11-10-3. CHAPTER 1 ADMINISTRATION AMENDMENTS.

(A) *Department of Fire Prevention:* Section 103 of the International Fire Code is amended as follows:

102.13 Conflicts with Other Adopted Codes. Where a conflict arises between this Code and the International Building Code and/or the International Residential Code, the more stringent application of the respective codes shall apply.

Exception: When any provision from the respective codes is agreed upon by the Chief Building Official and the Fire Code Official as being applicable and acceptable.

103.4 Liability. Subsection is deleted in its entirety.

103.4.1 Legal Defense. Subsection is deleted in its entirety.

(B) *Enforcement Authority:* The Fire Chief and his designees are hereby authorized to enforce the provisions of this ordinance as specified in Section 104.1 of the International Fire Code, 2015 Edition.

(C) *Required Operational Permits:* Subsection 105.6 of the International Fire Code is amended to read as follows:

105.6 Required Operational Permits. An operational permit shall be obtained from the Fire Prevention Bureau prior to engaging in the following activities, functions, operations, or practices, as defined in accordance with the Fire Code, unless otherwise specified in this Code:

(1) **105.6.2 Amusement buildings**

(2) **105.6.5 Carnivals and fairs**

(3) **105.6.11 Cryogenic fluids**

(4) **105.6.15 Explosives, explosive materials, and fireworks**

(5) **105.6.17 Flammable and combustible liquids**:

(a) To remove Class I or II liquids from an underground storage tank used for fueling motor vehicles by any means other than the approved, stationary on-site pumps normally used for dispensing purposes.

(b) To install, alter, remove, abandon, place temporarily out of service (for more than ninety (90) days) or otherwise dispose of an underground, protected above-ground or above-ground flammable or combustible liquid tank.

(c) To change the type of contents stored in a flammable or combustible liquid tank to a material that poses a greater hazard than that for which the tank was designed and constructed.

(6) **105.6.20 Fumigation and thermal insecticidal fogging**

(7) **105.6.20.1** Fumigation and/or associated operations for removing biological, chemical, or other naturally occurring agents, chemicals, organisms, or substances.

(8) **105.6.21 Hazardous Materials**

(9) **105.6.27 Liquid- or gas-fueled vehicles or equipment in buildings for display, demonstrating, or operation**. This shall not apply to parking garages, private garages, repair garages, or other buildings normally utilized for the operation, repair, restoration, and storage of motor vehicles.

(10) **105.6.28 LP-gas**

(11) **105.6.29 Magnesium**

(12) **105.6.32 Open burning**

(13) **105.6.37 Private fire hydrants**

(14) **105.6.38 Pyrotechnic special effects material**

(15) **105.6.45 Temporary membrane structures and tents**

(16) **105.6.49 Block parties and event street closures**

(D) *Required Construction Permits:* Subsection 105.7 of the International Fire Code is amended to read as follows:

105.7 Required Construction Permits. Upon approval of required construction documents, as required by Subsection 105.4, a fire protection permit shall be obtained from the Fire Prevention Bureau prior to initiating any alterations, construction, installation, modification, or remodel of any fire protection system or other fire- or life-safety system, as defined by the Fire Code. The following fire protection systems shall require submittal of plans, specifications, design and installation criteria, as required by the Fire Code Official, prior to issuance of a fire protection permit, those not listed are excluded from the requirements of this Section:

(1) **105.7.1 Automatic fire-extinguishing systems**

(2) **105.7.3 Compressed gases**

(3) **105.7.4 Cryogenic Fluids**

(4) **105.7.6 Fire alarm and detection systems and related equipment**

(5) **105.7.7 Fire pumps and related equipment**

(6) **105.7.8 Flammable and combustible liquids**

(7) **105.7.10 Hazardous materials**

(8) **105.7.9 Gates and Barricades across fire apparatus access roads (notification only, no fee)**

(9) **105.7.12 LP-gas**

(10) **105.7.13 Private fire hydrants**

(11) **105.7.16 Spraying and dipping**

(12) **105.7.17 Standpipe systems**

(13) **105.7.18 Temporary membrane structures, and tents**

(E) *Fees:* Section 105 of the International Fire Code is amended to add Sections 105.8 and 105.9 to read as follows:

105.8 Operational Permit Fees. The fee for operational permits required by Subsection 105.6 of this Code shall be as set forth in the Fee Schedule adopted by Resolution by the City Council. Fees shall be collected by the Fire Prevention Bureau. The Fire Code Official is authorized to waive the fee in accordance with approved standard operating guidelines for administering permits for activities described in Subsection 105.8.

105.9 Construction Permit Fees. Permit fees and taxes are required for fire protection and life safety systems required by Subsection 105.7 of this Code for initiating any alterations, construction, installation, modification, or remodel of any fire protection system or other fire- or life-safety system, as defined by the Fire Code. These fees shall be assessed by and paid to the City of Westminster in accordance with the provisions of the Fee Schedule adopted by Resolution by the City Council.

(F) *Building and Fire Code Appeals Committee:* Section 108 of the International Fire Code is amended as follows:

108.1 Building and Fire Code Appeals Committee. Appeals of orders, decisions, or determinations made by the Building Official or Fire Code Official relative to the application and interpretation of the Building and Fire Codes, and amendments thereto, shall be made to the Building and Fire Code Appeals Committee pursuant to Title II, Chapter 10, of this Code. No such appeal shall be heard by the Building and Fire Code Appeals Committee, unless the appeal is filed within thirty (30) calendar days after the date of the action of the Building Official or Fire Chief.

108.2 Limitations on authority. Subsection is deleted in its entirety.

108.3 Qualifications. Subsection is deleted in its entirety.

(G) *Violations:* Section 109 of the International Fire Code is amended to read as follows:

109.1 Unlawful Acts. It shall be unlawful for a person, firm or corporation to erect, construct, alter, repair, remove, demolish or utilize a building, occupancy, premises or system regulated by this Code, or cause same to be done, in conflict with or in violation of any of the provisions of this Code.

109.3 Notice of Violation. When the Fire Code Official finds a building, premises, vehicle, storage facility or outdoor area that is in violation of this Code, the Fire Code Official is authorized to prepare a written notice of violation describing the conditions deemed unsafe and, when compliance is not immediate, specifying a time for re-inspection.

109.3.1 Service. A notice of violation issued pursuant to this Code shall be served upon the owner, operator, occupant, or other person responsible for the condition or violation, either by personal service, mail, e-mail, or by delivering the same to, and leaving it with, some person of responsibility upon the premises. For unattended or abandoned locations, a copy of such notice of violation shall be posted on the premises in a conspicuous place at or near the entrance to such premises and the notice of violation shall be mailed by first-class mail to the owner of the subject property at the address shown in the county assessor records for the county in which the property is located. Notice shall be deemed served on the date of receipt by the owner, if personally served, or upon the fifth (5^{th}) day after mailing of the notice.

109.3.2 Compliance with Orders and Notices. A notice of violation issued or served as provided by this Code shall be complied with by the owner, operator, occupant or other person responsible for the condition or violation to which the notice of violation pertains.

109.3.3 Prosecution of Violations. If the notice of violation is not complied with promptly, the Fire Code Official is authorized to request the legal counsel of the jurisdiction to institute the appropriate legal proceedings at law or in equity to restrain, correct or abate such violation or to require removal or termination of the unlawful occupancy of the structure in violation of the provisions of this Code or of the order or direction made pursuant hereto.

109.3.4 Unauthorized Tampering. Signs, tags or seals posted or affixed by the Fire Code Official shall not be mutilated, destroyed, tampered with or removed without authorization from the Fire Code Official.

109.4 Violation Penalties. Any person who violates any of the provisions of this Code, or who fails to comply therewith, or who builds any structure in violation of a detailed statement of specifications or plans submitted and approved pursuant to this Code and from which no appeal has been taken, or who fails to comply with a final order issued pursuant to this Code within the time fixed therein shall be guilty of a misdemeanor punishable by a fine or imprisonment pursuant to the limits set forth in Section 1-8-1, W.M.C., or by both such fine and imprisonment. The imposition of one (1) penalty for any violation shall not excuse the violation or permit it to continue, and all such persons shall be required to correct or remedy such violations or defects within a reasonable time and, when not otherwise specified, each day that a prohibited condition is maintained shall constitute a separate offense. The imposition of a criminal penalty shall not prevent the abatement of prohibited conditions.

109.4.1 Abatement of Violation. In addition to the imposition of the penalties herein described, the Fire Code Official is authorized to institute appropriate action to prevent unlawful construction or to restrain, correct or abate a violation; or to prevent illegal occupancy of a structure or premises; or to stop an illegal act, conduct of business or occupancy of a structure on or about any premises.

(H) *Stop Work Order:* Section 111 of the International Fire Code is amended as follows:

111.4 Failure to Comply. Subsection is deleted in its entirety.

11-10-4. CHAPTER 5 FIRE SERVICE FEATURES AMENDMENTS.

(A) *Fire Apparatus Access Roads:* Section 503.1 of the International Fire Code is amended to add Section 503.1.4 to read as follows:

503.1.4 Block Parties and Street Obstructions. The Fire Department is authorized to issue operational permits for street closures intended for block parties, City of Westminster sponsored events, neighborhood events, or for similar purposes, where such events will not impede delivery of emergency services and does not create an additional risk to public safety. Applicable fees may be waived for City of Westminster events and events sponsored by non-profit entities and organizations.

(B) *Markings:* Section 503.3 of the International Fire Code is amended to add Section 503.3.1 to read as follows:

503.3.1. The marking of fire lanes on private property devoted to public use shall be approved by the Fire Code Official, in accordance with the Fire Code and the Uniform Traffic Control Manual.

(C) *Obstruction of Fire Apparatus Access Roads:* Section 503.4 of the International Fire Code is amended to add Section 503.4.2 to read as follows:

503.4.2. The Fire Code Official or any of his subordinates, or the Police Department, with knowledge of the existence of any vehicle parked in the fire lane, or in such manner as to interfere with the use of any fire hydrant, or in any manner in violation of this Section, may have such vehicle towed away and the charges of such towing shall be assessed to the owner of such vehicle. The aforesaid violation shall be sufficient grounds to cause a citation to be issued. In the event of a fire, the Fire Department shall have the authority to cause the vehicle blocking a fire hydrant or fire lane to be removed, with

any subsequent damage to the vehicle being paid by the owner of said vehicle. The towing of any vehicle pursuant to this Section shall comply with the provisions of Chapter 1 of Title X of the Westminster Municipal Code.

