



Boulder Police Department

Marijuana Business Inspection Report (updated Sept 2021)

City of Boulder municipal codes are located on the city’s website at www.bouldercolorado.gov under “Boulder Revised Code”. The below items are listed for convenience, but do not include all the potentially relevant municipal codes.

Name of Business Inspected (LLC name and Trade Name name if different)		
Address of Physical Location/s Inspected		
City License Number/s		
Date and Time of Inspection		
Title and Name of Inspector		
Type of Inspection (New License, Renewal, Random)		
Name of Owner/Manager on Site During Inspection		
Email Address and Phone Number of Owner/Manager on Site During Inspection		
Item to be Inspected/Considered	Municipal Code	Comments/Description of Item Comments written in red are related to the specific business and should be reviewed by the business.
Display of Licenses Required The name and contact information for the owner or owners and any keyholder of the marijuana business, the business license, and the sales tax license shall be conspicuously posted in the business.	<i>6-14-8(c)</i> <i>Medical</i> <i>6-16-8(c)</i> <i>Recreational</i>	It is recommended that a plain floor plan be posted at all entry/egress points for first responders who must respond to the business after hours for an emergency. Floor plans should be marked in red with “You are Here” at each location it is posted. Floor plans and emergency contacts

		may be covered with a sheet of paper to prevent public view.
<p>Fixed Location Required It shall be unlawful to operate a marijuana business or grow marijuana outside of a locked and enclosed space within a building.</p>	<p>6-14-7(a) 6-16-7(a)</p>	All marijuana businesses within the city limits must conduct business within the walls of their licensed premise. No outside areas of a marijuana business are licensed by the city.
<p>Modification of Premises Prior to making a modification of a marijuana business that would require a building permit or change items in the operating plan, security plan, or ventilation plan, the licensee shall submit to the city and have approved, when necessary, a complete application for modification of premises in the form provided by the city.</p>	<p>6-14-5(a)(15) 6-16-5(a)(16)</p>	<p>City Licensing should be consulted before making changes to the business if you are unsure whether the changes qualify for a modification application.</p> <p>Changes to the business that require a modification application include items such as changes to the operating plan, structural changes, principal uses of the floor area, changes to the neighborhood responsibility plan, etc....</p>
<p>Onsite Use Prohibited No marijuana shall be smoked, eaten, or otherwise consumed or ingested within the marijuana business.</p> <p>Consumption in Public Prohibited No person shall consume any marijuana in public. For purposes of this section, <i>in public</i> means: In or upon any public way or public right-of-way, whether in a vehicle or not; on any property or in any building that is owned, leased, used by, or open to the public or; in or upon those portions of any private property upon which the public has an express or implied license to enter or remain.</p>	<p>6-14-8(a) 6-16-8(a) 5-10-2</p>	Advise your customers and employees to leave the store and parking lot before using their purchase. It is illegal to use marijuana inside of a private vehicle when it is on a public roadway or in a public parking lot.
<p>Restriction on Access to Restricted Area - Medical No person other than a patient, licensee, employee, or a contractor, shall be in the restricted area. No patient shall be allowed entry into the restricted area without showing a valid picture ID and evidence that the person is a patient.</p> <p>Restriction on Access to Business – Recreational No person under twenty-one years of age shall be in the business premises. No person shall be allowed entry into the business premises without valid picture identification. An electric scanner must be used to</p>	<p>6-14-8(b) 6-16-8(b)</p>	The city defines “Restricted Area” in 6-16-2 as: <i>Restricted area</i> means the portion of a recreational marijuana business premises within which the licensee defines on its application it intends to cultivate, distribute, possess, or produce recreational marijuana and which area is clearly identified as the restricted area on the floor plan submitted with the recreational marijuana business license application for the business.

check ID unless the ID cannot be scanned such as a passport. Confiscated fraudulent IDs must be dropped off or mailed to the police department.		
Failure to Confiscate Fraudulent Proof of Age It shall be unlawful for any person to fail to confiscate fraudulent proof of age. It shall be an affirmative defense if the person reasonably believed that attempts to confiscate a fraudulent proof of age would cause a threat to any person or disruption to the business.	<i>6-14-13(a)(38)</i> <i>6-16-13(a)(42)</i>	Mail confiscated IDs to: Cannabis Enforcement Officer Boulder Police Department 1805 33 rd Street Boulder, CO. 80301
Business Conducted within Building Any and all cultivation, production, distribution, possession, storage, display, sales, or other distribution shall occur only within the restricted area and shall not be visible from the exterior of the building.	<i>6-14-8(d)</i> <i>6-16-8(d)</i>	Exterior windows where marijuana is located or processed must be covered or obscured so that marijuana cannot be seen from the outside.
Owner or Business Key holder Required on Premises No recreational marijuana business shall be managed by any person other than the licensee or the keyholder listed on the application for the license or a renewal thereof. Such licensee or keyholder shall be on the premises and responsible for all activities within the licensed business during all times when the business is open or in the possession of another person.	<i>6-14-8(e)</i> <i>6-16-8(e)</i>	The term “key holder” is a city term and the term “key badge holder” is a state term. The two terms have different meanings. The city defines “key holder” in <i>6-16-2</i> as: Keyholder means the individual designated by the owner of the business as the person responsible for all operations of the business in the absence of the owner from the business premises. Keyholder shall include any person with managerial authority in the business, and any person that has access to lock or unlock the safe, to lock or unlock the business, or set or disarm the alarm.
Hours of Operation A marijuana business shall be closed to the public, and no sale or other distribution of marijuana shall occur upon the premises or via delivery from the premises, between the hours of 10 p.m. and 8 a.m. Provided however, in the event that a planned delivery of marijuana cannot be completed on the day scheduled, the marijuana may be returned to the center.	<i>6-14-8(f)</i> <i>6-16-8(f)</i>	
Limitations on Inventory – Medical	<i>6-14-8(j)</i>	Sections <i>6-14-8(w)</i> and <i>6-16-8(z)</i> allow the sale of immature plants at medical and recreational stores.

<p>Shall not maintain any more marijuana within the premises than is permitted under applicable law for the patients which have designated the business as primary caregiver. The business shall not maintain any more marijuana than the amount stated on the business' license application to the state. No plants shall be located in a medical marijuana center or a medical marijuana-infused product manufacturer. The medical marijuana business shall maintain current records evidencing the status as patients of those who have designated the business as the patient's primary caregiver.</p> <p>Limitations on Inventory – Recreational Shall not maintain any more marijuana within the premises than the amount stated on the business' license application to the State of Colorado and city. No plants shall be located in a recreational marijuana center or a marijuana-infused product manufacturer or a marijuana testing facility.</p>	<p>6-16-8(j)</p>	<p>However, a marijuana store may not sell immature plants, unless (a) no more than six (6) immature plants are sold to any one customer, and (b) the immature plants are not transferred from the marijuana cultivation facility to the store until the day the customer is to pick up the immature plants and no immature plants are maintained at the store overnight. The business may require a deposit with any pre-orders.</p>
<p>Delivery to Patients - Medical Medical marijuana shall be packaged, sealed, and labeled, to include patient name. Deliverer shall have patient documentation according to municipal code. Maximum 8 oz for delivery in one trip. Can only deliver between 8am and 10pm.</p> <p>Delivery to Customers - Recreational No sales except directly to user; no deliveries. Except for sales to another licensed marijuana business, all sales of recreational marijuana shall be made in person in the restricted area of a recreational business. No sales shall be made via telephone, internet, or other means of remote purchase.</p>	<p>6-14-8(l) 6-16-8(l)</p>	<p>Recreational marijuana delivery is not allowed in the City of Boulder.</p>
<p>Delivery Between Marijuana Businesses All marijuana and marijuana-infused products are packaged, sealed, and labeled, and the products stored in a closed container. For each delivery, the METRC manifest must be submitted by email to marijuanamanifest@bouldercolorado.gov. The business will receive a “bounce back” email receipt from the Boulder Police Department acknowledging the shipment.</p>	<p>6-14-8(m) 6-16-8(m)</p>	<p>Please write the business trade name and not the LLC name in the subject line of the email being sent to marijuanamanifest@bouldercolorado.gov. This is necessary for searching emails efficiently. If the delivery driver is contacted by Boulder Police about the delivery, then the driver should present the “bounce back” email to the police officer.</p>

