



**CITY OF HUNTINGTON BEACH**  
**COMMUNITY DEVELOPMENT DEPARTMENT**  
**BUILDING DIVISION**

2000 Main Street  
Huntington Beach, CA 92648  
(714) 536-5241

**2022 CALIFORNIA MECHANICAL CODE GENERAL CHECKLIST**

**Note:** *The list below is intended to assist the applicant by identifying the general requirements in the 2022 California Mechanical Code. Please note that this list is not intended to be a full nor a complete list. Please refer to the 2022 California Mechanical Code and the HBMC for all requirements.*

**PART A. GENERAL REQUIREMENTS**

1. Provide a written response to corrections and/or notes on plans made by plan checker. All plan corrections shall be clouded or otherwise noted to expedite re-submittal.
2. All plans and calculations are to be wet stamped and signed by a licensed engineer, architect or by the design installer. 2022 CMC sec. 104.3, 104.3.1.
3. Note fire rated construction on plans to verify proper provisions for listed rated penetration protection.
4. Provide mechanical equipment schedule identifying the equipment, manufacturer, capacities and model numbers. Equipment shall also be listed and labeled by an approved testing agency. 2022 CMC sec.301.2
5. Provide CF1R form pages that summarize the minimum energy performance specifications needed for compliance on plan. These forms are for single-family, townhome and duplex projects. Low-rise (three stories or less) Multifamily and Mixed-Use must use new LMCC, LMCI and LMCV forms to document compliance starting with the 2022 Energy Code. If your project scope includes HERS measures, CF1R documents will need to be completed through a HERS Provider's registry.
6. Provide required compliance documents NRCC-MCH-E. These forms are for nonresidential, high-rise multifamily (4 stories or greater) and high-rise mixed-use (4 stories or greater) projects.
7. All rooms and occupied spaces listed in Table 402. 1 of the California Mechanical Code and table 120.1 of the 2022 California Energy Code shall be designed to have outdoor air for its occupants in accordance with Chapter 4 of the 2022 California Mechanical Code and Sec. 120.1 of the 2022 California Energy Code. Include the air-ventilation rate assumptions for the required ventilation on submitted plans.
8. All dwelling units shall meet the requirements of ANSI/ASHRAE Standard 62.2, Ventilation and Acceptable Indoor Air Quality in Low Rise Residential Buildings. Window operation is not a permissible method of providing the Whole Building Ventilation required in section 4 of that standard. 2022 CEC sec. 150 (o). Include all worksheets denoting duct size, length and fan selection. Include the air-ventilation rate assumptions for the required ventilation on submitted plans.
9. Mandatory requirements for ventilation and indoor air quality of multifamily buildings are required to meet the requirements of 2022 California Energy Code Sec. 160.2. Include the air-ventilation rate assumptions for the required ventilation on submitted plans.



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10. The shell building mechanical plans did not include control wiring, ducting systems, etc. and no HVAC components were energized. All TI's must provide complete mechanical forms NRCC-MCH-E (all parts) Acceptance testing is done on complete systems, which are not completed until the TI plans are approved and the system is completely installed.
11. All plans submitted to the Huntington Beach Building Dept. for plan check must be prepared on minimum ledger size paper. (11 x17)
12. Provide all K and/or FS (Kitchen/Food Service) plans to each set of mechanical plans to be submitted.
13. Provide NRCC-PRC-E form detailing the Commercial Kitchen Exhaust System(s). Form must be on plan per State of CA.
14. Provide NRCC-PRC-E form detailing the Commercial Refrigeration System(s). Form must be on plan per State of California.

**PART B. HEATING, REFRIGERATION AND VENTILATION**

1. Show location of HVAC equipment on rooftop detail. Identify equipment on plans.
2. All rooftop equipment must be screened from view per Huntington Beach Zoning Code 230.76 :  
230.76 Screening of Mechanical Equipment
  - A. General Requirement. Except as provided in subsection (B) below, all exterior mechanical equipment, except solar collectors and operating mechanical equipment in an I District located more than 100 feet from another zoning district boundary, shall be screened from view on all sides. Equipment to be screened includes, but is not limited to, heating, air conditioning, refrigeration equipment, plumbing lines, ductwork, and transformers.  
  
