

CHAPTER 23.20 LOCAL AMENDMENTS TO THE INTERNATIONAL MECHANICAL CODE 2009 EDITION

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- galvanized or stainless anchor bolts.
3. Mount appliance and associated piping and ductwork to wall and/or suspend from the ceiling in a location clear of any potential vehicle interference.

In all cases, the minimum clear width and depth of the garage shall be maintained in accordance with title 21.

23.20.304.3 Elevation of ignition source.

Amend section 304.3 by adding the following to the end of the paragraph:
Rooms and spaces that are not part of the living space of a dwelling unit shall include but are not limited to utility, storage, mud, laundry, toilet and bathing rooms.
Group F, M, S-1 and S-2 occupancies with overhead doors providing access to vehicles and equipment containing combustible fuel shall comply with this section.

23.20.304.13 Aircraft hangars.

Amend by adding a new section as follows:

304.13 Aircraft hangars. Overhead appliances installed in aircraft storage areas shall be located at least 10' vertically above the upper surface of the wings or engine enclosure of the tallest aircraft which may be housed in the hangar.

Exception. Where a 10' vertical separation cannot be maintained in an NFPA 409 Class III hangar, a sealed combustion appliance may be used. The appliance shall be located as high and as far away from the wings and engine enclosure as possible. This exception shall not apply to NFPA 409 Class I and Class II hangars.

23.20.306.3 Appliances in attics.

Add a new Exception #3 as follows:

Exception #3. The passageway and level surface are not required for replacement of horizontal furnaces located above drop ceilings in strip malls. All other code requirements apply.

23.20.306.4 Appliances under floors.

Amend by adding the following as the first sentence:

Installation of fuel burning appliances in underfloor crawl spaces is prohibited unless prior written approval is obtained from the authority with jurisdiction.

23.20.306.5 Equipment and appliances on roofs or elevated structures.

Add exception number 2 to section 306.5 as follows:

2. Where equipment requiring access and appliances are installed on the roof of a new building, such access shall be

provided by a permanent *approved* means, interior to the building, extending from floor level to the equipment and/or appliances level service space, regardless of the roof height.

23.20.306.5.2 Electrical requirements.

Revise the sentence to read as follows:

A receptacle outlet shall be provided as required by the N.E.C.

23.20.306.6 Mezzanines and platforms.

Add a new section as follows:

306.6 Mezzanines and platforms. Every mezzanine or platform containing appliances or equipment requiring access more than ten feet, six inches above the ground or floor level shall be made accessible by a stairway or ladder fastened to the structure. The ladder shall be constructed in compliance with the provisions of Local Amendment 23.20.306.5.

23.20.401.4.1 Mechanical intake openings serving single-family dwelling units.

Add a new section as follows:

401.4.1 Mechanical intake openings serving single family dwelling units. Mechanical outdoor air intake openings serving single family dwelling units shall be located a minimum of six (6) feet horizontally from a gas pressure regulator relief vent outlet. Where a vent outlet is located within six (6) feet horizontally of a mechanical outdoor intake opening, such opening shall be located a minimum of two (2) feet below the vent outlet. Measurements shall be taken from the gas pressure regulator relief vent outlet.

23.20. Table 401.5 Opening sizes in louvers, grilles and screens protecting air intake openings.

Revise the minimum and maximum opening sizes as follows:

OUTDOOR OPENING TYPE	MINIMUM AND MAXIMUM OPENING SIZES IN LOUVERS, GRILLES AND SCREENS MEASURED IN ANY DIRECTION
Intake openings in residential occupancies	1/2 inch
Intake openings in other than residential occupancies	Not < 1/2 inch and not > 1 inch

23.20.403.3 Outdoor airflow rate.

Amend by adding to the end of the first sentence the words "or in accordance with the latest version of ASHRAE Standard 62.1."

23.20. Table 403.3.1.2 Zone air distribution effectiveness.

In the last row of the table, delete the words "near to" and add in their place

"within 4 feet of".

23.20.404.1 Enclosed parking garages.

Add the following sentence to the end of the paragraph:

Carbon monoxide detectors, when used, shall be centrally located and shall activate the ventilation system at a maximum of 35 ppm.

23.20.406.1 General.

Delete section 406.1.

23.20.501.2 Exhaust discharge.

Delete Exception #1 to 501.2.