<p>Disposal of Marijuana and Marijuana Byproducts All marijuana and any product containing a usable form of marijuana must be made unusable and unrecognizable prior to removal from the business.</p>	<p><i>6-14-8(n)</i> <i>6-16-8(n)</i></p>	<p>There should be no identifiable leaf or flower in waste that is taken outside of the business. Damaged dumpster lids and cut locks can be avoided by leaving the dumpster unlocked when there is no marijuana waste inside of it. If possible, keep marijuana waste inside of the business until trash day. After the marijuana waste is picked up from the dumpster then remove the lock. Cameras angled to cover a larger area around the dumpster are helpful to gather license plate numbers or suspect descriptions.</p> <p>If your dumpster is broken into, check cameras to see if there is a description of a vehicle or person. If there is suspect information, then you can file a police report by calling non-emergency dispatch at 303-441-3333 (#8). If there is no suspect information, then you can file a police report online at www.bouldercolorado.gov.</p>
<p>Records to be Maintained Each licensee shall keep a complete set of books of account, invoices, copies of orders and sales, shipping instructions, bills of lading, weigh bills, correspondence, bank statements and all other records necessary to show transactions. The city may require any licensee to furnish such information as it considers necessary for the proper administration of this chapter.</p>	<p><i>6-14-9(a)</i> <i>6-16-9(a)</i></p>	
<p>Disclosure of Records By accepting the marijuana business license, the licensee is providing consent to disclose the information required by this chapter, including information about patients and caregivers. Any document that the applicant considers eligible for protection under the Colorado Open Records Act shall be clearly marked as confidential, and the reasons for such confidentiality shall be stated on the document.</p>	<p><i>6-14-9(c)</i> <i>6-16-9(c)</i></p>	

<p>Consent to Inspection of Records Acceptance of the business license constitutes consent by the licensee, owners, managers, and employees to permit the city manager or the designated representative to conduct routine inspections of the licensed business to ensure compliance with this chapter or any other applicable law, rule, or regulation. Application for a marijuana business license constitutes consent to inspection of the business as a public premise without a search warrant, and consent to seizure of any surveillance records, camera recordings, reports, or other materials required as a condition of a marijuana business license without a search warrant.</p>	<p><i>6-14-9(e)</i> <i>6-16-9(e)</i></p>	<p>During inspections, city employees should have their official credentials readily available if requested by the business. Official credentials include items such as the employee’s city badge, clothing with city emblems, vehicles with city emblems and business cards. Official credentials do not include personal identification such as a driver’s license.</p> <p>Inspectors may request to view METRC and cameras during inspections. Please have employees available during inspections who know how to retrieve these types of records.</p>
<p>Reporting of Source, Quantity and Sales Records maintained include source and quantity of marijuana distributed, produced, or possessed.</p>	<p><i>6-14-9(f)</i> <i>6-16-9(f)</i></p>	<p>Employee samples must be part of the records maintained by the business. No product can be given away for free by a marijuana business except for bottled water.</p>
<p>Cameras The marijuana business shall install and use security cameras to monitor and record all areas of the premises (except in restrooms), and where persons may gain or attempt to gain access to marijuana or cash maintained by the business. Cameras shall record all potential areas of ingress or egress to the business with sufficient detail to identify facial features and clothing. Recordings shall be maintained for a minimum of 40 days in a secure off-site location in the City of Boulder or in a Cloud based data storage format.</p>	<p><i>6-14-10(a)</i> <i>6-16-10(a)</i></p>	<p>Please be sure cameras show the inside of safes when the safe door is only partially open. This can be accomplished by placing a camera directly over the safe door pointing downward, or at an angle across the room. It is important to be able to see on camera what a person is doing inside a safe when they are removing items from the safe. Be sure the safe door cannot be used by the person to block the view of the camera.</p>
<p>Use of Safe for Storage The marijuana business shall install and use a safe for storage of any processed marijuana and cash on the premises when the business is closed to the public. The safe shall be incorporated into the building structure or securely attached thereto. For marijuana-infused products or marijuana being tested in a testing facility that must be kept refrigerated or frozen, the business may lock the refrigerated container or freezer in a manner authorized by the city in place of use of a safe, so long as the container is affixed to the building structure.</p>	<p><i>6-14-10(b)</i> <i>6-16-10(b)</i></p>	<p>The city considers “processed product” to be product that is weighed, packaged, and labeled. It is important to secure processed product and cash in safes overnight because it prevents financial loss to the business from a burglary and the product from being distributed illegally in the community. Difficult access to product and cash deters burglaries.</p> <p>At inspection, an inspector may ask you to open any safes, so please have the combination ready.</p>

		Only product required to be kept cold is allowed by the city to be stored in refrigerators or freezers. The city must pre-approve the use of anything other than safes or refrigerators and freezers.
Alarm System The marijuana business shall install and use an alarm system that is monitored by a company that is staffed twenty-four hours a day, seven days a week. If the alarm system includes a panic alarm, an operable dedicated phone for law enforcement to respond to the alarm shall remain on the premises at all times.	6-14-10(c) 6-16-10(c)	At license renewal time, an inspector may contact the alarm company to make sure the business still has alarm coverage. Please make sure emergency contacts remain current with the alarm company so first responders can contact a responsible person if there is an emergency in the middle of the night.
Reporting Requirements Reports of all criminal activities or attempts of violation of any law at the marijuana business or related thereto shall be reported to the Boulder Police Department within twelve hours of occurrence.	6-14-8(k)(6) 6-16-8(k)(6)	Police reports can be made to the Boulder Police Department by calling non-emergency dispatch at 303-441-3333 press #8.
Requirements for Public Health and Labeling All recreational marijuana sold or otherwise distributed by the licensee shall be packaged and labeled in a manner that is in compliance with all applicable requirements of the State of Colorado and any other applicable law. The product shall be packaged in a sealed container that cannot be opened without obvious damage to the packaging.	6-14-11 6-16-11	
Prohibited Acts	6-14-13(a)(1-40) 6-16-13(a)(1-44)	Prohibited acts are violations that can be written to individuals and/or against the business license.

This report is the determination of this department of the City of Boulder and does not reflect a determination of any other department of the City Marijuana Licensing Authority. This report will be provided to the Marijuana Licensing Authority. Any violations identified in this report may result in the filing of criminal charges and may also result in the suspension, revocation, non-renewal, or denial of the City of Boulder Marijuana Business License for this business.



Marijuana Business License Inspection Checklist

Address: _____

Owner/Agent: _____

Dispensary

Grow Facility

M.I.P. Facility

Inspected by: _____ **Date:** _____

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Facility is in compliance and approved for licensure. Signature: _____

Building Guidelines

- 1. All work required to be completed with approved permits. Plans and permits are required per the International Building Code (IBC) Section 105 and 106. Contact the Planning & Development Services Center at 1739 Broadway, third floor, (303-441-1880) for specific information on permit applications and requirements.
- 2. Provide address numbers and/or unit number
- 3. Provide registered design professional seal and signature where required by permit.
- 4. Unsafe structures and equipment shall be removed or made safe per IBC Section 116
- 5. Grow and marijuana infused product processing (MIPs) facilities are to meet IBC, Chapter 3 requirements based on Use and Occupancy Classification for a Factory Industrial, F-1, Moderate-hazard Occupancy per IBC 306.2 and applicable Types of Construction based on IBC Chapter 6
- 6. Dispensaries are to meet IBC Chapter 3 requirements based on Use and Occupancy Classification for a Mercantile Occupancy M (IBC 309.1), Business Occupancy B (304.1) and applicable Types of Construction based on IBC Chapter 6
- 7. Guards (railings) are required on open sided walking surfaces including stairways, walkways, equipment platforms, mezzanines, ramps, and landings with 30" or more drop off to floors and grade below per IBC 1013.2.