Screening of the top of equipment may be required by the Director, if necessary to protect views from an R or OS district. Rooftop mechanical equipment shall be setback 15 feet from the exterior edges of the building.
  - B. Utility Meters and Backflow Prevention Devices. Utility meters shall be screened from view from public rights-of-way. Electrical transformers in a required front or street side yard shall be enclosed in subsurface vaults. Backflow prevention devices shall not be located in the front yard setback and shall be screened from view.
3. Attic located HVAC equipment requires a permanent 120 volt receptacle outlet and a lighting fixture shall be installed near the appliance. The switch controlling the lighting fixture shall be located at the entrance to the passageway. 2022 CMC sec. 304.4.4



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4. Unless otherwise specified, not less than 30" in depth, width and height of working space shall be provided around equipment. 2022 CMC sec.304.1
5. Minimum 2 inch thick MERV-13 (Minimum Efficiency Reporting Value) rated air filters in all mechanically ventilated buildings with reference to CA. Energy Code 2022 CEC sec. 120.1 C (Non-Res.), 120.1 B (c) (Hotel/Motel), 150.0 12 C (Residential).
6. Factory made flexible air ducts and connectors shall be not more than 5' in length and shall not be used in lieu of rigid elbows and fittings. Exception: residential applications. 2022 CMC sec. 603.4.1.
7. Central heating furnaces and low-pressure boilers may be installed in a closet in a bathroom or bedroom provided the closet has a listed, gasketed door assembly, a listed self-closing device and a threshold with a bottom door seal. All combustion air must be taken from outdoors and appliances must be of direct vent type 2022 CMC sec. 904.1(1, 2).
8. Provide a Refrigerant Concentration Limit calculations form to comply with limits set in 2022 CMC sec.1104.2, table 1102.3.
9. Provide a complete mechanical/plumbing plan denoting the entire Hydronic heating system in accordance with chapter 12 of the 2022 CMC.
10. Furnace/a-c/heat pump/ not shown on plans. Show location of equipment.
11. Buildings of more than 15 feet in height shall have an inside means of access to the roof mounted equipment. 2022 CMC sec. 304.3.1, 304.3.1.1.
12. Altered duct systems must comply with section 141.0 D of the 2022 Ca. Energy Code. Extensions of an existing duct system must follow section 141.0 D (ii) which requires a duct leakage test.
13. ANSI/ASHRAE 62.2 requires that each kitchen and bathroom have a local ventilation exhaust system installed that exhausts indoor air to outside the building. ANSI/ASHRAE 62.2 sec. 5.1, 5.2.
14. Each bathroom containing a tub, shower or combination tub/shower must be served by an Energy Star rated ventilation fan with ducting terminating outside the building and controlled by the use of a Humidistat unless said fan is operating as a component of a whole house ventilation system. 2022 CA Green Building Codes Standard sec. 4.506.1.
15. Exhaust airflow for enclosed parking garages shall be provided in accordance with the requirements in table 403.7 of the 2022 California Mechanical Code, which is .75 cfm per sq. ft. of the parking garage. Alternate exhaust ventilation for enclosed parking garages is to take 2.5% of all parking spaces and provide 14,000 cfm per each of the 2.5% of spaces. Sec. 403.7.2.2.
16. Interior spaces intended for human occupancy shall be provided with active or passive space heating systems capable of maintaining an indoor temperature of not less than 68\* F at a point 3



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feet above the floor when in operation. 2022 CBC sec.1203.1. Exception Groups F,H,S or U occupancies.