23.20.501.2.1.1 Exhaust discharge.

Insert the word "public" between the words "onto" and "walkways".

23.20.501.2.2 Exhaust opening protection.

Delete the words "sized not less than ¼ inch (6mm) and not larger than".

23.20.504.6.4 Duct length.

Add a sentence to the end of the paragraph to read:

The duct shall be routed using the shortest possible distance and/or the least number of 45 and 90 degree elbows, as possible.

23.20.504.6.4.2 Manufacturer's instructions.

Add the following exception:

Exception: For distances exceeding the dryer manufacturer's recommendations, a booster fan, listed for the purpose, shall be used for lengths up to the booster fan manufacturer's recommendations.

23.20.504.6.5 Length identification.

Replace the words "equivalent length" with the words "total length plus total number of elbows".

Add to the end of the paragraph:

"and shall be laminated or in a moisture-resistant sleeve secured to the wall using screws, staples, or thumb tacks. Push pins are not acceptable."

23.20.505.1 Domestic systems.

Delete the first sentence and replace with the following:

Each domestic range, fuel-fired or electric, shall be equipped with either a range hood or an integral downdraft exhaust system discharging to the exterior of the building through a duct constructed of galvanized steel, stainless steel, aluminum, or copper. Clearance above the cook top shall be at least thirty (30) inches to unprotected

combustible material. When the underside of such combustible material is protected with insulating millboard at least one-quarter (1/4) inch thick covered with 0.021 inch thick (No. 28 U.S. gauge) sheet metal or metal ventilating hood, the distance shall not be less than twenty-four (24) inches.

Delete Exception No. 1.

23.20.505.2 Makeup air required.

Amend paragraph by adding the following:

Exception: A backdraft test may be performed to verify proper operation of all combustion appliances. If backdraft occurs under any operational scenario, makeup shall be required.

23.20.507.2.1.1 Operation.

Delete section 507.2.1.1 in its entirety.

23.20.511.1 Dust, stock and refuse conveying systems.

Amend by adding the following exception to section **511.1**:

Listed dust collectors and separator designed and installed in accordance with NFPA 664.

23.20.515.1 Multi-port exhaust fans.

Add new section as follows:

515.1 Multi-port exhaust fans. Multi-port exhaust fan installations shall comply with the following:

1. This type of fan may be used for exhausting environmental air such as bathrooms and toilet rooms and shall not be used for clothes dryer or range exhaust.
2. If this fan is installed in the attic, it shall be within three (3) feet of the attic access and the exhaust registers it serves shall be permanently labeled as to the location of the fan for service and maintenance.
3. The operating range for these fans is limited to -40 degrees F to +140 degrees F.
4. Combustion air requirements for fireplaces, water heaters, furnaces, boilers, etc., shall not be effected by the use or operation of this type of fan.
5. These fans shall not be used to exhaust combustible or flammable vapors, fumes, or dusts.
6. The exhaust fan and ductwork shall be insulated with minimum two (2) inch thick fiberglass duct insulation to minimize heat transfer to the attic space, which can result in ice damming on the roof.
7. All ceiling vapor barrier penetrations shall be sealed airtight to minimize condensation build-up in the attic and ice damming on the roof.

8. All duct seams shall be sealed airtight with duct mastic/sealer to prevent condensation damage in the attic.

23.20.601.4 Contamination prevention.

Amend by numbering the exception as "1" and adding the following two exceptions as follows:

Exceptions:

2. Environmental air exhaust ducts under positive pressure may extend into or through ducts or plenums if one of the following design approaches is used:
 - a. Route environmental air exhaust ducts inside a shaft when passing through a duct or plenum.
 - b. Install a second duct around the environmental air exhaust duct where passing through ducts and plenums to minimize leakage to the duct or plenum; seal both ends of the outer duct to outside.
 - c. **Seal the environmental air exhaust ducts along all seams and joints using a listed low to medium pressure duct sealant, typically applied by brush, trowel, or caulking gun; install sealant per manufacturer's recommendations.**
 - d. Provide flexible duct with no seams in the duct or plenum only to a limit of eight (8) feet. The eight (8) feet limit is due to high static losses. Also, sleeving the metal duct with flexible seamless duct is acceptable.
3. Gas vents installed in accordance with section 503.3.6 in the International Fuel Gas Code.

