, or

2. Within gas rooms.

Gas cabinets or exhausted enclosures shall be connected to an exhaust system. See Section 8003.3.1.3.5.

8003.3.3.4 Local exhaust for leaking portable tanks. A means of local exhaust shall be provided to capture leaks from portable tanks. Portable ducts or collection systems designed to be applied to the site of a leak in a valve or fitting on the tank are acceptable. The local exhaust system shall be connected to a

treatment system as specified in Section 8003.3.1.3.5. The local exhaust system shall be provided:

1. Within or immediately adjacent to outdoor storage areas, or

2. Within gas rooms used for portable or stationary tanks.

8003.4 Flammable and Combustible Liquids. Storage of flammable and combustible liquids shall be in accordance with Article 79.

8003.5 Flammable Solids and Flammable Gases.

8003.5.1 Indoor storage.

8003.5.1.1 General. Indoor storage of flammable solids and flammable gases in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.5.1. Storage of combustible fibers shall be in accordance with Article 28. See also Section 8001.14.2 for storage of flammable gases in quantities not exceeding exempt amounts.

8003.5.1.2 Pile size limits and location for solids. Flammable solids stored in quantities greater than 1,000 cubic feet (28.3 m^3) shall be separated into piles each not larger than 1,000 cubic feet (28.3 m^3). Aisle widths between piles shall not be less than the height of the piles or 4 feet (1219 mm), whichever is greater.

Flammable solids shall not be stored in basements.

8003.5.1.3 Static-producing equipment. Static-producing equipment located in flammable gas storage areas shall be grounded.

8003.5.2 Outdoor storage.

8003.5.2.1 General. Outdoor storage of flammable solids and flammable gases in amounts exceeding exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.5.2. Storage of combustible fibers shall be in accordance with Article 28.

8003.5.2.2 Distance from storage to exposures. Outdoor storage of flammable solids shall not be located within 20 feet (6096 mm) of any building, property line, street, alley, public way, or exit to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance.

Outdoor storage of flammable gases shall be in accordance with Table 8003.5-A.

8003.5.2.3 Pile size limits for solids. Outdoor storage of flammable solids shall be separated into piles not larger than 5,000 cubic feet (141 m^3) each. Aisle widths between piles shall not be less than one-half the height of the piles or 10 feet (3048 mm), whichever is greater.

8003.5.2.4 Static-producing equipment. Static-producing equipment in flammable gas storage areas shall be grounded.

8003.6 Oxidizers.

8003.6.1 Indoor storage.

8003.6.1.1 General. Indoor storage of oxidizers in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be

in accordance with Sections 8003.1 and 8003.6.2. Retail display of oxidizers shall be in accordance with Section 8001.12.

See also Section 8001.14.3 for storage of oxidizing gases in quantities not exceeding exempt amounts.

8003.6.1.2 Detached storage. Storage of liquid and solid oxidizers shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.6.1.3 Distance from detached storage buildings to exposures. In addition to the requirements of the Building Code, detached storage buildings shall be located in accordance with Tables 8003.6-A and 8003.6-B.

8003.6.1.4 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas for liquid and solid oxidizers shall be of liquid-tight construction.

8003.6.1.5 Smoke and heat venting. Smoke and heat venting shall be provided. The design criteria shall be as set forth in the Building Code.

8003.6.1.6 Smoke detection. An approved supervised smoke-detection system shall be installed in liquid and solid oxidizer storage areas. Activation of the detection systems shall sound a local alarm.

EXCEPTION: A smoke-detection system need not be provided in detached storage buildings protected by an automatic fire-extinguishing system.

8003.6.1.7 Storage conditions. The maximum quantities per building in detached storage buildings shall not exceed those set forth in Tables 8003.6-C through 8003.6-F.

The storage arrangement for liquid and solid oxidizers shall be as set forth in Tables 8003.6-C through 8003.6-F.

Class 2 oxidizers shall not be stored in basements except when such storage is in stationary tanks. Class 3 and 4 oxidizers in excess of the exempt amounts set forth in Section 8001.13 shall be stored on the ground floor only.

8003.6.1.8 Separation of Class 4 oxidizers from other materials. In addition to Section 8001.9.8, Class 4 oxidizer liquids and solids shall be separated from other hazardous materials by not less than one-hour fire-resistive construction or stored in hazardous materials storage cabinets. See Section 8003.1.10.

Detached storage buildings for Class 4 oxidizer liquids and solids shall be located a minimum of 50 feet (15 240 mm) from other hazardous materials storage.

8003.6.1.9 Contamination. Liquid and solid oxidizers shall not be stored on or against combustible surfaces. During storage, care shall be taken to prevent contamination.

8003.6.1.10 Static-producing equipment. Static-producing equipment in oxidizer gas storage areas shall be grounded.

8003.6.2 Outdoor storage.

8003.6.2.1 General. Outdoor storage of oxidizers in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Section 8003.1 and 8003.6.2.

8003.6.2.2 Distance from storage to exposures.

8003.6.2.2.1 Solids and liquids. Storage areas for liquid and solid oxidizers shall be located in accordance with Tables 8003.6-A and 8003.6-B.

8003.6.2.2.2 Gases. Storage areas for oxidizer gases shall be in accordance with Table 8003.6-G.

8003.6.2.3 Storage conditions.

8003.6.2.3.1 Solids and liquids. Storage arrangements for liquid and solid oxidizers shall be in accordance with Tables 8003.6-C through 8003.6-F.

