RESOLUTION 2018-32

A resolution approving the application of the 2015 International Fire Code, adopted by the Boulder Rural Fire Protection District, to the portions of the Boulder Rural Fire Protection District that lie in unincorporated Boulder County

Recitals

A. Section 32-1-1002(1)(d) of the Colorado Revised Statutes authorizes the board of any fire protection district to adopt and enforce a fire code, as the fire district board deems necessary. However, for the fire code to be effective within the unincorporated county, the governing body of the county must adopt a resolution stating that the code or specific portions thereof are applicable within the fire protection district's boundaries.

B. On November 27, 2017, the Board of Directors of the Boulder Rural Fire Protection District (the "Fire District"), all of which lies in unincorporated Boulder County, adopted the 2015 International Fire Code with certain amendments (the "Adopted Code").

C. The Fire District has requested that the Board of County Commissioners of Boulder County (the "Board") approve the Adopted Code for application within the territory of the Fire District that lies within unincorporated Boulder County. The request was processed and reviewed as Docket# FCRC-17-0001 (the "Docket"), all as further described in the memorandum and recommendation to the Board dated March 20, 2018, together with its attachments, presented by the Boulder County Land Use Department's Chief Building Official (the "Building Official's Recommendation").

D. Under Resolution 82-41, which establishes a fire code review process for the unincorporated areas of the County, the Boulder County's Fire Code Review Committee ("FCRC") held a public hearing on November 8, 2017 on the Docket. Based on the hearing, the FCRC recommended CONDITIONAL APPROVAL, with the condition being that the items identified by staff and by the Fire Code Review Committee be addressed in the Adopted Code. The District representatives present at the FCRC hearing agreed with the recommended conditions, and the Fire District adopted a revised resolution dated November 27, 2017 that complies with the recommended conditions.

E. On March 20, 2018, the Board held a public hearing on the Docket, at which time the Board considered the Building Official's Recommendation and the documents and testimony presented by the Chief Building Official, all as further reflected on the official record of the public hearing.

F. Based on the Building Official's Recommendation and the public hearing, the Board finds that the Fire District's Adopted Code is reasonable and appropriate for application within the portions of the Fire District that lie in unincorporated Boulder County.

Therefore, the Board resolves:

The Board approves Docket FCRC-17-0001, and approves the Fire District's Adopted Code, as set forth in Exhibit A, for application within the portions of the Fire District that lie in unincorporated Boulder County, pursuant to C.R.S. § 32-1-1002(1)(d).

A motion to approve the Docket was made by Commissioner Gardner, seconded by Commissioner Jones, and passed by a 3-0 vote.

ADOPTED as a final decision of the Board on this 20th day of March, 2018.

BOARD OF COUNTY COMMISSIONERS OF BOULDER COUNTY:

Cindy Domenico, Chair

Elise Jones, Vice Chair

Deb Gardner, Commissioner

ATTEST:

Clerk to the Board

A Resolution Adopting and Amending the 2015 Edition of the International Fire Code®

WHEREAS, the Fire Chief and Fire Marshal have reviewed the International Fire Code, 2015 Edition, and recommend the adoption of the same by the Boulder Rural Fire Protection District; and

WHEREAS, the Board of Directors of the Boulder Rural Fire Protection District deems it necessary and in the best interest of public safety to adopt and enforce the codes for the purpose of establishing rules of conduct and standards for the protection of life, health, property, security, and welfare of the inhabitants and visitors to the District; and

WHEREAS, the International Fire Code, 2015 Edition, published by the International Code Council, is a model code for the regulation and governing of the safeguarding of life and property from fire and explosion hazards arising from the storage, handling and use of hazardous substances, materials, and devices and from conditions hazardous to life and property in the occupancy of buildings and premises.

NOW THEREFORE BE IT RESOLVED THAT BY THE BOARD OF DIRECTORS OF THE BOULDER RURAL FIRE PROTECTION DISTRICT:

1 Adoption of the 2015 International Fire Code

1.1 Code Adopted

The 2015 International Fire Code is adopted in the form including the sections as amended herein, including the following appendices: Appendix B, Fire-Flow Requirements for Buildings; Appendix C, Fire Hydrant Locations and Distribution; Appendix D, Fire Apparatus Access Roads;Appendix F, Hazard Ranking; Appendix I, Fire Protection Systems – Noncompliant Conditions.

The date on which this resolution shall take effect shall be the date of approval by the County Commissioners of Boulder County. This Code shall be in effect within the limits of the Boulder Rural Fire Protection District.

1.2 Code Described

The 2015 International Fire Code is published by the International Code Council, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001-2070.

1.3 Copies on File

At least one copy of the 2015 International Fire Code shall be kept on file in the office of the Fire Marshal of the Boulder Rural Fire Protection District, 6230 Lookout Road, Boulder, Colorado 80301, and may be inspected during regular business hours.

1.4 Purpose

The purpose of this code is to establish the minimum standards consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosion, and dangerous conditions in new and existing buildings, structures, and premises, and to provide for the safety of firefighters, and emergency responders during emergency operations.

2 Definitions

Wherever the term "Board of Directors" is used, it shall be held to mean the Board of Directors of the Boulder Rural Fire Protection District.

Wherever the word "District" or phrase "Fire District" is used, it shall mean the Boulder Rural Fire Protection District.

Wherever the term "International Building Code" is used, it shall mean the Building Code as adopted, amended, and incorporated into the Boulder County Building Code.

Wherever the term "International Electrical Code" is used, it shall mean the Electrical Code as adopted, amended, and incorporated into the Boulder County Electrical Code.

3 Amendments Made In and To the 2015 International Fire Code

The 2015 International Fire Code is amended and changed in the following respects:

1. Subsection 101.1 is amended to read as follows: **101.1 Title.** These regulations shall be known as the Fire Code of the Boulder Rural Fire Protection District, hereinafter referred to as "this code".
2. **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.

3. **102.**14 Other Adopted Codes. Where this document refers to other ICC codes, the currently adopted edition for the location under consideration 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.

4. Subsection **103.4 Liability** shall be amended by the addition of the following sentence at the end of the section: "Nothing herein shall be construed as a waiver of any immunities provided by section C.R.S. 24 - 10 - 101, et seq., or by other statutes, or by common law."

5. Subsection **104.10 Fire investigations** shall be amended by the addition of the following sentence at the end of the section: "The authority of the Chief of the District, or authorize designee, including all fire code officials, to act as peace officers shall extend to the limits as authorized in C.R.S. 16-2.5-109."

6. Subsection **104.11 Authority at fires and other emergencies** shall be amended by the addition of the following sentence at the end of the section: "the authority of the Chief of the District, or authorized designee, including all fire code officials, to act as peace officers shall extend as far as the authority set forth in C.R.S. Section 32-1-1002, 16-2.5-109, and other applicable state statutes."

7. Subsection 105.4.1 is amended to read as follows: **105.4.1 Submittals.** Construction documents shall be submitted in one or more sets and in such form and detail as required by the fire code official. The construction documents shall be prepared by registered design professional when said documents are submitted in support of an application for a construction permit. When requested, qualifications statements shall be submitted to the fire code official for the registered design professional to demonstrate compliance with appropriate professional qualifications.

8. The following subsections are deleted in their entirety: 105.6.1, 105.6.2, 105.6.5 through 105.6.8, , 105.6.10 through 105.6.31, 105.6.33 through 105.6.44, and 105.6.46 through 105.6.48.

9. **105.6.27 Liquid- or gas-fueled vehicles or equipment in buildings for display, demonstrating, or operation.** This subsection has been modified to read: 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. Subsection 105.6.32 is amended to read as follows: **105.6.32 Open Burning.** An operational permit is required for the kindling or maintaining of an open fire or a fire on any public street alley road or other public or private ground. Instructions and stipulations of the permit shall be adhered to.

    Exception: No permit shall be required if burning is regulated pursuant to the regulations promulgated under CRS Section 25-7-123, or regulated by the Boulder County Health Department.

11. The following subsections are deleted in their entirety: 105.7.2 through 105.7.4, and 105.7.8 through 105.7.13.

12. Subsection 108.1 is repealed in its entirety and reenacted to read as follows:

    108.1 Appeals Procedure-General. Any person, firm, or corporation who are grieved by an application, interpretation, or order made by fire district personnel, pursuant to any provision of the code for the standards adopted, may file within three days a written

notice of appeal with the fire district requesting a hearing before the Fire Chief. All appeals must be made in writing to the Fire Chief at the district's administrative office. The Fire Chief shall establish reasonable rules for such appeal and shall make a record of all proceedings the decision of the Fire Chief shall be considered a final administrative decision.

