

ARTICLE 12. HEATING APPLIANCES, COMBUSTION AND CHIMNEYS

Sub-Article 1. Heating Appliances

(11.1.1). §C26-690.0 Design and Installation of Heating Apparatus.-The design, installation and repair of heating apparatus shall be as required by this title and the rules of the board.

(11.1.2.1). §C26-691.0 Pipes for Steam and Hot Water Heating.-

a. Contact of pipes with combustible material.

1. Except as provided in subparagraph 4 hereof, it shall be unlawful to make any contact between steam or hot water pipes and any woodwork or other combustible material.

2. Except as provided in subparagraph 4 hereof, steam or hot water pipes shall have a minimum clearance from any combustible material of one-half inch.

3. Except as provided in subparagraph 4 hereof, where steam or hot water pipes are located within one inch of any combustible material, such material shall be protected by a metal casing or lining and where such pipes pass through stock shelving, they shall be covered with at least one-half inch of insulating material. Steam and hot water pipe coverings shall be of fire-retarding material.

4. Subparagraph 1, 2 and 3 hereof shall not apply to hot water heating lines which incorporate an approved non-tamperable temperature control device which has been set so that the water circulating in the pipes cannot exceed 160 degrees fahrenheit in temperature.

(11.1.2.2). b. Concealed Hot Water Piping.-Concealed hot water piping may be located in an outer wall in any structure, only when amply protected against freezing.

(11.1.2.3). c. Expansion and Contraction of Heating Pipes.-Heating pipes shall be so installed as to provide safety for all expansion and contraction.

(11.1.3). §C26-692.0 Warm Air Pipes.-Distributing pipes connected to warm air furnaces shall be kept at least one inch away from any woodwork, and if less than two inches away, the woodwork shall be protected by sheet metal covering or other incombustible material.

(11.1.4.1). §C26-693.0 Furnaces and Boilers.-

a. Grate Areas Three Square Feet or More.-Furnaces or boilers having grate or burner areas of three square feet or more shall be set upon masonry foundations, which foundations shall rest upon incombustible construction or assemblies. Any such boiler operating at fifteen pounds pressure or more except a boiler of not more than thirty horsepower using gas fuel shall be enclosed in a room whose walls have a fire resistive rating of at least three hours and whose ceiling has a fire resistive rating of at least one hour.

(11.1.4.2). b. Solid or Gas Fuel in Grate Areas of Less Than Three Square Feet.-Furnaces or boilers using solid or gas fuel having grate or burner areas less than three square feet may be set on wood floors provided such furnaces or boilers rest upon foundations consisting of at least two inches of solid brick and four inches hollow tile, or the equivalent of these two materials, set on sheet metal plates at least as thick as No. 14 U.S. gage and at least twenty-four inches larger in all directions than the base of the boiler or furnace, if solid fuel is used, and six inches larger in all directions if gas fuel is used. Such tile shall be laid with open ends in contact. When solid fuel is used an ash plate or ash pan of metal at least as thick as No. 10 U.S. gage shall be provided above the foundation.

(11.1.4.2.1) bb. The board may adopt rules specifying the type of floor required under and around installations of fuel oil burning equipment. Such rules shall be adopted as the

board may deem necessary and proper for the safety, protection and welfare of the city and its inhabitants.

(11.1.4.3). c. Water Cooled Base Boilers.-Boilers with water cooled bases having grate areas of less than three square feet may rest directly on sheet metal bases without any intervening masonry, provided the sheet metal is at least as thick as No. 14 U.S. gage.

(11.1.4.4). d. Spaces around furnaces and boilers and other heaters.

1. A clear working space of at least eighteen inches on the sides and twenty-four inches on the top shall be provided around all furnaces and boilers except that boilers, furnaces and other heaters using gas fuel, approved by the board and when installed in private dwellings which do not have a cellar, may be installed in accordance with the approval of the board. Such separation shall be maintained with respect to walls as well as pumps and other apparatus used in connection with the heating plant.

2. Combustible material shall be at least six feet away from the front, four feet away from the top and three feet away from the sides of furnaces or boilers, including enclosures. These separations may be reduced one-half when at least one and one-half inches of asbestos insulating material or its equivalent is applied to the furnace or combustible material. Boilers, furnaces and other heaters using gas fuel, approved by the board shall be installed with clearances from combustible material in accordance with the approval of the board.

3. Gas-fired window or wall-type vented recessed heaters approved by the board, including those which have sealed combustion chambers and which are so constructed and installed that all air for combustion is derived from outside of the building and all flue gases are discharged to the outside of the building, shall be installed with the clearances from combustible material in accordance with the approval of the board.

4. In rooms where fuel oil burning equipment is installed the ceiling shall be insulated with material or assemblies having a fire resistive rating of at least one hour and extending at least four feet on sides and rear, and eight feet in front of the furnace, except that in private dwellings No. 16 U.S. gage sheet metal may be substituted for one hour fire resistive rating protection. If the ceiling is constructed throughout so as to have a fire resistive rating of at least one hour the installation may be omitted.

However, the board may adopt rules prescribing fire protective measures and minimum spaces for and around furnaces, boilers or installations of fuel oil burning equipment. Such rules shall be adopted as the board may deem necessary and proper for the safety, protection and welfare of the city and its inhabitants. If the board shall adopt such rules, the provisions of paragraph one, two and four of this subdivision shall not apply to such furnaces, boilers or installations of fuel oil burning equipment as are included within the purview of such rules.

(11.1.4.6). e. Connection of Furnaces and Boilers to Chimneys.-Every furnace or boiler shall be connected to a regulation chimney as classified under sections C26-703.0 through C26-713.0.

(11.1.4.7). f. Safety Valves on Steam Boilers.-Every boiler generating steam shall be equipped with a safety valve. Safety valves shall be adjusted and set to open under a lesser pressure than the maximum working pressure for which the boiler was designed.