8003.6.2.3.2 Gases. Storage arrangement for oxidizer gases shall be in accordance with Table 8003.6-G.

8003.7 Organic Peroxides.

8003.7.1 Indoor storage.

8003.7.1.1 General. Indoor storage of organic peroxides in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.7.1.

Unclassified detonatable organic peroxides that are capable of detonation in their normal shipping containers under conditions of fire exposure shall be stored in accordance with Article 77 as required for high explosives.

8003.7.1.2 Detached storage. Storage of organic peroxides shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.7.1.3 Distance from detached storage buildings to exposures. In addition to the requirements of the Building Code, detached storage buildings shall be located in accordance with Tables 8003.7-A and 8003.7-B.

8003.7.1.4 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas shall be of liquid-tight construction.

8003.7.1.5 Smoke and heat venting. Smoke and heat venting shall be provided. The design criteria shall be as set forth in the Building Code.

8003.7.1.6 Electrical wiring and equipment. In addition to Section 8001.9.4, electrical wiring and equipment in storage areas for Class I or II organic peroxides shall comply with the requirements for electrical Class I, Division 2 locations.

8003.7.1.7 Smoke detection. An approved supervised smoke-detection system shall be provided in rooms or areas where Class I, II, III or IV organic peroxides are stored. Activation of the detection system shall sound a local alarm.

EXCEPTION: A smoke-detection system need not be provided in detached storage buildings protected by an automatic fire-extinguishing system.

8003.7.1.8 Storage conditions.

8003.7.1.8.1 Maximum quantities. Maximum quantity per building in a mixed-occupancy building shall not exceed the amounts set forth in Table 8003.1-A. Maximum quantity per building in a detached storage building shall not exceed the amounts specified in Tables 8003.7-A and 8003.7-B.

8003.7.1.8.2 Storage arrangement. Storage arrangement for organic peroxides shall be in accordance with Tables 8003.7-C through 8003.7-E and shall comply with all of the following:

1. Containers and packages in storage areas shall be closed,

2. Bulk storage shall not be in piles or bins,

3. A minimum 2-foot (609.6 mm) clear space shall be maintained between storage and uninsulated metal walls, and

4. Fifty-five-gallon (208.2 L) drums shall not be stored more than one drum high.

8003.7.1.8.3 Location in building. The storage of Class I and II organic peroxides shall be on the ground floor. Class III organic peroxides shall not be stored in basements.

8003.7.1.9 Contamination. Organic peroxides shall be stored in their original DOT shipping containers. During storage, care shall be taken to prevent contamination.

8003.7.2 Outdoor storage.

8003.7.2.1 General. Outdoor storage of organic peroxides in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.7.2.

EXCEPTION: Unclassified detonatable organic peroxides that are capable of detonation in their normal shipping containers under fire conditions shall be stored in accordance with Article 77 as required for high explosives.

8003.7.2.2 Distance from storage to exposures. Storage areas for organic peroxides shall be located in accordance with Tables 8003.7-A and 8003.7-B.

8003.7.2.3 Electrical wiring and equipment. In addition to Section 8001.9.4, electrical wiring and equipment in outdoor storage areas containing Class I, II or III organic peroxides shall comply with the requirements for electrical Class I, Division 2 locations.

8003.7.2.4 Storage conditions.

8003.7.2.4.1 Maximum quantities. Maximum quantities of organic peroxides shall be in accordance with Tables 8003.7-A and 8003.7-B.

8003.7.2.4.2 Storage arrangement. Storage arrangement shall be in accordance with Tables 8003.7-C, 8003.7-D and 8003.7-E.

8003.7.2.5 Separation. In addition to Section 8001.9.8, storage areas for organic peroxides exceeding the amounts specified in Table 8003.1-A shall be located a minimum distance of 50 feet (15 240 mm) from other hazardous material storage.

8003.8 Pyrophoric Materials.

8003.8.1 Indoor storage.

8003.8.1.1 General. Indoor storage of pyrophoric solids, liquids and gases in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.8.1. See also Section 8001.14.4.

Indoor storage of silane and mixtures of silane greater than 2 percent by volume shall be in accordance with U.F.C. Standard 80-1.

8003.8.1.2 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas containing pyrophoric liquids shall be of liquid-tight construction.

8003.8.1.3 Electrical wiring and equipment. In addition to Section 8001.9.4, electrical wiring and equipment in storage areas for pyrophoric gases shall comply with the requirements for electrical Class I, Division 2 locations.

8003.8.1.4 Storage conditions.

8003.8.1.4.1 Pyrophoric solids and liquids. Storage of pyrophoric liquids and solids shall be limited to a maximum area of 100 square feet (9.29 m^2) per pile. Storage shall not exceed 5 feet (1524 mm) in height. Individual containers shall not be stacked.

Aisles between storage piles shall be a minimum of 10 feet (3048 mm) in width.

Individual tanks or containers shall not exceed 500 gallons (1893 L) capacity.

8003.8.1.4.2 Pyrophoric gases. Storage of pyrophoric gases shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.8.1.5 Separation. In addition to Section 8001.9.8, indoor storage of pyrophoric solids, liquids and gases shall be isolated from incompatible hazardous materials by one-hour fire-resistive walls with openings protected in accordance with the Building Code.

EXCEPTION: Storage in approved hazardous materials storage cabinets constructed in accordance with Section 8003.1.10.

8003.8.2 Outdoor storage.

8003.8.2.1 General. Outdoor storage of pyrophoric solids, liquids and gases in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.8.2.