108.1.1 Appeals Procedure-Administrative Decisions. To determine the suitability of alternate materials and types of construction and to provide for reasonable interpretations of the provisions of this code, upon request of an interested party, including the Fire Chief or designee, there were shall be, and is hereby created a board of appeals consisting of five members who are qualified by experience and training to pass judgment upon pertinent matters. The board of appeals shall be appointed by the Board of Directors and shall hold office at its pleasure. The board of appeals shall adopt reasonable rules of procedure for conducting its business, and shall render all interpretations, decisions, and findings in writing to the appellant or requesting party with a duplicate copy to the Fire Chief. All appeals of the Fire Chief's decision shall be made in writing, within three days of the date of the Fire Chief's decision, to the Board of Directors by delivery to the district Fire Chief or his representative at the district's administrative office.

13. Subsection 109.3 is amended to read as follows: **109.3 Violation penalties**. Persons who violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall correct install alter repair or do work in violation of the approved construction documents or directions of the fire code official or of a permit or certificate used under the provisions of this code, shall be guilty of a misdemeanor, punishable by a fine of not more than $250. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

14. Subsection 111.4 is amended to read as follows: **111.4 Failure to comply.** Any person who shall continue any work after having been served a stop work order except such work as that person is directed to perform to remove a violation or unsafe condition shall be liable to a fine and/or imprisonment up to the maximum specified in CRS Section 32-1-1001 and CRS section 32-1-1002. Each day in which such violation occurs shall constitute a separate violation pursuant to CRS Section 32-1-1002 (3) (d).

15. Subsection 113 is deleted in its entirety and replaced with: **113 Fees**

16. **113.1 Fees.** Fees for services pursuant to the provisions of this code shall be established from time to time by resolution of the Board of Directors pursuant to Section 32-1-1002(1)(j) C.R.S. Said fees and charges may include a charge for reimbursement to the fire district of any consultation fees, expenses or costs incurred by the fire district in the performance of inspection related services pursuant to provisions of this code.

113.2 Payment of fees. A permit shall not be valid until the fees prescribed by law have been paid; nor shall an amendment to a permit be released until additional fees, if any, has been paid.

112.3 Operational permit fee. An inspection fee may be charged for any operational permit required by Section 105.6. The inspection fee shall be based upon the time required to conduct inspections authorized by Section 105.2.2 and associated activities, to determine

compliance with this code and other applicable laws and ordinances as required by Section 105.2.4, and to issue the permit as specified in Section 105.3.7.

113.4 Construction permit fee. A fee may be charged for any construction permit required by Section 105.7 of this code. The construction permit fee is intended to cover the cost of inspections required or requested in connection with the work for which the permit is granted, and the associated costs of processing the application. An application shall include an estimate of the total value of the work, including materials and labor, for which the permit is being sought. If, in the opinion of the fire code official, the valuation is underestimated on the application, the permit shall be denied, unless written estimates are provided in a form acceptable to the fire code official, and that support the valuation set forth in the application. Final construction permit valuation shall be set by the fire code official.

113.5 Other inspection fee. Fees for reinspections, for inspections outside normal business hours, or for inspections for which no fee is otherwise established may be charged.

113.6 Plan review fee. The plan review fee is intended to cover the significant costs and expenses incurred by the fire district in reviewing materials necessary to perform appropriate inspections of construction, uses, processes, and operations. The fee shall be assessed based on the reasonable, customary, and necessary time associated with reviewing or evaluating site plans; construction documents and calculations; changes, additions, or revisions to approved plans; construction documents resubmitted after the fire code official's issuing a statement explaining the reasons that a previous submittal does not conform to the requirements of this code. When submittal documents are incomplete or changed so as to require additional plan review, an additional plan review fee shall be charged. The plan review fee required by this Section 113.6 is separate from the construction permit fee required by Section 113.4.

113.7 Unauthorized Work Inspection Fee. Any person or entity that commences any work before obtaining a construction permit required by Section 105.7 shall be subject to an inspection fee in an amount equal to the amount of the construction permit fee. The fee shall be separate from and in addition to a construction permit fee. Payment of the inspection fee shall not relieve any person from compliance with all other provisions of this code or from any penalty prescribed by law. The inspection fee shall be assessed regardless whether or not a construction permit is then or subsequently issued.

EXCEPTION: When approved in writing by the fire code official, work may commence prior to obtaining a construction permit.

113.8 Related Fees. The payment of the fee for construction, uses, processes, or operations authorized by an operational permit or construction permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law or required by Section 113.

17. **Section 202 General Definitions** is amended by the addition of the following terms:

ALARM CONTROL UNIT. A component of the [CO detection] system provided with a primary and secondary power source that receives signals from initiating devices or other control units, and processes these signals to determine the required system output functions.

ALCOHOL BEVERAGE (also, "ALCOHOL BEVERAGE"). A drinkable ethanol mixture 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/water-based mixture.

ALTITUDE. Altitude is the measure of elevation typically relative to sea level. The generally recognized altitude of Boulder, CO is 5,280 ft. Altitude has a direct impact on design considerations for life safety and property protection including but not limited to the physical properties of flammable and combustible liquids.

APPLIANCE. Visible notification component such as a bell, horn, speaker, light, or text that provides audible, visible, and/or tactile outputs to alert occupants of a hazardous condition. Single-station alarms contain both a [initiating] device and a [notification] appliance.

BATTERY BACKUP. The listed device has a battery that powers it when the power provided through the building electrical system fails.

BATTERY-POWERED. The listed device is powered solely by a primary battery for all power requirements and the battery is monitored for end-of-life by producing an audible trouble signal.

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.

BIOHAZARD. An infectious agent or hazardous biological material that presents a risk or potential risk to the health of humans, animals or the environment. The risk can be direct through infection or indirect through damage to the environment. Biohazardous materials include certain types of recombinant DNA; organisms and viruses infectious to humans, animals or plants (e.g., parasites, viruses, bacteria, fungi, prions, rickettsia); and biologically active agents (i.e., toxins, allergens, venoms) that may cause disease in other living organisms or cause significant impact or the environment or community.

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.

CARCINOGEN. A substance that causes the development of cancerous growths in living tissue. A chemical is considered to be a carcinogen if:

1. It has been evaluated by the International Agency for Research on Cancer (IARC) and found to be a carcinogen or potential carcinogen, or
2. It is listed as a carcinogen or potential carcinogen in the latest edition of the Annual Report on Carcinogens published by the National Toxicology Program, or
3. It is regulated by OSHA as a carcinogen.

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.

CENTRAL ALARM STATION/SUPERVISING STATION. A facility that receives fire alarm signals and at which personnel are in attendance at all times to respond to these signals. A supervising station that is licensed for central station service.

CENTRAL FUEL-BURNING APPLIANCE ROOM. A room containing a fuel burning appliance serving multiple dwelling units, such as a boiler, fire place, stove, furnace, or similar equipment, with the potential to distribute CO to multiple dwelling units.

CHEMICAL FUME HOOD. A ventilated enclosure designed to contain and exhaust fumes, gases vapors, mists, and particulate matter generated within the hood.

CLASS I LIQUIDS. Used in Chapter 38 to identify ethanol mixtures that are Class IB or Class IC flammable liquids.

CLASS I FIRE ALARM MONITORING. The monitoring of a fire alarm system by a licensed central station that is required by Boulder County's Building Code and the Boulder Rural Fire Codes.

CLASS II FIRE ALARM MONITORING. The monitoring of a fire alarm system by a licensed central station that is not required by Boulder County's Building Codes and Boulder Rural Fire Codes.

CO (CARBON MONOXIDE). A colorless odorless gas that is produced as a result of incomplete burning of carbon-containing fuels.

CO ALARM. A single- or multiple-station device having a sensor that responds to CO and listed in accordance with UL 2034 that provides audible notification. Required CO alarms may be monitored by an alarm control unit, but shall be powered independently and shall function autonomously in the event the alarm control unit is nonfunctional.

CO DETECTOR. A device listed per UL 2075 having a sensor that responds to CO, is monitored and powered by an alarm control unit, and does not necessarily have an integral notification appliance.

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 possible equipped with an overpressure-relieving mechanism in accordance with FM Global Approved Standard for Plastic Plugs for Steel Drums, Class Number 6083, or equivalent.