17. Decorative shrouds shall not be installed atop gas vents and chimneys except where such shrouds are listed UL 103 Factory built chimneys, UL 127 Factory built fireplaces, 2022 CMC sec. 802.5.1.1
18. Condensate disposal required to be collected and drained to an approved location. 2022 CMC secs. 310.1, 310.2.
19. Air for combustion, ventilation and dilution of flue gases for appliances installed in buildings shall be obtained by application of one of the methods covered in 2022 CMC section 701.4 through section 701.9.3. Where infiltration does not provide the necessary air, outdoor air shall be introduced in accordance with methods covered in section 701.6 through 701.9.3. 2022 CMC sec. 701.
20. Ductwork not shown or incomplete. Specify duct type, gage, material and insulation requirements. 2022 CMC Ch. 6.
21. Provide required information on the supporting of the HVAC duct system. 2022 CMC sec(s).603.3 through 603.3.2.3 and 603.3.3 (Earthquake Loads).
22. Flexible air ducts are to comply with UL 181 standards and installed per SMACNA and manufacturers installation instructions. 2022 CMC sec. 603.4.
23. Air moving systems supplying air in excess of 2000 cfm required to be equipped with an automatic shut off interlocked with a smoke detector located in the supply ducting of the air moving system. 2022 CMC sec. 609.1.
24. Return air may not be obtained from an area where it will pick-up objectionable odors, fumes or flammable vapors; a kitchen, closet, bathroom, toilet room, machinery room or where it is less than 10 feet above the surface of any abutting public way or driveway. 2022 CMC sec.311.3 (1 thru 6).
25. Corridors shall not serve as supply, return, exhaust, relief or ventilation air ducts. 2022 CBC sec. 1020.6.
26. Corridors are prohibited from conveying air to or from rooms if the corridor is required to be of fire resistive construction per the Building Code. 2022 CMC sec. 602.6.
27. Unvented room heaters may not be installed in a bathroom or bedroom or be used as the primary source of heat. 2022 CMC sec. 916.2.1, 916.2.1.1. Unvented fuel burning room heaters shall not be installed, used or maintained or permitted to exist in Group R occupancy. (HCD1, HCD 2).



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28. All materials exposed in a return air plenum or ceiling shall be non-combustible or have flame spread index no greater than 25 and a smoke developed index no greater than 50. (Exception: Dwelling Units) 2022 CMC sec. 602.2.
29. All dampers require access that shall not require the use of tools, keys or special knowledge. All access points shall be permanently identified on the exterior by a label with letters not less than ½" in height reading: SMOKE DAMPER, FIRE DAMPER OR COMBINATION F/S DAMPER. 2022 CMC sec. 606.5, 2022 CBC sec. 717.4.
30. Quantity of refrigerant requires refrigeration machinery room. Provide details of machinery room. 2022 CMC secs.1106.1 thru 1108.5.
31. Walk-in/reach-in cooler location required to be shown on plans. 2022 CMC sec. 1101.1.
32. Refrigerated rooms or spaces must be equipped with refrigerant vapor detection and alarm system that is in accordance with section 1106.2.2.1 of the 2022 CA Mechanical Code. Alarm system shall activate mechanical ventilation in accordance with 1106.2.4 and emergency shut off in accordance with 1108.3.
33. Please provide all components and details of the refrigeration systems on plans. 2022 CMC sec.1101.1.
34. Refrigeration systems or portions thereof shall not be located within a required exit enclosure. Refrigeration compressors exceeding 5 horsepower shall be located not less than 10 feet from an exit opening in a Group A, B, E, F, I, R1 or S Occupancy, unless separated by a one-hour fire resistive occupancy separation. 2022 CMC sec. 1105.6.
35. Steam and water piping that is a part of hydronic heating or cooling systems shall comply with Chapter 12 of the 2022 California Mech. Code.
36. Penetrations of the elevator lobby enclosure by ducts and air transfer openings shall be protected as required by the 2022 Ca. Building Code.
37. In addition to testing and adjusting, before a new space-conditioning system serving a building or space is operated for normal use, balance the system in accordance with the procedures defined by the Testing Adjusting and Balancing Bureau National Standards; the National Environmental Balancing Bureau Procedural Standards; Associated Air Balance Council National Standards or as approved by the enforcing agency. 2022 CA Green Building Code Standards sec. 5.410.4.3.1.
38. Heating, Ventilation and Air Conditioning Systems (including hydronic systems) shall be balanced in accordance with one of the following methods; AABC, ACCA manual B, ASHRAE 111, NEBB Procedural Standards or SMACNA Systems Testing. 2022 CMC sec. 314.1.