Outdoor storage of silane and mixtures of silane greater than 2 percent by volume shall be in accordance with U.F.C. Standard 80-1.

8003.8.2.2 Distance from storage to exposures. The separation of pyrophoric solids, liquids and gases from buildings, property lines, streets, alleys, public ways or exits to a public way shall be in accordance with the following:

1. **Solids and liquids.** Twice the separation required by Article 79 for Class I-B flammable liquids.

2. **Gases.** The location and maximum amount of pyrophoric gas per storage area shall be in accordance with Table 8003.8-A.

8003.8.2.3 Storage conditions. Quantities, arrangement and spacing for pyrophoric liquids and solids in tanks, portable tanks and containers shall be in accordance with Article 79 as required for Class I-B flammable liquids.

8003.8.2.4 Separation of incompatible materials. In addition to Section 8001.9.8, separation of pyrophoric liquids and solids from other hazardous materials shall be in accordance with Article 79 as required for Class I-B flammable liquids.

8003.9 Unstable (Reactive) Materials.

8003.9.1 Indoor storage.

8003.9.1.1 General. Indoor storage of unstable (reactive) materials in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.9.1.

In addition, Class 3 and 4 unstable (reactive) detonatable materials shall be stored in accordance with the Building Code requirements for explosives.

Retail display of unstable (reactive) materials shall be in accordance with Section 8001.12.

8003.9.1.2 Detached storage. Storage of unstable (reactive) materials shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.9.1.3 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas for liquids and solids shall be of liquid-tight construction.

8003.9.1.4 Smoke and heat venting. Smoke and heat venting shall be provided. The design criteria shall be as set forth in the Building Code.

8003.9.1.5 Storage conditions. Unstable (reactive) materials stored in quantities greater than 500 cubic feet (14.16 m^3) shall be separated into piles, each not larger than 500 cubic feet (14.16 m^3). Aisle width shall not be less than the height of the piles or 4 feet (1219 mm), whichever is greater.

EXCEPTION: Materials stored in tanks.

Unstable (reactive) materials shall not be stored in basements.

8003.9.2 Outdoor storage.

8003.9.2.1 General. Outdoor storage of unstable (reactive) materials in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.9.2.

8003.9.2.2 Distance from storage to exposures. Outdoor storage of unstable (reactive) material which can deflagrate shall not be within 75 feet (22 860 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way.

Outdoor storage of nondeflagrating unstable (reactive) materials shall not be within 20 feet (6096 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the sides of the storage is allowed in lieu of such distance.

8003.9.2.3 Storage conditions. Piles of unstable (reactive) materials shall not exceed 1,000 cubic feet (28.3 m^3).

Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

8003.10 Water-reactive Solids and Liquids.

8003.10.1 Indoor storage.

8003.10.1.1 General. Indoor storage of water-reactive solids and liquids in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.10.1.

Retail display of water-reactive solids and liquids shall be in accordance with Section 8001.12.

8003.10.1.2 Detached storage. Storage of water-reactive materials shall be in detached buildings in accordance with Section 8003.1.21 when required by Section 8003.1.21.

8003.10.1.3 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas shall be of liquid-tight construction.

8003.10.1.4 Waterproof room. Rooms or areas used for the storage of water-reactive solids or liquids shall be constructed in a manner which resists the penetration of water through the use of waterproof materials. Piping carrying water for other than approved automatic fire-sprinkler systems shall not be within such rooms or areas.

8003.10.1.5 Smoke and heat venting. Smoke and heat venting shall be provided. The design criteria shall be as set forth in the Building Code.

8003.10.1.6 Fire-extinguishing systems. When Class 3 solids or liquids are stored in areas protected by an automatic fire-sprinkler system, the materials shall be stored in closed watertight containers.

8003.10.1.7 Storage conditions. Water-reactive solids and liquids stored in quantities greater than 500 cubic feet (14.16 m^3) shall be separated into piles, each not larger than 500 cubic feet (14.16 m^3). Aisle widths between piles shall not be less than the height of the pile or 4 feet (1219 mm), whichever is greater.

EXCEPTION: Water-reactive solids and liquids stored in tanks.

Class 2 water-reactive solids and liquids shall not be stored in basements unless such materials are stored in closed watertight containers or tanks.

Class 3 water-reactive solids and liquids shall not be stored in basements.

For storage with flammable liquids, see Section 7902.5.4.

8003.10.2 Outdoor storage.

8003.10.2.1 General. Outdoor storage of water-reactive solids and liquids shall be within tanks or closed watertight containers, and in quantities exceeding the exempt amounts set forth in Section 8001.13, shall be in accordance with Sections 8003.1 and 8003.10.2.

8003.10.2.2 Distance from storage to exposures. Outdoor storage of Class 3 water-reactive solids and liquids shall not be within 75 feet (22 860 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way.

Outdoor storage of Class 1 and 2 water-reactive solids and liquids shall not be within 20 feet (6096 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less

than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance.

8003.10.2.3 Storage conditions. Class 3 water-reactive solids and liquids shall be limited to piles not greater than 100 cubic feet (2.83 m^3).

Class 1 or 2 water-reactive solids and liquids shall be limited to piles not greater than 1,000 cubic feet (28.3 m^3).

Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

8003.11 Cryogenic Fluids. Storage of cryogenic fluids shall be in accordance with Article 75.

Cryogenic fluids in individual cylinders, containers or tanks which exceed a water capacity of 1,000 pounds (453.6 kg) shall not be stored inside of buildings.

