

Final Draft Proposed Changes to the 2020 Fuel Gas Code of New York State

Issued July 2024

This document is being developed for the purpose of posting a notice of rule in development for the New York State Fire Prevention and Building Code Council (Code Council) and the New York State Department of State. The purpose is to show the final draft proposed changes to the current version of the 2020 Fuel Gas Code of New York State (2020 FGCNYS). Separate documents will exist for each of the current NYS specific code books. This document **is not intended to include** all of the proposed code language; it only contains those sections of code that are proposed to be new or modified. Please note that unaltered portions of the 2020 code books are not included within this document and should be considered to remain the same for this code update.

This document is the final draft of the notice of rule in development being released for comment from the public and the Code Council. Accordingly, the Yellow highlighted text included in earlier versions to denote the changes from earlier versions of the documents has been removed.

Please note:

- Chapter 1's are included as a separate document for all of the code books
- This document does not include grammatical, punctuation, and simple word clarifications that do not change the intent or meaning of a provision.
- Where a change is made by NYS, rather than an ICC level change, "[NY]" is added to the section numbers; however, grammatical and punctuation changes made by NYS that do not change the intent or meaning of a provision are not denoted by [NY]. Similarly, updates made by NYS to cross-referenced sections or sections where the only change is to the referenced code book (i.e. ~~International Plumbing Code~~ [Plumbing Code of New York State](#) are not denoted by [NY]).
- Changes to the existing text are denoted in the following manner:
 - Text insertions: [TEXT](#)
 - Text deletions: ~~TEXT~~
- Cross-referenced code sections may not be accurate and/or may change based on existing and future modifications. Code sections are based on the anticipated 2024 ICC code section.
- Where multiple code change proposals are listed together, it represents multiple ICC code changes that dealt with the same code sections and were therefore consolidated.
- Some code changes involve complex tables, lists, or lengthy sections in which a small change was made to only a portion of the section. In those instances, the entire section, table, list, etc. that was unchanged may not be included below. A note has been added to indicate when that happens (i.e. "Items 1 through 13 remain unchanged").
- Reference to Chapter 11 of the Residential Code of New York State for energy provisions will be corrected in the notice of proposed rule making documents to reference the corresponding provision from the Energy Conservation Construction Code of New York State.

Chapter 2 Definitions

[A] APPROVED AGENCY. An established and recognized ~~agency~~ [organization](#) that is regularly engaged in conducting tests, furnishing inspection services or furnishing [evaluation or](#) certification, where such ~~agency~~ [organization](#) has been approved by the *code official*.

[A] LISTED. Equipment, materials, products or services included in a list published by an organization acceptable to the code official and concerned with evaluation of products or services that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services and whose listing states either that the equipment, material, product or service meets identified standards or has been tested and found suitable for a specified purpose. Terms that are used to identify listed equipment, products, or materials include “listed”, “certified”, “classified” or other terms as determined appropriate by the listing organization.

[A] PEER REVIEW. An independent and objective technical review conducted by and approved third party.

POINT OF DELIVERY. For natural gas systems, the *point of delivery* is the outlet of the service meter assembly or the outlet of the service regulator or service shutoff valve where a meter is not provided. Where a system shutoff valve is provided ~~at~~ after the outlet of the service meter assembly, such valve shall be considered to be downstream of the *point of delivery*. For undiluted liquefied petroleum gas systems, the *point of delivery* shall be considered to be the outlet of the service pressure regulator, exclusive of line gas regulators, in the system.

PRESS-CONNECT JOINT. A permanent mechanical joint incorporating an elastomeric seal or an elastomeric seal and corrosion-resistant grip or bite ring. The joint is made with a pressing tool and jaw or ring approved by the fitting manufacturer.

REGULATOR, MONITORING. A pressure regulator set in series with another pressure regulator for the purpose of preventing an overpressure in the downstream piping system ~~automatically taking control of the pressure downstream of the monitored regulator when that pressure exceeds a set minimum.~~

SERVICE METER ASSEMBLY. The meter, valve, regulator, piping, fittings and equipment installed by the service gas supplier before the point of delivery.

SYSTEM SHUTOFF. A valve installed after the point of delivery to shut off the entire piping system.

VALVE. A device used in *piping* to control the gas supply to any section of a system of *piping* or to an *appliance*.

Appliance shutoff. A valve located in the *piping* system, used to isolate individual appliances for purposes such as service or replacement.

Automatic. An automatic or semiautomatic device consisting essentially of a valve and operator that control the gas supply to the burner(s) during operation of an *appliance*. The operator shall be actuated by application of gas pressure on a flexible diaphragm, by electrical means, by mechanical means, or by other *approved* means.

Automatic gas shutoff. A valve used in conjunction with an automatic gas shutoff device to shut off the gas supply to a water-heating system. It shall be constructed integrally with the gas shutoff device or shall be a separate assembly.

Individual main burner. A valve that controls the gas supply to an individual main burner.

Main burner control. A valve that controls the gas supply to the main burner manifold.

Manual main gas-control. A manually operated valve in the gas line for the purpose of completely turning on or shutting off the gas supply to the *appliance*, except to pilot or pilots that are provided with independent shutoff.

Manual reset. An automatic shutoff valve installed in the gas supply *piping* and set to shut off when unsafe conditions occur. The device remains closed until manually reopened.

Service shutoff. A valve, installed by the serving gas supplier between the ~~service meter or~~ source of supply and the ~~customer piping system~~ point of delivery, to shut off the entire *piping* system.

Chapter 3 general Regulations

[BS] 302.3 Cutting, notching and boring in wood members. The cutting, notching and boring of wood [framing](#) members shall comply with Sections [2308.6 of the International Building Code](#), ~~302.3.1 through 302.3.4.~~

~~**[BS] 302.3.2 Joist notching and boring.** Notching at the ends of joists shall not exceed one fourth the joist depth. Holes bored in joists shall not be within 2 inches (51 mm) of the top and bottom of the joist and their diameters shall not exceed one third the depth of the member. Notches in the top or bottom of the joist shall not exceed one sixth the depth and shall not be located in the middle one third of the span.~~

~~**[BS] 302.3.3 Stud cutting and notching.** In exterior walls and bearing partitions, any wood stud is permitted to be cut or notched to a depth not exceeding 25 percent of its width. Cutting or notching of studs to a depth not greater than 40 percent of the width of the stud is permitted in nonload-bearing partitions supporting no loads other than the weight of the partition.~~

~~**[BS] 302.3.4 Bored holes.** The diameter of bored holes in wood studs shall not exceed 40 percent of the stud depth. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in nonbearing partitions. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in any wall where each stud is doubled, provided that not more than two such successive doubled studs are so bored. The edge of the bored hole shall be not closer than $\frac{5}{8}$ inch (15.9 mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.~~

[BS] 302.6 Cutting, [and notching](#) ~~and boring~~ holes in cold-formed steel framing. [The cutting, notching and boring of holes in cold-formed steel framing members shall be in accordance with AISI S240 for structural members and AISI S220 for non-structural members.](#) ~~Flanges and lips of load-bearing, cold-formed steel framing members shall not be cut or notched. Holes in webs of load-bearing, cold-formed steel framing members shall be permitted along the centerline of the web of the framing member and shall not exceed the dimensional limitations, penetration spacing or minimum hole edge distance as prescribed by the registered design professional. Cutting, notching and boring holes of steel floor/roof decking shall be as prescribed by the registered design professional.~~

~~**[BS] 302.7 Cutting, notching and boring holes in non-structural cold-formed steel wall framing.** Flanges and lips of nonstructural cold-formed steel wall studs shall be permitted along the centerline of the web of the framing member, shall not exceed $1\frac{1}{2}$ inches (38 mm) in width or 4 inches (102 mm) in length, and the holes shall not be spaced less than 24 inches (610 mm) center to center from another hole or less than 10 inches (254 mm) from the bearing end.~~

303.3.1 Fireplaces and decorative appliances in Group I-2, ~~Condition 2~~ occupancies. [Gas In Group I-2, Condition 2 occupancies, gas](#) ~~fireplace~~ appliances and decorative gas appliances shall be prohibited ~~in Group I-2, Condition 2 occupancies~~ except where such appliances are direct-vent appliances installed in public lobby and waiting areas that are not within smoke compartments containing patient sleeping areas. ~~The~~ [In Group I-2, Condition 1 occupancies, gas fireplace appliances and decorative gas appliances shall be prohibited in patient sleeping rooms.](#) [In Group I-2 occupancies, the](#) ~~appliance~~ controls shall be located where they can be accessed only by facility staff. Such fireplaces shall comply with Sections 501.2 and 604.1 [of this code](#) and Section 915 of the *International Fire Code*.