(11.1.4.8). g. Relief Valves, Hot Water Systems.-Every closed hot water heating system shall be equipped with an approved pressure relief valve. Such pressure relief valves shall be

adjusted and set to open at a pressure slightly higher than the normal operating pressure of the hot water heating system.

(11.1.5). §C26-694.0 Boiler or Furnace Room Air Supply.-Rooms in which boilers or furnaces are located shall have adequate fresh air supply to insure proper combustion. It shall be unlawful to make any direct connection of air inlets to the ash pits or combustion chambers of boilers or furnaces, except where forced draft is employed.

(11.1.6). §C26-695.0 Stoves and Ranges.-

a. Cooking, laundry and heating stoves and combination coal and gas ranges installed in dwellings, shall be set on hearths supported by masonry trimmer arches extending at least six inches on all sides beyond such appliances, except that such appliances, when supported on legs furnishing an open air space of at least four inches below the bottom of the appliance, may be set on sheet metal of at least No. 24 U.S. gage, or other approved incombustible material.

b. It shall be unlawful to place any such appliances within twenty-four inches of wood stud partitions, wood furred walls or combustible material unless such appliances are protected by a shield of metal or other approved incombustible material so attached as to preserve an open air space behind such shield and to extend from the floor to twelve inches above and twelve inches beyond the sides of such appliances, in which case the appliance shall be placed at least six inches away from a wood stud partition, wood furred wall or combustible material.

c. Separation of Gas and Electric Ranges from Combustible Material.-

1. Cooking top clearances.-Domestic gas and electric ranges shall have a vertical clearance above the cooking top to the bottom of shelves, cabinets, or other combustible material of not less than thirty-six inches. When the underside of the combustible material is covered with at least five-eighths of an inch of gypsum or portland cement plaster on gypsum or metal lath or clay tile set in cement or cement-lime mortar, or gypsum or asbestos board covered with sheet metal of not less than No. 28 U.S. gauge in thickness, or other material providing adequate fire protection satisfactory to the superintendent, the combustible material shall be not less than twenty-four inches from the cooking top. The vertical clearance from combustible material shall extend to a distance of not less than nine inches beyond the sides of the top burners or to the sides of the range, whichever is greater.

2. Separation of gas and electric ranges and ovens from combustible material.

(a) Gas and electric ranges and ovens that have been approved by a recognized testing laboratory shall be installed with clearances from combustible material not less than those specified by the manufacturer, except as provided in paragraph one of this subdivision.

(b) Domestic ranges not approved by a recognized testing laboratory shall have a clearance from combustible material of not less than six inches at the sides and back and where such range does not have top burners, there shall be a vertical distance of at least twelve inches between the top of the range and combustible material. Ranges in which the clearance between the base frame and the floor is two inches or less shall be set on a base of hollow clay tile four inches thick or its equivalent, extending at least two inches beyond the range on all sides. When such clearance is more than two inches but less than six inches, such ranges shall be set on a base of asbestos board three-sixteenths of an inch thick held between two sheets of metal at least No. 24 U.S. gauge and extending at least two inches beyond the range on all sides. When such

clearance is more than six inches or the lower burners of the range are twelve inches or more above the floor measured from the burner ports, no protection shall be required.

(c) Vented products from recessed domestic ovens shall be conveyed through an incombustible vent pipe or duct to an opening in the outer surface of the cabinet or range or to the outer air. Clearances from the vent pipe to combustible material within cabinets shall not be less than twelve inches, and to the sides and back ten inches and from the bottom six inches unless the oven has been approved by a recognized testing laboratory for lesser clearances.

(d) Where the combustible material is protected as provided in paragraph one of this subdivision, one-half the clearances specified for ovens and ranges may be provided.

d. Stoves and ranges using solid fuel shall be connected by a smoke pipe to a regulation chimney.

(11.1.7.1). §C26-696.0 Exhaust Vents on Gas Appliances.-

a. Vented Gas Appliances.-

1. The following gas appliances shall be connected to flues or outlet pipes:

(a) Every appliance used for domestic purposes using in excess of fifty thousand British thermal units per hour, except domestic gas ranges;

(b) Automatically controlled appliances using more than five thousand British thermal units per hour;

(c) Automatically controlled appliances using less than five thousand British thermal units per hour, which are not equipped with an effective device to shut off the gas supply to the main burner or burners automatically when the constantly burning flame or pilot flame is extinguished;

(d) Installation of Gas Appliances.-Gas appliances shall be installed in conformity with specification Z21.30 of nineteen fifty-four of the American Standards Association, which specification is entitled "Installation of Gas Piping and Gas Appliances in Buildings," except as otherwise specifically provided in this title. In addition, any gas appliance subject to the provision of section D26-3.10a or D26-3.10b of title D of this chapter shall be installed in conformity with the applicable requirements of such sections.

(e) Water heaters installed in bathrooms, bedrooms or any place not adequately ventilated.

(f) Except as provided in sub-paragraph (b) of paragraph 13 of subdivision a of section D26-3.10a, the provisions with reference to connection to flues or outlet pipes shall not apply to gas-fired window or wall type vented recessed heaters, approved by the board, which have sealed combustion chambers and which are so constructed and installed that all air for combustion is derived from outside of the building and all flue gases are discharged to the outside of the building at a distance of six feet or more from any window on the floor above the flue outlet. Such vented recessed heaters shall be installed in accordance with the approval of the board.

(11.1.7.2). b. Unvented Gas Appliances.-Gas appliances having vent outlets, but not requiring connection with flues or outlet pipes, may be left unvented; but if vented, they shall be connected to flues conforming to the requirements of this article, or to outlet pipes.

(11.1.7.3). c. Flues and Outlet Pipes for Gas Appliances.-

1. Flues and outlet pipes to which gas appliances are connected shall have cross-sectional areas at least equal to the aggregate areas of the vent outlets of the appliances connected to them, but in any case the least internal dimension or diameter shall be three inches.

2. Flues and outlet pipes for the venting of gas appliances shall be carried to and through the roof or through an exterior wall to the outer air. In all cases outlet pipes shall be surmounted by a suitable cap.