(D) *Premises Identification:* Section 505.1 of the International Fire Code is amended to add Section 505.1.1 and 505.1.2 to read as follows:

505.1.1. Buildings having exterior rear or side access doors shall have approved address numbers, building numbers or approved building identification placed in a position approved by the Fire Code Official.

505.1.2. Buildings with multiple tenants with interior access doors shall have approved unit or space identification numbers, address numbers or other approved means of identifying individual tenant spaces or units.

(E) *Key Boxes:* Section 506 of the International Fire code is amended to add section 506.1.2 (7) to read as follows:

506.1.2 (7) Where approved by the fire code official, a separate key box may not be required at the elevator bank(s) when a properly sized and mounted key box for the building is located in a location approved by the fire code official.

(F) *Privately Owned Hydrant Systems:* Section 507 of the International Fire Code is amended to add Section 507.5.3.1 and 507.5.7 to read as follows:

507.5.3.1. Privately owned hydrants shall be maintained at the expense of the private property owner, subject to the direction and requirements of the Fire Code Official. Such private hydrants shall be flushed and tested periodically according to the Fire Code. In the event such testing reveals that the flow from private hydrants is inadequate according to applicable standards, modifications necessary to meet these standards shall be ordered by the Fire Code Official and made at the expense of the property owner. All private hydrants shall be painted the same color as hydrants on public rights-of-way or elsewhere throughout the City with a different color cap, that being white, to designate a private fire hydrant.

Appropriate markings or signs restricting parking in front of or adjacent to fire hydrants shall be designated by the Fire Code Official and implemented at the expense of the owner of the property. No point of connection to any private fire hydrant shall be left uncapped without permission of the Fire Code Official.

507.5.7 Existing Private Fire Hydrants. Existing hydrants that do not conform to City specifications or that do not face in the direction most consistent with emergency use by the Fire Department, as established by the Fire Code Official, shall be changed to meet the City's requirements by the property owner and at the property owner's expense, within fifteen (15) days of service of notice of the required changes upon the property owner or its resident agent.

11-10-5. CHAPTER 6 BUILDING SERVICES AND SYSTEMS AMENDMENTS.

(A) Section 605.11 of the International Fire Code is amended to add sections 605.11.3 and 605.11.4 as follows:

605.11.1.2.1 **Size of solar photovoltaic array.** Each photovoltaic array shall be limited to 150 feet (45 720 mm) by 150 feet (45 720 mm). Multiple arrays shall be separated by a 2-foot-wide (609 mm) clear access pathway.

605.11.1.2.2 **Hip roof layouts.** Panels and modules installed on Group R-3 buildings with hip roof layouts shall be located in a manner that provides a 2-foot-wide (609 mm) clear access pathway from the eave to the ridge on each roof slope where panels and modules are located. The access pathway shall be at a location on the building capable of supporting the fire fighters accessing the roof.

Exception: These requirements shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

605.11.1.2.3 **Single-ridge roofs.** Panels and modules installed on Group R-3 buildings with a single ridge shall be located in a manner that provides two, 2-foot-wide (609 mm) access pathways from the eave to the ridge on each roof slope where panels and modules are located.

Exception: This requirement shall not apply to roofs with slopes of two units vertical in 12 units horizontal (2:12) or less.

605.11.1.2.5 **Allowance for smoke ventilation operations.** Panels and modules installed on Group R-3 buildings shall be located not less than 2 feet (609 mm) from the ridge in order to allow for fire department smoke ventilation operations.

*Exception***:** Panels and modules shall be permitted to be located up to the roof ridge where an alternative ventilation method approved by the fire chief has been provided or where the fire chief has determined vertical ventilation techniques will not be employed.

605.11.3 Direct Current (DC) Wiring:

(a) Direct current (DC) conduit, wiring, and raceways shall be located below the solar array or a minimum of twenty-four inches (24") below the roof sheathing.

605.11.4 Labeling:

(a) For residential applications, a label stating, "CAUTION, SOLAR PHOTO VOLTAIC SYSTEM ON PREMISES" shall be placed at or within the main electrical service disconnect.

11-10-6. CHAPTER 9 FIRE PROTECTION SYSTEMS AMENDMENTS.

(A) *Automatic Sprinkler Systems:* Section 903 of the International Fire Code is amended to read as follows:

903.1.2 Anti-freeze systems. Only listed anti-freeze solutions are allowed.

903.2.8 Group R. An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all buildings with a Group R fire area. Group R-2 and Group R-4 occupancies required to be protected with an automatic fire sprinkler system shall provide fire sprinkler coverage for all exterior balconies.

*Exception***:** Existing Group R-2 and Group R-4 buildings and occupancies constructed prior to January 1, 2012, unless the building is undergoing renovation which is of sufficient extent that sprinkler system modifications are being completed that would provide fire sprinkler coverage on exterior balconies.

903.3.1.3.1 Safety factor allowance. All sprinkler systems installed in accordance with NFPA 13D shall have a safety factor for all hydraulic calculations in systems. This shall consist of one of the following:

(1) A five (5) percent hydraulic safety factor from the static pressure allowance.

(2) System design of no greater than 80 psi static pressure.

(3) As otherwise allowed by the fire code official.

903.3.1.3.2 Requirement for Notification. All sprinkler systems installed in accordance with NFPA 13D shall have a horn/strobe notification device placed on the exterior of the structure in a location visible to passersby.

903.3.2.1 Residential automatic sprinkler heads in light hazard occupancies. Residential automatic sprinkler heads are prohibited in light hazard occupancies.

903.3.2.2 Residential and Quick-response Automatic Sprinkler Heads. All installations of residential and quick-response automatic sprinkler heads shall be in strict accordance with their listings. Where listings authorize installation where prohibited in 903.3.2 and 903.3.2.1, the Fire Code Official may waive the requirements mandated by 903.3.2 and 903.3.2.1.

(B) *Standpipe Systems:* Section 905 of the International Fire Code is amended to add the following:

905.3.1 Height shall be amended by adding the following exceptions:

Exception 6: Class I standpipes are allowed to be manual systems.

Exception 7: Fire hose is not required for Class III standpipes. Standpipe hose outlets shall be two and one-half –inch (2-1/2") outlets with a two and one-half-inch (2-1/2") cap.

905.3.9 Bridges and Roadway Overpasses. Where required to extend water supply to streets, highways, and rail systems, a dry standpipe shall be installed in accordance with Fire Department requirements.

(C) *Fire Alarm and Detection Systems:* Section 907 of the International Fire Code is amended to add Section 907.6.7 to read as follows:

907.6.7 Extent of coverage. The Fire Code Official shall approve the extent of zone coverage for fire alarm systems in all buildings and structures.

(D) *Fire Department Connections:* Section 912 of the International Fire Code is amended to add section 912.2.3 to read as follows:

912.2.3 Fire Hydrant Accessibility. The Fire Department connection (FDC) shall have a fire hydrant within one hundred feet (100') in a location approved by the Fire Department.

11-10-7. CHAPTER 38 ALCOHOL BEVERAGE PRODUCTION FACILITIES.

(A) Chapter 38 of the International Fire Code is hereby added to read as follows:

Section 3801

GENERAL.

3801.1 Scope. Buildings and portions thereof where ethanol mixtures in excess of one half of one percent are produced, stored, handled or dispensed in the production of beverages shall be regulated in accordance with this chapter.

The intent of this chapter is to establish minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion or dangerous conditions in new and existing alcohol beverage production facilities (ABPF) such as distilleries, breweries, and wineries, and to provide safety to fire fighters and emergency responders during emergency operations. The objective is to consolidate regulations for materials, systems, processes, and conditions most commonly found in ABPFs to facilitate compliance with the intent of this chapter.

The fire and building code officials are authorized to enforce applicable provisions of this code, referenced standards, and recommended practices not specifically addressed in this chapter provided they are consistent with the intent and objective of this chapter. Consideration shall be given to the unique materials and equipment utilized in this industry such as wooden casks (typically barrels) and high quality but as-yet, unlisted stills.

Unless otherwise noted, where provisions in this chapter conflict with provisions in other sections of this code regarding ABPFs, the provisions of this chapter shall supersede the provisions in those sections.

3801.2 Referenced Standards. The Fire Code Official is authorized to enforce applicable provisions of the standards listed in Chapter 80 of this code, as amended, to ensure safe operation of the ABPFs.

3801.3 Recommended Practices. The Fire Code Official shall have the authority to utilize other chapters of this code and the recommended practices listed in Table 3801.3 to render interpretations and develop policies and procedures in the application of the provisions of this chapter. Such interpretations, policies and procedures shall be in compliance with the intent and objective of this chapter.

Table 3801.3

NFPA 30	Flammable and Combustible Liquids Code
NFPA 70	National Electrical Code
NFPA 77	Recommended Practice on Static Electricity
NFPA 497	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas
NFPA 499	Recommended Practice for the Classification of Combustible Dusts and of Hazardous Locations for Electrical Installations in Chemical Process Areas

FM Global Loss Prevention Data Sheet (FM LPDS) 7	Distilleries
FM LPDS 8-8	Distilled Spirits Storage
XL Catlin GAPS Guideline GAP.8.1.0.1	Barrel Storage of Distilled Spirits
XL Catlin GAPS Guideline GAP.17.23.3.2	Distilleries
The Distilled Spirits Council of the United States, Inc.	Recommended Fire Protection Practices for Distilled Spirits Beverage Facilities
	Published industry research information, as determined credible by the Fire Code Official, not contained in formal standards

3801.4 Construction Documents. Construction documents shall be submitted for review and permit issuance prior to the installation, construction, or modification of ABPFs or the operational equipment therein.

SECTION 3802

DEFINITIONS, ACRONYMS AND ABBREVIATIONS

3802.1 Definitions. The following definitions apply to this chapter.

ALCOHOL BEVERAGE. A drinkable ethanol mixture in excess of one half of one percent ethanol intended for human consumption including wine, beer, and beverage spirits.