304.1 General. Air for combustion, ventilation and dilution of flue gases for appliances installed in buildings shall be provided by application of one of the methods prescribed in Sections 304.5 through 304.9. Where the requirements of Section 304.5 are not met, outdoor air shall be introduced in accordance with one of the methods prescribed in Sections 304.6 through 304.9. *Direct-vent appliances*, gas appliances of other than natural draft design, vented gas appliances not designated as Category I and appliances equipped with power burners shall be provided with combustion, ventilation and dilution air in accordance with the *appliance* manufacturer's instructions.

Exception: Type 1 clothes dryers that are provided with makeup air in accordance with Section 614.7.

304.8 Engineered installations. Engineered *combustion air* installations shall provide an adequate supply of combustion, [ventilation and dilution air determined using engineering methods](#) ~~and shall be approved.~~

304.12 Protection from fumes and gases. Where [chemicals that generate](#) corrosive or flammable [products](#) ~~process fumes or gases, other than products of combustion, are present, means for the disposal of such fumes or gases shall be provided.~~ Such fumes or gases include carbon monoxide, hydrogen sulfide, ammonia, chlorine and halogenated hydrocarbons.

~~In barbershops, beauty shops and other facilities where chemicals that generate corrosive or flammable products, such as aerosol sprays, are routinely used, nondirect vent type appliances shall be located in a mechanical room separated or~~

~~partitioned off from other areas with provisions for combustion air and dilution air from the outdoors~~ one of the following shall apply to fired appliances where these chemicals can enter combustion air:

1. Fired appliances shall be located in a mechanical room separate or partitioned off from other areas with provisions for combustion and dilution air from outdoors.
2. The ~~Direct-vent~~ appliances shall be direct-vent and installed in accordance with the appliance manufacturer's installation instructions.

[M] 306.1 Access for maintenance and replacement. Appliances, control devices, heat exchangers and HVAC components that utilize energy shall ~~be accessible~~ provide access for inspection, service, repair and replacement without disabling the function of a fire-resistance-rated assembly or removing permanent construction, other appliances, or any other *piping* or ducts not connected to the *appliance* being inspected, serviced, repaired or replaced. A level working space not less than 30 inches (762 mm) deep and 30 inches (762 mm) wide shall be provided in front of the control side to service an *appliance*.

[M] 306.5 Equipment and appliances on roofs or elevated structures.

Where *equipment* requiring access or *appliances* are located on an elevated structure or the roof of a building such that personnel will have to climb higher than 16 feet (4877 mm) above grade to access such *equipment* or *appliances*, an interior or exterior means of access shall be provided. Such access shall not require climbing over obstructions greater than 30 inches (762 mm) in height or walking on roofs having a slope greater than 4 units vertical in 12 units horizontal (33-percent slope). Such access shall not require the use of portable ladders.

Permanent ladders installed to provide the required *access* shall comply with the following minimum design criteria:

1. The side railing shall extend above the parapet, ~~or~~ roof edge or landing platform not less than ~~30~~ 42 inches (1067 mm).
2. Ladders shall have rung spacing not less than 10 inches (254 mm) and not to exceed 14 inches (356 mm) on center. The upper-most rung shall be not more than 24 inches (610 mm) below the upper edge of the roof hatch, roof or parapet, as applicable.
3. Ladders shall have a toe spacing not less than ~~6 inches (152 mm) deep~~ 7 inches (178 mm) and not more than 12 inches (305 mm) deep.
4. There shall be not less than ~~18~~ 16 inches (406 mm) between rails.
5. Rungs shall have a diameter not less than 0.75-inch (19 mm) and be capable of withstanding a 300-pound (136.1 kg) load.
6. Ladders over 30 feet (9144 mm) in height shall be provided with offset sections and landings capable of withstanding 100 pounds per square foot (488.2 kg/m²). Landing dimensions shall be not less than 18 inches (457 mm) and not less than the width of the ladder served. A guard rail shall be provided on all open sides of the landing.
7. Climbing clearance. The distance from the centerline of the rungs to the nearest permanent object on the climbing side of the ladder shall be not less than 30 inches (762 mm) measured perpendicular to the rungs. This distance shall be maintained from the point of ladder access to the bottom of the roof hatch. A minimum clear width of 15 inches (381 mm) shall be provided on both sides of the ladder measured from the midpoint of and parallel with the rungs, except where cages or wells are installed.
8. Landing required. The ladder shall be provided with a clear and unobstructed bottom landing area having a minimum dimension of 30 inches by 30 inches (762 mm by 762 mm) centered in front of the ladder.
9. Ladders shall be protected against corrosion by *approved* means.
10. Access to ladders shall be provided at all times.
11. Top landing required. The ladder shall be provided with a clear and unobstructed landing on the exit side of the roof hatch having a minimum space of 30 inches (762 mm) deep and be of the same width as the hatch.

Catwalks installed to provide the required *access* shall be not less than 24 inches (610 mm) wide and shall have railings as required for service platforms.

Exception: This section shall not apply to Group R-3 *occupancies*.

[M] 306.6 Guards. Guards shall be provided where various components that require service and roof hatch openings are located within 10 feet (3048 mm) of a roof edge or open side of a walking surface and such edge or open side is located more than 30 inches (762 mm) above the floor, roof, or grade below. The guard shall extend not less than 30 inches (762 mm) beyond each end of components that require service and each end of the roof hatch parallel to the roof edge. The top of the guard shall be located not less than 42 inches (1067 mm) above the elevated surface adjacent to the guard. The

guard shall be constructed so as to prevent the passage of a 21-inch- diameter (533 mm) sphere and shall comply with the loading requirements for guards specified in the *International Building Code*.

307.2 Fuel-burning appliances. Liquid combustion byproducts of condensing appliances shall be collected and discharged to an *approved* plumbing fixture or disposal area in accordance with the manufacturer's instructions. Condensate *piping* shall be of *approved* corrosion-resistant material and shall be not smaller than the drain connection on the *appliance*. Such *piping* shall maintain a minimum slope in the direction of discharge of not less than $\frac{1}{8}$ unit vertical in 12 units horizontal (1-percent slope). [The termination of concealed condensate piping shall be marked to indicate whether the piping is connected to the primary drain or to the secondary drain.](#)

[M] 307.3 Drain pipe materials and sizes. Components of the condensate disposal system shall be [ABS](#), cast iron, ~~galvanized steel~~, copper [and copper alloy](#), CPVC, cross-linked polyethylene, [galvanized steel](#), PE-RT, polyethylene, ABS, CPVC [polypropylene](#), PVC or [PVDF](#) ~~polypropylene~~ pipe or tubing. Components shall be selected for the pressure and temperature rating of the installation. Joints and connections shall be made in accordance with the applicable provisions of Chapter 7 of the *International Plumbing Code* relative to the material type. Condensate waste and drain line size shall be not less than $\frac{3}{4}$ -inch (19 mm) ~~internal diameter~~ [pipe size](#) and shall not decrease in size from the drain pan connection to the place of condensate disposal. Where the drain pipes from more than one unit are manifolded together for condensate drainage, the pipe or tubing shall be sized in accordance with an *approved* method.