3. Flues shall be constructed as required for low temperature chimneys in subdivision b of section C26-710.0 or shall be type B gas vents approved by the board for venting of gas appliances. Such type B gas vents shall be installed in accordance with the terms of their approval, and the approval of the Underwriters Laboratories, Inc. and/or the American Gas Association.

Type B gas vents shall be vent piping of incombustible, corrosion resistant material of sufficient thickness, cross-sectional area, and heat insulating quality to avoid excess temperature on adjacent combustible material and shall be approved by the board.

Type B gas vents shall be used only with approved gas appliances which produce vent gas temperatures not in excess of 550 degrees F. They shall not be used for venting:

(a) Incinerators.

(b) Appliances which were designed to burn solid or liquid fuel or which may be converted readily to the use of solid or liquid fuel.

For the purpose of this provision approved gas fueled appliances when located in residences, including central heating boilers and furnaces with the exception of incinerators and conversion burners, may be accepted as producing vent gas temperatures not in excess of 550 degrees F. at the outlet of the draft hood.

Type B gas vents shall be plainly and permanently labelled to the effect that they are for use with appliances which burn only gas.

Type B gas vents shall be rigidly supported by strapping at each joint to insure the approved clearance from combustible material and to protect against damage to the vent.

Where a type B gas vent passes through a combustible floor or combustible wall, such passage shall be by means of an incombustible ventilating thimble or equivalent which will maintain the approved clearance from combustible construction, or where type B gas vents are of double wall construction and approved for passages through combustible floors and so ventilated an unventilated thimble may be used for maintaining the approved clearance.

Where passing through occupied space, type B gas vents shall be suitably enclosed to prevent their being damaged. Such enclosure shall be of incombustible construction unless the board approves enclosures of other construction and specifies the clearance to be maintained between such other construction and the type B vents.

Type B gas vents shall extend at least 2 feet above the highest point where they pass through the roof of a building and at least 2 feet higher than any portion of the building within ten feet, except that gas vents need not comply with this provision when equipped with a vent cap approved by the board for the prevention of down-draft.

Materials of type B vent. The material used for the flue or vent shall be resistant to corrosion and shall be of sufficient thickness to withstand damage.

4. Outlet pipes shall be standard water, steam or soil pipe, or other approved incombustible, corrosion, resisting material so connected as to prevent leakage at the joints.

5. Outlet pipes shall be so installed that there is a clearance on all sides of at least three inches between such pipe and woodwork or other combustible material. It shall be unlawful to extend such outlet pipes through a floor.

(11.1.7.4). d. Installation of Gas Appliances.-Gas appliances shall be installed in conformity with the “requirements for House Piping and Appliance Installation” of the American Gas Association, fourth reprint, May first, nineteen hundred thirty-three, except as otherwise specifically provided in this title.

(11.1.7.5). e. Shut-off Devices for Gas Appliances.-Automatically controlled gas appliances which connect to flues or other heat producing devices shall be equipped with an effective device automatically to shut off the gas supply to the main burner or burners, when the constantly burning flame or pilot is extinguished. The connection of such gas appliance to the flue shall be at least nine inches above the connection of the other heat producing appliance or the smoke pipes or outlet pipes from the gas burning appliance and the other heat producing device may enter the flue through a single opening if joined together by a Y fitting located as close as practical to the flue. The angle of intersection between the branch and the stem of the Y shall not exceed 45 degrees. The area of the common outlet pipe shall not be less than the combined areas of the outlet pipes joined by the Y fitting.

Sub-Article 2.-Combustion

(11.2.5.1). §C26-701.0 Incinerator Combustion Chambers.-

a. Installation of Incinerators.-Incinerators constructed as an integral part of a structure, for the reduction of garbage, refuse or other waste materials, shall be installed in accordance with the provisions of this section.

(11.2.5.2). b. Non-Fuel Fired Incinerators.-

1. Incinerators in which no fuel other than normal refuse is used for combustion, except that of a gas flame or similar means used to accomplish ignition, and in which the chute and smoke flue are identical, when installed in dwellings, public buildings and restaurants not over three stories in height, shall have the enclosing walls of the combustion chamber constructed of brickwork at least three and three-quarters inches thick when there is a horizontal grate area of nine square feet or less and at least eight inches thick when there is a horizontal grate area exceeding nine square feet, and, in each case, a lining of fire brick, at least four and one-half inches thick, with an air space, in the case of the thicker wall, between the brick and the fire brick sufficient to provide for expansion and contraction.

2. The combined chute and flue in structures over three stories in height shall be constructed as prescribed for smoke flues in section C26-706.0. Such chute and flue shall be constructed straight and plumb, and finished smooth on the inside.

3. Service openings into the chute shall be equipped with approved self-closing hoppers so constructed that the chute or flue is closed off while the hopper is being charged and that no part will project into the chute or flue. The area of the service opening shall not exceed one-third of the area of the chute or flue.

4. It shall be unlawful for any incinerator opening to open directly on a required means of egress unless such opening is cut off from such means of egress by a self-closing protective assembly having a fire resistive rating of at least one hour.

(11.2.5.3). c. Fuel Fired Incinerators.-

1. Fuel fired incinerators, whether the fuel is specially supplied or consists of refuse or waste material, shall have the enclosing walls of the combustion chamber constructed of brick at least eight inches thick and lining of fire brick at least four and one-half inches thick when the grate area is nine square feet or less, and with a lining of fire brick at least nine inches thick when the grate area exceeds nine square feet, all strongly braced and stayed with structural steep shapes: provided that the outer four inches of clay or shale brickwork may be replaced by a steel plate casing three-sixteenths of an inch in thickness. Such fire brick lining shall be laid in fire clay mortar.

2. The combustion chamber shall be located in a separate room or compartment used for no other purpose, or in a room devoted exclusively to boilers and heating plant. In either case such room shall be separated from the rest of the structure by floors, walls and ceilings having a fire resistive rating of at least three hours. Openings to such rooms shall be protected with protective assemblies having a fire resistive rating of at least one and one-half hours.