ALCOHOL BEVERAGE PRODUCTION FACILITY (ABPF). Any building or portion thereof where ethanol mixtures are produced, stored, handled, blended, dispensed, or bottled in the production of alcohol beverages including areas for grain storage and handling.

ALCOHOL BY VOLUME (ABV). Volume percentage of ethanol in an ethanol mixture.

BEVERAGE SPIRIT (TTB). A drinkable spirit intended for human consumption including neutral spirits or alcohol (i.e., vodka or grain spirits), whiskey, gin, brandy, blended applejack, rum, tequila, cordials and liqueurs.

BREWERY. An ABPF or portion thereof, including accessory uses, in which beer or other malt liquors are produced. For spirit production, beer and wash are synonymous as precursors to distillation.

BULK STORAGE. The storage of ethanol mixtures in containers exceeding 1.3 gallons (5L) in volume.

CASK. A closed vessel of 185 gallons (700 L) or less capacity, used primarily for storing Class I liquids, constructed of wooden staves and heads, held together by metal hoops, not equipped with provisions for emergency venting, and not intended for fixed installation.

CLASS 1 LIQUIDS. Used in this chapter to identify ethanol mixtures that are Class IB or Class IC flammable liquids.

CONTAINER. Any closed vessel of 119 gallons (450 L) or less capacity used for transporting or storing Class I liquids, not intended for fixed installation and not constructed of wood, but possibly equipped with an overpressure-relieving mechanism in accordance with FM Global Approved Standard for Plastic Plugs for Steel Drums, Class Number 6083, or equivalent.

DISTILLATION. The separation and concentration of the constituents of an ethanol mixture by slowly raising the temperature of the mixture through the boiling points of its constituents then collecting and condensing the constituent vapors separately from the mixture.

DISTILLERY (ALSO "DISTILLED SPIRITS PLANT – BEVERAGE"). An ABPF licensed by the TTB to produce, bottle, rectify, process or store beverage spirits including areas for fermentation, distillation, storage, blending, packaging, and accessory uses. Other types of distilleries licensed by the TTB include:

DISTILLED SPIRITS PLANT – INDUSTRIAL. A distilled spirits plant established to manufacture articles, or produce, bottle or package, denature or warehouse spirits for industrial use. These spirits are not intended for beverage use. Distilled spirits – Vinegar Plants also fall into this category.

DISTILLED SPIRITS PLANT – INDUSTRIAL / BEVERAGE. A distilled spirits plant that manufactures beverage and industrial spirits on the same premises.

DISTILLED SPIRITS PLANT – EXPERIMENTAL. An experimental distilled spirits plant established for specific and limited periods of time solely for experimentation in, or development of, industrial spirits or sources of materials used to produce spirits, or processes for producing or refining spirits.

ETHANOL (ALSO, "ETHYL ALCOHOL" OR "GRAIN ALCOHOL"). A volatile, flammable, colorless, neurotoxic liquid fit for human consumption with structural formula CH-3CH-2OH (abbreviated as C2H5OH or C2H6O).

ETHANOL MIXTURE. Liquid mixture comprised of ethanol and materials with hazards not regulated by this code, namely water.

FERMENTATION. An enzymatically controlled, anaerobic breakdown of energy-rich compounds such as simple carbohydrates by microorganisms such as yeast, to yield carbon dioxide and ethanol.

HAZMAT INVENTORY STATEMENT (HMIS). A portion of an HMR containing a list of all the hazardous materials in a facility including information related to the materials such as product names, locations, quantities, regulated hazards, and Chemical Abstract Service (**CAS**) numbers.

HAZMAT MANAGEMENT PLAN (HMMP). A portion of a hazardous material permit application containing site maps and facility floor plans identifying hazardous material locations and site and building features relevant to the management of hazardous material inventories, systems and operations.

HAZMAT REPORT (HMR). A consolidated description of a facility and the hazardous materials therein including a contact list, code-based description of the building and adjacent outdoor areas, and a Hazardous Material Inventory Statement (HMIS).

INTERMEDIATE BULK CONTAINER. Any closed vessel defined in Title 49, *Code of Federal Regulations*, Parts 100 through 199 or in Part 6 of the United Nations' Recommendations on the Transport of Dangerous Goods having a liquid capacity of 793 gallons (3000 L) or less, used for transporting or storing Class 1 Liquids, not equipped with provisions for emergency venting, not intended for fixed installation, and not constructed of wood.

MASH. Typically the mixture of ground or cracked grains, mashed fruit, or other crushed edible organic material steeped in hot water to release carbohydrates and reduce them to sugars. The term is used inconsistently (often overlapping with wort) for the various solutions in process up to the point where fermentation is complete.

MINIMUM EXPLOSIVE CONCENTRATION (MEC). The lowest mass to volume concentration of combustible dust that will propagate a flame (sometimes referred to as LFL). The MEC for grain dust is 0.055 oz./ft^3 (55 g/m^3).

NORMALLY CLOSED. A system or vessel in an ABPF used in the storage, production, dispensing, blending, bottling, or handling of Class 1 Liquids that, for up to 50 percent of the time it is in operation, its contents are not exposed to atmosphere and vulnerable to evaporation. Processes involving vessels such as casks opened only for filling, draining or sampling, distillation where all vapors are condensed below their flash point prior to collection, uncovered vessels of 5.3 gallon (20 L) capacity or less used to collect distillate below its flash point, and covered blending or maceration vessels are typically considered normally closed.

NORMALLY OPEN. A system or vessel in an ABPF used in the storage, production, dispensing, blending, bottling, or handling of Class 1 Liquids that, for 50 percent or more of the time it is in operation, its contents are continuously exposed to atmosphere and vulnerable to evaporation, or where a Class 1 Liquid at or above its flash point is exposed to atmosphere at any time during transfer, dispensing, or release. Continuous blending or maceration in uncovered vessels, open draining of Class 1 Liquids above their flash points, and the act of "bleeding" heads (the initial vapors generated during distillation) or tails (the last vapors generated during distillation) to atmosphere are typically considered normally open.

PILE. Independently stacked commodities possibly organized by separate spacers, dunnage, or pallets in which the demise of any storage container on a lower tier compromises the structural stability of the storage system.

PORTABLE TANK. A tank that is readily capable of being relocated within the facility, not permanently attached to immovable structure or ground, and not constructed of wood.

PROCESS DESCRIPTION. An operational description such as a flow chart of the sequence of events required to convert raw materials from the state in which they enter the ABPF through each development point until the finished products are derived. The process description identifies all input and output materials and includes quantities, concentrations, temperatures, pressures, types of equipment, systems, etc. at each development point using code-based terminology; e.g., "37 gallons of 55% ABV at standard temperature and pressure (STP)" vs. "all the high wines collected." All systems and processes utilized to produce all intermediate and finished products are required to be included in the description.

PROCESSING VESSEL. An open or closed vessel other than stills used in the manufacture of ethanol mixtures. Processing vessels include fermentation tanks, mash tuns, blending tanks, etc., but do not include long-term storage vessels such as vats or casks.

RACK. Shelves or similar structural frame-supported system of tiers in which the demise of any storage container on a lower tier does not affect the structural stability of the storage system.

SPIRIT. An ethanol mixture produced by the distillation of wine, wash, or a previously distilled spirit.

STATIONARY TANK. A tank not intended to be relocated that is physically attached to immovable structure or ground.

STILL. Any appliance is which distillation of an ethanol mixture is performed. For the purposes of Chapter 38, still includes pots, columns and condensing coils.

STORAGE AREA. ABPF or portion thereof where ethanol mixtures or materials incorporated or utilized in the manufacture of ethanol mixtures are held for maturation, awaiting transport, or subsequent handling (c.f., use area).

USE AREA. ABPF or portion thereof where ethanol mixtures or materials incorporated or utilized in the manufacture of ethanol mixtures are actively handled in processes such as fermentation, distillation, rectification, transportation, remixing, dispensing, bottling, blending, etc. (c.f., storage area).

VAT (ALSO FOUDRE). A stationary tank constructed primarily of wood.

VESSEL. As used in this chapter, reference to reservoirs holding – unless otherwise noted – Class 1 Liquids including casks, containers, intermediate bulk containers, processing vessels, and tanks.

WASH (ALSO BEER, MALT LIQUOR). The ethanol mixture intended for distillation produced by the fermentation of mash or wort. For spirit production, wash and wine are analogous as precursors to distillation.

WINE. An ethanol mixture produced by the fermentation of organic products, namely fruits, including agave. For spirit production, wine and wash are analogous as precursors to distillation.

WINERY. An ABPF or portion thereof, including accessory uses, in which wine is produced.

WORT. The sugar solution strained from mash for fermentation.

3802.2 Acronyms and abbreviations. The following acronyms and abbreviations shall, for the purposes of this chapter, have the meanings identified below:

ABPF. Alcohol Beverage Production Facility.

ABV. Alcohol by Volume.

ASME. American Society of Mechanical Engineers.

ASTM. American Society for Testing and Materials.

HMIS. Hazardous Material Inventory Statement.

HMMP. Hazardous Material Management Plan.

HMPA. Hazardous Material Permit Application.

HMR. Hazardous Material Report.

LEL. Lower Explosive Limit.

LFL. Lower Flammable Limit.

MAQ. Maximum allowable quantity per control area in accordance with IFC Section 5003.1.1.

MEC. Minimum Explosive Concentration.

SDS. Material Safety Data Sheet.

NEC. National Electrical Code.

TTB. Alcohol and Tobacco Tax and Trade Bureau.

SECTION 3803

GENERAL REQUIREMENTS

3803.1 Material classification. Hazard classifications and analyses of ethanol mixtures shall account for altitude-dependent properties based on an elevation of 5,280 feet (1,609 m) above sea level.

Ethanol mixtures that have no fire point when tested in accordance with ASTM D 92, *Standard Test Method for Flash and Fire Points,* by Cleveland Open Cup Tester and ethanol mixtures with 16 percent or less ABV with the remainder comprised of materials with hazards not regulated by code shall not be regulated as flammable or combustible liquids.

Ethanol mixtures with greater than 16 percent ABV and less than or equal to 34 percent ABV, and the remainder comprised of water and other materials with hazards not regulated by this code shall be classified as Flammable 1C liquids.