23.20.602.1 General.

Delete from the first sentence the words "uninhabited crawl spaces."

Add the following sentence to the end of the paragraph:

Underfloor crawlspaces shall not be used as plenums.

23.20.702 Circulation of air.

Amend by adding the following section:

702 Circulation of air. Fuel burning appliances may be required to pass a back draft test as a part of the final plumbing or mechanical inspection. This test shall be conducted with all exhaust fans operating and with fireplace draft open.

23.20.801.20 Plastic vent joints.

Add to the end of the paragraph:

Solvent cement joints for CPVC and PVC pipe and fittings shall be primed. The primer shall be a contrasting color listed for the use.

23.20.801.21 Location and support of venting systems other than masonry chimneys.

Add a new section as follows:

801.21 Location and support of venting systems other than masonry chimneys. Unless a vent or chimney listed for exterior use in cold weather climates is installed, a vent or chimney system installed exterior to the building outside the thermal envelope shall be enclosed in an insulated (R-19 minimum) chase. The portion of the system above the last roof and its projected plane need not be enclosed. The portion of the system passing through an attic space need not be insulated or enclosed.

23.20.802.9 Vent terminals - ice and snow protection.

Amend by adding the following section:

802.9 Vent terminals – ice and snow protection. Vent terminations penetrating a metal roof with a pitch shall be protected by an ice or snow deflector of an approved type acceptable to the Administrative Authority.

23.20.804.3.4 Horizontal terminations.

Add the following two sentences to Item 6:

An anticipated snow depth of twelve (12) inches shall be used when determining the manufacturer's minimum vent termination height. Measurements shall be made to the bottom of the vent outlet.

23.20.918.6 Prohibited sources.

Change the wording to the first half of the sentence to read:

"Outdoor, return, or transfer air for a forced-air heating system..."

Change sub-paragraph #6 to read "Crawlspace".

23.20.923.2 Small ceramic kilns – ventilation.

Amend by adding the following section:

923.2 Small ceramic kilns - ventilation. A canopy-type hood shall be installed directly above each kiln. The face opening area of the hood shall be equal to or greater than the top horizontal surface area of the kiln. The hood shall be constructed of not less than 0.024-inch (No. 24 U.S. gauge) galvanized steel or equivalent and be supported at a height of between twelve (12) inches and thirty (30) inches above the kiln by noncombustible supports.

Exception: Electric kilns installed with listed exhaust blowers may be used when marked as being suitable for the kiln and installed in accordance with manufacturer's instructions.

Each hood shall be connected to a gravity ventilation duct extending in a vertical direction to outside the building. This duct shall be of the same construction as the hood and shall have a minimum cross-sectional area of not less than one-fifteenth of the face opening area of the hood. The duct shall terminate a minimum of twelve (12) inches above any portion of a building within four (4) feet and terminate no less than four (4) feet from any openable windows or

other openings into the building or adjacent property line. The duct opening to the outside shall be shielded, without reduction of duct area, to prevent entrance of rain into the duct. The duct shall be supported at each section by noncombustible supports.

Provisions shall be made for air to enter the room in which a kiln is installed at a rate at least equal to the air being removed.

23.20.1001.1 Scope.

Amend Exception 7 by deleting the words "or state".

23.20.1004.4 Mounting.

Add the following to the end of the paragraph:

Boilers shall be installed in a water-tight pan of corrosion-resistant material. The pan shall be equipped with a minimum three quarter (3/4) inch (20mm) diameter drain discharging to an approved location.

Exceptions:

1. A pan is not required when a boiler is installed on a concrete slab.
2. A pan is not required where a corrosion-resistant material is placed under the boiler provided it covers the entire platform and extends to all walls adjoining the platform and turning up the walls a minimum of two (2) inches.

23.20.1006.6 Safety and relief valve discharge.

Add to the end of the paragraph:

When a boiler is installed on a platform, the boiler relief valve piping shall discharge to between 6" and 24" off the finished floor over the edge of the platform.

23.20.1006.7 Boiler safety devices.

Amend by replacing section 1006.7 with the following:

1006.7 Boiler safety devices. Boilers shall be equipped with controls and limit devices as required by the manufacturer's installation instructions, Table 1006.7 and the conditions of the listing.