3. The flue connections or breechings from the combustion chamber shall be constructed of No. 16 U.S. gage metal when twelve inches or less in diameter or greatest dimension and of No. 12 U.S. gage metal when they exceed twelve inches in diameter or greatest dimension. In addition they shall be lined with fire brick, laid in fire clay mortar, at least two and one-half inches thick when between twelve and eighteen inches in diameter or greater dimension, and at least four and one-half inches thick when they are larger. If they lead into and combine with flue connections or breechings from other appliances, such other connections or breechings shall also be lined as required for direct flue connection, unless the cross-sectional area of the connection into which they lead is at least four times their required cross-sectional area.

4. The clearance to woodwork or other combustible material or construction, on all sides of flue connections or breechings from the combustion chamber, shall be at least thirty-six inches; provided that when such woodwork or combustible construction is guarded by a metal shield backed with asbestos three-sixteenths of an inch thick, such clearance may be reduced to eighteen inches.

5. Refuse chutes, except when used exclusively for garbage disposal in dwellings, public buildings and restaurants, shall not feed directly to the combustion chamber, but shall discharge into a room or bin enclosed and separated from the incinerator room, by floors, ceilings, and walls of equal fire resistance to those required to enclose the incinerator room. The opening through which such material is transferred from such room or bin to the incinerator room shall be equipped with a protective assembly having a fire resistive rating of at least one and one-half hours.

6. Refuse chutes shall rest on substantial incombustible foundations. The enclosing walls of such chutes shall consist of brickwork at least eight inches thick or of reinforced concrete at least six inches thick. Such chutes shall extend at least four feet above the roof and shall be covered by a metal sky-light glazed with thin plain glass.

7. Service openings for chutes shall be located in separate rooms or compartments enclosed in walls or partitions, floors and ceilings, having a fire resistive rating of at least

one hour. Such openings shall be equipped with approved fire doors or other approved devices.

d. It shall be unlawful to throw carpet sweepings containing naphthalene, camphor balls or flakes, floor scrapings, oil soaked rags, empty paint cans or any other inflammable or highly combustible substance into any incinerator chute or opening. There shall be continuously and conspicuously posted on every door opening into a space in which there is located any service opening into an incinerator and also on the wall directly over the hopper opening into such incinerator a notice containing the following:

“THROWING CARPET SWEEPINGS CONTAINING NAPHTHALENE, CAMPHOR BALLS AND FLAKES, FLOOR SCRAPINGS, OIL SOAKED RAGS, EMPTY PAINT CANS OR ANY OTHER INFLAMMABLE OR HIGHLY COMBUSTIBLE SUBSTANCE INTO THIS INCINERATOR IS UNLAWFUL AND SUBJECTS THE OFFENDER TO A PENALTY.”

e. All dampers on smoke breechings of incinerators shall be provided with adequate openings so as to prevent accumulations of gases.

(11.2.6). §C26-702.0 Drying Rooms and Dry Kilns.-Drying rooms or dry kilns constructed as an integral part of a structure shall be built entirely of incombustible materials. When the heating pipes are not placed overhead, they shall be so shielded as to be separated by at least two inches from the contents at all times.

Sub-Article 3. Chimneys

(11.3.1). §C26-703.0 Design, Construction and Use of Chimneys.-The design, construction, use, repair and inspection of chimneys and fireplaces shall be in accordance with the provisions of this title and the rules of the board.

(11.3.1.1). §C26-703.1 Prefabricated chimneys-Notwithstanding the provisions of section C26-710.0c2: Prefabricated chimneys of refractory construction which are identified in the Underwriters Laboratories Guide No. 6011 3.13 and tested in accordance with their standards where thermal shock tests are conducted at 2,000°F and equilibrium tests at 1,800°F and which are listed by a nationally recognized testing laboratory and approved by the board are permitted for use together with their accessory connections such as elbows, tees, expansion joints breechings and other similar fittings on the appliances listed herein, when installed in accordance with the conditions of the approval of the board.

Interior chimneys shall be enclosed in all stories above the lowest one in which the equipment served thereby is located in incombustible walls with a fire rating of at least one hour, as approved by the board.

Connections to the chimney for additional heat producing appliances above the story of the lowest connected appliance shall be made by tee connections of the same construction as the main chimney and such tee shall extend at least one inch beyond the enclosure wall. Such opening for this connection shall be adequately firestopped. The enclosing wall shall be at least four inches away from such chimney. Multi-story venting shall be authorized only in accordance with the approval of the board.

Where the chimney passes through a combustible roof, it shall be protected by a ventilated roof thimble tested in accordance with the Underwriters Laboratories Standards established for this item and listed by a nationally recognized testing laboratory for specific use with this prefabricated chimney and as approved by the board.

Structural support and bracing of prefabricated chimneys shall be in accordance with this code and good engineering practice.

Chimneys supported at intermediate levels shall be supported on incombustible construction with a fire-resistive rating of at least three hours. This requirement is applicable to framing which supports the intermediate levels directly or indirectly.

The maximum unsupported height of a chimney shall not exceed the values as approved by the board.

Chimneys shall terminate at a distance above the roof in accordance with subdivision g of section C26-709.0, or subdivision b of this section C26-711.0 or subdivision g of section C26-710.0 of the Administrative Code, whichever applies for the attached appliance.

Notwithstanding any other provisions of this code, the provisions of this section shall apply to chimneys for use with: Apartment House Incinerators, Commercial-Industrial Incinerators, Annealing Furnaces, Steam Boilers over 100 cubic feet in size operating at over 50 psig pressure, other furnaces not exceeding 1,800°F exit temperatures, ventilating hoods as per section C26-712.0, and other appliances as listed under sections C26-705.0 and C26-706.0 of the Administrative Code.