310.1 Pipe and tubing other than CSST. Each aboveground portion of a gas piping system other than corrugated stainless steel tubing (CSST) that is likely to become energized shall be electrically continuous and bonded to an effective ground-fault current path. Gas piping other than CSST shall be considered to be bonded where it is connected to ~~an~~ [one or more](#) appliances that are connected to the equipment grounding conductor of the circuit that supplies that appliance(s).

Chapter 4 Gas Piping Installations

401.5 Identification. For other than steel pipe [and CSST](#), exposed *piping* shall be identified by a yellow label marked "Gas" in black letters. The marking shall be spaced at intervals not exceeding 5 feet (1524 mm). The marking shall not be required on [piping](#) ~~pipe~~ located in the same room as the *appliance* served. [CSST shall be identified as required by ANSI LC 1/CSA 6.26.](#)

402.3 Sizing. Gas *piping* shall be sized in accordance with one of the following:

1. Pipe sizing tables or sizing equations in accordance with Section 402.4 or 402.5 as applicable.
2. The sizing tables included in a *listed piping* system's manufacturer's installation instructions.
3. ~~Other approved engineering~~ [Engineering](#) methods.

402.6 Allowable pressure drop. The design pressure loss in [a](#) ~~any~~ *piping* system ~~under maximum probable flow conditions~~, from the *point of delivery* to the inlet connection of [all appliances served](#) ~~the appliance~~, shall be such that the supply pressure at [each](#) ~~the~~ appliance [inlet](#) is greater than or equal to the minimum pressure required by the appliance.

402.7 Maximum operating pressure. The maximum operating pressure for *piping* systems located inside buildings shall not exceed 5 pounds per square inch gauge (psig) (34 kPa gauge) except where one or more of the following conditions are met:

1. The *piping* joints are welded or brazed.
2. [The piping is joined by fittings listed to ANSI LC-4/CSA6.32 and installed in accordance with the manufacturer's instructions.](#)
3. The *piping* joints are flanged and pipe-to-flange connections are made by welding or brazing.
4. The *piping* is located in a ventilated chase or otherwise enclosed for protection against accidental gas accumulation.
5. The *piping* is located inside buildings or separate areas of buildings used exclusively for any of the following:
 - 5.1 Industrial processing or heating.
 - 5.2 Research.
 - 5.3 Warehousing.
 - 5.4 Boiler or mechanical rooms.

6. The *piping* is a temporary installation for buildings under construction.
7. The *piping* serves *appliances* or *equipment* used for agricultural purposes.
8. The piping system is an LP-gas piping system with an operating pressure greater than 20 psi (137.9 kPa) and complies with NFPA 58

~~403.3 Other materials. Material not covered by the standards specifications listed herein shall be investigated and tested to determine that it is safe and suitable for the proposed service, and, in addition, shall be recommended for that service by the manufacturer and shall be approved by the code official.~~

403.8.3 Threaded joint sealing compounds. Threaded joints shall be made using a thread joint sealing material. Thread joint sealing materials compounds shall be nonhardening and shall be resistant to the action of liquefied petroleum gas or to any other chemical constituents of the gases to be conducted through the piping. Thread joint sealing materials shall be compatible with the pipe and fitting materials on which the sealing materials are used.

403.10 Plastic pipe, joints and fittings. Plastic pipe, tubing and fittings shall be joined in accordance with the manufacturer's instructions. Such joint shall comply with the following:

1. The joint shall be designed and installed so that the longitudinal pull-out resistance of the joint will be greater than or equal to the tensile strength of the plastic *piping* material.
2. Heat-fusion joints shall be made in accordance with qualified procedures that have been established and proven by test to produce gas-tight joints as strong as or stronger than the pipe or tubing being joined. Joints shall be made with the joining method recommended by the pipe manufacturer. Polyethylene heat fusion fittings shall be marked "ASTM D2513." Polyamide heat fusion fittings shall be marked "ASTM F2945."
3. Where compression-type mechanical joints are used, the gasket material in the fitting shall be compatible with the plastic *piping* and with the gas distributed by the system. An internal tubular rigid stiffener shall be used in conjunction with the fitting. The stiffener shall be flush with the end of the pipe or tubing and shall extend to or beyond the outside end of the compression fitting when installed. The stiffener shall be free of rough or sharp edges and shall not be a force-fit in the plastic. Split tubular stiffeners shall not be used.
4. Plastic *piping* joints and fittings for use in liquefied petroleum gas *piping* systems shall be in accordance with NFPA 58.

403.11.7 Lapped flanges. Lapped flanges shall be used only above ground or in exposed locations accessible with access for inspection.

403.12.1 Flanges. When flanges are separated and before gaskets are replaced, the following shall be met:

1. Flange faces shall be cleaned.
2. Flange surfaces shall be inspected for pitting, corrosion and other surface defects.
3. Flanges that contain pitting, corrosion and other surface defects on faces shall be repaired or replaced.

404.8.2 Conduit with both ends terminating indoors. Where the conduit originates and terminates within the same building, the conduit shall originate and terminate in an accessible a portion of the building with access and shall not be sealed. The conduit shall extend not less than 2 inches (51 mm) beyond the point where the pipe emerges from the floor.

404.14.2 Conduit with both ends terminating indoors. Where the conduit originates and terminates within the same building, the conduit shall originate and terminate in an accessible a portion of the building with access and shall not be sealed. The conduit shall extend not less than 2 inches (51 mm) beyond the point where the pipe emerges from the floor.

404.5 Fittings in concealed locations. Fittings installed in concealed locations shall be limited to the following types:

1. Threaded elbows, tees, and couplings, plugs and caps.
2. Brazed fittings.
3. Welded fittings.
4. Fittings listed to ANSI LC-1/CSA 6.26 or ANSI LC-4/CSA 6.32.

~~[NY] 404.7 Protection against physical damage. In concealed locations, w~~Where ~~piping other than black or galvanized steel is installed through holes or notches in wood studs, joists, rafters or similar members less than 1 3/4 inches (44.45 mm) from the nearest edge of the member~~ will be concealed within light-frame construction assemblies, the pipe shall be protected by shield plates in accordance with Sections 404.7.1 through 404.7.3.1 ~~Such shield plates shall comply with the requirements of Section 404.7.1, shall cover the area of the pipe where the member is notched or bored, and shall extend a minimum of 4 inches (102 mm) above sole plates, below top plates and to each side of a stud, joist or rafter. The movement of piping made of CSST (including, but not limited to, piping made of listed ARCSST) shall not be otherwise constrained by straps, clips or other support devices. In addition, where CSST (including, but not limited to, listed AR-CSST) is installed in a concealed location and parallel to any joist, rafter, or similar member, the CSST shall be protected by shield plates in any area where the CSST is not:~~

- ~~1. Physically supported in a manner that ensures the CSST will always be at least 1 3/4 inches (44.45 mm) away from the nearest edge of any member, or~~
- ~~2. Encased in a protective metal pipe made of Schedule 40 steel or iron pipe or in a protective pipe sleeve made of a material approved by the building official as the equivalent of Schedule 40 steel or iron pipe.~~

~~Such shield plates shall comply with the requirements of Section 404.7.1, shall cover the area the where the CSST is located, and shall extend a minimum of 4~~October 21 – 31, 2024inches (102 mm) to each side of the CSST.

Exception: Black steel piping and galvanized steel piping shall not be required to be protected.

~~[NY] 404.7.1 Shield plates. Piping through bored holes or notches. In all cases, shield plates shall be certified or listed as complying with ANSI LC-1. In addition, in the case of piping made of CSST, shield plates shall be listed for use with the manufacturer's CSST system. Where piping is installed through holes or notches in framing members and the piping is located less than 1 3/4 inches (44.45 mm) from the framing member face to which wall, ceiling, floor, or roof membranes will be attached, the pipe shall be protected by shield plates that cover the width of the pipe and the framing member and that extend not less than 4 inches (102 mm) to each side of the framing member. Where the framing member that the piping passes through is a bottom plate, bottom track, top plate or top track, the shield plates shall cover the framing member and extend not less than 4 inches (102 mm) above the bottom framing member and not less than 4 inches (102 mm) below the top framing member.~~

~~[NY] 404.7.2 Piping installed in other locations. Where the piping is located within a framing member and is less than 1 3/4 inches (44.45 mm) from the framing member face to which wall, ceiling, floor, or roof membranes will be attached, the piping shall be protected by shield plates that cover the width and length of the piping. Where the piping is located outside of a framing member and is located less than 1 3/4 inches (44.45 mm) from the nearest edge of the face of the framing member to which the membrane will be attached, the piping shall be protected by shield plates that cover the width and length of the piping.~~

Exception: Shield plates for CSST and arc-resistant (AR) CSST shall extend not less than 5 inches (127 mm) to each side of the framing member.