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39. Combustion and ventilation air for infrared heaters shall be provided in accordance with the following;
- Where unvented infrared heaters are used, natural or mechanical means shall be provided to supply and exhaust not less than 4 cubic feet per minute per 1,000 btuh input of installed heaters.
  - Exhaust openings for removing flue products shall be above the level of the heaters. 2022 CMC sec. 926.3, 926.3.1. NFPA 54 10.17.3.1, NFPA 54 10.7.3.2.
40. All air distribution ducts and plenums, including but not limited to building cavities, mechanical closets, air-handler boxes and support platforms used as ducts or plenums, shall be installed, sealed and insulated to meet the requirements of the 2022 CMC Ch.6 and ANSI/SMACNA – 06-2006 HVAC Duct Construction Standards Metal and Flexible 3rd Edition incorporated herein by reference. 2022 CEC sec. 150.0 (m)

#### PART C. PRODUCT CONVEYING SYSTEMS

- The 2022 Uniform Mechanical Code Training Manual has classified sawdust and woodchips as flammable/explosive.
- Specify classification of product conveying system. 2022 CMC sec.505.8.
- Specify size of ductwork and what gage thickness the ductwork system is to be constructed of. 2022 CMC tbls. 506.2(1), 506.2(2).
- Fittings in class 2, 3 and 4 duct systems are to be two gages thicker than required for straight runs. 2022 CMC sec.506.5.
- Spacing for support of ducts shall not exceed 12 feet for 8 inch ducts nor exceed 20 feet intervals for ducts larger than 8 inch. 2022 CMC sec. 506.7.
- Dust collection bins must have outdoor location approval by Fire Dept. and indoor collection bins must be approved for their use. 2022 CMC 505.1.
- Cleanouts required at every ten feet and at changes in direction of a product conveying system being used to convey any particulate. 2022 CMC sec. 506.5.
- Ducts conveying explosive/flammable dusts require explosion vents protected by anti-flash swing valves or rupture diaphragms. Openings to relieve explosive forces through the explosion venting shall be outside the building. 2022 CMC sec. 506.6.

#### PART D. ENVIRONMENTAL EXHAUST

- Identify the size and type of duct material for environmental air system. 2022 CMC sec. 504.1.



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2. All environmental air systems must be shown on plans. This includes clothes dryers, rest room exhaust, non-commercial kitchen exhaust, etc.
3. When a closet is designed for the installation of a clothes dryer, a minimum opening of 100 sq. in. for make-up air shall be provided in the door or by other approved means. 2022 CMC sec. 504.4.1(1) (2).
4. All environmental air outlets shall terminate 3 feet from openings into the building, 3 feet from property line, 10 feet from a forced air inlet and 10' above a public walkway. 2022 CMC sec. 502.2.1.
5. Ducts conveying explosive or flammable vapor, fumes or dust shall terminate no less than 30' from a property line, 10' from openings into the building, 6' from exterior walls or roofs, 30' from combustible walls or openings into the building that are in the direction of the exhaust discharge and 10' above grade. Other product conveying outlets shall terminate not less than 10' from a property line, 3' from exterior walls and roofs, 10' from openings into the building and 10' above adjoining grade. 2022 CMC sec. 502.2.2.
6. Exhaust openings terminating to the outdoors shall be covered with corrosion resistant screen having not less than ¼" nor larger than ½" openings. Exception: Clothes Dryers. 2022 CMC sec. 502.1.

#### PART E. COMMERCIAL KITCHEN HOOD SYSTEMS

1. All commercial cooking equipment must have a commercial exhaust hood to serve the equipment. The only exceptions are if the commercial cooking equipment is certified UL 710B listed. 2022 CMC sec. 508.1 (1), (2).
2. Type of listed cooking equipment shall be identified and described on plans. 2022 CMC sec. 515.1(1), (2).
3. Construction of the hood and duct systems (Type I and Type II) must comply with the entire 2022 CMC secs. 508.3 thru 510.10 or be listed and approved for their use.
4. The wall construction behind where the Type I hood is to be hung must be a minimum of limited combustible construction to achieve the 3" clearance to limited construction required by the grease exhaust hood manufacturer. 2022 CMC sec. 507.4. Limited construction is described as a steel stud wall with ½" drywall on both sides as per NFPA 96 tbl. A.3.3.38.
5. Overlapping duct connections of either the telescoping joint or the bell type or flange type shall be used for welded field joints on grease duct construction, NO BUTT WELDED FIELD JOINTS ALLOWED. 2022 CMC sec. 510.5.3.2 and 510.5.4.