23.20.Table 1006.7 –CONTROLS AND LIMIT DEVICES FOR AUTOMATIC BOILERS

Boiler Group	Fuel	Fuel Input Range ¹ (Inclusive) (x0.293071 for W)	Type Of Pilot ²	Time for Pilot	Direct Electric Ignition	Flame Pilot	Main Burner Flame Failure ³	Assured Fuel Supply Control ⁴	Assured Air Supply Control ⁵	Low Fire Start Up Control ⁶	Pre-Purging Control ⁷	Hot Water Temp. and Low Water Limit Controls ⁸	Steam Pressure and Low Water Limit Controls ⁹	Approved Fuel Shutoff ¹⁰	Control and Limit Device System Design ¹¹
A	Gas	0-400,000 Btu/h	Any type	90	Not required	90	90	Not required	Required	Not required	Not required	Required	Required	Not required	Required
B	Gas	400,001-2,500,000Btu/h	Interrupted or intermittent	15	15	15	2-4	Not required	Required	Not required	Not required	Required	Required	Not required	Required
C	Gas	2,500,001-5,000,000Btu/h	Interrupted or intermittent	15	15	15	2-4	Required	Required	Required	Required	Required	Required	Required	Required
D	Gas	Over 5,000,000 Btu/h	Interrupted	15	15	15	2-4	Required	Required	Required	Required	Required	Required	Required	Required
E	Oil	0-400,000 Btu/h	Any type	Not required	90	90	90	Not required	Required	Not required	Not required	Required	Required	Not required	Required
F	Oil	400,001-1,000,000 Btu/h	Interrupted	Not required	30	30	2-4	Required	Required	Not required	Not required	Required	Required	Not required	Required
G	Oil	1,000,001-3,000,000 Btu/h	Interrupted	Not required	15	15	2-4	Required	Required	Not required	Not required	Required	Required	Not required	Required
H	Oil	Over 3,000,000 Btu/h	Interrupted	15	15	60	2-4	Required	Required	Required	Required	Required	Required	Required	Required
K	Elec.	All	Not required	Not required	Not required	Not required	Not required	Not required	Not Required	Not required	Not required	Required	Required	Not required	Required

- 1 Fuel input shall be determined by one of the following:
 - 1.1 The maximum burner input as shown on the burner nameplate or as otherwise identified by the manufacturer.
 - 1.2 The nominal boiler rating, as determined by the building official, plus 25 percent.
- 2 Automatic boilers shall have one flame failure device on each burner which shall prove the presence of a suitable ignition source at the point where it will reliably ignite the main burner, except boiler Groups A, B, E, F and G which are equipped with direct electric ignition shall monitor the main burner, and all boiler groups using interrupted pilots shall monitor only the main burner after the prescribed limited trial and ignition periods. Boiler Group A equipped with continuous pilot shall accomplish 100 percent shutoff within 90 seconds upon pilot flame failure. The use of intermittent pilots in boiler Group C is limited to approved burner units.
- 3 In boiler Groups B, C and D, a 90-second main burner flame failure limit may apply if continuous pilots are provided on manufacturer-assembled boiler-burner units approved by an approved testing agency as complying with nationally recognized standards approved by the building official. Boiler Groups F and G equipped to reenergize their ignition system within 0.8 second after main burner flame failure shall be permitted 30 seconds for Group F or 15 seconds for Group G to reestablish its main burner flame.
- 4 Boiler Groups C and D shall have controls interlocked to accomplish a nonrecycling fuel shutoff upon high or low gas pressure, and boiler Groups F, G and H using steam or air for fuel atomization shall have controls interlocked to accomplish a nonrecycling fuel shutoff upon low atomizing steam or air pressure. Boiler Groups F, G and H equipped with a preheated oil system shall have controls interlocked to provide fuel shutoff upon low oil temperature.
- 5 Automatic boilers shall have controls interlocked to shut off the fuel supply in the event of draft failure if forced or induced draft fans are used or, in the event of low combustion airflow, if a gas power burner is used. Where a single motor directly driving both the fan and the oil pump is used, a separate control is not required.
- 6 Boiler Groups C, D and H, when firing in excess of 400,000 Btu per combustion chamber, shall be provided with low fire start of its main burner system to permit smooth light off. This shall normally be a rate of approximately one-third of its maximum firing rate.
- 7 Boiler Groups C, D and H shall not permit pilot or main burner trial for ignition operation before a purging operation of sufficient duration to permit a minimum of four complete air changes through the furnace, including combustion chamber and the boiler passes. Where this is not readily determinable, five (5) complete air changes of the furnace, including combustion chamber up to the first pass, shall be considered equivalent. An atmospheric gas burner with no mechanical means of creating air movement or an oil burner which obtains two-thirds or more of the air required for combustion without mechanical means of creating air movement shall not require purge by means of four (4) air changes so long as its secondary air openings are not provided with means of closing. If such burners have means of closing secondary air openings, a time delay shall be provided which puts these closures in a normally open position for four (4) minutes before an attempt for ignition. An installation with a trapped