404.7.3 Shield plates. Shield plates shall be of steel material having a thickness of not less than 0.0575 inch (1.463 mm) (No. 16 gage).

[NY] 404.7.3.1 Shield plates for CSST and arc-resistant (AR) CSST. Listed for use with the manufacturer's CSST or AR-CSST piping system and shall be installed:

1. where the CSST or AR-CSST is not physically supported in a manner that ensures it will always be at least 1 3/4 inches (44.45 mm) away from the nearest edge of any member, or
2. where the CSST or AR-CSST is not encased in Schedule 40 steel or iron pipe, or
3. where the CSST or AR-CSST is not encased in a protective pipe sleeve made of a material approved by the building official as the equivalent of Schedule 40 steel or iron pipe.

~~404.11.5 Prohibited use. Uncoated threaded or socketwelded joints shall not be used in piping in contact with soil or where internal or external crevice corrosion is known to occur.~~

404.18 Pipe debris removal cleaning. The interior of piping shall be clear of debris. The use of a flammable or combustible gas to clean or remove debris from a piping system shall be prohibited.

407.2 Design and installation. *Piping* shall be supported with ~~metal~~ pipe hooks, ~~metal~~ pipe straps, ~~metal~~ bands, ~~metal~~ brackets, ~~metal~~ hangers or building structural components, suitable for the size of *piping*, of adequate strength and quality, and located at intervals so as to prevent or damp out excessive vibration. *Piping* shall be anchored to prevent undue strains on connected *appliances* and shall not be supported by other *piping*. Pipe hangers and supports shall conform to the requirements of MSS SP-58 and shall be spaced in accordance with Section 415. Supports, hangers and anchors shall be installed so as not to interfere with the free expansion and contraction of the *piping* between anchors. The components of the supporting *equipment* shall be designed and installed so that they will not be disengaged by movement of the supported *piping*.

Exception: The movement of CSST and arc-resistant (AR) CSST *piping systems* shall not be otherwise constrained by straps, clips or other support devices.

409.5.3 Located at manifold. Where the *appliance* shutoff valve is installed at a manifold, such shutoff valve shall be located within 50 feet (15 240 mm) of the *appliance* served and shall ~~be readily accessible~~ have ready access and be permanently identified. The *piping* from the manifold to within 6 feet (1829 mm) of the *appliance* shall be designed, sized and installed in accordance with Sections 401 through 408.

409.6 Shutoff valve for laboratories. Where provided with two or more fuel gas outlets, including table-, bench- and hood-mounted outlets, each laboratory space in educational, research, commercial and industrial *occupancies* shall be provided with a single dedicated shutoff valve through which all such gas outlets shall be supplied. The dedicated shutoff valve shall ~~be readily accessible~~ have ready access, be located within the laboratory space served, be located adjacent to the egress door from the space and shall be identified by *approved* signage stating “Gas Shutoff.”

411.1 Connecting appliances. Except as required by Section 411.1.1, *appliances* shall be connected to the *piping* system by one of the following:

1. Rigid metallic pipe and fittings.
2. Corrugated stainless steel tubing (CSST) where installed in accordance with the manufacturer’s instructions.
3. Semirigid metallic tubing and metallic fittings. Lengths shall not exceed 6 feet (1829 mm) and shall be located entirely in the same room as the *appliance*. Semirigid metallic tubing shall not enter a motor-operated *appliance* through an unprotected knockout opening.
4. *Listed* and *labeled appliance* connectors in compliance with ANSI Z21.24/CSA 6.10 and installed in accordance with the manufacturer’s instructions and located entirely in the same room as the *appliance*.
5. *Listed* and *labeled* quick-disconnect devices in compliance with ANSI Z21.41/CSA 6.9 used in conjunction with *listed* and *labeled appliance* connectors.
6. *Listed* and *labeled* convenience outlets in compliance with ANSI Z21.90/CSA 6.24 used in conjunction with *listed* and *labeled appliance* connectors.
7. *Listed* and *labeled* outdoor *appliance* connectors in compliance with ANSI Z21.75/CSA 6.27 and installed in accordance with the manufacturer’s instructions.
8. *Listed* outdoor gas hose connectors in compliance with ANSI Z21.54 used to connect portable outdoor appliances. The gas hose connection shall be made only in the outdoor area where the *appliance* is used, and shall be to the gas *piping* supply at an *appliance* shutoff valve, a listed quick-disconnect device or listed gas convenience outlet.
9. Gas hose connectors for use in laboratories and educational facilities in accordance with Section 411.4.

411.1.6 Unions. A union fitting shall be provided for *appliances* connected by rigid metallic pipe. Such unions shall ~~be accessible~~ have access and be located within 6 feet (1829 mm) of the *appliance*.

[F] **413.2.3 Residential fueling appliances General.** Residential fueling *appliances* shall be listed to CSA/ANSI NGV 5.1. The capacity of a residential fueling appliance (RFA) shall not exceed 5 standard cubic feet per minute (0.14 standard cubic meter/min) of natural gas. in accordance with Section 413.4.

413.2.4 Nonresidential fueling appliances. Nonresidential fueling appliances shall be listed to CSA/ANSI NGV 5.2. The capacity of a nonresidential fueling appliance, listed to that standard as a vehicle fueling appliance (VFA), shall not exceed 10 standard cubic feet per minute (0.28 standard cubic meter/min) of natural gas.

[F] 413.4 Residential fueling appliance installation. Residential fueling *appliances* shall be installed in accordance with [the requirements of CSA/ANSI NGV 5.1, manufacturer installation instructions, and Section 2308 of the International Fire Code for RFAs](#) ~~Sections 413.4.1 through 413.4.3.~~

~~**[F] 413.4.1 Listing and installation.** Residential fueling appliances shall be listed in accordance with ANSI NGV 5.1. Residential fueling appliances shall be installed in accordance with the appliance manufacturer's installation instructions.~~

~~**[F] 413.4.2 Gas connection.** Residential fueling appliances shall not be rigidly connected to the gas supply piping.~~

~~**[F] 413.4.3 Indoor installation.** A residential fueling appliance installed indoors or used for indoor fueling shall comply with all of the following:~~

- ~~1. The capacity shall not exceed 5 cubic feet per minute (0.14 m³/min) of natural gas.~~
- ~~2. Fuel gas from the pressure relief and blowdown systems shall be vented to the outdoors.~~
- ~~3. A methane gas detector shall be installed in the room or space containing the appliance or where fueling occurs and shall be located not lower than 6 inches (152 mm) from the highest point in the room or space. The detector shall be set to activate at one-fifth of the lower limit of flammability of natural gas and shall be interlocked with the residential fuel appliance to stop or prevent its operation upon activation. The detector shall have an audible or visible alarm.~~
- ~~4. The capacity of a residential fueling appliance installed outdoors for outdoor fueling shall not exceed 10 feet cubic per minute (0.28 m³/min) of natural gas. Residential fueling appliances located outdoors shall be installed on a firm, noncombustible base.~~

413.5 Nonresidential fueling appliance installation. Nonresidential fueling appliances shall be installed in accordance with [requirements for vehicle fueling appliances \(VFA\) in CSA/ANSI NGV 5.2, manufacturer installation instructions, and Section 2308 of the International Fire Code for VFAs.](#)

Chapter 5 Chimneys and Vents

501.7.3 Connection to masonry fireplace flue. A connector shall extend from the *appliance* to the flue serving a masonry *fireplace* such that the flue gases are exhausted directly into the flue. The connector shall ~~be accessible~~ [have access](#) or [be](#) removable for inspection and cleaning of both the connector and the flue. *Listed* direct connection devices shall be installed in accordance with their listing.