BOULDER COUNTY BUILDING CODE. The collection of International Code Council (ICC) publications as adopted and amended by Boulder County, excluding the International Fire Code (IFC).

DEVICE. An alarm initiating component that originates transmission of a change-of-state condition, such as a CO detector, manual fire alarm box, etc. Single-station alarms are both a [initiating] device and a [notification] appliance.

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 – 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.

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.

DUPLEX. A building consisting solely of a two-family dwelling as defined by the *International Residential Code.*

ELECTROLYTE. A solid, liquid, or aqueous salt solution that permits ionic conduction between positive and negative electrodes of a cell.

EMERGENCY shall mean one or more of the following:

- Fire, regardless of size or type
- Explosion
- Building, structure, or utility failure
- Rescue operations involving humans or animals, including people trapped in elevators due to power failure or mechanical malfunctions
- Failure of or damage to fire protection or life safety systems
- Exposure to a hazard(s)
- Panic
- Hazardous material leak or spill
- Overcrowding of any building or premises
- Rescue operations involving humans or animals injured or trapped in buildings, trenches, scaffolding, grandstands, etc.
- Any other hazard or situation involving or endangering life or property.

EMERGENCY RESPONDER RADIO ENHANCEMENT COMMUNICATION SYSTEM (RES/BDA). The RES/BDA is a network of amplifiers, fiber optic cable, coaxial cable, and radiating cable and/or discrete antennas with or without a distributed antenna system (DAS) controller, or an equivalent technology installed on or inside the property to enhance indoor public safety radio communications.

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 the Boulder County Building Code and Boulder Rural Fire Code, namely water.

EXTRACTION. The process of using solvents to remove essential oils or other botanic material from the plant materials.

FALSE FIRE ALARM. The activation of any fire alarm system resulting in a response by the Fire Department, caused by the negligent or intentional misuse of the fire alarm system by an owner, employee, agent, tenant, guest, visitor, or any other activation of a fire alarm system not caused by a valid alarm signal, exclusive of a nuisance fire alarm.

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.

FUEL-BURNING APPLIANCE. An appliance that burns carbon-containing solid, liquid, and/or gaseous fuels.

HARDWIRED. Device installed by wiring directly to the building electrical system, with battery backup, and not controlled by any disconnecting switch other than as required for over-current protection.

HAZ MAT (HAZARDOUS MATERIALS). Materials with hazards regulated by the Boulder Rural Fire Code.

HAZMAT INVENTORY STATEMENT (HMIS). A portion of an HMR containing a list of all the HazMat 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 HazMat Permit Application containing site maps and facility floor plans identifying HazMat locations and site and building features relevant to the management of HazMat inventories, systems and operations.

HAZMAT REPORT (HMR). A consolidated description of a facility and the HazMat therein including a contact list, code-based description of the building and adjacent outdoor areas, and a HazMat 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.

LOWER FLAMMABLE LIMIT (LFL) also [LOWER EXPLOSIVE LIMIT (LEL)]. The atmospheric volumetric concentration of a flammable vapor at which propagation of flame will occur in the presence of an ignition source. The LFL at sea level for ethanol vapor is 3.3 percent.

LOWEST LEVEL OF FIRE DEPARTMENT VEHICLE ACCESS. The lowest level of Fire Department vehicle access shall be measured from the lowest elevation of any required Fire Department access road located no more than 30 feet from any exterior wall of the building.

MACHINERY ROOM. See Section 1104.2 of the *International Mechanical Code*.

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.

MASS NOTIFICATION SYSTEM. A mass notification system (MNS) is a system used to provide emergency information and instructions to people in a building, area, site or other space using intelligible voice communications and possibly including visible signals, text, graphics, tactile, or other communications methods.

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).

MULTIPLE PURPOSE ALARM. A single device that incorporates the capability to detect more than one hazard, such as smoke, vapors, and/or gases. Multiple purpose devices shall emit audible alarms in a manner that clearly differentiates between the detected hazards.

MULTIPLE STATION ALARM. [1] A single alarm device capable of being physically or wirelessly interconnected to one or more similarly capable devices so the actuation of any one device causes the appropriate notification signal to occur in all interconnected devices. [2] An interconnected group of single- alarm devices defined in [1].

NON-DEDICATED SMOKE CONTROL SYSTEM. Smoke control components and equipment that are shared with other systems, such as the building HVAC system. Upon activation of fire alarm, non-dedicated smoke control equipment changes mode of operation to achieve the smoke control performance objectives. "Non-dedicated systems" shall refer only to equipment and components controlled from the firefighters' smoke control panel.

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.

NUISANCE FIRE ALARM. The activation of any fire alarm system resulting in a response by the Fire Department, caused by mechanical failure, malfunction, improper installation, lack of maintenance or other condition for which Fire Department personnel are unable to determine initiation of a valid alarm signal. (See Sections 401.5, "False Fire Alarm," and 907.1.5).

OPERATIONS PERMIT. A permit issued in conjunction with the operations listed in Section 105.6.

OPERATOR. A competent person employed by a central alarm station.

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

OWNER. The owner of the dwelling, dwelling unit and/or rental unit, a mortgagee or vendee in possession, an assignee of rents, receiver, executor, trustee, or any other person, business, sole proprietorship, partnership, association, or corporation directly or indirectly in control of a building, structure or real property or their authorized agent.

PERMITABLE QUANTITY. The minimum amount of hazardous or any other regulated material allowed to be stored or used at a property before an operations permit is required by Section 105.6.

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.

PLUG-IN. CO alarm with battery backup, installed by being plugged into an electrical outlet for primary power.

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.

POST OIL PROCESSING. The process of refining essential oils after the extraction, including but not limited to, dewaxing and winterization processes.

PRESSURE VESSEL. Containers, intermediate bulk containers, processing vessels, and tanks that under normal conditions, are permitted to operate above 15 pounds per square inch gauge (psig; 103.4 kPa).

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 APBF 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 a still 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.

PROPERTY. As used in this chapter, shall include private and public land in the undeveloped and developed state including the buildings, structures, paving and all other immobile improvements; natural features such as trees, shrubbery and similar botanical growth; and vehicles, vessels, equipment, materials and similar movable items located on them.

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.

RADIO FREQUENCY MAINTENANCE PLAN. The radio frequency maintenance plan is a document developed and distributed by the building owner for the purpose of maintaining the Department of Safety radio system from harmful interference generated on the property or otherwise under the control of the owner.

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

REGULATED MATERIAL. Any material materials regulated by the fire code (as amended) for which an operations permit could be required including storage and/or use of hazardous materials, LPG, combustible dust operations.

RELEASE/UNAUTHORIZED DISCHARGE. Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discharging of barrels, containers, and other receptacles containing any hazardous substances or pollutant or contaminant).

REMOTE AREA. (c.f. NFPA 13). The specified floor area over which an assigned sprinkler density (in volume per minute per unit area) is required in the design of an automatic sprinkler system.

RUNNER. A qualified person who responds to the location where a reported fire alarm system has been activated for the purpose of silencing, restoring, or confirming that the system is restored to a normal condition.

SELF-SERVICE MOTOR FUEL-DISPENSING FACILITY. That portion of motor fuel-dispensing facility where flammable and combustible liquids, liquefied petroleum gas, compressed natural gas, or hydrogen motor fuels are dispensed from fixed approved dispensing equipment into the fuel tanks of motor vehicles by persons other than a motor fuel-dispensing facility attendant.

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

SINGLE-FAMILY DWELLING. Any improved real property used or intended to be used as a residence and that contains one dwelling unit.

SINGLE STATION ALARM. A single device comprised of a sensor, alarm-initiating device, control components, and an alarm notification appliance.

SINGLE STATION [CO] ALARM. A device comprised of a sensor, alarm-initiating device, control components, and an alarm notification appliance in one unit.

SLEEPING ROOM. A room furnished with a bed and primarily used for sleeping purposes.

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).

TANK. Any normally open or normally closed vessel having a capacity greater than 60 gallons (230 L) intended for storing or processing (but not transporting outside the facility) Class 1 Liquids, and equipped with provisions for emergency venting.

TENANT. A person or legal entity who rents a dwelling unit from the owner for a fixed period of time usually under the terms of a lease or a similar legal entitlement or agreement.

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. Used in Chapter 38 to reference reservoirs holding – unless otherwise noted – Class 1 Liquids including casks, containers, intermediate bulk containers, processing vessels, and tanks.