8. Handrails are required on each side of stairways per IBC 1009.15 and will meet design requirements of IBC 1012 and 2047 where applicable.

9. Applicable Means of Egress requirements based on IBC Chapter 10

Door operations, IBC 1008.1.9. Except as specifically permitted by this section egress doors shall be readily operable from egress side without use of a key or special knowledge or effort

Hardware, IBC 1008.1.9.1. Door handles, pulls, latches, locks, and other operating devices shall not require tight pinching, grasping, or twisting of the wrist to operate.

Locks and Latches, IBC 1008.1.9.3 (similar). In buildings in occupancy Group B, F, M the main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided:

- The locking device is readily distinguishable as locked.
- A readily visible durable sign is posted on the egress side on or adjacent to the door stating: THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED
- The sign shall be in letters 1 inch (25mm) high on a contrasting background
- Keyed and Full-throw deadbolts shall indicate green for “open” and red for “closed”

Doors shall require only one operation to open the lock, latch or both. There are three general types of door hardware that meet this requirement:

- Panic bar hardware
- Mortise locksets (this hardware has a lever knob that releases the latch and the deadbolt in one motion)
- Full-throw (ADA accessible) type deadbolts or keyed deadbolts are allowed at the main exterior door (see locks and latches above for requirements)

NOTE:

- All new door hardware shall be accessible per IBC Chapter 11
- Use commercial grade II door hardware at main door and security room door per State of Colorado requirements
- Existing doors other than the main entrance door that currently require more than one motion to open will need to be changed to door hardware that allows only one operation to open the door
- The occupant load factor (O.L.F.) for dispensaries is 30 sq. ft. per person. The O.L.F. for grow and business areas is 100 sq. ft. per person
- Spaces with one means of egress, IBC 1015.1. Two exits are required with an occupant load of 50 and 75' common path travel distance. (100' if sprinklered)

10. Class “A” flame spread rating for interior finishes per IBC section 803 or covered with a thermal barrier (1/2 in Gypsum Wallboard) per IBC 2603.4. The following products must be rated or covered with an approved thermal barrier

- Plastic film
- Foam plastic insulation
- Paper facing on fiberglass insulation



- 11. Applicable glass and glazing requirements based on IBC 2406.3, #6 (within 24” of a door, tempered glazing or approved film will meet this requirement)
- 12. Storage lofts shall be constructed with permits and designed to a 100 psf floor live load
- 13. Walls sealed between units to avoid odors migrating into adjacent spaces per B.R.C. 1981, 6-14-8 (h)

Mechanical Guidelines

1. A ventilation system will be required to filter the odor from a business so that it cannot be detected at the exterior of the business or at any adjoining property as detailed in B.R.C. 1981, 6-14-8 (h). The ventilation system for a marijuana business requires, at a minimum:

- 2. Exhaust systems that house sources of contaminants are to be designed and constructed so as to prevent spreading of contaminants or odors to other occupied parts of the building per the International Mechanical Code (IMC) 401.6 and 501.2
- 3. The required outdoor ventilation air per IMC Table 403.3: for grow facilities use 10 persons per 1000 sq. ft. at a ventilation rate of 60 cfm/person, (similar to smoking lounge requirements): for dispensaries and M.I.P.s use 10 persons per 1000 sq. ft. and 15 cfm per person (similar to a florist)
- 4. Contaminated air shall not be re-circulated per IMC 510.4
- 5. The inlet for the exhaust system shall be located in the area(s) of highest contaminant concentration, B.R.C. 1981, 6-14-8 (h) and IMC 502.1.1
- 6. Flexible duct shall not exceed 14’ in length per B.R.C. 1981, 10-9-2 (e)
- 7. For dispensaries, grow facilities, and MIPs: Exhaust outlets must be 10 feet from mechanical air intakes, 3 feet from property lines and operable openings into a building per IMC 501.3.1 (1)
- 8. Exhaust from the space must be filtered with a listed and labeled filter designed to remove odors from the exhaust stream according to BRC 1981, 6-14-8(h) and 6-16-8(h). Filters must be correctly sized according to cubic feet of space.
- 9. Fuel fired appliances shall not be located in storage areas per IMC 303.3
- 10. Provide access to equipment and appliances on roofs or elevated structures per IMC 306.5
- 11. Condensate disposal for air conditioning units required per IMC 307

Electrical Guidelines

All electrical systems and permitting are required to be done by licensed electricians and contractors, “Electrical Contractor Registration,” B.R.C. 4-8-1. In addition:



1. A single line diagram of the existing and proposed electrical system, including the main electrical service National Electric Code (NEC) 215.5, shall be provided to the city. Electrical services which are 400amps or greater must be sealed by a Colorado Design Professional.

2. All electrical equipment is to be listed and labeled by an approved testing agency, NEC 110.3

3. Flexible cords (extension cords) are not to be used as a substitute for fixed wiring nor run through or concealed by holes in walls, structural ceilings, suspended ceilings, dropped ceilings or floors; run through doorways, windows or similar openings; attached to building surfaces, NEC 400.8

4. Approved wiring methods utilized in grow facilities in accordance with NEC Chapter 3

5. NM cable (romex) is not allowed for use in damp locations (grow rooms) per NEC 334.10

6. Prior to stocking of any marijuana products all building components and electrical equipment shall be completed, inspected and approved per IBC 109

Additional Requirements for Grow Facilities:

1. Carbon dioxide generation systems must be listed and labeled, properly installed and functioning with a concentration level of no more than 1500 ppm per IMC 301.4

2. Provide cable or chain to restrain CO2 tanks per the fire code

3. Backflow prevention on hose bibs and faucets required per IPC 608.1



Additional Requirements for Marijuana Infused Products (MIP's)

1. An industrial hygienist and/or State licensed design professional shall provide detailed plans and specifications on the process for extracting cannabinoids from marijuana plant products with flammable solvents, gasses and solids per IBC 307, IMC 510 and NEC chapter 5. Additionally, sanitation shall be maintained through design and implementation of the guidelines detailed below.
- Concentrations of flammable liquids and gasses in excess of 25 % of the lower flammability level of the products will require a system designed in compliance with IMC section 510 to mitigate the potential for explosion or fire (see also IBC section 307 and IFC chapters 34 – 37)
 - Concentrations of grease, smoke, heat, steam or products of combustion created when marijuana products are processed into foods, beverages, salves, inhalants and tinctures are to be contained as detailed in the IMC sections 506 and 507 (Type I and Type II hoods)
 - Sanitation requirements for facilities used for processing marijuana into foods, beverages, salves, inhalants and tinctures shall meet the following guidelines that are to be detailed on the drawings submitted for review.
 - Location of hand wash sinks;
 - How dishes will be washed. IPC section 802.1 requires all food handling and health care related fixtures, devices, and equipment to discharge through indirect waste lines into a floor sink;
 - Contact surfaces shall be smooth, free of breaks, open seams, cracks, chips, pits and similar imperfections, free from sharp internal angles, corners, crevices, finishes to have smooth welds and joints;
 - Equipment containing bearings and gears shall be designed, constructed and maintained to ensure that it meets food and health requirements (washing machines are not listed for food or health related preparations);
 - All rooms shall have sufficient ventilation to keep them free from excessive heat, steam, condensation, vapors, odors, smoke and fumes per IMC chapters 4 and 5;
 - Table or counter mounted equipment shall be installed to facilitate the cleaning of the equipment and adjacent areas by being sealed to the surface or elevated by at least four inches;
 - Three compartment sinks are required for washing, rinsing, and sanitizing equipment and utensils;
 - Hand sinks must be conveniently located for employees;
 - Hand sinks shall only be used for hand washing (maximum water temperature of 110 degrees is to be maintained through an appropriate mixing valve);
 - Sinks used for food or medicine preparation or for washing equipment shall not be used for hand washing;
 - At least one utility or mop sink must be provided;
 - Garbage and refuse shall be stored in a manner to be inaccessible to insects and rodents;
 - Floors shall be smooth, durable, nonabsorbent, light colored and maintained in good repair;
 - The junction between the floor and wall shall be closed and sealed; and
 - Walls and ceilings must be smooth and easily cleanable