503.2.3 Direct-vent appliances. *Listed direct-vent appliances* shall be installed in accordance with the manufacturer's instructions ~~and Section 503.8, Item 3.~~ [Through-the-wall vent terminations for listed direct-vent appliances shall be in accordance with](#) Section 503.8.

503.2.4 Appliances with integral vents. Appliances incorporating integral venting means shall be installed in accordance ~~with the manufacturer's instructions and~~ Section 503.8, ~~Items 1 and 2.~~ **503.2.5 Incinerators.** ~~Commercial-industrial-type incinerators~~ [Incinerators](#) shall be vented in accordance with NFPA 82.

503.3.3 Mechanical draft systems. Mechanical draft systems shall comply with the following:

1. Mechanical draft systems shall be *listed* in accordance with UL 378 and shall be installed in accordance with the manufacturer's instructions for both the *appliance* and the mechanical draft system.
2. Appliances requiring venting shall be permitted to be vented by means of mechanical draft systems of either forced or induced draft design.
3. Forced draft systems and all portions of induced draft systems under positive pressure during operation shall be designed and installed so as to prevent leakage of flue or vent gases into a building.
4. Vent connectors serving appliances vented by natural draft shall not be connected to any portion of mechanical draft systems operating under positive pressure.
5. Where a mechanical draft system is employed, provisions shall be made to prevent the flow of gas to the main burners when the draft system is not performing so as to satisfy the operating requirements of the *appliance* for safe performance.

6. ~~The exit terminals of mechanical draft systems shall be not less than 7 feet (2134 mm) above finished ground level where located adjacent to public walk ways and shall be located as specified in Section 503.8, Items 1 and 2.~~

503.5.1 Factory-built chimneys. Factory-built chimneys shall be *listed* in accordance with UL 103 ~~and installed in accordance with the manufacturer's instructions.~~ Factory-built chimneys used to vent *appliances* that operate at a positive vent pressure shall be *listed* for such application.

503.5.5 Size of chimneys. The effective area of a chimney venting system serving *listed* appliances with draft hoods, Category I appliances and other appliances *listed* for use with Type B vents shall be determined in accordance with one of the following methods:

1. The provisions of Section 504.
2. ~~For sizing an individual chimney venting system for~~ The effective areas of the vent connector and chimney flue of a venting system serving a single *appliance* with a draft hood, ~~the effective areas of the vent connector and chimney flue~~ shall be not less than the area of the *appliance* flue collar or draft hood outlet, nor greater than seven times the draft hood outlet area.
3. ~~For sizing a chimney venting system connected to~~ The effective area of the chimney flue or a venting system serving two appliances with draft hoods, ~~the effective area of the chimney flue~~ shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet, nor greater than seven times the smallest draft hood outlet area.
4. Chimney venting systems using mechanical draft shall be sized in accordance with ~~approved~~ *engineering methods*.
5. Other ~~approved~~ *engineering methods*.

503.5.6.1 Chimney lining. Chimneys shall be lined in accordance with NFPA 211.

~~**Exception:** Where an existing chimney complies with Sections 503.5.6 through 503.5.6.3 and its sizing is in accordance with Section 503.5.5, its continued use shall be allowed where the *appliance* vented by such chimney is replaced by an *appliance* of similar type, input rating and efficiency.~~

503.5.9 Cleanouts. Where a chimney that formerly carried flue products from liquid or solid fuel-burning appliances is used with an *appliance* using fuel gas, ~~an accessible~~ a cleanout with access shall be provided. The cleanout shall have a tight-fitting cover and shall be installed so its upper edge is not less than 6 inches (152 mm) below the lower edge of the lowest chimney inlet opening.

503.5.11 Insulation shield. Where a factory-built chimney passes through insulated assemblies, an insulation shield constructed of steel having a thickness of not less than 0.0187 inch (0.475 mm) shall be installed to provide *clearance* between the chimney and the insulation material. The *clearance* shall be not less than the *clearance* to combustibles specified by the chimney manufacturer's installation instructions. Where chimneys pass through attic space, the shield shall terminate not less than 2 inches (51 mm) above the installation materials and shall be secured in place to prevent displacement. ~~Insulation shields provided as part of a listed chimney system shall be installed in accordance with the manufacturer's installation instructions.~~

503.6.10.1 Category I appliances. The sizing of natural draft venting systems serving one or more *listed* appliances equipped with a draft hood or appliances *listed* for use with Type B gas vent, installed in a single story of a building, shall be in accordance with one of the following methods:

1. The provisions of Section 504.
2. For sizing an individual gas vent for a single, draft-hood-equipped *appliance*, the effective area of the vent connector and the gas vent shall be not less than the area of the *appliance* draft hood outlet, nor greater than seven times the draft hood outlet area.
3. For sizing a gas vent connected to two appliances with draft hoods, the effective area of the vent shall be not less than the area of the larger draft hood outlet plus 50 percent of the area of the smaller draft hood outlet, nor greater than seven times the smaller draft hood outlet area.
4. ~~Approved engineering~~ Engineering methods practices.

503.6.10.4 Mechanical draft. Chimney venting systems using mechanical draft shall be sized in accordance with approved engineering methods.

503.6.11 Gas vents serving appliances on more than one floor. ~~A~~ Where a common vent is installed ~~shall be permitted in a~~ multistory installation ~~installations~~ to vent Category I appliances located on more than one floor level, ~~provided that~~ the venting system is ~~shall be~~ designed and installed in accordance with approved engineering methods. For the purpose of this section, crawl spaces, basements and attics shall be considered to be floor levels.

503.7.9 Size of single-wall metal pipe. A venting system constructed of single-wall metal pipe shall be sized in accordance with one of the following methods and the *appliance* manufacturer's instructions:

1. For a draft-hood-equipped *appliance*, in accordance with Section 504.
2. For a venting system for a single *appliance* with a draft hood, the areas of the connector and the pipe each shall be not less than the area of the *appliance* flue collar or draft hood outlet, whichever is smaller. The vent area shall be not greater than seven times the draft hood outlet area.
3. ~~Other approved engineering~~ Engineering methods.

503.8 Venting system terminal clearances ~~termination location~~. ~~The location of venting system terminations shall comply with the following (see Appendix C):~~ The clearances for through-the-wall direct-vent and nondirect-vent terminals shall be in accordance with Table 503.8 and Figure 503.8.

Exception: The clearances in Table 503.8 shall not apply to the combustion air intake of a direct-vent appliance

- ~~1. A mechanical draft venting system shall terminate not less than 3 feet (914 mm) above any forced air inlet located within 10 feet (3048 mm).
Exceptions:
a. This provision shall not apply to the combustion air intake of a direct-vent appliance.
b. This provision shall not apply to the separation of the integral outdoor air inlet and flue gas discharge of listed outdoor appliances.~~
- ~~2. A mechanical draft venting system, excluding direct vent appliances, shall terminate not less than 4 feet (1219 mm) below, 4 feet (1219 mm) horizontally from, or 1 foot (305 mm) above any door, operable window or gravity air inlet into any building. The bottom of the vent terminal shall be located not less than 12 inches (305 mm) above finished ground level.~~
- ~~3. The clearances for through the wall, direct vent terminals shall be in accordance with Table 503.8. The bottom of the vent terminal and the air intake shall be located not less than 12 inches (305 mm) above finished ground level.~~
- ~~4. Through the wall vents for Category II and IV appliances and noncategorized condensing appliances shall not terminate over public walkways or over an area where condensate or vapor could create a nuisance or hazard or could be detrimental to the operation of regulators, relief valves or other equipment. Where local experience indicates that condensate is a problem with Category I and III appliances, this provision shall also apply. Drains for condensate shall be installed in accordance with the appliance and vent manufacturers' instructions.~~
- ~~5. Vent systems for Category IV appliances that terminate through an outside wall of a building and discharge flue gases perpendicular to the adjacent wall shall be located not less than 10 feet (3048 mm) horizontally from an operable opening in an adjacent building. This requirement shall not apply to vent terminals that are 2 feet (607 mm) or more above or 25 feet (7620 mm) or more below operable openings.~~

TABLE 503.8
THROUGH THE WALL, DIRECT VENT TERMINATION CLEARANCES

DIRECT VENT APPLIANCE INPUT RATING (Btu/hr)	THROUGH THE WALL VENT TERMINAL CLEARANCE FROM ANY AIR OPENING INTO THE BUILDING (inches)
<10,000	6
≥10,000 ≤50,000	9
>50,000 ≤150,000	12

>150,000

In accordance with the appliance manufacturer's instructions and not less than the clearances specified in Section 503.8, Item 2

For SI: 1 inch = 25.4 mm, 1 Btu/h = 0.2931 W.