WALL HYDRANT. Valved 2-1/2-inch (64 mm) exterior standpipe connection.

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

18. Subsection 503.2.9 is added to read as follows: **503.2.9 Driveway Access.** Driveways from platted roads to single family residences shall be sized to meet the requirements of the Boulder County Transportation Department specifications on straight sections. Inside and outside curve radii will be determined by the Fire Code Official to accommodate the fire apparatus expected to respond to the residence.
19. Subsection 507.2.3 is added to read as follows: **507.2.3 In-ground Cisterns.** In-ground cisterns for fire protection shall be designed, installed and maintained to meet the requirements of Boulder County Land Use and the Fire Code Official.
20. Subsection 507.2.4 is added to read as follows: **507.2.4 Community Cisterns.** Where an occupancy is close enough and has adequate access by firefighting apparatus, in the opinion of the Fire Code Official, a community cistern may be used to provide firefighting water supply, instead of an In-ground Cistern as described in Subsection 503.2.3.
21. 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 Hydrant Maintenance. 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 the Boulder Rural Fire Rescue 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 District'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.
22. Section 605.11 of the International Fire Code is amended to add sections 605.11.3, 605.11.4 and 605.11.5 as follows:

605.11.3 Direct Current (DC) Wiring. 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. For residential applications, a label stating, "CAUTION, SOLAR PHOTO VOLTAIC SYSTEM ON PREMISES" shall be placed at or within the main electrical service disconnect.
605.11.5 Rapid Shut Down Switch. All solar system shall have a "rapid shutdown" switch located at ground level in the area of the electric panel box and inverter

23. Subsection 903.2.8 is amended to read as follows: **903.2.8 Group R and Residences constructed under the 2015 International Residential Code.** An automatic sprinkler system installed in accordance with Section 903.3 shall be provided throughout all residences.
24. Subsection 903.3.1.3 is amended to read as follows: **903.3.1.3 Residential Sprinkler Systems.** Automatic sprinkler systems installed in one and two-family dwellings, Group R-3, and R-4 Congregate living facilities and townhouses shall be permitted to be installed throughout in accordance with the Boulder County Building Code, its amendments, and Subsections 903.3.1.3.1 through 903.3.1.3.3.
25. Subsection 903.3.1.3.1 is added to read as follows: **903.1.3.1 Fire Department Connections.** Residential sprinkler systems which are supplied by atmospheric pressure tanks and fire pumps shall be installed with a Fire Department Connection, the size and location of which shall be determined by the Fire Code Official.
26. Subsection 903.3.1.3.2 is added to read as follows: **903.3.1.3.2 Attached Garage Sprinklers**. Residences with attached garages, where the garage may serve as an egress path, shall have the garage sprinkled, as determined by the Fire Code Official.
27. Subsection 903.3.1.3.3 is added to read as follows: **903.3.1.3.3 Interior and Exterior Notification.** Residential sprinkler systems shall have adequate interior notification of the occupants provided to alert them that the sprinkler system is activated, in accordance with NFPA 72. Additionally, a horn and strobe device shall be installed above the Fire Department Connection noted in Section 903.3.1.3.1.
28. 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.

29. A new chapter 38 – Alcohol Beverage Production Facilities is added

SECTION 3801 GENERAL
3801.1 Scope. Buildings and portions thereof where ethanol mixtures are produced, stored, handled or dispensed in the production of alcohol beverages shall be regulated in accordance with this Chapter and the *Boulder County Building Code and Boulder Rural Fire Code*.

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 (ABPFs) 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 the *Boulder County Building Code and Boulder Rural Fire 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 the *Boulder County Building Code and Boulder Rural Fire Code* for ABPFs, the more restrictive provisions shall apply.

3801.2 Referenced standards. The Fire and Building code officials are authorized to enforce applicable provisions of the standards listed in IFC Chapter 80, as amended and IBC Chapter 35 as amended to ensure the safe operation of ABPFs. Table 3801.2 lists the standards most often utilized for ABPFs.

Table 3801.2 Referenced Standards

DOCUMENT	TITLE
NFPA 13	Standard for the Installation of Sprinkler Systems
NFPA 30	Flammable and Combustible Liquids Code
NFPA 61	Standard for the Prevention of Fires and Dust Explosions in Agricultural and Food Processing Facilities
NFPA 69	Standard on Explosion Prevention Systems
NFPA 70	National Electrical Code (NEC)
NFPA 72	National Fire Alarm and Signaling Code
NFPA 505	Fire Safety Standard For Powered Industrial Trucks Including Type Designations, Areas Of Use, Conversions, Maintenance, And Operations
NFPA 704	Standards System for Identification of the Hazards Materials for Emergency Response
NFPA 780	Standard for the Installation of Lightning Protection Systems

3801.3 Recommended practices. The Fire and Building code officials shall have the authority to utilize the recommended practices listed in Table 3801.3 to render interpretations and develop policies and procedures in the application of the provisions of the *Boulder County Building Code and Boulder Rural Fire Code* and referenced standards. Such interpretations, policies, and procedures shall be in compliance with the intent and objective of this chapter.

Table 3801.3 Recommended Practices

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

NFPA 499	Recommended Practice for the Classification of Combustible Dusts and of Hazardous Locations for Electrical Installations in Chemical Process Areas
The Distilled Spirits Council of the United States,	Recommended Fire Protection Practices for Distilled Spirits Beverage Facilities

3801.4 Construction Documents. Construction documents shall be submitted for review and permit prior to the installation, construction, or modification of ABPFs or the operational equipment therein.
3801.5 Operational Permits. Operational permits shall be required as set forth in Section 105 and in accordance with Boulder Rural Fire Protection District policy.

SECTION 3802 DEFINITIONS, ACRONYMS AND ABBREVIATIONS

3802.1 Definitions. The following terms are defined in Chapter 2.
ALCOHOL BEVERAGE
ALCOHOL BEVERAGE PRODUCTION FACILITY (*ABPF)*
ALCOHOL BY VOLUME (*ABV*)
BEVERAGE SPIRIT (*TTB*)
BREWERY
BULK STORAGE
CASK
CLASS 1 LIQUIDS
CONTAINER
BOULDER COUNTY BUILDING CODE
BOULDER COUNTY BUILDING CODE AND BOULDER RURAL FIRE CODE
BOULDER RURAL FIRE CODE
DISTILLATION
DISTILLERY (ALSO "DISTILLED SPIRITS PLANT – BEVERAGE")
DISTILLED SPIRITS PLANT – INDUSTRIAL
DISTILLED SPIRITS PLANT – INDUSTRIAL / BEVERAGE
DISTILLED SPIRITS PLANT – EXPERIMENTAL
ETHANOL (ALSO, "ETHYL ALCOHOL" OR "GRAIN ALCOHOL")
ETHANOL MIXTURE
FERMENTATION
HAZMAT
HAZMAT INVENTORY STATEMENT (HMIS)
HAZMAT MANAGEMENT PLAN (HMMP)
HAZMAT REPORT (HMR)
INTERMEDIATE BULK CONTAINER
LOWER FLAMMABLE LIMIT (LFL)
MASH
MINIMUM EXPLOSIVE CONCENTRATION (MEC)
NORMALLY CLOSED
NORMALLY OPEN
PILE

PORTABLE TANK
PROCESS DESCRIPTION
PRESSURE VESSEL
PROCESSING VESSEL
RACK
REMOTE AREA
SPIRIT
STATIONARY TANK
STILL
STORAGE AREA
TANK
USE AREA
VAT (ALSO FOUDRE)
WASH (ALSO BEER, MALT LIQUOR)
WINE
WINERY
WORT
VESSEL

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. HazMat Inventory Statement.
HMMP. HazMat Management Plan.
HMPA. HazMat Permit Application.
HMR. HazMat 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.
MSDS. 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 the *Boulder County Building Code and Boulder Rural Fire 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 the *Boulder County Building Code and Boulder Rural Fire 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 the *Boulder County Building Code and Boulder Rural Fire 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 IFC Chapter 22 and IFC 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 *Boulder County Building Code and Boulder Rural Fire Code* according to the fire safety and relative hazard involved.

3803.3 Hazardous materials permit application (HMPA). An HMPA in an approved format is required for all ABPFs using or storing HazMat. 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 IFC Section 404, as amended, shall be prepared and maintained.

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

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

3803.3.7 Unauthorized Discharges Preparation. Plans and provisions shall be made for controlling and mitigating unauthorized discharges.