2. Infused product extraction and hazard containment equipment must be listed, labeled and installed per NEC 110.3 and IMC 301.4

Other Code Related Items

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

Please call Jon Bergelin, 303-441-3173 to schedule a re-inspection when all items are in compliance.

Other specific requirements are on the city webpage: <https://bouldercolorado.gov/finance/marijuana-businesses>

For specific code section references please email Jon Bergelin: bergelinj@bouldercolorado.gov



Boulder Fire Department
3065 Center Green Drive, Boulder, CO 80301-2505
(303) 441-4401

2018 International Fire Code Inspection Checklist

This inspection checklist focuses on the 2018/ International Fire Code during a general inspection. There may be other issues that arise during the inspection that are not on this list and will be documented as a violation per the fire code. This check list has been divided into the chapters referenced and they are labeled in green. The specific code for each chapter has been shown in red. The general purpose for the code is shown in blue.

Chapter 1 – Scope and Administration

Section 102 -Applicability

- 102.4 Application of the International Building Code
 - Meaning: Remodeling construction projects require a building permit and a final inspection which assists with the compliance of the International Building Code to ensure a safe building.
 - Purpose: A structure fire within a building presents many dangers for a firefighter. Firefighter safety begins with the building being built and maintained to the building code.

Section 110-Unsafe Buildings

- 111.1 Unsafe Conditions
 - Meaning: The fire code official is required to report unsafe buildings to the building official to secure abatement of unsafe conditions.
 - Purpose: A structure fire within a building presents many dangers for a firefighter. Firefighter safety begins with the building being built and maintained to the building code.

Chapter 3 – General Requirements

Section 304- Combustible Waste Material

- D 304.1 Waste Accumulation Prohibited
 - Meaning: Combustible waste of any sort that may cause a fire hazard shall not be allowed to accumulate within any building or the property it was built on.
 - Purpose: Accumulated waste, trash, construction debris and other natural debris can become a serious fire hazard and spread flame throughout the structure quickly.

Section 305 -Ignition Sources

- D 305.1 Clearance from Ignition Sources
 - Meaning: Clearance between any possible ignition source and combustible materials shall be maintained at a safe distance.
 - Purpose: Establishing safe clearances will minimize the chances of an accidental fire starting and expanding into a larger fire by igniting other combustibles.

Section 312 – Vehicle Impact Protection

○ 312.1 General Vehicle Impact Protection

Meaning: The main natural gas valve located on the outside of the building shall have vehicle impact protection installed. This can be accomplished by providing guard posts or approved physical barriers. The specifications for the guard posts are as follows:

1. Made of steel not less than 4 inches in diameter and filled with concrete
2. Spaced no more than 4 feet between posts on center
3. Set not less than 3 feet deep in a concrete footing of not less than 15 inches in diameter
4. Set with the top of the posts not less than 3 feet above the ground
5. Located not less than 3 feet from the projected object

Purpose: Protection of the gas meter or any other piece of equipment that contains fuel or is fuel fired, is vital so that vehicles do not strike the meter and cause a gas leak. Gas leaking from a meter can easily find an ignition source and cause an explosion.

Section 313 – Fueled Equipment

○ 313.1 General Fueled Equipment

Meaning: Any type of fueled equipment, including but not limited to motorcycles, mopeds, lawn-care equipment and portable cooking equipment shall not be stored, operated or repaired within the building.

Purpose: Obviously when there is a presence of fuels such as gasoline, oil or propane stored within the building, an extreme fire hazard comes into play. If the vapors from such fuels find ignition sources such as a gas flame from boilers or heaters, sparks from electrical components, or something as simple as static electricity, ignition may begin causing quick flame spread.

Section 315- General Storage

○ 315.3 Storage In Buildings

Meaning: Combustible storage (may also be viewed as trash or debris) within the building shall be done in a neat and orderly manner. This storage shall also to be kept away from heaters or heating devices by either distance or shielding so ignition cannot occur. Combustible storage shall not be allowed in exits ways or exit enclosures.

Purpose: In order to keep the building from having quick flame spread, combustible storage has to be policed at all times and not allowed to get out of hand. Miscellaneous combustibles will produce quick amounts of smoke and flame wherever it is present.

○ 315.3.1 Ceiling Clearance In Non-Sprinkled Building

Meaning: If the building you are occupying is not equipped with an automatic fire sprinkler system, the clearance between the storage piles and the ceiling shall be at least 2 feet.

Purpose: The 2 foot clearance allows for firefighters to apply water effectively on top of a burning storage pile as well as to project over and beyond adjacent piles to reach burning materials.

○ 315.3.1 Ceiling Clearance In a Sprinkled Building

Meaning: If the building you are occupying has an automatic fire sprinkler system, there shall be a minimum of 18 inches in clearance from storage which would allow timely activation of the fire sprinklers and allows unobstructed water distribution over the storage piles.

Purpose: In order for the sprinkler head to activate and disperse the water as designed, this minimum amount of clearance is needed in order to do so.

○ 315.3.2 Means of Egress

Meaning: Combustible materials shall not be stored at any time in hallways, stairways or in front of exit doors.

Purpose: This is in place so that all occupants can easily vacate the building during the time of an emergency. Improper storage of combustibles in these areas can cause trip hazards and may even ignite cutting off egress ways completely

- 315.3.3 Equipment Rooms
 - Meaning: Combustible material shall not be allowed to be stored within boiler rooms, mechanical rooms or electrical equipment rooms.
 - Purpose: This is in place so that firefighters can easily reach the controls of the said equipment. It also serves the purpose of keeping combustibles away from any type of open flames or electrical spark(s) that are associated with the said equipment.

Chapter 5 – Fire Service Features

Section 503 – Fire Apparatus Access Roads

- 503.4 Obstruction of Fire Apparatus Access Roads
 - Meaning: Fire apparatus access roads shall not be obstructed which includes the parking of vehicles. Minimum widths and clearances shall be maintained at all times.
 - Purpose: Fire engines are very large and getting close to a building to perform fire tactics becomes very difficult if access roads or alleys become obstructed in any manner. Damage to illegally parked vehicles in fire access roads can occur during fire operations.

Section 505 – Premises Identification

- 505.1 Address Identification
 - Meaning: Address numbers shall be placed on the building that is plainly visible from the street fronting the property. These numbers shall be a minimum of 4 inches high with a minimum stroke width of inch.
 - Purpose: Building must be easily identified by the fire engine companies responding for an emergency.

Section 506-Key Boxes

- 506.2 Key Box Maintenance
 - Meaning: The Knox Box is a security system used for securing keys to the building. If a building has a Knox Box, the keys that have been put into the box shall be updated to the locks that are currently in use. This can only be done by fire department personnel only.
 - Purpose: The Knox Box is used by the fire department only to gain access into a building when it is vacant and or not occupied at the time of an emergency. This assists in the elimination of damage to the building if for some reason the fire department needs to make forcible entry.