Ethanol mixtures with greater than 34 percent ABV, and the remainder comprised of water and other materials with hazards not regulated by this code shall be classified as flammable 1B liquids.

3803.2 Occupancy classification. The occupancy classification of use areas and storage areas including grain-handling and bottling/packaging systems and processes shall be classified in accordance with Sections 3803.2.1 through 3803.2.3.

3803.2.1 H-2 occupancy classification. An H-2 occupancy classification shall be assigned to buildings or portions thereof in accordance with Sections 3803.2.1.1 and 3803.2.1.2.

3803.2.1.1 Combustible dust producing operations. ABPFs or portions thereof containing equipment, systems and processes where grains are stored, transferred or milled in such a manner that the confinement conditions and dust concentrations create a fire or explosion hazard shall be in accordance with Chapter 22 and Chapter 50, as amended. The fire and building code officials are authorized to require technical assistance in accordance with Section 104 to establish whether the building or portion thereof is required to be assigned an H-2 occupancy classification and to determine explosion and deflagration hazard reduction criteria.

3803.2.1.2 Flammable liquids. ABPFs and portions thereof with quantities of Class 1 Liquids in excess of the MAQs, that are stored or processed in normally open vessels or systems, or vessels or systems that are pressurized at more than 15 pounds per square inch gauge (psig; 103.4 kPa), or where a Class 1 Liquid is released to atmosphere at or above its flash point temperature as part of normal operations shall be assigned an H-2 occupancy classification.

3803.2.2 H-3 occupancy classification. ABPFs and portions thereof with quantities of Class 1 Liquids in excess of the MAQs, that are stored or processed in normally closed vessels or systems pressurized to 15 pounds per square inch gauge (psig; 103.4 kPa) or less, shall be classified as H-3 occupancies.

Exception: Quantities of ethanol mixtures beverages exceeding the MAQs but packaged in individual containers not exceeding 1.3 gallons (5 L) in volume shall not cause the ABPF or portion thereof to be assigned an H-3 occupancy classification.

3803.2.3 Non-high hazard occupancy classification. Control areas with Class 1 Liquids, combustible dust production, or other regulated hazards shall be assigned an occupancy classification in accordance with the International Building Code according to the fire safety and relative hazard involved.

3803.3 Hazardous materials permit application (HMPA). An HMPA is required for all ABPFs using or storing hazardous materials. It shall contain at a minimum, an HMR, HMMP, process description, fire-safety and evacuation plans, and a storage plan.

3803.3.1 Hazardous materials report (HMR). An HMR in an approved format is required for all facilities using or storing HazMat. It shall contain at a minimum, critical personnel contact information, pertinent building construction and occupancy information, and an HMIS.

3803.3.2 Hazardous materials management plan (HMMP). An HMMP in accordance with Section 5001.5.1 and Appendix H101 shall be provided in an approved format.

3803.3.3 Process description. A process description shall be provided in an approved format. All relevant process and storage operations in all Control Areas and Group H Occupancies shall be identified. The quantities of all materials with regulated hazards in each area at each step of all processes shall be calculated. The maximum capacity of all Class 1 Liquid bulk storage vessels, processing vessels and stills shall be used in the quantity calculation. The capacities of all such vessels and stills that can be used simultaneously shall be counted as being simultaneously full.

3803.3.4 Emergency Planning. Fire safety and evacuation plans in accordance with Section 404, as amended, shall be prepared and maintained.

3803.3.5 Storage plan. Aisle and storage plans shall be submitted in accordance with Chapter 50, as amended.

3803.3.6 Material safety data sheets. MSDS shall be readily available on the premises for hazardous materials therein.

3803.3.7 Unauthorized Discharges Preparation. Plans and provisions shall be made for controlling and mitigating unauthorized discharges. Holding and discharge of products shall meet City of Westminster Utilities Division guidelines.

3803.3.8 Personnel training and written procedures. Persons responsible for the operations in Class 1 Liquid storage areas or use areas shall be familiar with the chemical nature of the materials and the appropriate mitigating actions necessary in the event of fire, leak, or spill.

3803.3.9 Fire department liaison. Responsible persons shall be designated and trained to be liaison personnel to the fire department. They shall aid the fire department in preplanning emergency responses and identifying the locations of hazardous materials, shall have access to MSDS and be knowledgeable in the site's emergency response procedures.

3803.4 Unauthorized discharges. When Class 1 Liquids are released in quantities reportable under state, federal or local regulations, the fire code official shall be notified and action shall be taken in accordance with Sections 3803.4.1 and 3803.4.2.

3803.4.1 Records. Accurate records shall be kept of all unauthorized discharges of Class 1 Liquids by the permittee.

3803.4.2 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 fire code official, 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.

3803.5 Construction. The construction of ABPFs shall be in accordance with Sections 3803.5.1 and 3803.5.2.

3803.5.1 General. Special detailed requirements, building heights, allowable areas, construction types, control areas, rated assemblies, finishes, means of egress, accessibility, interior environment, energy efficiency, exterior walls, roofing, structural design, fire service features, building services and systems, and fire and smoke protection shall be in accordance with this code and the International Building Code for the assigned occupancy classifications and this Chapter.

3803.5.2 Floors. Floors of use areas and storage areas for Class 1 Liquids shall be of noncombustible construction. Floor surfacing shall not be reactive with ethanol.

3803.6 Systems, features and components. Systems, features and components shall be provided in accordance with Sections 3803.6.1 through 3803.6.13.

3803.6.1 Deflagration prevention by combustible concentration reduction. Atmospheric concentration of flammable vapors shall be maintained at or below 25 percent of the LFL, and combustible dusts at or below 25 percent of the MEC, in all areas of the ABPF or portion thereof where they could collect or migrate. Good housekeeping shall be exercised to prevent accumulation of combustible dust on all exposed surfaces at all levels throughout the building.

Indoor storage areas and use areas are permitted to be provided with natural ventilation where it can be shown to maintain the atmospheric concentrations at or below 25 percent of the LFL and MEC for the materials under consideration.

Where natural ventilation is not adequate, Class 1 Liquid use areas, storage areas and equipment, machinery, and operations which produce or emit combustible dust, shall be provided with an approved mechanical collection and exhaust system in accordance with Sections 501,502.1, 502.8, 502.9.5 and 503 of the *International Mechanical Code*.

Use areas and storage areas in ABPFs or portions thereof where Class 1 Liquid vapor concentrations cannot be maintained at or below 25 percent of the LFL, or confined enclosures where the concentration of combustible dust cannot be maintained at or below 25 percent of the MEC, shall be provided hazardous exhaust in accordance with Sections 510 and 511 of the *International Mechanical Code*.

3803.6.1.1 System requirements. Exhaust ventilation systems shall comply with all of the following:

(1) Installation shall be in accordance with the International Mechanical Code.

(2) Mechanical ventilation over the storage area or use area shall be at a rate of not less than 1 cubic foot per minute per square foot [cfm/ft2; 0.00508 cms/m2)] of floor area.

Exception: Areas where Class 1 Liquids are stored in casks are permitted to be provided with an engineered ventilation system in accordance with International Mechanical Code Chapter 4. The air flow rate shall not be less than the greater of (1) that required to maintain the flammable vapor concentration in the storage area at or below 25 percent of the LFL, or (2) 0.06 cubic feet per minute per square foot (cfm/ft2; 0.000305 cms/m2).

(3) Systems shall operate continuously unless alternative designs are approved.

(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 an approved location. The switch shall be a break-glass or other approved type and shall be labeled, VENTILATION SYSTEM EMERGENCY SHUTOFF."

(5) Exhaust ventilation shall be designed to consider the density of the material released. For ethanol vapor, inlet air shall be introduced, and exhaust shall be taken, from a point within 12 inches (305 mm) of the floor. For dust, inlet air shall be introduced at a point within 12 inches (305 mm) of the floor and exhaust shall be taken as close to the dust generation source as possible.

(6) The location and configuration of both the inlet and exhaust air openings shall be designed to provide air movement across all portions of the floor or room to prevent the accumulation of flammable vapors and suspended dust.

(7) Exhaust air shall not be recirculated to occupied areas.

3803.6.2 Spill control and secondary containment. Spill control and secondary containment shall be provided in accordance with Sections 3803.6.2.1 through 3803.6.2.2.

3803.6.2.1 Indoor. Spill control and secondary containment shall be provided for H-2 and H-3 occupancies in ABPFs where:

(1) The capacity of any single normally closed vessel or system with Class 1 Liquids exceeds 55 gallons (208 L);

(2) The aggregate capacity of multiple normally closed vessels or systems with Class 1 Liquids exceeds 1,000 gallons (3,785 L); or

(3) Class 1 Liquids are dispensed into or from a normally open vessel or system exceeding a 5.3-gallon (20 L) capacity.

3803.6.2.1.1 Design. The drainage system shall be in accordance with the *International Plumbing Code* and the following:

(1) All portions of the drainage system including floors shall be liquid-tight and constructed of noncombustible materials compatible with ethanol.

(2) The drains and drainage system capacity shall be sized to carry the volumetric flow of water discharged from the automatic sprinkler system without backing up at the drains or pooling to a depth greater than ¼" (6.5mm). The sprinkler coverage area used to calculate the required volumetric flow is permitted to be based on the smaller of (1) the remote area in accordance with NFPA 13 – provided it is located in the area served by the drains – or (2) the area of the building or portion thereof served by the drains.

(3) Floors shall slope to drains. Impermeable curbs and floor slope shall be designed to prevent spilled Class I Liquids and water discharged from the automatic sprinkler system from flowing to adjoining areas. Floor slope shall not be less than 2%.

Exceptions:

(1) Floors in existing buildings with less than 2% slope are permitted to be used provided they are made liquid tight and floor sinks are installed as necessary to preclude water discharged from the automatic sprinkler system from pooling in low spots. These drains shall be installed in addition to the drains required in Item 2 of this section.

(2) Where trench drains or a combination of impermeable curbs and trench drains surround the sprinkler coverage area, the floors shall slope to the drains at a rate of not less than 1%. Where a combination of impermeable curbs and trench drains is used, no less than 50% of the perimeter shall be protected by trench drains.