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 HazMat, 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 the *Boulder County Building Code and Boulder Rural Fire Code*.

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/ft^2; 0.00508 cms/m^2)] 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/ft^2; 0.000305 cms/m^2).
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

1. 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:

2. All portions of the drainage system including floors shall be liquid-tight and constructed of noncombustible materials compatible with ethanol.
   Exception: Where approved by the Fire and Building Code officials, and in compliance with federal, state, and local government agencies' regulations and permits, floors of buildings or portions thereof used for the bulk storage of Class I Liquids are permitted to be exposed earth. Combustible materials such as tilled organic matter are permitted to be mixed with the dirt provided the mixture is non- combustible.
3. 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 $^1/_4$" (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.
   Exception: When released onto the ground within a fire area, the volumetric flow of water is permitted to be reduced to account for the percolation into the soil. An engineering analysis shall be provided to establish the reduction.

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.

4. 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, and local governmental agencies' regulations and permits.

3803.6.2.2 Outdoor. Secondary containment for outdoor storage areas shall be in accordance with IFC 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 NFPA 30 but shall not be less than that required in accordance with NFPA 13 for Ordinary Hazard Group 2 with a minimum design area of 3,000 square feet (279 m2).

Exception: H-2 and H-3 occupancies with storage of Class 1 Liquids in casks shall be protected by a sprinkler system designed for Extra Hazard 2 in accordance with NFPA 13, or by an approved engineered design.

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 IFC Section 903.4, as amended. Audible and visible occupant notification upon activation of water flow shall be provided in accordance with IFC 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 IFC 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 IFC 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 the *Boulder County Building Code and Boulder Rural Fire 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 IFC 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 IFC 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 IFC 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, IFC 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:
3. Vats or casks without internal metal or plastic components that could hold a potential difference.
4. 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 IFC 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 IFC 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 the *Boulder County Building Code and Boulder Rural Fire 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 the *Boulder County Building Code and Boulder Rural Fire 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 IFC 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, IFC 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.

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.
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 IFC 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 IFC 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 designated as smoking.
2. Areas where hot work permits have been issued in accordance with this Section 105.
3. 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 IFC 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 IFC 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, IFC 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 IFC 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 IBC 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 in tanks shall comply with IFC Chapters 50 and 57, as amended. Vaults shall be in accordance with IFC Chapter 57, as amended. Underground storage of Class I liquids in other vessels is prohibited.

3804.1.2.2 Outdoor storage of Class 1 Liquids. Outdoor storage shall be in accordance with IFC 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 IFC 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 IFC 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 IFC 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 adopted 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 IFC 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 IFC 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 the *Boulder County Building Code* and *Boulder Rural Fire 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, IFC 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, scuff boards, 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, scuff boards, floor overlay. Dunnage, scuff boards, 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 IFC Chapter 32, as amended, are in conflict with those in Section 3804.2.1, the more restrictive shall govern.

3804.2.1.3 Pile storage. Pile storage including palletized storage shall be in accordance with Sections 3804.2.1.3.1 through 3804.2.1.3.2.

3804.2.1.3.1 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.

Configurations must be stable against overturning in accordance with the seismic design requirements of the International Building Code for the seismic zone in which the ABPF is located.

3804.2.1.3.2 Palletized storage. Palletized storage shall be in accordance with Sections 3804.2.1.3.2.1 and 3804.2.1.3.2.2.

3804.2.1.3.2.1 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.

3804.2.1.3.2.2 Idle combustible pallets. Storage of idle wood pallets shall be limited to a maximum pile size of 2,500 square feet (232 m^2) and to a maximum storage height of 6 feet (1829 mm). Storage of idle plastic pallets shall be in accordance with IFC 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.

3804.2.1.4 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.

CHAPTER 39 MARIJUANA OPERATIONS is added as follows:

CHAPTER 39 MARIJUANA OPERATIONS

SECTION 3901 GENERAL

3901.1 Scope. This section shall apply to all occupancies not regulated under the *International Residential Code* engaging in marijuana (i.e. cannabis and extract derivatives) sales locations, growing, processing, extraction, and/or testing. These occupancies shall comply with this chapter and other applicable provisions of this Code.

3901.2 Permits. Permits shall be required as set forth in Section 105 and in accordance with Boulder Rural Fire Protection District policy.

SECTION 3902 DEFINITIONS

3902.1 Definitions. The following terms are defined in Chapter 2.

CHEMICAL FUME HOOD
EXTRACTION
POST OIL PROCESSING

SECTION 3903 EXTRACTION OPERATIONS

3903.1 Construction Requirements.

3903.1.1 Location. Extraction processes shall be performed in a room dedicated to the extraction process.

3903.1.2 Egress. Exit doors from extraction rooms utilizing hazardous materials shall swing in the direction of egress and be self-closing. Panic hardware shall be provided on doors in liquefied petroleum gas (LPG) extraction rooms. Where latching door hardware is provided on extraction rooms utilizing hazardous materials, panic hardware shall be provided.

3903.1.3 Extraction Rooms. Extraction room shall be fully enclosed. The floor, ceiling, and walls of extraction rooms shall be constructed in accordance with the *Boulder County Building Code* and be continuous, non-combustible, and smooth. Rooms designed in accordance with Section 3903.4.1.1 shall be constructed to permit the free passage of exhaust air from all parts of the room.

Exceptions:

1. Enclosed booths constructed in accordance with IFC Sections 2404.3.2.1 through 2404.3.2.3.
2. CO_2 extraction rooms and extraction rooms containing processes not utilizing hazardous materials.

3903.1.4 Openings and penetrations. Openings and penetrations into extraction rooms utilizing hazardous materials shall only be provided for egress, mechanical, electrical, or plumbing systems serving the extraction room. Penetrations into LPG extraction rooms shall be sealed vapor tight. Non-operable glazing is permitted where glazing does not interfere with required exhaust systems.

3903.1.5 Extraction room illumination. Luminaires inside the extraction room shall comply with Section 3903.2.2. Luminaires attached to the walls or ceilings of an extraction room or booth, but outside of any classified area and separated from the flammable vapor areas by vapor-tight glass panels, shall be suitable for use in ordinary hazard locations. Such luminaires shall be serviced from outside the flammable vapor areas.

3903.1.6 Fire protection. Extraction rooms, booths, or hoods, including ductwork where required for hazardous exhaust systems, shall be protected by an approved automatic fire extinguishing system complying with Chapter 9 where any of the following exist:

1. Extraction processes utilizing LPG or off gassing LPG from spent plant material or oil

2. Vapors are released exceeding 25% of the lower flammable limit from flammable liquid extraction processes or flammable liquid post oil processing.

3903.2 Sources of ignition. Extraction or post oil processing operations which use flammable liquids or liquefied petroleum gas (LPG) shall comply with Sections 3903.2.1 through 3903.2.3

3903.2.1 Open flame and sparks. Smoking, open flames, direct fired heating devices, etc. shall be prohibited in areas where flammable vapors exist.

3903.2.2 Electrical equipment. Electrical equipment installed in rooms designed in accordance with Section 3903.4.1.1, hoods, or booths containing LPG extraction processes shall be in accordance with NFPA 70 (NEC) as a Class I Division I location. Areas adjacent to classified locations shall be in accordance with NFPA 70 (NEC). Electrical equipment installed in areas of flammable liquid extractions or post oil processing shall be in accordance with IFC Chapter 50, as amended, and NFPA 70 (NEC).

Exception: Subject to approval of the fire code official, rooms or booths containing LPG extraction equipment that is not normally opened within the room or booth for oil or plant material retrieval, and frequent leakage in the closed system does not occur, may be considered a Class I Division II location.

3903.2.3 Grounding and Bonding. Precautions shall be taken within LPG extraction rooms to minimize the possibility of ignition by static electrical sparks through static bonding and grounding of extraction equipment, ducts, and piping etc. installed in accordance with NFPA 70 (NEC).

3903.3 Equipment. Extraction process equipment utilizing hazardous materials shall be listed or approved.

3903.4 Exhaust required. Extraction and post oil processing, utilizing LPG or flammable liquids shall be provided with an exhaust system in accordance with Section 3903.4.1 or 3903.4.2. The exhaust system shall be in operation at all times when extractions or post oil processing is being performed and until LPG is off gassed from oil and/or plant material removed from LPG extraction equipment. Fans shall be of the type approved for use when flammable or explosive vapors are present in accordance with the *International Mechanical Code,* Section 503. Capture and containment air velocity shall be provided across booths, hoods, or exhausted enclosures to capture and convey emissions to the exhaust system and shall be no less than 75 fpm.