(11.3.2). §C26-704.0 Classification of Chimneys.-Chimneys shall be classified as:

1. Low temperature.
2. Medium temperature.
3. High temperature.

(11.3.3). §C26-705.0 Low Temperature Chimneys.-

- a. Chimneys constructed to convey products of combustion having a temperature of six hundred degrees Fahrenheit or less at a point of entrance shall be classified as low temperature chimneys.
- b. The following heat producing devices shall be included among those requiring low temperature chimneys: bakers' ovens; boiling vats; candy furnaces; coffee roasting ovens; cooking ranges; core ovens; cruller furnaces; drying furnaces for spent materials; feed drying furnaces; fertilizer drying ovens; forge furnaces; gas producers; hardening furnaces (below dark red) ; hot air engine furnaces; hot air heating furnaces; hot water and low pressure steam heating boilers; japanning ovens; metal drying furnaces; lead melting furnaces; nickel plate furnaces; paraffine furnaces; rendering furnaces; rosin melting furnaces; stereotype furnaces; sulphur furnaces; type-foundry furnaces, wood drying furnaces; and wood impregnating furnaces.

(11.3.4). §C26-706.0 Medium Temperature Chimneys.-

- a. Chimneys constructed to convey products of combustion having a temperature of between six hundred and twelve hundred degrees Fahrenheit at the point of entrance shall be classified as medium temperature chimneys.
- b. The following heat producing devices shall be included among those requiring medium temperature chimneys; charcoal furnaces; direct fire heated feed driers; direct fire heated fertilizer driers; direct fire heated pulp driers; galvanizing furnaces; hardening furnaces (cherry to pale red); porcelain biscuit kilns; smoke houses; steam boilers, other than low pressure heating boilers or gas-fired boilers designed to be operated with approved types of draft hoods which cause the products of combustion to be diluted with air; water-glass kilns; wood-distilling furnaces; and wood-gas retorts.

(11.3.5). §C26-707.0 High Temperature Chimneys.-

a. Chimneys constructed to convey products of combustion having a temperature of over twelve hundred degrees Fahrenheit at the point of entrance shall be classified as high temperature chimneys.

b. The following heat producing devices shall be included among those requiring high temperature chimneys; annealing furnaces; blast furnaces; bone calcining furnaces; brass furnaces; carbon point furnaces; cement, brick and tile kilns; coal and water gas retorts; cupolas; earthenware kilns; gas blow furnaces; glass smelting furnaces; glass kilns; open hearth furnaces; ore roasting furnaces; porcelain baking and glazing kilns; regenerative furnaces; reverberatory furnaces; stacks, carburetor or superheating furnaces in water gas works; welding furnaces; and wood carbonizing furnaces.

(11.3.6). §C26-708.0 Unclassified Heat Producing Devices.-In doubtful cases the superintendent shall decide the grade of any heat producing device, being governed in his decision by the degree and amount of heat transmitted at the point of entrance to the chimney.

(11.3.7). §C26-709.0 Chimneys for Incinerators.-

a. For non-fuel fired incinerators in which the grate area of the combustion chamber is nine square feet or less, the chimney walls shall be at least three and three-quarters inches thick and shall be lined with fire clay flue lining. It shall be unlawful to install more than three service openings in such a chimney or to use such chimneys in structures over three stories in height.

b. For non-fuel fired incinerators in which the grate of the combustion chamber exceeds nine square feet in area, the chimney walls shall be at least three and three-quarter inches thick and lined for a distance of at least thirty feet above the roof of the combustion chamber with four and one-half inches of fire brick; above this point the chimney wall shall be constructed with at least eight inches of brickwork.

c. For fuel fired incinerators in residence structures, institutional structures, churches, schools and restaurants, the chimney walls shall be encased as required for non-fuel fired incinerators with grates exceeding nine square feet in area, but the fire brick lining shall extend at least forty feet above the roof of the combustion chamber.

d. For rubbish and waste material incinerators, the chimney walls shall be encased in brick work at least eight inches thick and a lining of fire brick at least four and one-half inches thick laid in fire clay mortar for the full height of the chimney.

e. The connection of a fuel fired incinerator or a rubbish and waste material incinerator to a boiler stack or chimney for a high temperature heating device shall be permitted by means of an approved breeching, provided the cross-sectional area of such stack or chimney is at least four times that of the incinerator breeching.

f. The floor of the incinerator settling chamber shall consist of arches or slabs of incombustible materials or assemblies having a fire resistive rating of at least four hours and be at least six inches above any point of the roof adjacent to the settling chamber.

g. Chimneys for incinerators shall extend at least ten feet above the roof and terminate in substantially constructed spark arresters.

(11.3.8). §26-710.0 Construction of Masonry Chimneys.-

a. Construction of Masonry Chimneys.-

1. Masonry chimneys shall be built with solid walls of brick, stone or concrete or with perforated radial brick capable of withstanding high temperatures. Lining, when required, shall consist of fire brick or fire clay flue lining, except that sheet metal flue lining,

enclosed in masonry, may be used for the repair or alteration of flues existing on January 1, 1938 in Residence Structures for sections other than vertical for fire place flues in Class 1, fireproof structures, and Class 2, fire-protected structures. Sheet metal flue lining shall be at least as thick as No. 16 U.S. gage for fireplace flues and at least No. 12 U.S. gage for other flues.

2. When metal flue lining is used, the eight feet immediately below the flue outlet shall be lined with sheet metal at least as thick as No. 10 U.S. gage or with terra cotta flue lining.

3. Masonry chimneys shall be provided with a cleancut opening equipped with tight fitting iron doors at the base of every flue other than fireplace flues.