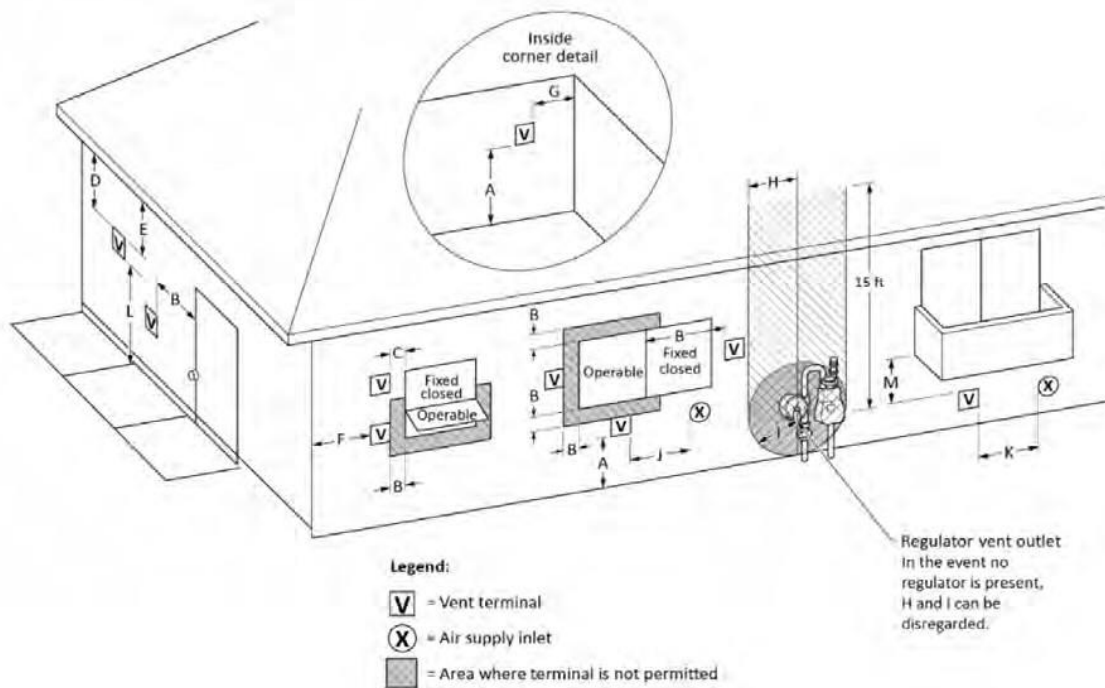


FIGURE 503.8

THROUGH-THE-WALL VENT TERMINAL CLEARANCE

TABLE 503.8

THROUGH-THE-WALL VENT TERMINAL CLEARANCE

<u>FIGURE CLEARANCE</u>	<u>CLEARANCE LOCATION</u>	<u>MINIMUM CLEARANCE FOR DIRECT-VENT TERMINALS</u>	<u>MINIMUM CLEARANCE FOR NONDIRECT-VENT TERMINALS</u>
<u>A</u>	<u>Clearance above finished grade level, veranda, porch, deck, or balcony</u>	<u>12 inches</u>	
<u>B</u>	<u>Clearance to window or door that is openable</u>	<u>6 inches: Appliances < 10,000 Btu/h</u> <u>9 inches: Appliances > 10,000 Btu/h < 50,000 Btu/h</u> <u>12 inches: Appliances > 50,000 Btu/h < 150,000 Btu/h</u>	<u>4 feet below or to side of opening or 1 foot above opening</u>

		<u>Appliances > 150,000 Btu/h, in accordance with the appliance manufacturer's instructions and not less than the clearances specified for nondirect-vent terminals in Row B</u>	
<u>C</u>	<u>Clearance to nonopenable window</u>	<u>None unless otherwise specified by the appliance manufacturer</u>	
<u>D</u>	<u>Vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 feet from the center line of the terminal</u>	<u>None unless otherwise specified by the appliance manufacturer</u>	
<u>E</u>	<u>Clearance to unventilated soffit</u>	<u>None unless otherwise specified by the appliance manufacturer</u>	
<u>F</u>	<u>Clearance to outside corner of building</u>	<u>None unless otherwise specified by the appliance manufacturer</u>	
<u>G</u>	<u>Clearance to inside corner of building</u>	<u>None unless otherwise specified by the appliance manufacturer</u>	
<u>H</u>	<u>Clearance to nonmechanical air supply inlet to building and the combustion air inlet to any other appliance</u>	<u>Same clearance as specified for Row B</u>	
<u>I</u>	<u>Clearance to a mechanical air supply inlet</u>	<u>10 feet horizontally from inlet or 3 feet above inlet</u>	
<u>J</u>	<u>Clearance above paved sidewalk or paved driveway located on public property</u>	<u>7 feet and shall not be located above public walkways or other areas where condensate or vapor can cause a nuisance or hazard</u>	
<u>K</u>	<u>Clearance to underside of veranda, porch deck, or balcony</u>	<u>12 inches where the area beneath the veranda, porch deck or balcony is open on not less than two sides. The vent terminal is prohibited in this location where only one side is open.</u>	

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 Btu/h = 0.293 W

503.9 Condensation drainage. Provisions shall be made to collect and dispose of condensate from venting systems serving Category II and IV appliances and noncategorized condensing appliances ~~in accordance with Section 503.8, Item 4. Drains for condensate shall be installed in accordance with the appliance and vent manufacturer's instructions. Where local experience indicates that condensation is a problem, provisions shall be made to drain off and dispose of condensate from venting systems serving Category I and III appliances in accordance with Section 503.8, Item 4.~~

503.10.2.5 Medium-heat appliances. Vent connectors for medium-heat appliances shall be constructed of factory-built medium-heat chimney sections or steel of a thickness not less than that specified in Table 503.10.2.5 and shall comply with the following:

1. A steel vent connector for an *appliance* with a vent gas temperature in excess of 1,000°F (538°C) measured at the entrance to the connector shall be lined with medium-duty fire brick (ASTM C64, Type F), or the equivalent.
2. The lining shall be not less than 2½ inches (64 mm) thick for a vent connector having a diameter or greatest cross-sectional dimension of 18 inches (457 mm) or less.
3. The lining shall be not less than 4½ inches (114 mm) thick laid on the 4½-inch (114 mm) bed for a vent connector having a diameter or greatest cross-sectional dimension greater than 18 inches (457 mm).

4. ~~Factory-built~~ Where factory-built chimney sections, ~~if employed are installed, they~~ shall be joined together in accordance with the chimney manufacturer's instructions.

503.10.3.1 Single draft hood and fan-assisted. A vent connector for an *appliance* with a single draft hood or for a Category I fan-assisted combustion system *appliance* shall be sized and installed in accordance with Section 504 ~~or other approved~~ engineering methods.