Section 507 – Fire Protection Water Supplies

- 507.5.4 Obstructions
 - Meaning: There shall be no storage in the closet where the valve is located or around the automatic fire sprinkler valve itself. This is to include the fire department connection (FDC) located on the outside of the building.
 - Purpose: Firefighters need quick access to these valves in order to shut off the water if a sprinkler head has been activated, this will cause less water damage.
- 507.5.5 Clear Space around Fire Hydrants
 - Meaning: The fire hydrant shall not have any obstructions to include but not limited to bushes, fences, vehicles, growth, landscaping, etc. around it at a minimum of a 3 foot radius. Firefighters need to recognize this device immediately.
 - Purpose: A fire hydrant is the water source used by the fire department to extinguish fires. In order to utilize this appliance, a wrench is applied to it to remove the caps so that large diameter hose can be connected to it. The same wrench is used on the very top of the hydrant and is turned 360 degrees in order to open the valve and have water flow through the hose. Any obstructions would interrupt this operation that needs to be done quickly.

Section 509 – Fire Protection and Utility Equipment Identification

- D** 509.1 Identification of Fire Protection
Meaning: A sign shall be posted on the door leading into the automatic fire sprinkler control valve. This sign shall have a red background with white lettering, be plainly visible and legible stating FIRE SPRINKLER CONTROL VALVE.
Purpose: Firefighters need quick access to these valves in order to shut off the water and a sign will give assistance in locating the valve.
- D** 509.1.1 Utility Identification
Meaning: A sign shall be posted on the door leading into rooms containing utility equipment such as boiler rooms, HVAC systems, electrical panels and other utility shut-offs. This sign shall be plainly visible and legible identifying the equipment.
Purpose: Firefighters need quick access to these areas in order to shut off the specific utilities and a sign will give assistance in locating these utilities.

Chapter 6 – Building Services and Systems

International Fuel Gas Code – Main Gas Valve

- D** 409.1.3 Valve Is Accessible
Meaning: The main natural gas valve located on the outside of the building shall be accessible at all times for any required operation or maintenance duties. There should be no storage of any type blocking access to or hiding the gas valve itself.
Purpose: If a gas leak of any sort, whether it's located inside of the building or outside, firefighters need to visualize the gas meter and have quick and immediate access to this valve in order to shut down the gas source.

Section 603 – Fuel-Fired Appliances

- D** 603.4 Portable Unvented Heaters
Meaning: This refers to portable space heaters, such as kerosene-fuel fired appliances or gas-fired appliances that connect to gas convenience outlets with gas hose connectors. This type of appliance shall not be allowed to be used within the building. This does not apply to permanently installed appliances.
Purpose: Portable space-heaters can be moved around at will and may be placed too close to combustibles or may be susceptible of being hit, tipped over, etc. causing quick fire spread. These appliances are considered an unacceptable risk

Section 605 – Electrical Equipment, Wiring Hazards

- D** 604.1 Abatement of Electrical Hazards
Meaning: All electrical wiring, devices, appliances or other equipment shall be in good working condition as designed. If at any time there have been modifications or damage to these electrical components, repairs or replacement per the electrical code will be required.
Purpose: The leading causes of electrical fires include inadequate or improper maintenance; nonconforming modifications to existing installations; failure to maintain clearances around electrical equipment and improper use of electrical equipment.
- D** 604.3 Working Space and Clearance
Meaning: The electrical service equipment to the building and including the electrical panel boxes, need to be accessible at all times for any required operation or maintenance duties. There should be no storage of any type blocking access to or hiding the electrical service equipment itself.
Purpose: In the case of an emergency, firefighters need to visualize the electrical service equipment and have quick and immediate access to it in order to shut down electrical power.

- 604.3.1 Labeling
 - Meaning: Doors leading into the electrical service equipment room shall be labeled with a sign. This sign shall be plainly visible and legible stating ELECTRICAL ROOM.
 - Purpose: This assists firefighters in identifying and then shutting down the electrical service controls during a fire or other emergency.
- 604.4 Multiplug Adapters
 - Meaning: Multi-plug adapters, such as cube adapters, unfused plug strips or any other electrical device not complying with the electrical code shall not allowed to be used.
 - Purpose: When multi-plug adapters that have no over-current protection are used for several appliances, the conductor may produce enough heat to ignite nearby combustibles in the time it takes to trip the circuit breaker for the outlet being used.
- 604.4.1 Power Tap Design
 - Meaning: Power strips or surge protectors shall be of the polarized or grounded type, equipped with over-current protection and shall be UL tested.
 - Purpose: These devices are intended only for indoor temporary use for supplying power to general items such as home workshop tools, computers, audio and video equipment, etc.
- 604.4.2 Power Supply
 - Meaning: Power strips or surge protectors shall be directly connected to a permanently installed electrical outlet.
 - Purpose: Power strips or surge protectors have to be plugged directly into a wall outlet and not into another power strip, surge protector or extension cord. This would defeat the purpose of having current protection in these devices if the other elements are subjected to damage.
- 604.4.3 Installation
 - Meaning: Power strips or surge protectors shall not extend through walls, ceilings, floors, or under doors or floor coverings, or be subjected to environmental or physical damage.
 - Purpose: This would prohibit power strips or surge protectors to be plugged into a wall in one room to supply power to a device in another room and possibly causing physical damage to wiring.
- 604.5 Extension Cords
 - Meaning: Extension cords and flexible cords shall not be a substitute for permanent wiring. These cords should not be attached to buildings, extended through walls, ceilings or floors, or be subjected to both environmental and physical damage.
 - Purpose: Frequent or improper use of extension cords in place of permanent wiring is an indication of inadequate electrical service capacity or incompatible demands. Physical damage to the extension cords may result in localized resistance heating which may produce enough heat to ignite nearby combustibles.
- 604.6 Unapproved Conditions
 - Meaning: Open junction boxes and open-wiring splices shall not be allowed. Approved covers (wall plates, blank plates, junction lids) shall be provided so that wire exposure has been covered.
 - Purpose: Without covers, connections made in junction boxes may be subjected to physical damage. This damage may loosen electrical connections, resulting in high-resistance arcing. Accumulation of dirt and debris in open electrical boxes creates an ignitable fuel concentration.

Chapter 7 – Fire Resistance Rated Construction

Section 703 – Fire Resistance Rated Construction

- D 703.1 Maintenance
- Meaning: Walls, ceilings, fire stops, shaft partitions and floors have all been designed and built with fire-resistance-rated construction. Damage to these areas such as but not limited to holes, cracking and separations, etc. shall be repaired immediately. The repairs shall be done per code.
- Purpose: If a fire were to occur within the building, it will travel in areas with least resistance. A hole in a wall or ceiling gives the fire the opportunity to travel within the hole and then behind the wall or above the ceiling. Now the fire has become very difficult for the firefighters to find which obviously allows the fire to spread quickly. If an automatic fire sprinkler system is in place, activation may not occur because of the hidden fire.
- D 705.1 Opening Protective's
- Meaning: Fire doors leading to hallways, stairways, mechanical rooms or boiler rooms shall not be propped open with door wedges, door fold downs or other items. Fire doors and smoke barrier doors shall not be blocked or obstructed or otherwise made inoperable.
- Purpose: If a fire was to happen in any one of these locations, these doors being closed would assist with confining that fire to that area only. If the doors were propped open, the fire would be allowed to spread a lot quicker possibly causing other concerning issues such as: impeded evacuation of the building, sprinkler system not containing the fire, difficult fire suppression and rescue efforts.