(3) Drainage systems shall terminate in an approved secondary containment reservoir designed to contain a spill from the largest vessel in the area served by the drains plus the volumetric flow of water calculated in Item 2 above for a period of 20 minutes. An approved automatic monitoring method shall be provided to detect material in the reservoir. Monitoring devices shall be connected to approved visual and audible alarms. Reservoir capacity to accommodate the required secondary containment volume shall be maintained at all times.

Exception: Release of Class 1 Liquids and fire protection water directly into a sanitary or storm-water drainage system, onto the ground, or a combination thereof is permitted when in compliance with federal, state, local governmental agencies and City of Westminster Utilities Division regulations and permits.

3803.6.2.2 Outdoor. Secondary containment for outdoor storage areas shall be in accordance with Chapter 50, as amended.

3803.6.3 Occupant and property protection. Occupant and property protection shall be provided in accordance with Sections 3803.6.3.1 through 3803.6.3.4.

3803.6.3.1 Automatic sprinklers. An automatic sprinkler system shall be installed throughout ABPF H-2 and H-3 fire areas in accordance with Sections 3803.6.3.1.1 through 3803.6.3.1.3.

3803.6.3.1.1 Flammable liquids. Sprinkler discharge criteria for Class 1 Liquid use areas and storage areas in ABPFs or portions thereof shall be in accordance with standards identified in Table 3801.3 or a design density of 0.20 gpm/ft^2 over a design area of 3,000 ft^2, whichever is greater.

3803.6.3.1.2 Combustible dust producing operations. Automatic sprinkler protection criteria for H-2/Combustible Dust Producing Operations shall be determined in accordance with Section 3803.2.1.1.

3803.6.3.1.3 Non-high hazard occupancies. Sprinkler discharge criteria for ABPFs or portions thereof not classified as a division of the high-hazard occupancy classification and where Class 1 Liquids are not present in quantities or conditions required to be regulated by NFPA 30 or this chapter, shall be in accordance with NFPA 13.

3803.6.3.2 Sprinkler system supervision and alarms. Automatic sprinkler systems shall be electrically supervised in accordance with Section 903.4, as amended. Audible and visible occupant notification upon activation of water flow shall be provided in accordance with Section 907.5, as amended, throughout all areas in ABPFs with automatic sprinkler protection.

3803.6.3.3 Emergency alarm. In addition to automatic sprinkler system flow detection and all fire safety functions required by other sections of this code, an approved manual fire alarm system in accordance with Sections 3803.6.3.3.1 through 3803.6.3.3.3 shall be provided in H-2 and H-3 occupancies in ABPFs.

3803.6.3.3.1 Initiation. Manual fire alarm boxes shall be installed in accordance with Section 907.4.2 outside of each interior exit or exit access door in the fire barrier walls separating the H-2 or H-3 occupancies, and in the exterior walls surrounding the H-2 or H-3 occupancies.

Exception: On exterior walls of H-2 or H-3 occupancies, fire alarm boxes are permitted to be installed inside of each interior exit, exit access, or exit discharge door in the exterior wall.

Manual fire alarm boxes shall be installed at not more than 150-foot (45,720 mm) intervals along corridors, interior exit stairways or ramps, or exit passageways where Class 1 Liquids are transported.

3803.6.3.3.2 Notification. Emergency alarm audible and visible occupant notification shall be provided in accordance with Section 907.5, as amended, throughout fire areas containing H-2 or H-3 occupancies.

3803.6.3.3.3 Annunciation. The emergency alarm system shall be monitored and annunciated as a separate zone at the Fire Alarm Control Panel (FACP). A separate emergency alarm panel is required when prescribed by other sections of this code for regulated hazards other than, or in addition to, Class 1 Liquids or combustible dust production in the manufacture of ethanol mixtures. When the

emergency alarm system is activated, information shall be communicated to the supervising station that the zone in alarm contains flammable liquids or combustible dust, or both.

3803.6.3.4 Portable fire extinguishers. A minimum of one approved portable fire extinguisher complying with Section 906, as amended, and 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 1 Liquid storage area or use area or combustible dust production area.

3803.6.4 Electrical. Electrical wiring, equipment and systems shall be installed and maintained in ABPFs in accordance with NFPA 70 (NEC) and Section 605 and Sections 3803.6.4.1 through 3803.6.4.4.

3803.6.4.1 Classified electrical equipment. Classified electrical equipment per NFPA 70 (NEC) shall be installed in accordance with Section 5703.1.1 in areas of ABPFs or portions thereof where it cannot be justified to the fire and building code official during design review, and subsequently demonstrated to the fire code official on annual inspections, that an atmospheric concentration at or below 25 percent of the LFL or MEC can be maintained.

A classified area shall not be required to extend beyond an unpierced floor, roof or other solid partition that prevents the migration of liquids, vapors and dust.

3803.6.4.1.1 Stills. Electrical equipment attached to or part of stills in H-2 or H-3 occupancies shall be Class 1, Division 1 in accordance with NFPA 70 (NEC).

3803.6.4.1.2 Electric motors. Electric motors located 8 feet (2438 mm) or less from any edge of equipment where Class 1 Liquid vapor/air mixtures could exist under normal operations and 3 feet (914 mm) or less above the floor or grade level within 25 feet (7620 mm) horizontally from any equipment with Class 1 Liquids shall be considered Class 1, Division 2 in accordance with NFPA 70 (NEC).

3803.6.4.1.3 Other applications. The fire code official is authorized to determine the extent of the Class 1 electrical equipment and wiring location when a condition is not specifically covered by this chapter, Section 5703.1.1 or NFPA 70 (NEC).

3803.6.4.1.4 Industrial trucks. Powered industrial trucks used in areas designated as classified electrical locations in accordance with Section 3803.6.4.1 shall be listed and labeled for use in the intended environment in accordance with NFPA 505.

3803.6.4.2 Grounding. Equipment used for grain or Class 1 Liquids shall be electrically connected in accordance with NFPA 70 (NEC) and NFPA 77, and Sections 3803.6.4.2.1 and 3803.6.4.2.2 to prevent the accumulation of static electricity and sparking.

3803.6.4.2.1 Conveyance equipment. All conveyance equipment including that used for grain or Class 1 Liquid transfer and shall be electrically connected by bond wires, ground cables, piping or similar means to a static grounding system. Conveyor belts shall be electrically conductive and equipped with static eliminators.

Nozzles and vessels used for the transfer of Class 1 Liquids shall be electrically interconnected by:

(1) Metallic floor plates on which vessels stand while filling, when such floor plates are electrically connected to the fill stem; or

(2) Where the fill stem is bonded to the container during filling by means of a bond wire.

Exceptions:

(1) Vats or casks without internal metal or plastic components that could hold a potential difference.

(2) Equipment used in post bottling operations such as packaging and box storage shall be grounded in accordance with standards applicable to that equipment and industry practice.

3803.6.4.2.2 Storage equipment. Plastic and metal grain storage bins or silos and Class 1 Liquid stationary tanks that are drawn down and refilled on a regular basis or are otherwise subjected to processes that could create an electric potential difference and sparking, shall be grounded.

3803.6.4.3 Lightning protection. Lightning protection in accordance with NFPA 780 shall be provided on ABPFs with an H-2 occupancy; on miscellaneous structures with a combustible dust production hazard due to the storage, handling, or processing of grains; and on ABPFs with an H-2 occupancy and a still having a 750 gallon (2839L) or larger capacity, or aggregate bulk storage of Class I Flammable Liquids of 7,800 gallons (29,526L) or greater.

3803.6.4.4 Standby or emergency power. Where mechanical ventilation, treatment systems, limit controls, alarm, detection or other electrically operated systems are required, such systems shall be provided with an emergency or standby power system in accordance with NFPA 70 (NEC) and Section 604.1, as amended.

Exception: Subject to the fire and building code officials, standby power for mechanical ventilation and limit control systems shall not be required where an approved fail-safe engineered system is installed.

3803.6.5 Location of stills and vessels. Stills and vessels in Class 1 Liquid use areas shall be located with respect to the lot lines of adjoining property which can be built on, in accordance with Tables 5703.4(1) and 5703.4(2).

Exceptions:

(1) Where the exterior wall facing the adjoining lot line is without openings, has a fire-resistance rating of not less than 2 hours, and the ABPF is protected throughout with an automatic sprinkler system in accordance with Section 3803.6.3.1, the fire and building code officials are authorized to reduce the minimum separation distances to not less than 1 foot (305 mm), or the minimum separation distances required by other provisions of this code or the International Building Code, whichever is greater.

(2) Where the capacity of the largest still or vessel within the minimum separation distance is 250 gallons (946 L) or less, the aggregate volume of all stills and vessels within the minimum separation distance is 750 gallons (2839 L) or less, the normal operating pressure of all vessels within the minimum separation distance is 2.5 psig (17.2 kPa) or less, and the ABPF is protected throughout with an automatic sprinkler system in accordance with Section 3803.6.3.1, the minimum separation distance to lot lines is permitted to be 1 foot (305 mm), or the minimum separation distances required by other provisions of this code or the International Building Code, whichever is greater.

3803.6.6 Security. Class 1 Liquid use areas and storage areas shall be secured against unauthorized entry and safeguarded in a manner approved by the fire code official.

3803.6.7 Protection from vehicles. Bollards in accordance with Section 312 or other approved means shall be provided to protect all vessels, stills, and piping which handle Class 1 Liquids and are subject to vehicular, including industrial truck, damage.

3803.6.8 Labeling and signage. When a permit is required in accordance with Section 105, visible hazard identification markings, labels, signs and placards shall be placed on vessels and process piping used for Class 1 Liquids, and in Class 1 Liquid storage areas, use areas and combustible dust production areas, and at the entrances thereto in accordance with applicable federal, state, and standards regulations, Sections 3803.6.8.1 through 3803.6.8.6, Chapters 50 and 57, as amended, and NFPA 704, or as approved. Content shall be in English, symbols permitted by this code and referenced standards, or both. Placards shall be in accordance with NFPA 704. The fire code official is authorized to require additional signs and placards at specific entrances and locations. Markings, labels, signs, and placards shall not be obscured or removed.

Exception: Casks are not required to be labeled.