(11.3.8.1). b. Brick Chimneys.-The walls of brick chimneys used for low temperatures shall be at least eight inches thick and shall be lined with fire clay flue lining, except that in dwelling house chimneys for ordinary stoves, ranges and fireplaces, the thickness of brick may be reduced to three and three-quarter inches and except that where boiler flues pass open fireplaces, the thickness of brick between flue lining and fireplace opening may be reduced to three and three-quarter inches. In multiple dwellings constructed before January first, nineteen hundred thirty-eight, the masonry walls of the chimney about the fire clay flue lining may be four inches in thickness. No existing brickwork may be used as any part of the four-inch wall. Such walls shall be constructed entirely new about the fire clay flue lining. Where not less than eight inches of masonry is provided about the flue lining, existing masonry may be used for the enclosure of the flue lining. All joints in chimneys shall be filled solidly with mortar. The space between the brickwork and the lining shall be filled with mortar as the brickwork rises. The brick shall be wetted sufficiently to form a good bond with the mortar. For medium temperatures the walls shall be at least eight inches thick, lined with an inner course of fire brick four and one-half inches thick laid in fire clay mortar or approved high temperature cement for the first fifty feet from the entrance. For high temperatures they shall be built with double walls, each at least eight inches in thickness with a minimum air space of two inches between them. The inside course of the interior walls shall be of fire brick laid in fire clay mortar or approved high temperature cement.

(11.3.8.2). c. Free Standing Radial Brick Chimneys.-Free standing perforated radial brick chimneys may be unlined when used for low or medium temperature provided the brick shall have a softening point of at least one thousand nine hundred ninety-four degrees Fahrenheit (Segar Cone 03), shall be at least seven and one-half inches in radial thickness. The brick shall be shaped to the circular and radial lines of the various sections so as to form even joints.

(11.3.8.3). d. Mortar and Joints in Chimneys.-Brick work shall be laid in spread mortar, with all joints solidly push-filled. Exposed joints both inside and outside shall be struck smooth. Mortar used in chimney construction shall be cement mortar at least equal in mixture to that required under subdivision d of section C26-313.0.

(11.3.8.4). e.

1. Concrete Chimneys.-Concrete chimneys cast-in-place shall be suitably reinforced vertically and horizontally. The walls shall be at least that thickness specified for brick chimneys and shall be lined with fire clay flue lining.

2. Precast masonry chimneys of other thicknesses may be used when the conductivity of these chimneys having lesser wall thicknesses is equal to or less than the conductivity of the standard concrete chimneys described in paragraph 1. Each such precast masonry

chimney shall be approved by the board. The board may require such tests as it deems necessary.

(11.3.8.5). f. Stone Chimneys.-Stone chimneys shall have fire clay flue lining or metal where permitted by this section, and shall be at least four inches thicker than required for corresponding brick chimneys, except that portions of stone chimneys extending above the roof lines, when constructed of coursed ashlar, may be of the same thickness as required for brick chimneys. Rubble-stone chimney walls shall be at least twelve inches thick.

(11.3.8.6). g. Extension of Chimneys Above Roof and Capping.-

1. Chimneys shall extend at least four feet above flat roofs and two feet above the ridges of peak roofs when such peaks are within thirty feet of the chimney. The chimney shall be properly capped with stone, terra cotta, concrete, cast iron, or other approved material.

2. Chimneys of cupola furnaces, blast furnaces and similar devices, erected after January first, nineteen hundred thirty-eight, shall extend at least twenty feet above the highest point of any roof within a radius of fifty feet, except that chimneys of cupola furnaces, used only occasionally for instruction purposes, in school structures, shall extend at least ten feet above the roof, and be covered on the top with heavy wire netting or other approved spark arresters. It shall be unlawful to erect or place woodwork or other combustible material or construction within three feet of any part of such a device or its chimney.

(11.3.8.7). h. Fire Clay Flue Linings.-

1. Fire clay flue lining shall be manufactured from suitable refractory clay, either natural or compounded, and shall be adapted to withstand high temperatures and the action of flue gases. Such lining shall be of standard commercial thickness and at least five-eighths of an inch.

2. The flue sections shall be carefully bedded one upon another in cement mortar with all joints left smooth on the inside. The masonry shall be built around each section of lining as it is set in place, and all spaces between masonry and linings shall be completely filled with mortar. No cracked, broken or otherwise defective lining shall be used. Flue linings shall start at least four inches below the bottom of smoke pipe intake and shall be continuous the entire height of the flue.

(11.3.8.8). i. Supports for Chimneys.-Chimneys shall not be carried directly or indirectly on wood construction of any kind. In frame structures chimneys shall always be built from the ground up, or rest on basement walls. Chimneys shall be properly supported to carry the weight imposed without danger of settling or cracking.

(11.3.8.9). j. Corbelling of Chimneys.-It shall be unlawful to use less than twelve inches thick to support a corbelled chimney. The maximum projection of a corbelling shall be six inches from the face of the wall and, in all such cases, shall consist of at least five courses of brick. The corbelling of chimneys shall also conform to provisions of section C26-451.0.

(11.3.8.10). k. Separation of Flues.-Where more than one flue lining is installed within a chimney, the lining of each flue shall be separated, one from the other, by a withe of cement grouting at least one inch thick, or by a division wall of brick or concrete at least three and three-quarter inches thick. The cross-tie between flue linings thus established shall in all cases be adequate to give proper stability to the chimney construction. Flues intended for heating furnaces or boiler connections shall be separated from other flues by a withe at least three and three-quarter inches in thickness.

(11.3.8.11). l. Smoke Pipe Intakes.-Smoke pipe intakes shall consist of fire clay or metal thimbles securely set in a chimney wall, or cast in concrete. Such openings shall be at least eighteen inches from wood or other combustible construction, except where such wood or combustible construction is protected in an approved manner by, incombustible insulation, in which case the distance shall be at least nine inches.

(11.3.8.12). m. Cleaning of Flues and Safety of Chimneys.-After a chimney has been completed, all flues shall be thoroughly cleaned and left smooth on the inside. Any chimney which may be dangerous in any manner whatever shall be repaired and made safe, or taken down.

(11.3.8.13). n. Framing of Wood Structural Members Around Chimneys.-It shall be unlawful to place any wood beams, joists or rafters within four inches of the outside faces of any chimney.