Chapter 9 – Fire Protection Systems

Section 901 - General

- D 901.4 Installation
- Meaning: All areas within the building shall be protected by the automatic fire sprinkler system. This is to include any storage closets, attics, crawlspaces or new additions.
- Purpose: New additions or remodel work have been done in the past where a building permit was not submitted. When this happens, the sprinkler system is forgotten and therefore the result is improper coverage. A fire within these unprotected areas will not be detected and causes the remainder of the sprinkler system to be behind in its capability of suppressing the fire.
- D 901.6 Inspection, Testing and Maintenance
- Meaning: All automatic fire sprinkler heads where the water is actually being distributed to the fire area shall not have "dust bunnies", paint, dirt or grime accumulated on these devices.
- Purpose: Foreign products that have been allowed to build up on the automatic fire sprinkler heads can actually cause the sprinkler head to activate at a higher temperature than what they were designed for.

Section 903 – Automatic Sprinkler Systems

- D 903.5 Testing and Maintenance
- Meaning: All automatic fire sprinkler systems shall be required to have an inspection done annually by a licensed contractor.
- Purpose: The automatic fire sprinkler system was designed to flow water toward any sprinkler head within the system that has been activated. Water pressures, valves, tamper switches and other mechanical operations of the system have to be tested and inspected to assure proper operation.

Section 906-Portable Fire Extinguishers

- D 906.1 *Where Required*
- Meaning: The building shall have portable ABC type fire extinguishers located throughout the building and missing extinguishers shall be replaced.
- Purpose: Having a portable fire extinguisher available, assists with the extinguishment of small fires, not allowing them to become larger fires. If at any time these are used for fire extinguishment, 911 should be called to make sure the fire is definitely out.

- O 906.2 General Requirements (Inspections per NFPA 10)
 - Meaning: All of the fire extinguishers shall be inspected on an annual basis by a licensed contractor. These extinguishers shall have an inspection tag hanging on them showing the inspection date.
 - Purpose: The extinguishers need to be checked for low pressures, hydrostatic dates, compacted extinguishing agent, leakage or damage. Any of these types of deficiencies can cause the fire extinguisher to not properly function when needed.

- D 906.6 Unobstructed and Unobscured
 - Meaning: Portable fire extinguishers shall not be unobstructed and in clear view. If visual contact cannot be completely avoided, means shall be provided to indicate the location of extinguishers.
 - Purpose: Fire extinguishers need to be in clear view or an authorized sign needs to point out where the fire extinguisher is located. Employees should also know the locations of all fire extinguishers in their work areas in order to minimize delays if needed.

- O 906.7 Hangers and Brackets
 - Meaning: All fire extinguishers shall be mounted properly on the walls and near exits or egress ways. Purpose: The reason why we ask that the fire extinguishers be mounted on the walls is to assist in alleviating accidental discharges. Locating these extinguishers near an exit or egress way is so that individuals utilizing the extinguisher will know their first way out of the building.

Section 912 – Fire Department Connections

- D 912.2 Access
 - Meaning: Immediate access to the fire department connection on located on the outside of the building shall be maintained and visible at all times.
 - Purpose: Fire department connections are a tool the fire department uses to support the water supply to the automatic fire sprinkler system. It is important that there is immediate access to this appliance because hose is connected to this and then connected to the fire truck to pump water into the system.

- D 912.4.1 Fire Department Connection Cover Caps
 - Meaning: Caps to protect debris from entering the connection and into the piping shall be in place.
 - Purpose: These caps keep debris from entering the automatic fire sprinkler system. Trash, cigarettes, dirt and leaves have all been found in the fire department connections because the caps were not in place. This debris gets pushed further into the system and can end up plugging the actual sprinkler head itself and not allow the water to be dispersed as designed.

- D 912.4.2 Clear Space around Connections
 - Meaning: A working space of not less than 36 inches in width, 36 inches in depth and 78 inches in height shall be provided and maintained.
 - Purpose: Working space is important here because the firefighters need to connect hoses to this appliance and then to the fire truck itself. Equipment being used for connections and the equipment being worn by the firefighters makes this space very valuable.

Chapter 10 – Means of Egress

Section 1001 - Administration

- D 1001.2 Minimum Requirements
 - Meaning: It shall be unlawful to change or remodel a building in a manner that will reduce the number of exit doors or the capacity (width) of a means of egress.
 - Purpose: The means of egress and/or exit system is to be constantly available throughout the life of the building. Any changes to this system are to be reviewed by the building department and the fire department and usually will require a building permit.

Section 1004 – Occupant Load

○ 1004.3 Posting of Occupant Load

Meaning: An occupant load sign identifies how many people (50 or more) are allowed in a meeting room, dining, room or assembly room. This sign is red in color with white lettering and shall be mounted on the wall of the room in a place that is visible to all. The occupant load is calculated by fire department personnel.

Purpose: The posting of this sign is basically the calculated number of the maximum amount people allowed in the room that would be able to evacuate the building properly. If this number is exceeded, the proper evacuation of the occupants drops drastically and rescue efforts may be hampered.

Section 1006- Means of Egress Illumination

○ 1031.10 Emergency Lighting

Meaning: Emergency lights (also known as "frog eyes") are used to illuminate egress and exit ways. These lights shall be working as designed with battery a backup and the light(s) themselves need to be pointing in the direction of travel.

Purpose: Emergency lights need to work properly so when the power is out for whatever reason, these lights will illuminate the egress and exit ways for safe evacuation.

Section 1008 – Doors, Gates and Turnstiles

D 1010.1.2 .1 Door Swing

Meaning: Doors that are used for egress (exiting) leading to the outside of the building that may serve an occupant load of 50 or more shall swing in the direction of egress travel.

Purpose: If a door were to swing the opposite direction of egress (pull open instead of push), with a high number of people trying to utilize it, this would cause a delay with evacuation because of possible "bottle necking".

○ 1008.1.3 Door Opening Force

Meaning: The force for pushing or pulling an exit door open shall not require any extra effort. This force shall not exceed 5 pounds and the door should not be sticking open or closed.

Purpose: The 5 pound maximum force for pushing and pulling is based on that which has been deemed appropriate for people with physical limitation due to size, age or disability. All potential users should have the capability to open the exit doors in order to vacate the building.

○ 1010.1.9 Door operations

Meaning: Exit doors shall be operable and ready to be opened from the egress side without the use of a key, special knowledge or effort.

Purpose: During an emergency, occupants need to vacate the building immediately without any difficulty in doing so. When utilizing an egress door, an individual should only have to perform only one motion to evacuate the building, meaning unlocking a lock and opening the door at the same time is acceptable. Anything else is considered two (2) motions and special knowledge which is not acceptable.

○ 1010.1.9.5 Bolt Locks

Meaning: Manually operated flush bolt or surface bolt type of locks shall not be allowed.

Purpose: These types of locks are prohibited due to the inability of users to quickly identify and operate such devices under emergency conditions.

Section 1009 – Stairways

O 1011.7.3 Enclosures Under Interior Stairways

Meaning: If the enclosable space underneath an interior stairway is to be used in any manner, the walls and soffit areas shall be protected with a minimum of a 1-hour fire-resistance-rated construction. Access to the enclosed area shall not open into a stairway enclosure.

Purpose: The purpose for this is so the stairwell remains protected if the enclosed area is used for storage. The reason for access to this area is not to be in the stairway is because if the door was to be left open and a fire was to take place in the enclosed area, the smoke would feed directly into the stairwell.

O 1011.7.4 Enclosures Under Exterior Stairways

Meaning: There shall be no enclosable usable space underneath an exterior stairway unless the space is completely enclosed with a minimum of a 1-hour fire-resistance-rated construction. The open space under the exterior stairway shall not be used for any purpose.

Purpose: The purpose for this is so the stairwell remains protected if the enclosed area is used for storage. If the space under the exterior stairway is not protected per code, this space shall not be used for any purpose at all.