3903.4.1 Exhaust for LPG extraction processes. A hazardous exhaust system engineered in accordance with the *Boulder County Building Code and Boulder Rural Fire Code* shall be provided for LPG extraction processes including LPG degassing from processed plant material or oil removed from extraction equipment.

3903.4.1.1 Exhausted enclosure. Where the extraction room is used as the exhausted enclosure, the exhaust system shall be designed to provide capture and containment air velocity across all areas of the enclosure.

3903.4.1.2 Electrical Interlocks. The exhaust system shall be interlocked with the room power, such that when the exhaust system is not operating, power and lighting will be disabled.

3903.4.2 Exhaust for Flammable Liquid Extraction processes. A hazardous exhaust system in accordance with the Boulder County Building Code and Boulder Rural Fire Code shall be provided for flammable liquid extraction processes.

Exceptions:

1. Distillation process with less than 5 gallons of flammable liquid performed under a chemical fume hood installed in accordance with the *Boulder County Building Code and Boulder Rural Fire Code* unless a hazardous exhaust system is required by the *Boulder County Building Code and Boulder Rural Fire Code.*
2. Solvent distillation units in compliance with IFC Section 5705.4

3903.5 Gas Detection. A continuous gas detection system shall be provided within rooms, booths or hoods, containing CO_2 or LPG extraction processes. Actuation of the gas detection system shall initiate a local alarm within the room. CO2 gas detection systems shall alarm at 5000ppm. LPG gas detection systems shall alarm at no greater than 20% of the LFL. Portable LPG gas detection shall be utilized by the extraction system operator to verify local hydrocarbon levels, including system leaks.

3903.6 CO_2 Extraction Equipment Process discharge. CO_2 discharges shall be piped to the exterior.

3903.7 Refrigeration and Cooling Equipment. Refrigerators, freezers, and other cooling equipment used to store or process flammable liquids shall be in accordance with NFPA 45 and applicable provisions of the *Boulder County Building Code and Boulder Rural Fire Code*.

24. SECTION 3904 MARIJUANA GROWING OPERATIONS

3904.1 CO_2 Enrichment Systems. CO_2 enrichment systems shall comply with Sections 5310 or 5311.

25. Section 5310 Carbon Dioxide (CO_2) gas enrichment systems using on-site supply tanks and/or cylinders in plant growing (husbandry) applications is added as follows:

SECTION 5310 CARBON DIOXIDE (CO_2) GAS ENRICHMENT SYSTEMS USING ON-SITE SUPPLY TANKS AND/OR CYLINDERS IN PLANT GROWING (HUSBANDRY) APPLICATIONS

5310.1 General. Carbon dioxide enrichment systems with more than 100 pounds (45.4 kg) of carbon dioxide or any system using any amount of carbon dioxide (CO_2) below grade used in plant growing (husbandry) applications shall comply with Sections 5310.2 through 5310.8.

5310.2 Permits. Permits shall be required in accordance with Sections 105 and in accordance with Boulder Rural Fire Protection District policy.

5310.3 Equipment. The storage, use, and handling of carbon dioxide shall be in accordance with IFC Chapter 53, as amended, and the applicable requirements of NFPA 55, Chapter 13. All equipment utilized in compressed gas systems shall be compatible with the intended gas and use.

5310.3.1 Containers, cylinders and tanks. Gas storage containers, cylinders and tanks shall be designed, fabricated, tested and labeled with manufactures' specifications and shall be maintained in accordance with the regulations of DOTn 49 CFR, Parts 100-185 or the ASME Boiler and Pressure Vessel Code, Section VIII.

5310.3.1.1 Location. Location of gas storage containers, cylinders and tanks, inside or outside the building, shall be at an approved location.

5310.3.1.2 Security. Gas storage containers, cylinders and tanks shall be secured in an approved manner to prevent overturning. Containers, cylinders and tanks located outside shall be secured and safeguarded against tampering and protected from physical damage if exposed to vehicle traffic.

5310.3.1.3 Design and construction. Bulk tank installations over 2,000 pounds will require an engineered foundation and construction permit in accordance with the Boulder County Building Code.

5310.3.2 Piping systems. Piping, tubing, fittings, valves and pressure regulating devices shall be designed and installed in accordance with approved standards and manufacturers' recommendations.

5310.3.2.1 Piping, tubing and hoses. Piping, tubing and hose materials shall be compatible with carbon dioxide and rated for the temperatures and pressures encountered in the system. All hoses and tubing used in carbon dioxide service shall be designed for a bursting pressure of at least four times their design pressure. PVC/ABS and other types of rigid plastic piping are not approved materials. Acceptable piping for carbon dioxide shall be the following:

1. Stainless steel A269 grade, which is either seamless or welded drawn over mandrel
2. Copper K grade, hard drawn seamless
3. Copper ACR grade (1/2 inch outside diameter or less) annealed seamless
4. Plastic/polymer materials rated for use with carbon dioxide

5. Additional approved piping, tubing and hoses found in the Compressed Gas Association (CGA) standards for carbon dioxide

5310.3.2.1.1 Support. Gas piping shall not be attached or supported by any electrical light supports or wiring.

5310.3.2.1.2 Identification. Markings for carbon dioxide (CO_2) piping systems shall consist of the content's name (carbon dioxide or CO_2) and direction-of-flow arrow. Markings shall be provided at each valve; at wall, floor or ceiling penetrations; at each change of direction; and at not less than every 20 feet or fraction thereof throughout the piping run.

5310.3.2.2 Fittings, joints and connections. Fittings, joints and connections shall be subject to the approval of the fire and building departments.

5310.3.2.2.1 Fittings and joints between gas supply containers and automatic shutoff valve. Joints and fittings on the supply piping or tubing between the CO_2 supply source and the automatic system shutoff valve shall be threaded, compression or welded.

5310.3.2.2.2 Unused connections. Unused piping or tubing connected to the supply system shall be capped or plugged. A closed valve will not be allowed in lieu of a cap or plug.

5310.3.2.2.3 Concealed connections. All fittings and joints shall be exposed and located adjacent to the supply source or points of use and shall be protected by a detector.

5310.3.2.3 Valves. Piping systems shall be provided with valves in accordance with Sections 5307.3.2.3.1 through 5307.3.2.3.4.

5310.3.2.3.1 Pressure relief valves. Pressure relief valves shall be provided and piped to the outdoors.

5310.3.2.3.2 System shutoff valve. An automatic system shutoff valve shall be provided as near to the supply pressure regulator as possible and shall be designed to fail to a closed condition closing on loss of electrical power to the valve and gas detection. Additional automatic shutoff valves may be provided at each point of use. Automatic shutoff valves shall be designed and located so that all phases (i.e., gas, liquid and solid) of carbon dioxide (CO_2) will not interfere with the operation of the device.

5310.3.2.3.3 Appliance shutoff valves. Each appliance shall be provided with a shutoff valve within 3 feet of the appliance. All shutoff valves shall be capable of being locked or tagged in the closed position for servicing.

5310.3.2.3.4 Accessibility and identification. Valves and controls shall be readily accessible at all times. Normal and emergency system shut-off valves shall be clearly identified. All valves shall be designed or marked to indicate clearly whether it is open or closed.

5310.3.3 Venting. Venting of gases shall be directed to an approved location outside the building. Insulated liquid carbon dioxide systems shall have pressure relief devices vented in accordance with NFPA 55.

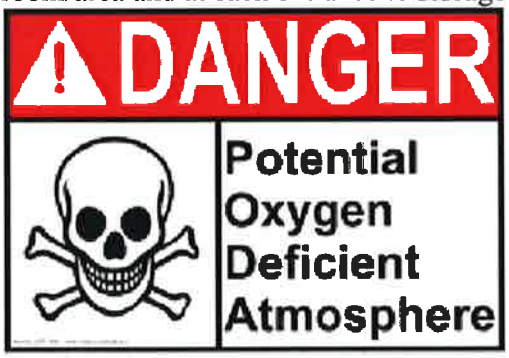
5310.4 Protection from damage. Carbon dioxide systems shall be installed so the storage tanks, cylinders, piping and fittings are protected from damage by occupants or equipment during normal facility operations.