503.10.3.2 Multiple draft hood. ~~For~~ Where a single *appliance* having more than one draft hood outlet or flue collar is installed, the manifold shall be constructed according to the instructions of the *appliance* manufacturer. Where there are no instructions, the manifold shall be designed and constructed in accordance with ~~approved~~ engineering ~~practices~~ methods. As an alternate method, the effective area of the manifold shall equal the combined area of the flue collars or draft hood outlets and the vent connectors shall have a rise of not less than 12 inches (305 mm) ~~minimum 1-foot (305 mm) rise~~.

503.10.3.3 Multiple appliances. Where two or more appliances are connected to a common vent or chimney, each vent connector shall be sized in accordance with Section 504 ~~or other approved~~ engineering methods. As an alternative method applicable only where all of the appliances are draft hood equipped, each vent connector shall have an effective area not less than the area of the draft hood outlet of the *appliance* to which it is connected.

503.10.3.4 Common connector/manifold. Where two or more *appliances* are vented through a common vent connector or vent manifold, the common vent connector or vent manifold shall be located at the highest level consistent with available headroom and the required *clearance to combustible materials* and shall be sized in accordance with Section 504 ~~or other approved~~ engineering methods. As an alternate method applicable only where there are two draft hood- equipped appliances, the effective area of the common vent connector or vent manifold and all junction fittings shall be not less than the area of the larger vent connector plus 50 percent of the area of the smaller flue collar outlet.

503.10.7 Connector junctions. Where vent connectors are joined together, the connection shall be made with a tee or wye fitting.

~~**503.12.2.2 Special design draft hood.** Where it is determined that a draft hood of special design is needed or preferable for a particular installation, the installation shall be in accordance with the recommendations of the *appliance* manufacturer and shall be approved.~~

503.12.6 Positioning. Draft hoods and draft regulators shall be installed in the position for which they were designed with reference to the horizontal and vertical planes and shall be located so that the relief opening is not obstructed by any part of the *appliance* or adjacent construction. The *appliance* and its draft hood shall be located so that the relief opening ~~is accessible~~ has access for checking vent operation.

503.13 Manually operated dampers. A manually operated damper shall not be placed in the vent connector for any *appliance*. Fixed baffles and balancing baffles shall not be classified as manually operated dampers.

503.13.1 Balancing baffles. Balancing baffles shall be listed in accordance with UL 378 and shall be mechanically locked in the desired position before placing the *appliance* in operation.

503.14 ~~Automatically operated~~ Automatic vent dampers. An ~~automatically operated~~ automatic vent damper shall be ~~of a listed type~~.

503.15 Obstructions. Devices that retard the flow of vent gases shall not be installed in a vent connector, chimney or vent. The following shall not be considered as obstructions:

1. Draft regulators and safety controls specifically *listed* for installation in venting systems and installed in accordance with the manufacturer's instructions.
2. *Approved* draft regulators and safety controls that are designed and installed in accordance with ~~approved~~ engineering methods.
3. *Listed* heat reclaimers and automatically operated vent dampers installed in accordance with the manufacturer's instructions.

4. *Approved* economizers, heat reclaimers and recuperators installed in venting systems of appliances not required to be equipped with draft hoods, provided that the *appliance* manufacturer's instructions cover the installation of such a device in the venting system and performance in accordance with Sections 503.3 and 503.3.1 is obtained.
5. Vent dampers serving *listed* appliances installed in accordance with Sections 504.2.1 and 504.3.1 ~~or other~~ *approved* engineering methods.

504.2.16 Engineering calculations. ~~For Where a~~ vent ~~height is~~ *heights* less than 6 feet (1829 mm) ~~and or~~ greater than shown in the tables, ~~an~~ engineering ~~method~~ *methods* shall be used to calculate ~~the~~ vent ~~capacity~~ *capacities*.

504.3.12 Vent height measurement. ~~For multiple appliances all located on one floor, The~~ available total height (H) ~~for multiple appliances on the same floor~~ shall be measured from the highest draft hood outlet or flue collar up to the level of the outlet of the common vent.

504.3.13 Multistory height measurement. ~~For multistory installations, Where~~ *appliances are located on more than one floor, the* available total height (H) for each segment of the system shall be the vertical distance between the highest draft hood outlet or flue collar entering that segment and the centerline of the next higher interconnection tee.

504.3.18 Multiple input rate appliances. ~~For appliances with more than one input rate, the~~ *The* minimum vent connector capacity (FAN Min) ~~for appliances with more than one input rate shall be~~ determined from the tables ~~and~~ shall be less than the lowest *appliance* input rating, ~~and the~~ *The* maximum vent connector capacity (FAN Max or NAT Max) ~~for appliances with more than one input rate shall be~~ determined from the tables ~~and~~ shall be greater than the highest *appliance* input rating.

Chapter 6 Specific Appliances

602.1 General. Decorative *appliances* for installation in *approved* solid fuel-burning *fireplaces* shall be ~~listed~~ *tested* in accordance with ANSI Z21.60/CSA 6.26, ~~shall comply with the requirements of the Energy Conservation Construction Code of New York State Section R403.13,~~ and shall be installed in accordance with the manufacturer's instructions. Manually lighted natural gas decorative appliances shall be ~~listed~~ *tested* in accordance with ANSI Z21.84.

602.2 Flame safeguard device. Decorative *appliances* for installation in *approved* solid fuel-burning *fireplaces*, with the exception of those ~~listed~~ *tested* in accordance with ANSI Z21.84, shall utilize a direct ignition device, an ignitor or a pilot flame to ignite the fuel at the main burner, and shall be equipped with a flame safeguard device. The flame safeguard device shall automatically shut off the fuel supply to a main burner or group of burners when the means of ignition of such burners becomes inoperative.

603.1 General. Log lighters shall be ~~listed~~ *tested* in accordance with CSA 8 and installed in accordance with the manufacturer's instructions.

604.1 General. Vented gas fireplaces shall be ~~listed~~ *tested* in accordance with ANSI Z21.50/CSA 2.22, shall be installed in accordance with the manufacturer's instructions, ~~shall comply with the requirements of the Energy Conservation Construction Code of New York State Section R403.13,~~ and shall be designed and equipped as specified in Section 602.2.

605.1 General. Vented gas fireplace heaters shall be installed in accordance with the manufacturer's instructions, shall be ~~listed~~ *tested* in accordance with ANSI Z21.88/CSA 2.33, ~~shall comply with the requirements of the Energy Conservation Construction Code of New York State Section R403.13,~~ and shall be designed and equipped as specified in Section 602.2.

606.1 General. Factory built cremation furnaces and commercial direct-fed incinerators shall be listed and labeled in accordance with UL 2790. Factory-built incinerators for domestic applications shall be listed and labeled in accordance with UL 791. Incinerators and ~~crematories~~ *cremation furnaces* shall be installed in accordance with the manufacturer's instructions.

608.1 General. Vented wall furnaces shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.86/CSA 2.32 and shall be installed in accordance with the manufacturer's instructions.

609.1 General. Floor furnaces shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.86/CSA 2.32 and shall be installed in accordance with the manufacturer's instructions.

610.1 General. Duct furnaces shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z83.8/CSA 2.6 or UL 795 and shall be installed in accordance with the manufacturer's instructions.

611.2 Installation. *Nonrecirculating direct-fired industrial air heaters* shall not be used to supply any area containing sleeping quarters. *Nonrecirculating direct-fired industrial air heaters* shall ~~be installed only in industrial or commercial occupancies.~~ *Nonrecirculating direct-fired industrial air heaters* shall be permitted to provide ventilation air.

612.2 Location. *Recirculating ~~direct-fired~~ industrial air heaters* shall be ~~installed only in industrial and commercial occupancies.~~ *Recirculating direct-fired air* heaters shall not serve any area containing sleeping quarters. *Recirculating direct-fired industrial air heaters* shall not be installed in *hazardous locations* or in buildings that contain flammable solids, liquids or gases, explosive materials or substances that can become toxic when exposed to flame or heat.

613.1 General. Clothes dryers shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.5.1/CSA 7.1 or ANSI Z21.5.2/CSA 7.2 and shall be installed in accordance with the manufacturer's instructions.