Section 1011-Exit Signs

O 1013.1.1 Where Required

Meaning: Paths leading to an exit and above the exit door itself shall have an exit sign posted to where it is easily visible for the occupants. At no time, should these signs be removed and or damaged and must be maintained with its original design.

Purpose: All occupants and especially occupants not familiar with the building need to be able to visualize an exit sign to assist in vacating the building. Any occupant should be able to advance toward the exit sign(s) and be able to directly vacate from the building without confusion.

CJ 1013.6.3 Illumination

Meaning: Exit signs shall be illuminated either internally or externally at all times to include when primary power loss has occurred. Electrical exit signs are internally illuminated and need to be maintained per manufacturer's instructions. Other non-electrical types of exit signs require illumination from another source such as emergency lighting within the building.

Purpose: When these signs are illuminated and especially when primary power has been discontinued, these signs are clearly visible to assist occupants in vacating the building.

O 1013.6.3 Power Source

Meaning:

Exit lights shall be illuminated at all times. To ensure these lights are operating for duration of not less than 90 minutes during a power loss, they shall be connected to emergency power such as storage batteries or on site generator.

Purpose: These signs are illuminated when primary power has been discontinued and are clearly illuminated for a minimum of 90 minutes after main power has been discontinued.

Section 1017 – Aisles

D 1029.9.1 Aisle

Width

Meaning: The minimum clear aisle width shall not be less than 36 inches in width.

Purpose: This minimum width requirement allows for occupants to have sufficient room to work within and to evacuate the building without "Bottle necking" towards an exit.

Section 1030 – Maintenance of the Means of Egress

O 1031.3 Obstructions

Meaning: The means of egress shall be free from obstructions that would prevent its use, including the accumulation of snow and ice.

Purpose: The exit ways were designed so that the occupants of the building would be able to evacuate the building with ease at the time of an emergency. Any actions taken to impede the proper evacuation of the building may lead to injury or possible death in emergency situations.

O 1031.6 Finishes, Furnishings and Decorations

Meaning: Exit doors shall be distinguishable from adjacent construction or finishes so that the doors can be recognized as exit doors. Furnishings, decorations or other objects shall not block egress ways or exit doors or disguise them in any way.

Purpose: The exit ways were designed so that the occupants of the building would be able to identify and evacuate the building with ease at the time of an emergency.

Chapter 22-Combustible Dust-Producing Operations

Section 2203 - Precautions

D 2203.4 Housekeeping

Meaning: Accumulation of combustible dust shall be kept to a minimum in the interior of the building. Forced air or similar methods shall not be used to remove dust from surfaces.

Purpose: Good housekeeping and lowering the dust build up to a minimum will assist with the reduction of potential flash fire and or explosion. It is important when removing accumulated combustible dust not to place it into suspension into the air.

Chapter 50 – Hazardous Materials

Section 5003-General Requirements

O 5003.4 Material Safety Data Sheets

Meaning: Material Safety Data Sheets (MSDS) is documentation that is developed when a hazardous substance has been formed in a laboratory. This information shall be readily available on site for hazardous materials being utilized within the business.

Purpose: This information gives accurate and timely information to firefighters that will assist with the safe resolution to an emergency. This information will also assist with the pre-incident planning which is essential for buildings containing hazardous materials, regardless of quantity.

D 5003.5.1 Markings

Meaning: Individual containers, cartons or packages shall be conspicuously marked or labeled in an approved manner that will readily identify hazard information of the product within.

Purpose: This information gives accurate and timely information to firefighters that will assist with the safe resolution to an emergency. Containers consisting of water shall also be labeled "Water" for quick identification. This information will also assist with the pre-incident planning which is essential for buildings containing hazardous materials regardless of quantity.

D 5003.9.9 Shelf Storage

Meaning: Shelving shall be provided with a lip or guard and anchored when used for the storage of individual containers. Shelf storage of hazardous materials shall be maintained in an orderly manner.

Purpose: The lip or guard at the edges of the shelving assists with the containers from falling off the shelves. Obviously, the containers need to be stored in an orderly manner for quick identification.

Chapter 39: PROCESSING AND EXTRACTION FACILITIES

User note: About this chapter: Chapter 39 is a new chapter focused on the processing and extraction of oils and fats from various plants. This process includes extraction by use of a solvent, desolventizing the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery. The processes used are not necessarily typical hazardous material processes, and often the systems and equipment associated with such processes are not listed. Because of the typical lack of listings, the systems and equipment need specific approvals for each installation. This chapter provides the tools to appropriately address the hazards while also meeting the unique needs of industry. This chapter has provisions for a technical report prepared by a registered design professional and requires site inspections to make sure equipment and systems are installed as designed and approved.

SECTION 3901 GENERAL

3901.1 Scope. Plant processing or extraction facilities shall comply with this chapter and the *International Building Code*. The extraction process includes the act of extraction of the oils and fats by use of a solvent, desolventizing of the raw material, production of the miscella, distillation of the solvent from the miscella and solvent recovery. The use, storage, transfilling and handling of hazardous materials in these facilities shall comply with this chapter, other applicable provisions of this code and the *International Building Code*.

3901.2 Existing buildings or facilities. Existing buildings or facilities used for the processing of plants or where the medium of extraction or solvent is changed shall comply with this chapter.

3901.3 Permits. Permits shall be required as set forth in Sections 105.6 and 105.7.

SECTION 3902 DEFINITIONS

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

DESOLVENTIZING. MISCELLA.

SECTION 3903 PROCESSING AND EXTRACTION

3903.1 Construction. Processing shall be located in a building complying with the *International Building Code*.

3903.2 Prohibited occupancies. Extraction processes utilizing flammable gases or flammable *cryogenic fluids* shall not be located in any building containing a Group A, E, I or R occupancy.

3903.3 Location. The extraction equipment and extraction processes utilizing hydrocarbon solvents shall be located in a room or area dedicated to extraction.

3903.4 Post-process purification and winterization. Post-processing and winterization involving the heating or pressurizing of the miscella to other than normal pressure or temperature shall be *approved* and performed in an appliance listed for such use. Domestic or commercial cooking appliances shall not be used.

3903.4.1 Industrial ovens. The use of industrial ovens shall comply with Chapter 30.

3903.5 Use of flammable and combustible liquids. The use of flammable and *combustible liquids* for liquid extraction processes where the liquid is boiled, distilled or evaporated shall be located within a hazardous exhaust fume hood, rated for exhausting flammable vapors. Electrical equipment used within the hazardous exhaust fume hood shall be rated for use in flammable atmospheres. Heating of flammable or combustible liquids over an open flame is prohibited.

Exception: The use of a heating element not rated for flammable atmospheres, where documentation from the manufacture, or *approved* testing laboratory indicates the element is rated for heating of flammable liquids.

3903.6 Liquefied petroleum gas. Liquefied petroleum gases shall not be released to the atmosphere except where released in accordance with Section 7.3 of NFPA 58.

SECTION 3904 SYSTEMS AND EQUIPMENT

3904.1 General requirements. Systems and equipment used with the processing and extraction of oils and products from plants shall comply with Sections 3904.2 through 3904.4 and 5003.2, and other applicable provisions of this code, the *International Building Code* and the *International Mechanical Code*.

3904.2 Systems and equipment. Systems or equipment used for the extraction of oils from plant material shall be *listed* or *approved* for the specific use. If the system used for extraction of oils and products from plant material is not *listed*, the system shall be reviewed by a *registered design professional*. The *registered design professional* shall review and consider any information provided by the system's designer or manufacturer. For systems and equipment not *listed* for the specific use, a technical report in accordance with Section 3904.3 shall be prepared and submitted to the *fire code official* for review and approval. The firm or individual preparing the technical report shall be *approved* by the *fire code official* prior to performing the analysis.