8003.12 Highly Toxic and Toxic Solids and Liquids.

8003.12.1 Indoor storage.

8003.12.1.1 General. Indoor storage of highly toxic and toxic solids and liquids in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.12.1.

Retail display of highly toxic or toxic materials shall be in accordance with Section 8001.12.

8003.12.1.2 Liquid-tight floors. In addition to Section 8003.1.18, floors of storage rooms shall be of liquid-tight construction.

8003.12.1.3 Exhaust scrubber. Exhaust scrubbers or other systems for the processing of highly toxic liquid vapors shall be provided for storage areas where a spill or other accidental release of such liquids can be expected to release highly toxic vapors. Exhaust scrubbers and other processing systems shall be installed in accordance with the Mechanical Code. Emission control shall conform to the requirements of the local air quality authority.

8003.12.1.4 Separation. In addition to Section 8001.9.8, storage of highly toxic liquids and solids shall be isolated from other hazardous materials by one-hour fire-resistive construction or stored in approved hazardous material storage cabinets. See Section 8003.1.10.

8003.12.2 Outdoor storage.

8003.12.2.1 General. Outdoor storage of highly toxic and toxic solids and liquids in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.12.2.

8003.12.2.2 Distance from storage to exposures. Outdoor storage of highly toxic or toxic solids and liquids shall not be within 20 feet (6096 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance.

8003.12.2.3 Fire extinguishing systems. Outdoor storage of highly toxic solids and liquids shall be in fire-resistive containers or shall comply with one of the following:

1. The storage area shall be protected by an automatic, open head, deluge fire-sprinkler system of the type and density specified in the Building Code (see U.B.C. Standard 9-1), or

2. Storage shall be located under a canopy of noncombustible construction, with the canopied area protected by an automatic fire-sprinkler system of the type and density specified in the Building Code. See U.B.C. Standard 9-1. Such storage shall not be considered indoor storage. See Section 8003.1.20.

8003.12.2.4 Storage conditions. Outdoor storage piles of highly toxic solids and liquids shall be separated into piles, each not larger than 2,500 cubic feet (70.79 m^3). Aisle widths between piles shall not be less than one-half the height of the pile or 10 feet (3048 mm), whichever is greater.

The storage of highly toxic liquids which liberate highly toxic vapors in the event of a spill or other accidental discharge shall not be outside of a building unless effective collection and treatment systems are provided. The treatment system shall comply with the Mechanical Code.

8003.13 Radioactive Materials.

8003.13.1 Indoor storage.

8003.13.1.1 General. Indoor storage of radioactive materials in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.13.1.

8003.13.1.2 Liquid-tight floor. In addition to Section 8003.1.18, floors of storage areas shall be of liquid-tight construction.

8003.13.1.3 Detection. Areas used for the storage of radioactive materials shall be provided with detection equipment suitable for determining surface level contamination at levels that would present a short-term hazard condition. Such detection equipment is allowed to be maintained at a location other than the storage area but shall be on the premises.

8003.13.1.4 Storage conditions. The maximum quantity and storage arrangement of radioactive materials to be stored in buildings or rooms designed for such purposes shall be in accordance with the requirements of the Nuclear Regulatory Commission and state and local requirements.

Storage of contaminated combustible materials shall be in tightly closed noncombustible containers which do not contain other waste. Special attention shall be given to prompt disposal of combustible wastes contaminated with oxidizing materials that are subject to spontaneous heating.

8003.13.1.5 Container quantity limits. The quantity of material in any individual container shall not exceed 2 millicuries (7.4×10^7 becquerels) for alpha emitters, 200 curies (7.4×10^{12} becquerels) for beta emitters or 0.1 curies (3.7×10^9 becquerels) for gamma emitters.

EXCEPTION: Licensed, sealed sources for instruments, calibration devices and equipment. Licensing requirements and determination of whether a source is sealed or nonsealed shall be as set forth in Nuclear Regulatory Commission regulations.

8003.13.2 Outdoor storage.

8003.13.2.1 General. Outdoor storage of radioactive materials in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.13.2.

8003.13.2.2 Distance from storage to exposures. Outdoor storage shall not be within 20 feet (6096 mm) of property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance.

Outdoor storage shall not be within 20 feet (6096 mm) of buildings unless the building exterior walls are not less than one-hour fire-resistive construction. Storage shall not be within 10 feet (3048 mm) from building openings. Building openings less than 20 feet (6096 mm) from outdoor storage shall be protected by a fire assembly having a 45-minute fire-resistive rating.

8003.13.2.3 Fire-extinguishing systems. Outdoor storage of radioactive materials shall be in fire-resistive containers or shall comply with one of the following:

1. The storage area shall be protected by an automatic, open head, deluge fire-sprinkler system of the type and density specified in the Building Code (see U.B.C. Standard 9-1), or

2. Storage shall be located under a canopy of noncombustible construction, with the canopied area protected by an approved automatic fire-extinguishing system. Such storage shall not be considered to be indoor storage. See Section 8003.1.20.

8003.13.2.4 Storage conditions. Storage shall be arranged in accordance with Nuclear Regulatory Commission, state and local requirements.

8003.14 Corrosives.

8003.14.1 Indoor storage.

8003.14.1.1 General. Indoor storage of corrosive materials in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.14.1.

Retail display of corrosive materials shall be in accordance with Section 8001.12.

8003.14.1.2 Liquid-tight floor. In addition to Section 8003.1.18, floors in storage areas for corrosive liquids shall be of liquid-tight construction.

8003.14.2 Outdoor storage.

8003.14.2.1 General. Outdoor storage of corrosive materials in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.14.2.