5310.5 Required protection. Where carbon dioxide storage tanks, cylinders, piping and equipment are located indoors, rooms or areas containing carbon dioxide storage tanks, cylinders, piping and fittings and grow room/areas where carbon dioxide is released and can collect shall be provided with an emergency alarm system in accordance with Section 5310.5.1.

5310.5.1 Emergency alarm system. An emergency alarm system shall comply with all of the following:

1. Continuous gas detection shall be provided to monitor areas where carbon dioxide (CO_2) can accumulate. Detection equipment shall be provided to indicate carbon dioxide (CO_2) levels in each grow cultivation area/room and interior carbon dioxide (CO_2) storage location.
2. Detectors shall be:
    a. listed or approved devices
    b. permanently mounted
    c. installed at a height of no more than 48 inches above the floor or as approved by the fire code official
    d. directly connected to building electrical supply and or fire alarm systems and protected from accidental disconnection or damage
    e. auto calibrating and self "zeroing" devices are not permitted unless they can be zeroed and spanned
    f. located within manufacturers specified detection range for each point of use and storage location
3. Activation of the emergency alarm system shall initiate amber strobes and audible horns provided in the vicinity of each interior storage container, cylinder or tank and at each point of release. Additional amber strobes and audible horns shall be placed at the entrances to below grade locations and confined spaces. The notification devices shall be rated a minimum of 80cd for a visible effect and 75 dBA for an audible effect and shall be mounted in accordance with NFPA 72 requirements. Provide audible visual devices at the following locations:
    a. Inside an interior storage room/area and outside the room/area at each entrance.
    b. Inside grow cultivation room/areas.

4. Local alarm set points shall be set at:
    a. 5,000 PPM – Latching Alarm
    b. Visual and audible notification in approved locations at room or area in alarm
    c. Activation of automatic system shut off valve
    d. Evacuate the room in alarm and contact a qualified service company to investigate and address the condition.
    e. Reset of the emergency alarm to be conducted by qualified personnel.
5. Signage shall be required adjacent to each horn/strobe as follows.
    a. *Storage area/room:* "DO NOT ENTER WHEN LIGHT IS FLASHING - CARBON DIOXIDE LEAK DETECTED"
    b. *Grow cultivation room/area dispensing:* "FLASHING LIGHT MEANS CARBON DIOXIDE LEAK DETECTED – EVACUATE ROOM"
    c. The sign shall have a minimum 1-inch block lettering with a minimum $^1/_4$ -inch stroke. The sign shall be on a contrasting surface of black on yellow and shall be of durable construction.
    d. *Signage on entrance doors to grow cultivation and storage rooms:* Signage shall be provided at entrance doors to each grow cultivation room/area and at each entrance to storage rooms/areas:



    e. NFPA 704 placards for simple asphyxiants shall also be provided at the exterior main entrance and at each entrance to storage rooms/areas.
6. A minimum of one portable carbon dioxide (CO_2) meter shall be in use during business hours.

5310.6 Transfilling. Filling and transfilling of gases between storage containers, cylinders and tanks and delivery vehicles shall be performed by qualified personnel using equipment and operating procedures in accordance with CGA P-1. Interior storage containers, cylinders and tanks shall be filled via remote fill ports on the exterior of the building at grade level. Exterior remote fill ports shall be fitted with a vent line to the outside. Delivery personnel shall have access to interior storage areas to inspect valves and piping prior to initiating filling operations.

5310.7 Inspection and testing. All piping installations shall be visually inspected, calibrated, and pressure tested to determine that the materials, design, fabrication and installation practices comply with the requirements of this code.

5310.7.1 Records. A written record of all required inspections, testing, calibration, and maintenance shall be maintained in a log book on the premises containing the three (3) most current years of records and be available for review by fire inspection personnel.

5310.7.2 Required inspections and testing. All piping installations shall be tested and inspected in accordance with Sections 5310.7.2.1 through 5310.7.2.5, as approved by the Fire Code Official.

5310.7.2.1 Acceptance testing. Appliances and equipment shall not be placed in operation until after the piping system has been checked for leakage and detectors, notification devices and automatic shutoff valves have been tested by a qualified service company. All piping installations shall be visually inspected and pressure tested prior to initial operation. The test pressure downstream of the pressure regulator shall be not less than 110% of the operating pressure. Joints shall be checked with a bubble-forming solution. Acceptance testing is required to be witnessed by Fire and/or Building Code Officials. Provide an inspection report to the fire and/or building officials for the piping and joint visual inspection and pressure test.

5310.7.2.2 Daily inspections. All detectors and alarms shall be visibly inspected daily. These inspections are permitted to be conducted by trained employees.

5310.7.2.3 Monthly inspections. All storage vessels, piping, and appurtenances shall be visibly inspected monthly. These inspections are permitted to be conducted by trained employees.

5310.7.2.4 Semi-annual inspections. Systems shall be visually inspected, gas detectors calibrated in accordance with manufacturer specification, alarms tested, and tested for leaks semi-annually by a qualified service company.

5310.7.2.5 Alterations and repair. In the event alterations, repairs or additions are made, the affected piping shall be retested in accordance with Section 5310.7.2.1.

5310.7.3 Reserved.

5310.7.4 Calibration. Detectors shall be checked for accuracy, calibrated to a reference gas concentration, and span reset per manufacturers recommendations.

5310.7.5 Pressure testing. Pipe joints shall be exposed for examination during the test.

5310.7.5.1 Test medium. The test medium shall be air, nitrogen, carbon dioxide, or an inert gas.

5310.7.5.2 Section testing. Piping systems shall be permitted to be tested as a complete unit or in sections. A valve shall not be subjected to the test pressure unless

it can be determined that the valve, including the valve-closing mechanism, is designed to safely withstand the test pressure.

5310.7.5.3 Regulators and valve assemblies. Regulator and valve assemblies fabricated independently of the piping systems in which they are to be installed shall be permitted to be tested with inert gas or air at the time of fabrication. Test records shall be maintained in accordance with Section 5310.7.1.

5310.7.5.4 Test preparation. All joints and fittings shall be exposed for examination during and after the test.

5310.7.5.4.1 Pipe clearing. Prior to testing, the interior of the pipe shall be cleared of all foreign material.

5310.7.5.4.2 Appliance and equipment isolation. Appliances and equipment that are not to be included in the test shall be isolated from the piping by closing the appliance shutoff valve.

5310.7.5.4.3 Test pressure measurement. Test pressure shall be measured with a pressure-measuring device designed and calibrated to read, record or indicate a pressure loss caused by leakage during the pressure test period. The source of pressure shall be isolated before the pressure tests are made. Mechanical gauges used to measure test pressures shall have a range such that the highest end of the scale is not greater than five times the test pressure.

5310.7.5.4.4 Test pressure. The test pressures shall be as specified in Section 5310.7.2.1. Where the test pressure exceeds 125 psig (862 kPa gauge), the test pressure shall not exceed a value that produces a hoop stress in the piping greater than 50 percent of the specified minimum yield strength of the pipe or tubing. Pressures shall be adjusted smoothly and slowly to avoid pressure spikes.

5310.7.5.5 Test duration. The test duration shall be not less than 10 minutes.

5310.7.5.6 Visual inspection and cleaning. After testing is complete and the pressure is reduced to at or below operating pressure, all joints shall be cleaned of bubble-forming solution and visually inspected.

5310.7.5.7 Detection of leaks and defects. The piping system shall withstand the test pressure specified without showing any evidence of leakage or other defects. Any reduction of test pressures as indicated by pressure gauges shall be deemed to indicate the presence of a leak.

5310.7.5.8 Corrections. Where leakage or other defects are located, the affected portion of the piping system shall be repaired or replaced and retested.

5310.8 Training. All employees shall receive annual training in hazard identification, physical properties, inspections, and emergency procedures. Training records shall be maintained on site and be available to inspectors upon request.

Section 5311 Carbon Dioxide (CO_2) Gas Enrichment Systems Using a Natural Gas Burner in Plant Growing (Husbandry) Applications is added as follows:

SECTION 5311 CARBON DIOXIDE (CO_2) GAS ENRICHMENT SYSTEMS USING A NATURAL GAS BURNER IN PLANT GROWING (HUSBANDRY) APPLICATIONS

5311.1 General. Natural gas burners that are utilized to generate carbon dioxide (CO_2) in plant growing (husbandry) applications shall comply with Sections 5311.2 through 5311.6. A mechanical exhaust system shall be provided as required by the *International Mechanical Code.*

5311.2 Permits. Permits shall be required in accordance with Section105 and in accordance with Boulder Rural Fire Protection District policy.