(11.3.8.14). o. Fire-Stopping Around Chimneys.-Spaces between chimneys and wood joists or beams shall be filled with loose cinders, loose mortar refuse, gypsum block, or other porous incombustible insulating material to form a fire-stop.

(11.3.8.15). p. Interior Woodwork Adjacent to Chimneys.-It shall be unlawful to place any wood furring, studding, lathing or plugging directly against any chimney or fireplace wall, or in any chimney breast. The space behind wood construction around chimneys and fireplace walls shall be solidly filled in with incombustible, heat resisting material. Plaster shall be applied directly on the masonry or on metal lath without the intervention of wood furring or studding. Furring, if used, shall be of metal or other incombustible material. Approved nail holding devices attached to the wall surface shall be used for nailing.

(11.3.8.16). q. Back Walls for Fireplaces.-The firebacks of fireplaces shall be of solid masonry at least eight inches thick. A lining of firebrick or other approved material at least two inches thick shall be provided unless the fireback is twelve inches or more in thickness. It shall be unlawful to make any contact between solid woodwork and fireback walls.

(11.3.8.17). r. Trimmer Arches for Fireplaces and Chimney Breasts.-Fireplaces and chimney breasts shall have trimmer arches, or other approved fire resistive construction, supporting hearths. Such construction and hearths shall be at least sixteen inches wide measured from the face of the chimney breast and shall be of brick, stone, hollow tile, or other approved incombustible material. The length of trimmer arches and hearths shall be at least twelve inches greater than the fireplace opening. Wood centering under a trimmer arch shall be removed before plastering the ceiling beneath.

(11.3.8.18). s. Separation of Wood Mantels from Fireplaces.-It shall be unlawful to place any wood mantels or other woodwork within eight inches of the side or top of any open fireplace, or to use combustible summer pieces or fireboards.

(11.3.9.1). §C26-711.0 Metal Chimneys.-

a. Thickness of Material in Metal Chimneys.-Metal chimneys shall be securely supported and all materials entering into their construction or serving as support shall be stressed within the working stresses fixed by this title. The metal work shall be riveted or welded and of adequate thickness, but at least as thick as No. 16 U.S. gage when the cross-sectional area is one hundred fifty-four square inches or less, or No. 14 U.S. gage when the cross-sectional area is between one hundred fifty-four and two hundred one square inches, or No. 12 U.S. gage when the cross-sectional area is between two hundred one and two hundred fifty-four square inches, and No. 10 U.S. gage when the cross-sectional area is more than two hundred

fifty-four square inches. Cleanout openings equipped with tight fitting iron doors shall be provided at the base of every such stack.

(11.3.9.2). b. Extension of Metal Chimneys Above Roof.-Metal chimneys used for high temperatures shall extend to a height of at least ten feet above the highest point of any roof within a radius of twenty-five feet and shall also comply with the requirements of the second paragraph of subdivision g of section C26-710.0.

(11.3.9.3). c. Foundations for Outside Metal Chimneys.-Metal Chimneys erected after January first, nineteen hundred thirty-eight, outside and independent of any structure, shall be supported on substantial masonry foundations so designed that the maximum pressure for both dead and wind loads on the soil shall be two-thirds or less of the presumptive bearing capacity of the soil as indicated in section C26-377.0.

(11.3.9.4). d. Bracing and Clearances for Outside Chimneys.-Any metal chimney, or part thereof, erected after January first, nineteen hundred thirty-eight, on the immediate exterior of the structure it serves, shall be braced to such structure at least every twenty feet. Such chimney shall have a clearance of at least four inches from the walls of a fireproof or non-fireproof structure, eighteen inches from the walls of a frame structure, and a minimum clearance of eighteen inches in any direction from any wall opening, fire escape or other exit facility, unless such chimney is insulated in some approved manner, in which case the clearances herein provided may be reduced to an amount to be fixed by the superintendent when approving the insulation.

(11.3.9.5). e. Enclosure and Clearances for Inside Chimneys.-Any metal chimney, or part thereof, erected after January first, nineteen hundred thirty-eight, within any non-fireproof structure shall be enclosed in walls of solid masonry at least eight inches thick or, if in a fireproof building, such chimney or part thereof shall be enclosed in walls of approved masonry at least eight inches thick or at least four inches of solid masonry provided the stack is covered with at least two inches of approved incombustible insulating material. Where such chimney is less than twenty-four inches in its smallest internal dimension, it shall have a space left between the chimney and the enclosing walls sufficient to render the entire chimney accessible for examination and repair. The enclosing walls shall, in all cases, be without openings above the story at which they start. In any case the enclosing wall shall be at least four inches away from such chimney.

(11.3.9.6) f. Clearances for Smoke Pipe or Breeching.-

1.

(a) The minimum distance between any smoke pipe or breeching and any combustible material or construction shall be eighteen inches in the case of low temperature heating devices and thirty-six inches for medium or high temperature heating devices, except that, when such combustible material is protected with at least two inches of asbestos or in some other approved manner, such clearance may be reduced one-half.

(b) The board may adopt rules prescribing fire protective measures and minimum distances between smoke pipes or breechings and any combustible materials or construction.

Such rules shall be adopted as the board may deem necessary and proper for the safety, protection and welfare of the city and its inhabitants. If the board shall adopt such rules, the provisions of item a of paragraph one of this subdivision shall not apply to such furnaces, boilers or installations of fuel oil burning equipment as are included within the purview of such rules.

2. It shall be unlawful to pass any smoke pipe through any floor.

(11.3.9.7). g. Smoke Pipes Passing Through Partitions.-Smoke pipes from low temperature heating devices, passing through combustible partitions, shall be guarded by a double metal ventilating thimble twelve inches larger in diameter than the pipe, or by a metal tube built in brick work or other approved fire resistive materials, at least eight inches thick on all sides of the tube.