8003.14.2.2 Distance from storage to exposures. Outdoor storage of corrosive liquids shall not be within 20 feet (6096 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the side of the storage area is allowed in lieu of such distance.

8003.15 Carcinogens, Irritants, Sensitizers and Other Health Hazard Solids, Liquids and Gases.

8003.15.1 Indoor storage.

8003.15.1.1 General. Indoor storage of carcinogens, irritants, sensitizers and other health hazard solids, liquids and gases in amounts exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.15.1.

Retail display of carcinogens, irritants, sensitizers and other health hazard materials shall be in accordance with Section 8001.12.

8003.15.1.2 Liquid-tight floor. In addition to Section 8003.1.18, floors in storage areas for carcinogens, irritants, sensitizers or other health hazard liquids shall be of liquid-tight construction.

8003.15.2 Outdoor storage.

8003.15.2.1 General. Outdoor storage of carcinogens, irritants, sensitizers and other health hazard solids, liquids and gases in quantities exceeding the exempt amounts set forth in Section 8001.13 shall be in accordance with Sections 8003.1 and 8003.15.2.

8003.15.2.2 Distance from storage to exposures. Outdoor storage of carcinogens, irritants, sensitizers or other health hazard solids, liquids and gases shall not be within 20 feet (6096 mm) of buildings, property lines, streets, alleys, public ways or exits to a public way. An unpierced two-hour fire-resistive wall extending not less than 30 inches (762 mm) above and to the sides of the storage area is allowed in lieu of such distance.

8003.15.2.3 Storage conditions. Outdoor storage of carcinogens, irritants, sensitizers and other health hazard solids and liquids shall be separated into piles not larger than 2,500 cubic feet (70.79 m^3). Aisle widths between piles shall not be less than one-half the height of the piles or 10 feet (3048 mm), whichever is greater.

NEW SECTION

WAC 51-34-9100 Appendix II-F--Protected aboveground tanks for motor vehicle fuel-dispensing stations outside buildings.

NEW SECTION

WAC 51-34-9101 Section 1--Scope. Storage and dispensing of motor fuels into the fuel tanks of motor vehicles from protected aboveground tanks located outside buildings shall be in accordance with Appendix II-F.

NEW SECTION

WAC 51-34-9102 Section 2--Definitions. For the purpose of Appendix II-F, certain terms are defined as follows:

FUEL-DELIVERY SYSTEM is a system which consists of a tank vehicle containing a pump, fill hose with appropriate connections, and a person who performs the tank filling operation of transferring fuel from the tank vehicle to an aboveground tank. The two types of fuel-delivery systems for aboveground tanks are as follows:

2.1 **PRECONNECTED FLEXIBLE HOSE SYSTEM** is a fuel-delivery system containing a reel-mounted preconnected flexible hose having a maximum nominal diameter of 2 inches (50.8 mm) and a manually controlled fuel-delivery nozzle at the downstream end of the hose.

2.2 **RIGID HOSE SYSTEM** is a fuel-delivery system utilizing one or more sections of large diameter rigid hose [usually 3 to 4 inches (76.2 to 101.6 mm) in nominal diameter] which does not contain a nozzle but which contains interlocking connections for manually connecting the hose from the tank vehicle to the tank.

PRIMARY TANK is a listed aboveground atmospheric tank used to store liquid. See definition of PRIMARY CONTAINMENT in Section 217.

PROTECTED ABOVEGROUND TANK is a listed tank system consisting of a primary tank provided with protection from physical damage, and fire-resistive protection from a high-intensity liquid pool fire exposure. The tank system is allowed to provide these protection elements as a unit or is allowed to be an assembly of components, or a combination thereof.

NEW SECTION

WAC 51-34-9103 Section 3--Permits and plans. A permit is required to install, operate, repair or modify protected aboveground tanks used for storage and dispensing of flammable or combustible liquid motor fuels.

The installation plans shall be submitted with permit applications. The plans shall include the design, details, and specifications of the following:

3.1 Quantities and types of liquids to be stored;

3.2 Distances from tanks and dispensers to property lines and buildings;

3.3 Vehicle access;

3.4 Fire appliances;

3.5 Vehicle impact protection;

3.6 Protected aboveground tanks and their supports;

3.7 Method of storage and dispensing;

3.8 Overfill prevention, spill containment, vents, vapor recovery, dispensers, and other equipment and accessories;

3.9 Seismic design in accordance with the Building Code;

3.10 Secondary containment;

3.11 Venting;

3.12 Piping;

3.13 Electrical systems;

3.14 Emergency controls; and

3.15 Other information as required by the chief.

NEW SECTION

WAC 51-34-9104 Section 4--Tank design.

4.1 **General.** Protected aboveground tanks shall be listed and shall meet the requirements of U.F.C. Standard A-II-F-1.

4.2 **Primary Tanks.** Primary tanks shall be designed in accordance with Section 7902.1.8.2.1.

4.3 **Size.** Primary tanks shall not exceed a 10,000-gallon (37 854 L) individual or 40,000-gallon (151 416 L) aggregate capacity.

4.4 **Vents.**

4.4.1 **Capacity.** The vent capacity reduction factor as provided for in Section 7902.2.6.3.4 shall not be allowed.

4.4.2 **Flame arresters.** Approved flame arresters shall be installed in normal vents.

4.5 **Projectile Protection.** When a projectile test is required by the chief, the protected tank shall be tested in accordance with the requirements for bullet resistance as specified in Section 7702.3.4.3.