3803.6.8.1 Warning signs. Warning signs shall be of a durable material, have a yellow background with black or red text or symbols, and shall convey the danger being identified. Warning sign text shall not be less than 3 inches (76 mm) in height with a 5/8 inch (15 mm) stroke. Warning signs shall be approved by the fire code official.

3803.6.8.2 Information signs. Information signs shall be of a durable material, have a blue background with white or red text or symbols, or a white background with blue text, and shall convey the information required. Information sign text shall not be less than 3 inches (76 mm) in height with a 5/8 inch (15 mm) stroke. Information signs shall be approved by the fire code official.

Exception: Where otherwise specified by applicable regulations or standards.

3803.6.8.3 Location. Placards shall be located in accordance with NFPA 704 and shall be provided on the outside of each interior exit or exit access door in the fire barrier walls separating the H-2 or H-3 occupancies, and in the exterior walls surrounding the H-2 or H-3 occupancies.

3803.6.8.4 Piping. Piping and tubing conveying Class 1, 2, or 3 flammable or combustible liquids between vessels including heat transfer fluids shall be identified in accordance with ASME A13.1 to indicate the material conveyed.

3803.6.8.5 Individual containers, packages and cartons. Individual containers, intermediate bulk containers, packages and cartons shall be conspicuously identified in accordance with federal regulations and applicable state laws.

3803.6.8.6 Tank marking. Every tank shall bear a permanent nameplate or marking indicating the standard used as the basis of design. Stationary tanks more than 100 gallons (379 L) in capacity used for the storage of Class 1 Liquids shall bear a warning sign and placard in accordance with Section 3803.6.8 corresponding to the material therein.

Exception: Vats.

3803.6.9 Sources of ignition. Control of sources of ignition shall be in accordance with Sections 3803.6.8.1 and 3803.6.8.2.

3803.6.9.1 Smoking. Smoking areas shall be in accordance with Section 310 and shall be prohibited in Class 1 Liquid storage areas or use areas and in combustible dust production areas. "No Smoking" warning signs in accordance with Sections 310.3 shall be provided in such areas and at all entrances to them.

Exception: Where designated smoking areas within ABPFs are permitted. Designated smoking areas shall be separated from Class 1 Liquid storage areas and use areas and combustible dust production areas by a minimum of 25 feet (7620 mm) and shall be clearly identified with information signs in accordance with Section 3803.6.8.

3803.6.9.2 Open flames. Open flames including barrel charring operations, and devices operating at temperatures above 680 °F (360 °C) are prohibited throughout fire areas containing Class 1 Liquid storage areas or use areas or combustible dust production areas.

Exceptions:

(1) Areas where hot work has been approved by the fire code official.

(2) Listed and labeled gas fired or electric unit heaters installed in accordance with the International Mechanical Code, International Fuel Gas Code and NFPA 70 (NEC), located more than eight feet (2438 mm) from any edge of equipment where Class 1 Liquid vapor/air mixtures could exist under normal operations and more than three feet (914 mm) above the floor or grade level within 25 feet (7620 mm) horizontally from any equipment with Class 1 Liquids.

3803.6.10 Separation of incompatible materials. Incompatible materials shall be separated in accordance with Section 5003.9.8.

3803.6.11 Seismic protection. All equipment in ABPFs including machinery, racks, piping, and stationary tanks shall be braced and anchored in accordance with the seismic design requirements of the *International Building Code* for the seismic zone in which the ABPF is located.

3803.6.12 Protection from corrosion. Machinery, piping, tank, process vessel, and container materials exposed to Class 1 Liquids shall be protected in accordance with Sections 3803.6.12.1 and 3803.6.12.2.

3803.6.12.1 Protection from external corrosion and galvanic action. Where subject to external corrosion or galvanic action, machinery, piping, tank, process vessel, and container holding or conveying Class 1 Liquids shall be fabricated from noncorrosive materials or provided with corrosion protection. Dissimilar metallic parts subject to galvanic action shall not be joined.

3803.6.12.2 Chemical protection. Machinery, piping, tank, process vessel, and container materials used for Class 1 Liquids shall be protected from all chemicals to which they are exposed including ethanol. Clean-in-place (CIPs) fittings shall be compatible with the cleaning agents used on the vessels and piping to which they are attached. Tank lining shall be in accordance with Section 3804.1.2.6.

3803.6.13 Limit controls. Limit controls shall be provided in accordance with Sections 3803.6.13.1 through 3803.6.13.3.

3803.6.13.1 Pressure control. Machinery, piping, tanks, vessels, and stills containing or conveying Class 1 Liquids shall be designed for the pressures they will be subjected to in accordance with applicable standards. Machinery, piping, tanks, containers, processing vessels, and stills containing or conveying Class 1 Liquids that can generate pressures exceeding design limits because of exposure fires or internal reaction shall have an approved means to relieve excessive positive and negative internal pressure. Vents provided to relieve excessive positive pressure shall discharge to an approved location.

3803.6.13.2 High-liquid-level control. Stationary tanks and process vessels with Class 1 Liquids having a capacity greater than 500 gallons (1893 L) shall be equipped with a device or other means to prevent overflow into the building including, but not limited to a float valve, preset meter on the fill line, valve actuated by the weight of the tank's contents, low-head pump incapable of producing overflow, or a liquid-tight overflow pipe at least one pipe size larger than the fill pipe and discharging by gravity back to an approved location.

Exception: Liquid-level sight gauges or other manual means approved by the fire code official to determine fill level are permitted in ABPFs where the use area or storage area is small enough that the stationary tank or process vessel is effectively under constant observation during filling operations.

3803.6.13.3 Low-liquid-level control. Approved safeguards shall be provided to prevent a low-liquid level in stationary tanks, processing vessels and stills from creating a hazardous condition, including but not limited to overheating.

3803.6.14 Handling and transportation. Containers, portable tanks, and casks holding more than 5 gallons (19 L) of Class 1 Liquids being transported in a corridor or enclosed exit shall be on a cart or truck in accordance with Sections 5003.10.2 and 5003.10.3.

SECTION 3804

EQUIPMENT

3804.1 General. Equipment utilized for the production, storage, dispensing, blending or handling of Class 1 Liquids shall be listed or approved and shall be in accordance with Sections 3804.1.1 through 3804.1.4.4.2.

3804.1.1 Piping systems. Piping systems for conveying Class 1 Liquids including piping, tubing, valves, pumps, and fittings shall be designed, installed, and maintained in accordance with Sections 3804.1.1.1 through 3804.1. 1.7, Section 5703.6, as amended, and ASME B31. The use of other standards is permitted when approved.

3804.1.1.1 Component design and construction. Piping, tubing, hoses, valves, fittings and related components conveying Class 1 Liquids shall be in accordance with the following:

(1) Piping, tubing, hoses, valves, pumps, fittings and related components shall be designed and fabricated from materials of adequate strength and durability to withstand the structural and environmental conditions to which they are subjected.

(2) Piping, tubing, hoses, valves, pumps, fittings and related components used in liquid transfer operations shall be approved or listed for the intended use.

(3) Where provided, in-line flame arresters in piping systems shall be installed and maintained in accordance with their listing or API 2028.

(4) Where Class 1 Liquids are carried in piping pressurized above 15 pounds per square inch gauge (psig; 103 kPa), an approved means of leak detection shall be provided.

Exception: Piping for overpressure relief devices.

3804.1.1.2 Piping supports. Piping systems shall be substantially supported and protected against physical damage and excessive stresses arising from seismic activity, settlement, vibration, expansion and contraction. Piping supports shall be protected against exposure to fire by:

(1) Draining spilled liquid away from the piping support system at a minimum slope of not less than 2 percent;

(2) Providing protection with a fire-resistance rating of not less than 2 hours; or

(3) Other approved methods.

3804.1.1.3 Pipe joints. Pipe joints shall be in accordance with Sections 5703.6.9 and 5703.6.10.

Exception: Where located in concealed spaces within buildings, joints in piping systems used to convey Class 1 liquids shall be welded.

3804.1.1.4 Valves. Piping systems with and without pumps shall contain a sufficient number of manual-control, auto-control, and check valves to protect the ABPF and properly control the flow of Class 1 Liquids; in normal operation, in the event of physical damage, or the condition of fire exposure, and shall be in accordance with the following:

(1) Readily accessible manual valves, automatic remotely-activated fail-safe emergency shutoff valves, or excess flow control shall be installed on gravity-fed supply piping and tubing and in systems pressurized above 15 pounds per square inch gauge (psig; 103 kPa) as close to the source as practical.

(2) Manual emergency shutoff valves and controls for remotely activated emergency shutoff valves shall be clearly visible and readily accessible. Information signage in accordance with Section 3803.6.8 shall be provided identifying the emergency shutoff valves and controls.

(3) Backflow prevention or check valves shall be provided when backflow could create a hazardous condition or cause an unauthorized discharge.

3804.1.1.5 Pumps. Solid or liquid fueled pumps are not permitted in Class 1 Liquid use areas or storage areas.

Exception: Fire pumps separated from the Class 1 Liquid use areas and storage areas by 2-hour fire-resistance rated fire barriers in accordance with IBC Section 707.

Positive-displacement pumps shall be provided with pressure relief discharging back to the vessel, pump suction or other approved location, or shall be provided with interlocks to prevent over-pressure.

3804.1.1.6 Pressurized transfer systems. Gases introduced to provide for transfer of Class 1 Liquids shall be inert. Controls, including pressure relief devices, shall be provided to limit the

pressure so the maximum working pressure of vessels cannot be exceeded. Where devices operating through pressure within a tank, intermediate bulk container, or container are utilized, the tank, intermediate bulk container, or container shall be a pressure vessel approved for the intended use.

3804.1.1.7 Maintenance. Piping and appurtenances shall be maintained in a safe operating condition and in accordance with their applicable listings and standards. Damage to piping or appurtenances shall be repaired using materials having equal or greater strength and fire resistance or the equipment shall be replaced, taken out of service, repaired or disposed of in an approved manner. The repair, alteration or reconstruction, including welding, cutting and hot tapping of piping that has been placed in service, shall be in accordance with NFPA 30.