(11.3.10). h. Underground Smoke Flues.-Underground smoke flues shall be covered with at least twelve inches of solid masonry or an approved equivalent insulation. If clean-out openings are installed they shall be provided with approved double iron doors or covers, of which the two parts shall be twelve inches apart, with the intervening space filled with insulating material. It shall be unlawful to lay combustible floorings over any such flues.

(11.3.11.1). i. Warm Air Furnace Piping.-

1. Intake and delivery ducts for warm air furnaces.-Intake and delivery ducts for warm air furnaces shall be of metal or other approved fire resistive material.

(11.3.11.2). 2. Clearance and Insulation for Warm Air Ducts Under Ceilings.-Warm air ducts placed under ceilings shall be at least six inches below wood floor beams, wood lath plaster ceilings, or other combustible materials, unless such combustible construction is protected by metal lath and plaster, or plaster boards of one-half inch asbestos, in which case the distance shall be at least three inches.

(11.3.11.3). 3. Insulation for Warm Air Ducts Through Partitions and Floors.-Warm air ducts or flues placed to pass through combustible partitions or floors shall be constructed double with a one and one-half inch air space open at one end, or shall be covered with approved incombustible insulation at least one inch thick.

(11.3.11.4). 4. Insulation for Warm Air Ducts in Partitions.-Warm air ducts or flues placed in combustible partitions shall be covered with one-half inch asbestos air cell covering or shall be constructed double with one-half inch air space. The asbestos covering or the outside pipe shall be at least one and one-half inches away from the woodwork. In lieu of such protection, four inches of brick work or concrete may be placed between the duct and woodwork.

(11.3.11.5). 5. Insulation for Warm Air Ducts in Floors.-Warm air ducts placed between the flooring and ceiling of non-fireproof floors shall be constructed double with a one inch air space. The outside pipe shall be at least two inches from any woodwork, unless such woodwork shall be covered with metal.

(11.3.11.6). 6. Insulation for Warm Air Ducts in Closets.-Warm air ducts or flues placed in closets or similar locations shall be constructed double with a one and one-half inch air space, or shall be covered with an approved incombustible insulation at least one inch thick. When constructed double, the outside pipe shall be at least No. 18 U.S. gage and at least one inch from any woodwork.

(11.3.11.7). 7. Insulation for Warm Air Ducts Adjacent to Interior Woodwork.-No casing, furring, or wood lath shall be placed against or cover a warm air duct of any kind; but woodwork may be placed on a covering of such ducts of metal lath and plaster, plaster board and one-half inch of plaster or asbestos if the thickness of the cover is at least seven-eighths of an inch.

(11.3.11.8). 8. Warm Air Registers.-Warm air registers placed in any woodwork or combustible floor shall rest upon stone or iron borders firmly set in plaster of Paris or gaged mortar. Registered boxes used in any such heating system shall be made of tin

plate or galvanized iron with a flange to fit the rabbet in the border. The register box shall be enclosed in a tin or galvanized iron casing turned under the border and placed at least two inches from the sides of the box. Such casings shall extend from the border to and through the cellar or basement ceiling in the case of a first floor register, and through the partition in the case of a wall register. When a register box is placed in the floor over a portable furnace, the space on all sides between the casing and the register box shall be at least four inches. Every warm air furnace shall have at least one register without a shut-off of any description.

(11.3.11.9). 9. The clearances in an approved automatically fired, forced air heating system having air temperature at the furnace outlet limited not to exceed 200°F and shall be at least one inch from any combustible material at the top and sides of the bonnet or plenum and, for the duct, at least one inch for a distance of three feet from the bonnet or plenum. The foregoing shall apply regardless of any provision of this subdivision to the contrary.

(11.3.11.10) 10. The standards of the national board of fire underwriters for the installation of residence type warm air heating and air conditioning systems, N.B.F.U. No. 90B, as recommended by the national fire protection association, shall apply when furnace outlet temperature does not exceed 200°F.

(11.3.12). §C26-712.0 Ventilating Hoods.-

a. Ranges, candy kettles, cruller furnaces and appliances for the frying of bakery or confectionery products, except ranges in dwellings, shall be provided with ventilating hoods and pipes to take off the smoke, gases and vapors, unless such appliances are enclosed and vented in an approved manner.

b. Such hoods shall be six and one-half feet or less above the floor. The width and breadth shall be at least those of the appliance served thereby.

c. Such hoods and their pipes shall be constructed of incombustible materials. The pipes shall be connected with independent masonry flues, constructed as required for smoke flues for low temperature heating devices, provided that in structures erected before January first, nineteen hundred thirty-eight, when such masonry flues are unavailable, they may be connected with independent metal chimneys outside the structure. In any case such flues or stacks shall be used only for the ventilation of such hoods. All the hoods in a single room or kitchen may be connected to a single flue.

d. Such hoods shall be installed with the clearances required for smoke pipes. When the pipe from such a hood passes through a partition, it shall be protected as required for smoke pipes.

e. The system of hoods, vent pipes, flues and ducts shall be provided with grease filters or other similar devices approved by the board of standards and appeals so installed as to prevent the accumulation of grease within the vent system or with approved fire extinguishing equipment. Such fire extinguishing equipment shall conform to the requirement of subsection c of section C19-165.3. The provisions of this subdivision e shall apply to all existing installations.

(11.3.13). §C26-713.0 Adjoining Chimneys.-When any stacks, chimneys or flues are carried up as provided in section C26-570.0, the internal areas of the new portions shall be at least equal to the internal areas below.

Sub-Article 4. Clearance of Cooking Space Fittings from Cooking Ranges

(11.4). §C26-714.0 Clearances of Cooking Space Fittings from Cooking Ranges.-Cooking space cabinets of wood or other combustible material installed adjacent to cooking ranges, shall have the clearances specified for domestic gas ranges in section C26-695.0. Any woodwork or other combustible material less than three feet above the range shall be covered on the under side with sheet metal at least as thick as No. 29, U.S. gage backed with asbestos mill board at least three-sixteenths of an inch thick, but in any case the clearance shall be at least two feet.