NEW SECTION

WAC 51-34-9105 Section 5--Installation of tanks. The installation of protected aboveground tanks shall be in accordance with the following:

5.1 **Separation Distances.** A protected aboveground tank shall be separated from property lines, important buildings, public ways and other tanks in accordance with Table A-II-F-1.

TABLE A-II-F-1—MINIMUM SEPARATION REQUIREMENTS FOR PROTECTED ABOVEGROUND TANKS

INDIVIDUAL TANK CAPACITY gallons (liters)	MINIMUM DISTANCE FROM PROPERTY LINE WHICH IS OR CAN BE BUILT UPON, INCLUDING THE OPPOSITE SIDE OF A PUBLIC WAY feet (mm)	MINIMUM DISTANCE FROM THE NEAREST SIDE OF ANY PUBLIC WAY OR FROM THE NEAREST IMPORTANT BUILDING ON THE SAME PROPERTY feet (mm)	MINIMUM DISTANCE BETWEEN TANKS feet (mm)
Less than or equal to 6,000 (22 712)	15 (4572)	5 (1524)	3 (914)
Greater than 6,000 (22 712)	50 (15 240)	25 (7620)	3 (914)

5.2 **Total Quantity.** Protected aboveground tank installations shall not exceed 40,000 gallons (151 416 L) aggregate capacity of primary tanks. Tank installations having the maximum allowable aggregate capacity shall be separated from other installations of protected aboveground tanks by not less than 100 feet (30 480 mm).

5.3 **Secondary Containment.** Protected aboveground tanks shall be provided with drainage control or diking in accordance with Sections 7901.8 and 7902.2.8 or with secondary containment that is a component of the listed protected tank system. Secondary containment systems shall be monitored either visually or automatically. Enclosed secondary containment systems shall be provided with emergency venting.

5.4 **Vehicle Impact Protection.** Guard posts or other approved barrier protection shall be separately provided for each protected aboveground tank and for connected piping subject to vehicle impact. The design of guard posts shall be in accordance with Section 8001.9.3. Also see U.F.C. Standard A-II-F-1, Section 2.7.2.

5.5 **Overfill Prevention.** Protected aboveground tanks shall not be filled in excess of 90 percent of their capacity. An overfill prevention system shall be provided for each tank. During tank filling operation, the system shall:

1. Provide an independent means of notifying the person filling the tank that the fluid level has reached 85 percent of tank capacity by providing an audible or visual alarm signal, providing a tank level gage marked at 85 percent of tank capacity, or other approved means, and

2. Automatically shut off the flow of fuel to the tank when the quantity of liquid in the tank reaches 90 percent of tank capacity. For rigid hose fuel-delivery systems, an approved means shall be provided to empty the fill hose into the tank after the automatic shutoff device is activated.

A permanent sign shall be provided at the fill point for the tank documenting the filling procedure and the tank calibration chart. The filling procedure shall require the person filling the tank to determine the gallonage required to fill it to 90 percent of capacity before commencing the fill operation.

5.6 **Fill Pipe Connections.** The fill pipe shall be provided with a means for making a direct connection to the tank vehicle's fuel-delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation. When any portion of the fill pipe exterior to the tank extends below the level of the top of the tank, a check valve shall be installed in the fill pipe not more than 12 inches (304.8 mm) from the fill hose connection. See Section 7901.11.4 for tank valves.

5.7 **Spill Containers.** A spill container having a capacity of not less than 5 gallons (18.9 L) shall be provided for each fill connection. For tanks with a top fill connection, spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain valve which drains into the primary tank. For tanks with a remote fill connection, a portable spill container shall be provided.

5.8 **Signs.** Warning signs and identification signs shall be installed to clearly identify hazards. The design of such signs shall be in accordance with Sections 5201.8 and 7901.9. Conspicuous signs prohibiting simultaneous tank filling and fuel dispensing shall be posted.

NEW SECTION

WAC 51-34-9106 Section 6--Installation of dispensing and piping systems.

6.1 **General.** Dispensing and piping systems and electrical controls shall be installed in accordance with Section 7901.11 and Article 52, except as provided in Appendix Sections 6.2, 6.3 and 6.4.

6.2 **Tank Openings.** Tank openings in protected aboveground tanks shall be through the top only.

6.3 **Dispensing Devices.** Dispensing devices are allowed to be installed on top of or immediately adjacent to protected aboveground tanks.

6.4 **Antisiphon Devices.** Approved antisiphon devices shall be installed in each external pipe connected to the tank when the pipe extends below the level of the top of the tank.

NEW SECTION

WAC 51-34-9107 Section 7--Parking of tank vehicles. Tank vehicles shall not be parked within 25 feet (7620 mm) of a protected aboveground tank.

EXCEPTION: When the tank is being filled from the tank vehicle.

NEW SECTION

WAC 51-34-9108 Section 8--Maintenance. Protected aboveground tanks, piping and dispensing systems shall be maintained in a safe operating condition. Protected aboveground tanks and components of dispensing systems shall be maintained in accordance with their listings.

Damage to protected aboveground tanks shall be repaired using materials having equal or greater strength and fire resistance.

Chapter 51-35 WAC

STATE BUILDING CODE ADOPTION AND AMENDMENT OF THE 1994 EDITION OF THE UNIFORM FIRE CODE STANDARDS

NEW SECTION

WAC 51-35-001 Authority. These rules are adopted under the authority of chapter 19.27 RCW.