3804.1.2 Vessels. The design and construction of vessels used in ABPFs for Class 1 Liquids shall comply with the applicable Sections 3804.1.2.1 through 3804.1.2.13.4 and NFPA 30, or shall be of an approved type. Pressure vessels shall comply with the *ASME Boiler and Pressure Vessel Code.*

3804.1.2.1 Underground storage of Class 1 Liquids. Underground storage of Class I liquids is prohibited.

3804.1.2.2 Outdoor storage of Class 1 Liquids. Outdoor storage shall be in accordance with Chapters 50 and 57, as amended.

3804.1.2.3 Tank vehicles and tank cars. Tank vehicles and tank cars shall not be used as storage or processing vessels.

3804.1.2.4 Design of supports. The supporting structure for stationary tanks and portable tanks with capacity greater than 660 gallon (2498 L) shall be designed in accordance with the *International Building Code* and NFPA 30.

3804.1.2.5 Locations subject to flooding. Where a portable tank or intermediate bulk container with capacity in excess of 660 gallons (2498 L), or a stationary tank is located in an area where it is subject to a rise in the water table, flooding or accumulation of water from fire suppression operations, uplift protection shall be provided in accordance with NFPA 30, Sections 22.14 and 23.14.

3804.1.2.6 Tank lining. Steel stationary tanks and steel portable tanks with capacity greater than 660 gallon (2498 L) are permitted 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 permitted to be stored in lined tanks.

3804.1.2.7 Manual drainage. Manual drainage control valves shall be provided on stationary tanks and portable tanks with capacity greater than 660 gallon (2498 L). Manual drainage control valves on stationary tanks shall be located at approved locations remote from the tanks to ensure their operation in a fire condition.

3804.1.2.8 Connections. Filling and emptying connections to vessels shall be provided with liquid-tight caps, covers, plugs, or valves which shall be closed when not in use.

Connections located below normal Class 1 Liquid levels in stationary tanks with capacity of 500 gallons (1893 L) or more shall be provided with internal or external isolation valves located as close as practical to the shell of the tank.

3804.1.2.9 Materials used in tank construction. The materials used in tank construction shall be in accordance with NFPA 30.

3804.1.2.10 Separation between adjacent tanks. The separation between stationary tanks containing Class 1 Liquids shall be in accordance with NFPA 30, Table 22.4.2.1.

Exceptions:

(1) Where a group of no more than 4 stationary tanks are aligned in a single row, the minimum separation distance between tanks is permitted to be reduced to 18" (457 mm) provided no single tank is over 960 gallons (3634 L) and clear access of 3 feet (914 mm) is provided around the group.

(2) Where stationary tanks are in the drainage path of Class 1 Liquids, and are compacted in three or more rows or in an irregular pattern, the fire code official is authorized to require greater separation than specified in NFPA 30, Table 22.4.2.1 or other means to make tanks in the interior of the pattern accessible for emergency response including firefighting purposes.

3804.1.2.11 Maintenance. Vessels and their appurtenances shall be maintained in a safe operating condition in accordance with their listings, applicable standards, and industry practice. Damage and malfunctions shall be repaired using materials having equal or greater strength and fire resistance. Vessels leaking Class 1 Liquids shall be promptly emptied, repaired and returned to service. Stationary tanks not returned to service shall be abandoned in accordance with Section 5704.2.13, or removed in accordance with Section 5704.2.14.

3804.1.2.12 Vent lines. Portable tanks with a storage capacity of 660 gallons (2498 L) or more and stationary tanks shall be provided with normal and emergency vents in accordance with Sections 3804.1.2.12.1 through 3804.1.2.12.5 to relieve positive and negative pressures such as those created from filling and draining.

Vent lines shall not be used for purposes other than venting unless approved.

3804.1.2.12.1 Installation of vent piping. Vent pipes shall be designed, sized, constructed and installed in accordance with Sections 5703.6, as amended, 5704.2.7.3 and 5704.2.7.4. Vent pipes shall be installed to drain toward the tank without sags or traps in which liquid can collect. Vent pipes shall be protected from physical damage and vibration.

3804.1.2.12.2 Vent-line flame arresters and pressure-vacuum vents. Normal vents shall be equipped with vent-line flame arresters and pressure-vacuum vents in accordance with Section 5704.2.7.3.2.

3804.1.2.12.3 Vent pipe outlets. To facilitate atmospheric dispersion, vent outlets shall be located so vapors are released at a safe point outside of buildings, directed upward or horizontally away from adjacent walls so vapors will not be trapped by eaves or other obstructions. Vent outlets shall not be less than 12 feet (3658 mm) above the finished ground level and shall not be less than 5 feet (1524 mm) from building openings or lot lines of properties that can be built upon.

3804.1.2.12.4 Manifolding. Subject to the approval of the fire code official, vent pipes are permitted to be manifolded only 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.

3804.1.2.12.5 Emergency venting. Tanks shall be equipped with additional venting that will relieve rapid overpressure due to fire. Emergency vents shall not discharge inside buildings. The venting shall be installed and maintained in accordance with NFPA 30, 22.7.

3804.1.2.13 Vessel openings other than vents. Vessel openings other than vents shall comply with Sections 3804.1.2.13.1 through 3804.1.2.13.4

3804.1.2.13.1 Filling and emptying connections. Filling and emptying connections to stationary tanks shall be properly identified in accordance with Section 3803.6.8.

3804.1.2.13.2 Fill pipes and discharge lines. For top-loaded stationary tanks and portable tanks with capacity greater than 660 gallons (2498 L), a metallic fill pipe shall be designed and installed to minimize the generation of static electricity by terminating the pipe within 6 inches (152 mm) of the bottom of the tank. It shall be installed in a manner which avoids excessive vibration.

3804.1.2.13.3 Manual gauging. Vessel openings for manual gauging, if independent of the fill pipe, shall be provided with a liquid-tight cap, cover, or plug. Covers shall be kept closed when not gauging. Such openings shall be protected against liquid overflow and possible vapor release by means of a spring-loaded check valve or other approved device.

3804.1.2.13.4 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 dry-break connection, or other approved vapor-tight device. Openings designed for combined fill and vapor recovery shall be protected against vapor release.

Exceptions:

(1) Where the opening is a pipe connected to a vapor processing system.

(2) Where connection of the liquid delivery line to the fill pipe simultaneously connects the vapor recovery line.

3804.1.3 Stairs, platforms and walkways. Stairs, platforms and walkways installed to facilitate access to vessels, storage, pipes, and process equipment shall be noncombustible and designed and constructed in accordance with NFPA 30 and the *International Building Code*.

3804.1.4 Testing. Equipment, devices and systems shall be tested in accordance with Sections 3804.1.4.1 through 3804.1.4.4.2.

3804.1.4.1 Piping systems. Before being covered, enclosed or placed in use, piping shall be hydrostatically tested to 150 percent of the maximum anticipated pressure of the system, or pneumatically tested to 110 percent of the maximum anticipated pressure of the system, but not less than 5 pounds per square inch gauge (psig; 34.5 kPa) at the highest point of the system. This test shall be maintained for a sufficient time period to complete visual inspection of joints and connections. For a minimum of 10 minutes, there shall be no leakage or permanent distortion. Storage tanks shall be tested independently from the piping.

Exception: Piping tested in accordance with the applicable section of ASME B31.9.

3804.1.4.1.1 Existing piping. Existing piping shall be tested in accordance with this section when the fire code official has reasonable cause to believe a leak exists. Piping used for Class 1 Liquids shall not be tested pneumatically.

Exception: Vapor-recovery piping is permitted to be tested using an inert gas.

3804.1.4.2 Tanks. Prior to being placed into service, tanks shall be tested in accordance with NFPA 30, 21.5.

3804.1.4.3 Safety systems. Automatic sprinkler systems, automatic sprinkler system monitoring, fire alarm systems, all limit controls, and all other fire- and life-safety systems shall pass the commissioning or acceptance tests in accordance with their respective design, installation, and testing standards prior to occupancy and use of the facility. Emergency alarms and limit-control monitoring shall be tested as for fire alarm systems in accordance with NFPA 72.

3804.1.4.4 Periodic testing. Equipment and safety systems shall be periodically tested in accordance with Sections 3804.1.4.4.1 and 3804.1.4.4.2. Written records of the tests conducted or maintenance performed shall be maintained in accordance with the provisions of Section 107.

Exceptions:

(1) Periodic testing shall not be required when approved written documentation is provided substantiating testing will damage the equipment, device or system and the equipment, device or system is maintained as specified by the respective manufacturer.

(2) Periodic testing shall not be required when the equipment and systems are utilized routinely as part of normal operations and maintained in good operating condition.

(3) Periodic testing shall not be required for equipment, devices and systems that fail in a fail-safe manner.

(4) Periodic testing shall not be required for equipment, devices and systems that self-diagnose and report trouble. Records of the self-diagnosis and trouble reporting shall be made available to the fire code official.

(5) Periodic testing shall not be required if system activation occurs during the required test cycle for the components activated during the test cycle.

(6) Approved maintenance in accordance with Section 5003.6 that is performed not less than annually or in accordance with an approved schedule shall be permitted to meet the testing requirements set forth in sections 5003.2.9.1 and 5003.2.9.2.

3804.1.4.4.1 Equipment. The following equipment shall be tested periodically:

(1) Piping

(2) Limit controls required by Section 3803.6.13

3804.1.4.4.1.1 Testing frequency. The equipment listed in Section 3804.1.4.4.1 shall be tested at one of the frequencies listed below:

(1) Not less than annually;

(2) In accordance with the approved manufacturer's requirements;

(3) In accordance with approved recognized industry standards; or

(4) In accordance with an approved schedule.

3804.1.4.4.2 Safety systems. Safety systems listed in Section 3804.1.4.3 shall be periodically tested in accordance with their design, installation and testing standards.

Emergency alarms and limit-control monitoring shall be tested as for fire alarm systems in accordance with NFPA 72.

3804.2 Storage and use areas. Storage and process operations shall be in accordance with other provisions of this code and sections 3804.2.1 through 3804.2.3.3.

3804.2.1 Storage areas. Storage of Class 1 Liquids shall be in accordance with Sections 3804.2.1.1 through 3804.2.1.4, Chapter 32, as amended, and NFPA 30.

3804.2.1.1 General. Storage of vessels in closely packed piles, on pallets, in racks, or on shelves shall be in accordance with Sections 3804.2.1.1.1 through 3804.2.1.1.3.