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6. Type I hoods and non-enclosed grease ducts shall be installed with clearance from combustible construction of at least 18 inches. This may be reduced to 3 inches to limited combustible material and 0 for non-combustible. 2022 CMC sec. 507.4.
7. Type 1 hoods or portions thereof penetrating a rated ceiling/wall assembly or buildings more than 1 story shall be enclosed in a duct enclosure. 2022 CMC sec. 510.7.
8. FIELD applied grease duct enclosures shall continuously cover the duct on all sides from the point at which the duct enclosure penetrates a ceiling, wall or floor to the outlet terminal and shall be listed in accordance with ASTM E 2336 and installed per manufacturer's instructions and listing. 2022 CMC sec. 507.4.5.
9. A Type II hood shall be installed at or above all equipment and commercial dishwashers that generate steam, heat and products of combustion where grease or smoke is not present. Exception is a dishwashing machine connected to a type 2 duct system and exhausted to the outdoors or with a self-contained condensing system in accordance with UL 921. 2022 CMC sec. 519.1.
10. Clean out opening in a horizontal grease duct systems must be provided with access and platform when not accessible from a 10' stepladder. 2022 CMC sec. 510.3.3.2.
11. When a 20" x 20" cleanout opening is not possible in a horizontal grease duct, openings large enough to ensure thorough cleaning shall be provided at 12 foot intervals. 2022 CMC sec. 510.3.3.1.
12. Provide calculations of hood and duct systems with formula from 2022 CMC secs. 508.5.1.1 thru 508.5.1.5.
13. Listed Type I hoods are to be installed per listing and manufacturer instructions. 2022 CMC sec. 508.2. Please add this information to plan.
14. Exhaust air volumes for hoods shall be of sufficient level to provide for capture and removal of grease laden cooking vapors. 2022 CMC sec. 511.2.2.
15. Makeup air quantity shall be adequate to prevent negative pressures in the commercial cooking area(s) from exceeding 0.02 inch water column. When its fire extinguishing equipment discharges, make up air supplied INTERNALLY to a hood shall shut down. 2022 CMC sec. 511.3.
16. Roof detail required showing location of rooftop exhausting equipment termination according to 2022 CMC secs. 510.9.1 (1) thru (9) and 510.10.
17. A hinged upblast fan with flexible weatherproof electrical cable and a drain directed to visible, ready accessible grease receptacle not exceeding 1 gal. shall terminate in accordance with section 2022 CMC 510.9, 510.9.1 and sec. 511.1.1.





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18. Grease duct discharge must be a minimum of 10 feet of clearance from outlet to adjacent buildings, property lines and air intakes. Where space limitations prevent a 10 foot horizontal separation from air intakes duct may be elevated to 3 feet above air intakes within 10 feet. 2022 CMC sec. 510.9.1(3).
19. A Performance Test shall be conducted upon completion and before approval of a ventilation system serving commercial cooking appliances. The test shall verify the exhaust airflow rate in accordance with sections 508.10.1.2 thru 508.10.1.5 or the airflow rate stamped on listed hood. Please add note to plan. 2022 CMC sec. 511.2.2.1.
20. The permit holder shall verify a capture and containment performance of the hood. A field test shall be performed with cooking equipment at normal operating temperature and capture and containment shall be verified through a visual observation of smoke or steam produced by smoke candles or puffers. Smoke bombs are prohibited from use on this test. Please add note to plan. 2022 CMC sec. 511.2.2.2.
21. Prior to use or concealment a grease duct leakage test shall be performed to verify the welded seams and joints are liquid tight. The test shall be a water pressure test, a light test, or an approved equivalent test. The permit holder shall be responsible for providing the equipment AND for performing the test. 2022 CMC sec. 510.5.6. Please add note to plan.
22. On underground horizontal grease exhaust duct the cleanouts shall be provided at the top of the grease duct. 2022 CMC sec. 510.8.2.
23. Underground grease ducts the duct shall be sloped to drain back to a drain receptacle. Grease collection device shall be located at the base of the vertical riser. 2022 CMC sec. 510.8.1.
24. Gas operated equipment utilizing solid fuel for flavoring does not require a separate exhaust system if the following 12 conditions stated in this section are complied with. 2022 CMC Sec. 517.3.1.1.
25. Install a cleanout door opening into the grease duct as required by section 510.3 of the 2022 CMC.
26. Clearance from grease duct to combustible construction shall be no less than 18", clearance of grease duct to non-combustible or limited combustion enclosure (shaft) shall not be less than 6 inches. Clearance reductions stated in sections 507.4 through 507.4.3.3 shall not apply to enclosures. 2022 CMC sec. 510.7.3.
27. If personnel entry is not possible on a vertical grease duct, access shall be provided at each floor. 2022 CMC sec. 510.3.4.1.
28. Exhaust outlets within the hood may only serve a 12-foot section of an unlisted hood. 2022 CMC sec. 508.7.