3904.3 Technical report. A technical report, reviewed and approved by the *fire code official* as required by Section 3904.2, is required prior to the equipment being located or installed at the facility. The report shall be prepared by a *registered design professional* or other professional approved by the *fire code official*.

3904.3.1 Report content. The technical report shall contain all of the following:

1. Manufacturer information.
2. Preparer of record of the technical report.
3. Date of review and report revision history.
4. Signature page, including all of the following:
 - 4.1. Author of the report.
 - 4.2. Date of report.
 - 4.3. Date and signature of *registered design professional* of record performing the design or peer review.
5. Model number of the item evaluated. If the equipment is provided with a serial number, the serial number shall be included for verification at the time of site inspection.
6. Methodology of the design or peer review process used to determine minimum safety requirements. Methodology shall consider the basis of design, and shall include a code analysis and code path to demonstrate whether specific codes or standards are applicable.
7. Equipment description. A list of every component and subassembly, such as fittings, hose, quick dis- connects, gauges, site glass, gaskets, valves, pumps, vessels, containers and switches, of the system or equipment, indicating the manufacturer, model number, material and solvent compatibility. Manufacturer's data sheets shall be provided.
8. A general flow schematic or general process flow diagram of the process. Post-processing or winterization shall be included in this diagram. Primary components of the process equipment shall be identified and match the equipment list required in Item 7. Operating temperatures, pressures and solvent state of matter shall be identified in each primary step or component. A piping and instrumentation diagram (PID or P&ID) shall be provided.
9. Analysis of the vessel(s) if pressurized beyond standard atmospheric pressure. Analysis shall include purchased and fabricated components.
10. Structural analysis for the frame system supporting the equipment.

11. Process safety analysis of the extraction system, from the introduction of raw product to the end of the extraction process.
12. Comprehensive process hazard analysis considering failure modes and points of failure throughout the process. The process hazard analysis shall include a review of emergency procedure information provided by the manufacturer of the equipment or process and not that of the facility, building or room.
13. Review of the assembly instructions, operational and maintenance manuals provided by the manufacturer.
14. List of references used in the analysis.

3904.4 Site inspection. Prior to operation of the extraction equipment, where required by the *fire code official*, the engineer of record or *approved* professional, as *approved* in Section 3904.2, shall inspect the site of the extraction process once equipment has been installed for compliance with the technical report and the building analysis. The engineer of record or *approved* professional shall provide a report of findings and observations of the site inspection to the *fire code official* prior to the approval of the extraction process. The field inspection report authored by the engineer of record shall include the serial number of the equipment used in the process and shall confirm that the equipment installed is the same model and type of equipment identified in the technical report.

SECTION 3905 SAFETY SYSTEMS

3905.1 Gas detection. For extraction processes utilizing flammable gases as solvents, a continuous gas detection system shall be provided. The gas detection threshold shall be not greater than 25 percent of the lower explosive limit/lower flammability limit (LEL/LFL) of the materials.

3905.1.1 System design. The flammable gas detection system shall be *listed* or *approved* and shall be calibrated to the types of fuels or gases used for the extraction process. The gas detection system shall be designed to activate when the level of flammable gas exceeds 25 percent of the LFL.

3905.1.2 Gas detection system components. Gas detection system control units shall be *listed* and *labeled* in accordance with UL 864 or UL 2017. Gas detectors shall be *listed* and *labeled* in accordance with UL 2075 for use with the gases and vapors being detected.

3905.1.3 Operation. Activation of the gas detection system shall result in all the following:

1. Initiation of distinct audible and visual alarm signals in the extraction room.
2. Deactivation of all heating systems located in the extraction room.
3. Activation of the mechanical ventilation system, where the system is interlocked with gas detection.

3905.1.4 Failure of the gas detection system. Failure of the gas detection system shall result in the deactivation of the heating system; activation of the mechanical ventilation system where the system is interlocked with the gas detection system; and initiation of a trouble signal to sound in an *approved* location.

3905.1.5 Interlocks. Electrical components within the extraction room shall be interlocked with the gas detection system. Activation of the gas detection system shall disable all light switches and electrical outlets.

3905.2 Emergency shutoff. Extraction processes utilizing gaseous hydrocarbon-based solvents shall be provided with emergency shutoff systems in accordance with Section 5803.1.3.

Chapter 53 – Compressed Gases

Section 5303 – General Requirements

- D 5303.5.3 Securing Compressed Gas Cylinders, Cylinders and Tanks
- Meaning: All compressed gas containers should be secured to prevent falling caused by contact or vibration. Securing compressed gas containers shall be done by tightly securing the containers to a fixed object, mobile carts, nesting or within a rack designed for such use.
- Purpose: These cylinders may be considered as missiles waiting for launch. If they are not properly secured and should happen to tip over knocking off the valve, these cylinders may propel at great force causing severe damage and injury.

Chapter 57 – Flammable and Combustible Liquids

Section 5703 – General Requirements

- D 5703.5.3 Warning Labels
- Meaning: Individual containers, packages and cartons shall be identified, marked, labeled and placarded.
- Purpose: Identification of flammable and combustible liquids gives accurate and timely information to firefighters that will assist with the safe resolution to an emergency. This information will also assist with the pre-incident planning which is essential for buildings containing flammable and combustible liquids, regardless of quantity.

Section 5704 – Storage

- D 5704.3.3.3 Clear Means of Egress
- Meaning: Storage of any liquids, including stock for sale, shall not be stored near or allowed to obstruct physically the route of egress.
- Purpose: The means of egress must be usable to be effective. The placement of flammable or combustible liquids near or in the route used to exit the room or building produces a risk that is not acceptable.
- D 5704.3.3.5 Shelf Storage
- Meaning: Shelving shall be provided with a lip or guard and anchored when used for the storage of individual containers. Shelf storage of flammable or combustible liquids shall be maintained in an orderly manner.
- Purpose: The lip or guard at the edges of the shelving assists with the containers from falling off the shelves. Obviously, the containers need to be stored in an orderly manner for quick identification.

Chapter 61 – Liquefied Petroleum Gases

Section 6103 - Installation of Equipment

- D 6103.2.1 Portable Containers
- Meaning: Portable LP gas containers shall not be used within buildings.
- Purpose: This is a long-lasting requirement that relates to the potential for releasing propane within the building. Propane released within a building may find an ignition source and may potentially cause an explosion.

Section 6109 - Storage of Portable LP-Gas Containers Awaiting Use or Resale

- D 6109.7 Storage In Basement, Pit or Similar Location
- Meaning: LP gas containers shall not be stored in a basement, pit or similar location where heavier-than-air gas might collect. LP gas containers shall not be stored in above-grade, under-floor spaces or basements unless location is provided with an approved means of ventilation.
- Purpose: Propane is approximately 1.52 times heavier than air and has the potential to sink to the ground when it is released. This action will increase the possibilities for the gas to reach an ignition source such as a pilot light from a heater which is obviously located low on the ground.

This "check list" was prepared by the fire department for all MMB and RMB business owners to have in hand and utilize for two reasons. One, to assist with the education of how important inspections are within your business in order to maintain safety for your employees. Two, to assist the owners and management with the preparation of a Fire Department inspection that will soon take place within your business.

A fire inspection will take place once it has been scheduled by the business contacting our Administrative Assistant, Amber Wright at (303) 441-4179. Once the inspection has taken place and if violations have been found, the business will have thirty (30) days to correct the violations in order to be code compliant. Once all violations have been corrected, the business is to call and schedule for a re-inspection. It is the fire departments goal with this "check list" to minimize violations and to minimize the time for each business to become code compliant.

Please note that there may be other fire code violations found during your inspection that may not appear on this "check list" and will be documented as a violation per the 2012 International Fire Code.