5311.3 Equipment. Natural gas burners shall be listed, labeled and installed in accordance with the manufacturer's installation instructions. Piping systems, combustion and ventilation air and venting for natural gas appliances shall be designed and installed in accordance with approved standards, the International Fuel Gas Code and manufacturer's recommendations.

5311.4 Required protection. Where natural gas burners are located indoors for carbon dioxide (CO_2) enrichment, grow room/areas shall be provided with an emergency alarm system in accordance with Section 5311.4.1 and carbon monoxide detection in accordance with Section 5311.4.2.

5311.4.1 Emergency alarm system. An emergency alarm system shall comply with all of the following:

1. Continuous gas detection shall be provided to monitor areas where carbon dioxide (CO_2) can accumulate. Detection equipment shall be provided to indicate carbon dioxide (CO_2) levels in each grow cultivation area/room.
2. Detectors shall be:
    a. Listed or approved devices
    b. permanently mounted
    c. installed at a height of no more than 48 inches above the floor or as approved by the fire code official
    d. directly connected to building electrical supply and or fire alarm systems and protected from accidental disconnection or damage
    e. auto calibrating and self "zeroing" devices are not permitted unless they can be zeroed and spanned
    f. located within manufacturer's specified detection range for each point of release
3. Activation of the emergency alarm system shall initiate amber strobes and audible horns provided in each room/area where carbon dioxide (CO_2) can accumulate.

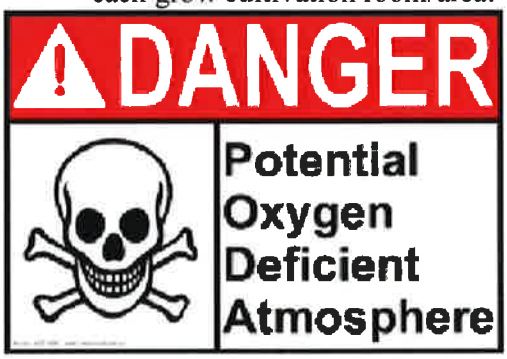
Additional amber strobes and audible horns shall be placed at the entrances to below grade locations. The notification devices shall be rated a minimum of 80cd for a visible effect and 75 dBA for an audible effect and shall be mounted in accordance with NFPA 72 requirements. Provide notification devices at the following locations:

a. Inside grow cultivation room/areas.

4. Local alarm set points shall be set at 5000 PPM and result in a latching alarm that forces the following actions:

   a. Visual and audible notification in approved locations at room or area in alarm
   b. Activation of the automatic natural gas control valves to each burner to a closed position stopping the generation of carbon dioxide (CO_2)
   c. Evacuate the room in alarm and contact a qualified service company.
   d. Reset of emergency alarm to be conducted by qualified personnel.

5. Signage will be required adjacent to each horn/strobe as follows:
   a. *Entrance to below grade location:* "DO NOT ENTER WHEN LIGHT IS FLASHING – CARBON DIOXIDE LEAK DETECTED"
   b. Grow cultivation room/area dispensing: "FLASHING LIGHT MEANS CARBON DIOXIDE LEAK DETECTED – EVACUATE ROOM"
   c. The sign shall have a minimum 1-inch block lettering with a minimum $^1/_4$ -inch stroke. The sign
   d. shall be on a contrasting surface of black on yellow and shall be of durable construction.
   e. Signage at entrance doors: Signage shall be provided at entrance doors to each grow cultivation room/area:



   f. NFPA 704 placards for simple asphyxiants shall also be provided at the exterior main entrance.

6. All carbon dioxide (CO_2) burner systems shall shut down in the event of a loss of electrical power to the carbon dioxide (CO_2) detectors.
7. A minimum of one (1) portable carbon dioxide (CO_2) meter shall be in use during business hours.

5311.4.2 Carbon monoxide (CO) detection. Carbon monoxide (CO) gas detection shall be provided to monitor products of combustion continuously. Detectors shall be:

1. listed or approved devices
2. permanently mounted

3. Installed per manufacturer's recommendations and directions
4. directly connected to building electrical supply and fire alarm systems and protected from accidental disconnection or damage
5. CO detection shall be at set at 35 PPM and upon activation shall initiate the following:
    a. Close the automatic valve to each burner
    b. Activate the mechanical exhaust system
6. All carbon dioxide (CO_2) burner systems shall shut down in the event of a loss of electrical power to the carbon monoxide (CO) detectors.
7. A minimum of one (1) portable carbon monoxide (CO) meter shall be in use during business hours.

5311.5 Inspection and testing. All detectors, alarms and carbon dioxide (CO_2) burners must be visually inspected, calibrated, and tested to determine that the materials, design, fabrication and installation practices comply with the requirements of this code.

5311.5.1 Records. A written record of all required inspections, testing, calibration, and maintenance shall be maintained in a log book on the premises containing the three (3) most current years of records and be available for review by fire inspection personnel.

5311.5.2 Required inspections and testing. All detectors, alarms and carbon dioxide (CO_2) burner equipment shall be tested and inspected in accordance with Sections 5311.5.2.1 through 5311.5.2.6, as approved by the Fire Code Official.

5311.5.2.1 Acceptance testing. Appliances and equipment shall not be placed in operation until after the detectors, notification devices, automatic gas control valves and mechanical exhaust system have been tested by a qualified service company. Acceptance testing is required to be witnessed by Fire and/or Building Code Officials.

5311.5.2.2 Daily inspections. All detectors and alarms shall be visibly inspected daily. These inspections are permitted to be conducted by trained employees.

5311.5.2.3 Monthly inspections. All carbon dioxide (CO_2) burners and appurtenances shall be visibly inspected monthly. These inspections are permitted to be conducted by trained employees.

5311.5.2.4 Semi-annual inspections. Systems shall be visually inspected and gas detectors calibrated in accordance with manufacturer specification semi-annually by a qualified service company.

5311.5.2.5 Annual testing. All detectors, alarms, gas control valves and mechanical exhaust systems shall be tested annually by a qualified service company.

5311.5.2.6 Alterations and repair. In the event alterations, repairs or additions are made, the affected equipment shall be retested in accordance with Section 5311.5.2.1.

5311.5.3 Reserved

5311.5.4 Calibration. Detectors shall be checked for accuracy, calibrated to a reference gas concentration, and span reset.

5311.6 Training. All employees shall receive annual training in hazard identification, physical properties, inspections, and emergency procedures. Training records shall be maintained on site and be available to inspectors upon request.

4 Enforcement and Appeals

1. The Fire Chief shall enforce this code in accordance with the procedures set forth in this code and C.R.S 32-1-1002.
2. A Notice of Violation or Hazard may be issued by the Fire Chief or his designee concerning violations or hazards which are not corrected on-site during an inspection and an Order to Comply may be issued by the Fire Chief or his designee for:
    a. failure to correct a violation or hazard within the time specified in a previously issued a Notice of Violation or Hazard; or
    b. violating the code or state statute and said violation renders the building, structure, or premises especially liable to fire or is a hazard to the safety of the occupants thereof, or which is so situated as to endanger other property is set forth in CRS Section 32-1-1002 (3), whether or not a Notice has been previously issued.
3. An appeal of a Notice of Violation or Hazard may be made in accordance with the provisions of this code and resolution.
4. An appeal of an Order to Comply may be made in accordance with the provisions of this code and resolution only if no previous appeal has been made of a previously issued Notice of Violation or Hazard concerning the same a violation or hazard.
5. If no appeal is made pursuant to this code and resolution, or to the court pursuant to CRS Section 32-1-1002 (3), and compliance with in Order and or correction of a hazard has not occurred, the Fire Chief or his designee may instruct a Boulder County Sheriff's deputy to issue a summons or a citation for the Boulder County District Court.
6. An appeal shall suspend the time limits for compliance or correction of a fire hazard or hazards, until the appeal is resolved for appeals of a Notice of Violation or Hazard which is issued pursuant to Section 4, paragraph 2a herein. An appeal shall not suspend the time limit for compliance or correction of life safety deficiencies were violations. An appeal of an Order issued pursuant to section 4, paragraph 2b herein shall not suspend the time limits for compliance or correction, and compliance or correction shall be made or render forth with unless the Order is suspended pursuant to the procedures set forth in this code and resolution.

Approved November 27, 2017 by the Board of Directors of the Boulder Rural Fire Protection District.

Director

Director

Director

Director

Director