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29. Fire extinguishing equipment for the protection of grease removal devices, hood exhaust plenums and exhaust duct systems shall be provided. 2022 CMC sec. 513.1.

#### PART F. STEAM AND WATER BOILERS

1. Two exit access doorways are required in boiler, furnace and incinerator rooms where the area is over 500sq. feet and any fuel fired equipment exceeds 400,000 btuh. 2022 CBC sec. 1006.2.2.1.
2. Boilers rated at 10 horsepower and operate at 15 psi must be installed in a one hour fire rated room or provided with an automatic fire sprinkler system. 2022 CBC table 509.
3. Expansion tanks required to be installed in conjunction with boiler. 2022 CMC sec. 1004.1.
4. Boiler room/enclosure requires combustion air following guidelines of 2022 CMC Ch. 7. 2022 CMC sec. 1001.3
5. Potable water supply connections to steam and/or water boilers shall be provided with a listed backflow protection assembly or device. 2022 CPC sec. 603.5.10.
6. Provide an elevation plan of boiler vent system, shafts (if required), combustion air and blow-down tank (if required).
7. Trap primed floor drain required to be installed in a boiler room that serves boiler(s) providing hydronic heating and/or hot water supply. 2022 CMC sec. 1001.4.

#### PART G. GAS PIPING

1. Provide detail on gas piping; include size of piping and pipe materials. 2022 CMC sec. 1308.1.
2. Provide lengths of all gas piping branches and the main line from meter to structure. Include all valve locations. 2022 CMC sec. 1315.4 (1 -6 ).
3. Provide total btuh demand for each outlet on the gas piping system. Include both new and existing outlet btuh demand for proper sizing approval of gas system. 2022 CMC sec. 1315.4(1 thru 6).
4. Description of each appliance of the gas piping system is required. 2022 CMC sec. 1314.3.
5. CSST (corrugated stainless steel tubing) gas pipe systems shall be bonded to the electrical service grounding electrode system. 2022 CMC 1311.2. The bond jumper shall be a minimum 6 awg. copper. 2022 CMC sec. 1311.2.2 (Exception: Listed, electrically continuous, shielded CSST tubing).
6. 2022 CMC 1310.6 The maximum operating pressure for any [piping](#) systems located inside buildings shall not exceed 5 psi (34 kPa) unless one or more of the following conditions are met:
  1. The piping joints are welded or brazed.
  2. The piping joints are flanged and all pipe-to-flange connections are made by welding or brazing.
  3. The piping is located in a ventilated chase or otherwise enclosed for protection against accidental gas accumulation.



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4. The piping is located inside buildings or separate areas of buildings used exclusively for one of the following:
  1. Industrial processing or heating
  2. Research
  3. Warehousing
  4. Boiler or mechanical rooms
5. The piping is a temporary installation for buildings under construction.
6. The piping serves appliances or equipment used for agricultural purposes.
7. The piping system is an LP-Gas piping system with an operating pressure greater than 20 psi (138 kPa) and complies with NFPA 58. [NFPA 54:5.5.4]
7. Line pressure regulators at multiple regulator installations shall be marked by a metal tag or other permanent means designating the building or the part of the building being served by such regulator. 2022 CMC sec. 1308.7.7.
8. In multiple tenant buildings supplied through a master meter or through a service regulator where a meter is not provided or where meters or service regulators are not readily accessible from the equipment location, an individual shut off valve for each apartment or tenant line shall be provided at a convenient point of general accessibility. 2022 CMC sec. 1310.11.1.1.
9. Where the serving gas supplier delivers gas at a pressure greater than 2 psi for piping systems serving appliances designed to operate at 14" wc or less overpressure protection devices shall be installed. 2022 CMC sec. 1308.8.

#### PART H. ADDITIONAL CORRECTONS

1. See additional attached notes and respond accordingly to corrections noted.