NEW SECTION

WAC 51-35-002 Purpose. The purpose of these rules is to implement the provisions of chapter 19.27 RCW, which provides that the State Building Code Council shall maintain the State Building Code in a status which is consistent with the purpose as set forth in RCW 19.27.020. In maintaining the codes the Council shall regularly review updated versions of the codes adopted under the act, and other pertinent information, and shall amend the codes as deemed appropriate by the Council.

NEW SECTION

WAC 51-35-003 Uniform Fire Code Standards. The 1994 edition of the Uniform Fire Code Standards as published by the International Fire Code Institute is hereby adopted by reference with the following additions, deletions, and exceptions.

NEW SECTION

WAC 51-35-007 Exceptions. The exceptions and amendments to the Uniform Fire Codes Standards contained in the provisions of chapter 19.27 RCW shall apply in case of conflict with any of the provisions of these rules.

NEW SECTION

WAC 51-35-008 Implementation. The Uniform Fire Code Standards adopted by chapter 51-35 Washington Administrative Code (WAC) shall become effective in all counties and cities of this state on June 30, 1995.

NEW SECTION

WAC 51-35-52000 Uniform Fire Code Standard 52-1 compressed natural gas (CNG) vehicular fuel systems.

NEW SECTION

WAC 51-35-52400 Chapter 4--CNG compression, storage, and dispensing systems.

NEW SECTION

WAC 51-35-52440 Section 52440.

4-4 Siting.

NEW SECTION

WAC 51-35-52441 Section 52441.

4-4.1 CNG compression, storage, and dispensing shall be located and conducted outdoors or indoors in compliance with 4-4.2 and 4-4.3. Vehicle Fueling Appliances shall be installed per Section 4-17.

NEW SECTION

WAC 51-35-52442 Section 52442.

4-4.2 Outdoors.

4-4.2.1 CNG storage containers charged with CNG not connected for use shall be located outdoors.

4-4.2.2 Weather Protection Shelters. A facility in which CNG compression, storage and dispensing equipment is sheltered by an enclosure of noncombustible materials that has at least 50 percent of the total perimeter area substantially open and a roof designed for ventilation and dispersal of escaped gas shall be regarded as outdoors.

EXCEPTION: Compression equipment located in or under such weather protection shelters may be fully enclosed by noncombustible materials.

4-4.2.3 Compression, storage, and dispensing equipment outdoors shall be located aboveground, not beneath electric power lines or where exposed by their failure, and a minimum of 10 ft (3.0 m) from the nearest important building or line of adjoining property that may be built upon or source of ignition.

4-4.2.4 Compression, storage, and dispensing equipment outdoors shall be located not less than 10 ft (3.0 m) from the nearest public street or sidewalk line and at least 50 ft (15 m) from the nearest rail of any railroad main track.

4-4.2.5 A clear space of at least 3 ft (1 m) shall be provided for access to all valves and fittings of multiple groups of containers.

4-4.2.6 Readily ignitable material shall not be permitted within 10 ft (3 m) of any stationary container.

4-4.2.7 The minimum separation between containers and aboveground tanks containing flammable or combustible liquids shall be 20 ft (6.1 m).

4-4.2.8 During outdoor fueling operations, the point of transfer (see definition) shall be located at least 10 ft (3 m) from any important building, mobile home, public sidewalk, highway, street, or road and at least 3 ft (1 m) from storage containers.

EXCEPTION: At the discretion of the authority having jurisdiction, the point of transfer may be located at a lesser distance from buildings or walls constructed of concrete or masonry materials, but at lease 10 ft (3.0 m) from any building openings.

Delete Chapters 5 and 6 and substitute New Chapters 5 and 6 as follows:

NEW SECTION

WAC 51-35-52500 Chapter 5--Vehicle fueling appliances.

NEW SECTION

WAC 51-35-52510 Section 52510.

5-1 General

5-1.1 Applicability. Vehicle fueling appliances shall be installed, operated and maintained in accordance with this chapter, Uniform Fire Code Article 52, the Mechanical Code and the Plumbing Code.

5-1.2 Permits. For commercial vehicle fueling permits, see Uniform Fire Code Section 105.8, permit m.3.

5-1.3 Maximum flow and pressure. Vehicle fueling appliances shall not exceed a flow rate of 10 standard cubic feet per minute (4.7 L/s) at a discharge pressure of 4,000 psi (27 579 kPa) at NTP. Vehicle fueling appliances used for residential service shall not exceed a flow rate of 5 standard cubic feet per minute(2.4 L/s) at a discharge pressure of 4,000 psi (27 579 kPa) at NTP.

NEW SECTION

WAC 51-35-52520 Section 52520.

5-2 Location and Installation

5-2.1 Residential and commercial vehicle fueling appliances shall be installed outside of buildings. The appliance shall be a minimum of 3 feet (914 mm) from property lines and building openings. When approved by the chief, commercial vehicle fueling appliances may be installed indoors when installed in accordance with Section 5-8.3 and Uniform Fire Code Article 52.

For the purposes of this section, residential shall mean a dwelling as defined in the Uniform Building Code but does not include congregate residences. For the purposes of this section commercial shall not include hotels, apartments, congregate residences and lodging houses.

5-2.2 Anchorage. Vehicle fueling appliances shall be anchored to resist loads in accordance with the Building Code.

5-2.3 Physical and impact protection. Equipment related to the vehicle fueling appliance shall be protected to minimize the possibility of physical damage. When subject to vehicle impact, vehicle fueling appliances shall be provided with vehicular impact protection. See Uniform Fire Code Section 8001.9.3.