[M] 614.4.1 Terminal location. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. Where the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into buildings including openings in ventilated soffits.

[M] 614.6 Booster fans prohibited. Domestic booster fans shall not be installed in dryer exhaust systems.

614.7 Makeup air. Installations exhausting more than 200 cfm (0.09 m³/s) shall be provided with makeup air. ~~Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (645 mm²) for makeup air shall be provided in the closet enclosure, or makeup air shall be provided by other approved means.~~

[M] 614.7.1 Closet installation. Where a closet is designed for the installation of a clothes dryer, an opening having an area of not less than 100 square inches (645 mm²) for makeup air shall be provided in the closet enclosure, or makeup air shall be provided by other approved means.

617.1 General. Pool and spa heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.56/CSA 4.7 and shall be installed in accordance with the manufacturer's instructions.

618.1 General. Forced-air warm-air furnaces shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.47/CSA 2.3 or UL 795 and shall be installed in accordance with the manufacturer's instructions.

618.6 (IFGS) Furnace plenums and air ducts. Where a furnace is installed so that supply ducts carry air circulated by the furnace to areas outside of the space containing the furnace, the return air shall be handled by a duct(s) sealed to the furnace casing and terminating outside of the space containing the furnace. Return air shall not be taken from the mechanical room containing the furnace.

620.1 General. Unit heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z83.8/CSA 2.6 and shall be installed in accordance with the manufacturer's instructions.

621.1 General. Unvented room heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.11.2 and shall be installed in accordance with the conditions of the listing and the manufacturer's instructions. Unvented room heaters utilizing fuels other than fuel gas shall be regulated by the *International Mechanical Code*.

622.1 General. Vented room heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.86/CSA 2.32, shall be designed and equipped as specified in Section 602.2 and shall be installed in accordance with the manufacturer's instructions.

623.1 Cooking appliances. Cooking appliances that are designed for permanent installation, including ranges, ovens, stoves, broilers, grills, fryers, griddles, hot plates and barbecues, shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.1, ANSI Z21.58/CSA 1.6 or ANSI Z83.11/CSA 1.8 and shall be installed in accordance with the manufacturer's instructions.

623.2 Prohibited location. Cooking appliances designed, tested, listed and labeled for use in commercial occupancies shall not be installed within dwelling units or within any area where domestic cooking operations occur.

Exceptions: ~~1.~~ Appliances that are also listed as domestic cooking appliances.

~~2. Where the installation is designed by a licensed Professional Engineer, in compliance with the manufacturer's installation instructions.~~

624.1 General. Water heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.10.1/CSA 4.1 ~~or~~ ~~and~~ ANSI Z21.10.3/CSA 4.3 and shall be installed in accordance with the manufacturer's instructions. Water heaters utilizing fuels other than fuel gas shall be regulated by the *International Mechanical Code*.

625.1 General. Refrigerators shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.19/CSA 1.4 and shall be installed in accordance with the manufacturer's instructions. Refrigerators shall be provided with adequate clearances for ventilation at the top and back, and shall be installed in accordance with the manufacturer's instructions. If such instructions are not available, not less than 2 inches (51 mm) shall be provided between the back of the refrigerator and the wall and not less than 12 inches (305 mm) above the top.

627.1 General. Gas-fired air-conditioning appliances shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z21.40.1/CGA 2.91 or ANSI Z21.40.2/CGA 2.92 and shall be installed in accordance with the manufacturer's instructions.

630.1 General. Infrared radiant heaters shall be ~~listed~~ ~~tested~~ in accordance with ANSI Z83.19 or Z83.20 and shall be installed in accordance with the manufacturer's instructions.

SECTION 634 (IFGS)

CHIMNEY DAMPER OPENING AREA

634.1 Free opening area of chimney dampers. ~~Where an unlisted decorative appliance for installation in a vented fireplace is installed, the fireplace damper shall have a permanent free opening equal to or greater than specified in Table 634.1.~~

TABLE 634.1

FREE OPENING AREA OF CHIMNEY DAMPER FOR VENTING FLUE GASES FROM UNLISTED DECORATIVE APPLIANCES FOR INSTALLATION IN VENTED FIREPLACES

CHIMNEY HEIGHT (feet)	MINIMUM PERMANENT FREE OPENING (square inches) ^a						
	8	13	20	29	39	51	64
	Appliance input rating (Btu per hour)						
6	7,800	14,000	23,200	34,000	46,400	62,400	80,000
8	8,400	15,200	25,200	37,000	50,400	68,000	86,000
10	9,000	16,800	27,600	40,400	55,800	74,400	96,400
15	9,800	18,200	30,200	44,600	62,400	84,000	108,800
20	10,600	20,200	32,600	50,400	68,400	94,000	122,200
30	11,200	21,600	36,600	55,200	76,800	105,800	138,600

~~For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 square inch = 645.16 mm², 1 British thermal unit per hour = 0.2931 W.~~

~~a. The first six minimum permanent free openings (8 to 51 square inches) correspond approximately to the cross-sectional areas of chimneys having diameters of 3 through 8 inches, respectively. The 64 square-inch opening corresponds to the cross-sectional area of standard 8-inch by 8-inch chimney tile.~~

635.1 General. Permanently fixed-in-place outdoor decorative *appliances* shall be listed ~~tested~~ in accordance with ANSI Z21.97 and shall be installed in accordance with the manufacturer's instructions.

Chapter 8 Reference Standards

ANSI

[ANSI Z21.90/CSA 6.24—2015 Gas Convenience Outlets and Optional Enclosures](#)
[CSA/ANSI NGV 5.2—2017 Vehicle Fueling Appliances \(VFA\)](#)
[Z21.41/CSA 6.9—2014 Quick Disconnect Devices for use with Gas Fuel Appliances](#)

ASME

[B16.20—2017 Metallic Gaskets For Pipe Flanges: Ring-Joint, Spiral-Wound and Jacketed](#)
[B16.21—2016 Nonmetallic Flat Gaskets for Pipe Flanges](#)

ASSP

[Z359.1 The Fall Protection Code](#)

ASTM

[C64 - 72\(1977\) Standard Specification for Refractories for Incinerators and Boilers](#)

SMACNA

[SMACNA/ANSI—2016 HVAC Duct Construction Standards—Metal and Flexible, 4th Edition \(ANSI\)](#)

UL

[UL 791-2006: Residential Incinerators – with revisions through November, 2014](#)
[UL 2790-2010: Commercial Incinerators - with revisions through June, 2019](#)

Appendices

SECTION D103 GAS PIPING AND CONNECTIONS INSPECTIONS.

1. *Leak Checks.* Conduct a test for gas leakage using either a non-corrosive leak detection solution or a CGD confirmed with a leak detection solution.

The preferred method for leak checking is by use of gas leak detection solution applied to all joints. This method provides a reliable visual indication of significant leaks.

The use of a CGD in its audio sensing mode can quickly locate suspect leaks but can be overly sensitive indicating insignificant and false leaks. All suspect leaks found through the use of a CGD should be confirmed using a leak detection solution.

Where gas leakage is confirmed, the owner should be notified that repairs must be made. The inspection should include the following components:

- a. All gas *pipng* fittings located within the *appliance* space.
 - b. *Appliance* connector fittings.
 - c. *Appliance* gas valve/regulator housing and connections.
2. *Appliance Connector.* Verify that the *appliance* connection type is compliant with Section 411 of the International Fuel Gas Code. Inspect flexible *appliance* connections to determine if they are free of cracks, corrosion and signs of damage. Verify that there are no uncoated ~~brass~~ copper alloy connectors. Where connectors are determined to be unsafe or where an uncoated ~~brass~~ copper alloy connector is found, the appliance shutoff valve should be placed in the off position and the owner notified that the connector must be replaced.

3. *Piping Support.* Inspect *piping* to determine that it is adequately supported, that there is no undue stress on the *piping*, and if there are any improperly capped pipe openings.
4. *Bonding.* Verify that the electrical bonding of gas *piping* is compliant with Section 310 of the International Fuel Gas Code.

DRAFT

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