3804.2.1.1.1 Basement storage. Storage in excess of the MAQs is prohibited in basements.

3804.2.1.1.2 Limited combustible storage. Limited quantities of class 1 through 4 commodities are permitted to be stored in the same non-separated area, room, or building as Class 1 Liquids provided the combustibles, other than those used for packaging the Class 1 Liquids, are separated from the Class 1 Liquids in storage by a minimum of 8 feet (2438 mm) horizontally either by open aisles, open racks, or racks filled with noncombustible commodities.

3804.2.1.1.3 Shelf storage. Shelving shall be of substantial construction, and shall be braced and anchored in accordance with the seismic design requirements of the *International Building Code* for the seismic zone in which the ABPF is located. Shelving, chocks, scuffboards, floor overlay and similar installations shall be of noncombustible construction or of wood not less than a 1-inch (25 mm) nominal thickness; treatments, coatings and construction materials shall be compatible with ethanol. Shelves shall be provided with a lip or guard when used for the storage of individual containers or casks.

Exception: Storage in flammable liquid storage cabinets specifically designed for such use.

3804.2.1.1.4 Separation and aisles. Aisles shall be provided in storage areas such that all storage vessels are located no more than 20 feet (6096 mm) horizontally from a main aisle or access aisle. Main aisles shall be a minimum of 8 feet (2438 mm) wide in high piled combustible storage areas and a minimum of 4 feet wide in non-high piled combustible storage areas. Access aisles shall be a minimum of 4 feet (1219 mm) wide in high piled combustible storage areas and a minimum of 44 inches (1118 mm) wide in non-high piled combustible storage areas. Aisles utilized for manual stocking, separation between piles, separation between adjacent rows of racks, and separation between racks and adjacent pile storage shall be main aisles or access aisles. Aisles utilized for mechanical stocking shall be main aisles. All piles including palletized storage shall border a main aisle on a minimum of one side or end. Additional aisles shall be provided for access to doors, required windows and ventilation openings, standpipe connections, fire extinguishers, mechanical equipment and switches. Such aisles shall be a minimum of 3 feet (914 mm) in width. A single aisle is permitted to serve multiple functions provided its minimum width is the largest of the widths required for the functions served.

3804.2.1.1.5 Material handling equipment. Material handling equipment shall be suitable to manipulate vessels at the highest tier level.

3804.2.1.1.6 Housekeeping. Storage shall be maintained in an orderly manner.

3804.2.1.1.7 Dunnage, scuffboards, floor overlay. Dunnage, scuffboards, floor overlay and similar installations shall be of noncombustible construction or of wood not less than a 1-inch (25 mm) nominal thickness.

3804.2.1.1.8 High piled combustible storage. Storage of vessels in closely packed piles, on pallets, in racks, or on shelves, where the top of storage is greater than 6 feet (1829 mm) in height, shall be considered high piled combustible storage. Where applicable requirements in Chapter 32, as amended, are in conflict with those in Section 3804.2.1, the more restrictive shall govern.

3804.2.1.2 Pile storage. Pile storage including palletized storage shall be in accordance with Sections 3804.2.1.2.1 through 3804.2.1.2.2.2.

3804.2.1.2.1 Stabilizing and supports. Intermediate bulk containers, containers, and portable tanks shall be stored in accordance with NFPA 30. Horizontally oriented casks stored in piles shall be supported by stackable racks or cradles of substantial construction designed for that purpose. Lateral bracing shall be provided for horizontally oriented casks stored in piles where the height of the pile exceeds three times the least dimension of the base rack or cradle. Storage height of horizontally oriented casks in this configuration shall not exceed the lesser of the rack manufacturer's recommendations or industry standards.

3804.2.1.2.2 Palletized storage. Palletized storage shall be in accordance with Sections 3804.2.1.2.2.1 and 3804.2.1.2.2.2.

3804.2.1.2.2.1 Stabilizing and supports. Casks stacked vertically for storage shall be separated by pallets or other dunnage that spreads the weight of the casks on the tier above over the casks on the tier below. A lower tier shall not have less than four casks and shall not have an empty cask when a tier above has a cask that is not empty. No more than two tiers of casks are permitted to be stacked vertically in this configuration.

Exceptions:

(1) Where the collapse strength of the casks on the lowest tier is not exceeded, palletized storage of vertically oriented casks are permitted to be stacked to a height of four tiers where the casks are bound together in a square pattern groups of no less than four, by a steel band or other approved binding.

(2) Where the collapse strength of the casks on the lowest tier is not exceeded, palletized storage of vertically oriented casks are permitted to be stacked to a height of six tiers where the casks are bound together in a square pattern in groups of no less than nine, by a steel band or other approved binding.

(3) Where the collapse strength of the casks on the lowest tier is not exceeded, an engineered overturning analysis shall be provided demonstrating stability in accordance with the seismic design requirements of the International Building Code for the seismic zone in which the ABPF is located for storage configurations other than permitted in Exceptions 1 and 2.

(4) At no time shall the allowable quantities for the occupancy be exceeded.

3804.2.1.2.2.2 Idle combustible pallets. Storage of idle wood pallets shall be in accordance with section 3206.4.1.1 and as limited by the capacity of the automatic sprinkler system in accordance with NFPA 13. Pallet storage shall be separated from liquid storage by aisles that are a minimum of 8 feet (2438 mm) wide.

3804.2.1.3 Portable tank, intermediate bulk container, and container storage. Portable tanks and intermediate bulk containers stored over one tier in height shall be designed to nest securely without dunnage. Stacked containers shall be separated by pallets or dunnage to provide stability and to prevent excessive stress to container walls. The storage height and configuration shall be in accordance with NFPA 30.

3804.2.2 Grain storage. Grain storage shall be in accordance with Section 3803.2.1.1.

3804.2.3 Use areas. Use areas for Class 1 Liquids in amounts exceeding the MAQ shall be in accordance with Sections 3804.2.3.1 through 3804.2.3.3.

3804.2.3.1 General. Systems shall be suitable for the use intended and shall be designed by persons competent in such design. Controls shall be designed to prevent materials from entering or leaving the process or reaction system at other than the intended time, rate or path. Where failure of an automatic control could result in a dangerous condition or reaction, the automatic control shall be fail-safe. Use areas with Class 1 Liquids in excess of the MAQs are prohibited in basements.

3804.2.3.2 Non-listed appliances. Stills where internal operating vapor pressures normally exceed 2.5 psig (103.4 kPa) or could potentially exceed 2.5 psig (103.4 kPa) due to failures in operating methods such as clogged head packing or other materials held on column plates shall be provided with a listed pressure relief valve piped to discharge to the exterior in an approved location.

Exception: Stills listed for operation above 2.5 psig (103.4 kPa) and, where approved, stills constructed in accordance with the *ASME Boiler and Pressure Vessel Code.*

3804.2.3.3 Class 1 Liquid transfer. Class 1 liquids shall be transferred by one of the following methods:

(1) From safety cans in accordance with NFPA 30.

(2) Through an approved closed piping system.

(3) From vessels by an approved pump taking suction through an opening in the top of the vessel.

(4) By gravity from a tank, intermediate bulk container, or container through an approved self-closing or automatic-closing valve.

(5) Approved engineered liquid transfer systems.

Exception: Liquids transferred into and from containers not exceeding a 5.3-gallon (20 L) capacity.

11-10-8: CHAPTER 56 EXPLOSIVES AND FIREWORKS AMENDMENTS:

(A) *General:* Section 5601 of the International Fire Code is amended as follows:

5601.1.3 Fireworks. Exception 1, Exception 2, and Exception 4 are deleted in their entirety and new exceptions are added to read as follows:

Exceptions:

(1) State of Colorado defined "permissible fireworks" will be allowed for possession, handling, and use only during the timeframe beginning at 12:00 a.m. on July 3rd and ending at 12:00 p.m. on July 5th of any given calendar year.

(2) Fireworks shall be prohibited in all City of Westminster parks and open spaces, unless approved by the Director of Parks, Recreation, and Libraries and the Fire Department.

(3) As provided in Section 6-8-3, W.M.C.

(B) *Explosives Materials Storage and Handling:* Section 5604 of the International Fire Code is amended to add Section 5604.1.1 to read as follows:

5604.1.1 General Storage Limitations. The storage of explosives and blasting agents is prohibited within all zones except PUD (Planned Unit Development) where such storage is specifically listed as an allowed use, except for temporary storage for use in connection with approved blasting operations; provided that this prohibition shall not apply to wholesale and retail stocks of small arms, ammunition, explosive bolts, explosive rivets, or cartridges for explosive-actuated power tools in aggregate quantities involving less than five hundred pounds (500#) of explosive material.

11-10-9: CHAPTER 61 LIQUIFIED PETROLEUM GASES AMENDMENTS:

(A) Subsection 6104.2 of the International Fire Code is amended to add the following text to read as follows:

6104.2 Maximum Capacity within Established Limits.

This maximum capacity limitation specifically applies to the following zoning areas: RA, RE, R1, R2, R3, R4, R5, B1, C1, T1, and PUD (Planned Unit Development) zoned districts.

11-10-10: APPENDIX B FIRE-FLOW REQUIREMENTS FOR BUILDINGS AMENDMENTS:

(A) Section B105 of the International Fire Code is amended by adding the following sections:

B105.4 Minimum Fire-Flow Requirements.

The minimum fire-flow requirement for any building regardless of occupancy classification, table or reference in this appendix, shall be 1,500 gallons per minute.

B105.5 Fire Flow Reduction Allowance: Buildings which are equipped with an automatic sprinkler system in accordance with section 903.3.1.1 or 903.3.1.2 of the International Fire Code are allowed a minimum fire-flow of 50% of the value in Table B105.1(2), provided the fire-flow shall be a minimum of 1,500 gallons per minute.

11-10-11: APPENDIX C FIRE HYDRANT LOCATIONS AND DISTRIBUTION:

(A) Table C102.1 of the International Fire Code is amended as follows:

Footnote f: A 50-percent spacing increase may be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with section 903.3.1.1 of the International Fire Code.

Footnote g: A 25 percent spacing increase may be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with section 903.3.1.2 or 903.3.1.3 of the International Fire Code or Section P2904 of the International Residential Code.