5-2.4 Safe functioning of the appliance. The vehicle fueling appliance shall be located to prevent damage resulting from flooding, ice build-up or blockage of ventilation.

NEW SECTION

WAC 51-35-52530 Section 52530.

5-3 Appliance Vent Lines

5-3.1 General. Vehicle fueling appliances shall be provided with an approved method to discharge methane outdoors as the result of the operation of a relief valve or device.

5-3.2 Arrangement. Relief valves or devices shall be provided with an approved means of safely discharging natural gas outside of buildings. The method employed shall be designed such that the design flow capacity of the relief valve or device is not restricted.

5-3.3 Location. Relief valves or devices shall be terminated in accordance with the following minimum requirements:

5-3.3.1 Sources of ignition. Relief valves or devices shall terminate a minimum of 36 inches (914 mm) from sources of ignition.

5-3.3.2 Building openings. Relief valves or devices shall terminate a minimum of 36 inches (914 mm) horizontally and 12 inches (305 mm) vertically above openings or vents into buildings or a space where flammable vapors are likely to accumulate.

5-3.3.3 Paths of egress. Relief valves or devices shall not terminate within 5 feet (1524 mm) of sidewalks or paths of egress.

5-3.4 Termination. Relief valves or devices shall be terminated so as to prevent the entry of water, insects, ice or other materials.

NEW SECTION

WAC 51-35-52540 Section 52540.

5-4 Hoses

5-4.1 General. Hoses used for the supply of natural gas to the vehicle fueling appliances or the dispensing of natural gas into motor vehicles shall be in accordance with this section.

5-4.2 Supply hoses. A single hose having a maximum length of 3 feet (914 mm) is allowed to be used to terminate the natural gas supply into the intake of the vehicle fueling appliance. The hose shall be installed when it is necessary to prevent abrasion damage resulting from vibration at the compressor intake or discharge.

5-4.3 Dispensing hoses. The use of hoses for dispensing of natural gas from a vehicle fueling appliance into a motor vehicle shall be in accordance with the following minimum requirements:

5-4.3.1 Length. The maximum length of the hose shall not exceed 25 feet (7620 mm).

5-4.3.2 Protection. Hoses shall be protected from abrasion, mechanical damage and being driven over.

5-4.3.3 Number of hoses. The number of hoses which may be used for the dispensing of natural gas into motor vehicles shall be in accordance with the appliance's listing.

5-4.3.4 Breakaway protection. The vehicle dispensing hose shall be equipped with a breakaway connection. Operation of the breakaway connection shall stop the flow of natural gas from the vehicle fueling appliance. The maximum force necessary to effect breakaway shall be 40 pounds (18.1 kg) in any horizontal direction.

NEW SECTION

WAC 51-35-52550 Section 52550.

5-5 Signs

5-5.1 General. Signs concerning the safe operation of vehicle fueling appliances shall be provided in accordance with this section.

5-5.2 No smoking. NO SMOKING WITHIN 3 FEET signs shall be provided at the vehicle fueling appliance.

5-5.3 Automobile ignition. TURN OFF IGNITION BEFORE FUELING signs shall be provided at the vehicle fueling appliance.

5-5.4 Electrical disconnect. Approved CNG COMPRESSOR EMERGENCY ELECTRICAL DISCONNECT signs shall be provided at the electrical disconnect switch.

NEW SECTION

WAC 51-35-52560 Section 52560.

5-6 Electrical Disconnect

5-6.1 An emergency electrical disconnect switch shall be provided in an approved location not less than 5 feet (1524 mm) or more than 25 feet (7620 mm) away from the vehicle fueling appliance. The disconnect switch shall be in view of the vehicle fueling appliance.

NEW SECTION

WAC 51-35-52570 Section 52570.

5-7 Gas Supply

5-7.1 Vehicle fueling appliances shall be provided with an approved method of shutting off the supply of natural gas.

NEW SECTION

WAC 51-35-52580 Section 52580.

5-8 Dispensing of CNG

5-8.1 The exterior and interior dispensing of natural gas into motor vehicles shall be in accordance with this section.

5-8.2 Exterior dispensing. The exterior dispensing of natural gas into motor vehicles shall be in accordance with Chapter 5 of this Standard and Uniform Fire Code Article 52.

5-8.3 Interior dispensing. When approved by the chief, the fueling of vehicles inside of buildings shall be in accordance with this section and the following requirements:

5-8.3.1 Mechanical ventilation. The room or area where natural gas is dispensed shall be provided with mechanical ventilation which is designed to not recirculate air. The ventilation system shall terminate outside of the building. The ventilation system shall be designed to provide a minimum ventilation rate of at least 10 times the maximum flow rate of the vehicle fueling appliance.

5-8.3.2 Gas detection. The room or area where natural gas is dispensed shall be provided with a listed gas-detection system. The detector shall be designed to activate an audible and visual alarm when the amount of natural gas exceeds 20 percent of the lower flammability limit for methane.

5-8.3.3 System failure. Failure of the mechanical ventilation system or the gas-detection system shall shut off power to the vehicle fueling appliance.

NEW SECTION

WAC 51-35-52590 Section 52590.

5-9 Maintenance and Inspection

5-9.1 General. Installation and maintenance of vehicle fueling appliances shall be in accordance with the manufacturer's instructions and listings.

5-9.2 Identification. A water-resistant tag, label or other approved means shall be affixed to the vehicle fueling appliance which identifies that the appliance has been serviced in accordance with manufacturer's instructions.

NEW SECTION

WAC 51-35-52600 Chapter 6--Reserved.