- combustion chamber shall in every case be provided with a mechanical means of creating air movement for purging.
- 8 Every automatic hot-water-heating boiler, low-pressure hot-water-heating boiler, and power hot-water boiler shall be equipped with two (2) high-temperature limit controls with a manual reset on the control with the higher setting interlocked to shut off the main fuel supply, except the manual reset on the high-temperature limit control shall not be required on any automatic package boiler not exceeding 400,000 Btu/h input and approved by an approved testing agency. Every automatic hot-water heating, power boiler and package hot-water supply boiler shall be equipped with one low-water-level limit control with a manual reset interlocked to shut off the fuel supply, installed to prevent damage to the boiler and to permit testing of the control without draining the heating system except on boilers used in Group R Occupancies of less than six (6) units. However, a low-water-flow limit control installed in the circulating water line may be used instead of the low-water-level limit control for the same purpose on coil-type boilers.
 - 9 Every automatic low-pressure steam-heating boiler, small power boiler and power steam boiler shall be equipped with two high-steam pressure limit controls interlocked to shut off the fuel supply to the main burner with manual reset on the control with the higher setting, and two (2) low-water-level limit controls, one of which shall be provided with a manual reset device and independent of the feed water controller. Coil-type flash steam boilers may use two (2) high-temperature limit controls, one of which shall be manually reset in the hot-water coil section of the boiler instead of the low-water-level limit control.
 - 10 Boiler Groups C, D and H shall use an approved automatic reset safety shutoff valve for the main burner fuel shutoff, which shall be interlocked to the programming control devices required. On oil burners where the safety shutoff valve shall be subjected to pressures in excess of ten (10) psi when the burner is not firing, a second safety shutoff valve shall be provided in series with the first. Boiler Groups C and D, using gas in excess of 1-pound-per-square-inch pressure or having a trapped combustion chamber or employing horizontal fire tubes, shall be equipped with two (2) approved safety shutoff valves, one of which shall be an automatic-reset type, one of which may be used as an operating control, and both of which shall be interlocked to the limit-control devices required. Boiler Groups C and D using gas in excess of 1-pound-per-square-inch pressure shall be provided with a permanent and ready means for making periodic tightness checks of the main fuel safety shutoff valves.
 - 11 Control and limit device systems shall be grounded with operating voltage not to exceed 150 volts except, on approval by the building official, existing control equipment to be reused in an altered boiler control system may use 220-volt single phase with one side grounded, provided such voltage is used for all controls. Control and limit devices shall interrupt the ungrounded side of the circuit. A readily accessible means of manually disconnecting the control circuit shall be provided with controls so arranged that when they are de-energized the burner shall be inoperative.

23.20.1006.8 Electrical requirements.

Delete section in its entirety.

23.20.1007 Boiler low-water cutoff.

Delete section in its entirety.

23.20.1105.3 Refrigerant detector.

Add a second sentence to read as follows:

Refrigerant detectors shall alarm audibly and visually both inside and outside the machinery room or refrigerated space.

23.20.1105.6.2 Make-up air.

Amend last sentence by changing ¼ -inch to ½ -inch.

23.20.1105.9 Machinery room, general requirements.

Add a subsection 1105.9 as follows:

1105.9 Seismic protection. Refrigeration piping from adjacent equipment or machinery rooms that are not attached to the building shall be provided with seismic protection suitable for outdoor use and approved for use by the Administrative Authority. Examples: Flexible connectors approved for use in refrigeration systems, soft copper piping, swing joints.

23.20.1301.1 Scope.

Revise the first sentence of the section to read as follows:

The design, installation, construction, and repair of fuel oil storage and piping systems shall be in accordance with this chapter and NFPA 31.