CHAPTER VIII

CHIMNEYS, FIREPLACES, AND VENTING SYSTEMS (Based on N.C. Building Code, NFPA Bulletin 211 and the Heating Code of American Insurance Asso.)

801.0 CHIMNEYS

Chimneys shall be built to conform with the North Carolina Building Code. For details, see "APPENDIX I" of this code which includes excerpts from the N.C. Building Code.

802.0 FIREPLACES

Fireplaces shall be built to conform with the N. C. Building Code. Details are indicated in the excerpts found in "APPENDIX I" of this code, and the following sections.

803.0—VENTS AND VENTING SYSTEMS

803.1—TYPES OF VENTS WHICH MAY BE USED

(a) Appliance vents that do not conform to the requirements of this article for chimneys shall be one of the following types installed as required by this section.

(1) TYPE B GAS VENTS—Factory made vent piping of non-combustible, corrosion resistant material approved as a result of tests and listings by a nationally recognized testing laboratory for venting of approved gas appliances equipped to burn only gas.

(2) TYPE BW GAS VENTS—Factory made vent piping of non-combustible, corrosion resistant material approved as a result of tests and listing by a nationally recognized testing laboratory for venting approved gas-fired wall furnaces.

(3) TYPE L VENTING SYSTEMS—Factory made vent piping and fittings of non-combustible material approved as a result of tests and listing by a nationally recognized testing laboratory for use with fuel burning appliances approved for use with such systems.

(4) METAL PIPE GAS VENTS—Vent piping of sheet copper of not less than No. 24 B & S gauge or of galvanized iron of not less than No. 20 galvanized sheet gauge or of other approved non-combustible corrosion resistant material.

803.2—USE LIMITS

Metal Chimneys
up to 154 S.I - 16 GA
154-201 SI - 14 GA
201 - 254 SI - 12 GA
Above 254 SI - 10 GA
} NFPA-211

(a) Type B vents shall be used only with approved gas appliances which produce flue gas temperatures not in excess of 550° F. They shall not be used for venting:

(1) Incinerators.

(2) Appliances which may be converted readily to the use of solid or liquid fuels.

(3) Combination gas oil burning appliances.

(4) Appliances approved for use with chimneys only.

(b) Type BW vents shall be used only with approved vented gas fired wall furnaces having a capacity not greater than that of the listed Type BW gas vent.

(c) Type L venting systems shall be used only with appliances specifically approved for such use and approved gas appliances suitable for use with Type B gas vents

(d) Metal pipe gas vents may be used in accordance with the following to vent gas appliances that have been tested by an approved agency and found to have flue gas temperatures not exceeding 550° F.

(1) Metal pipe gas vents shall be used only for runs directly from the space in which the appliance is located through the roof or exterior wall to the outer air.

(2) Metal pipe gas vents shall not originate in any unoccupied attic or concealed space and shall not pass through any attic, inside wall, concealed space nor through any floor or ceiling.

803.3—HEIGHT

(a) Except as provided in 803.3(d) and in 803.6, all vents and venting systems shall terminate above the roof surface, and:

(1) Vents and venting systems except as provided in Section ~~2708.3~~(a) (2) shall extend 2 feet above the highest point where they pass through the roof surface of a building and at least 2 feet higher than any portion of a building within 10 feet.

(2) Vents and venting systems installed with approved mechanical exhausters may terminate at a height of not less than 12 inches above the highest point where they pass through the roof surface.

(b) Natural-draft vents for gas appliances shall terminate at a height not less than 5 feet above the highest connected appliance outlet except as provided in 803.6(b).

(c) Gas vents serving vented wall furnaces shall terminate at a height not less than 12 feet above the bottom of the furnace.

(d) Powered vents and venting systems need not comply with 803.3(a), (b), and (c) provided they comply with the following:

(1) Approval shall be obtained from the Building Official.

(2) The outlet of an exhauster-equipped gas-venting system serving approved gas appliances equipped with draft hoods shall be not less than 9 inches from any building opening nor less than 2 feet from an adjacent building; and not less than 7 feet above grade or walkways.

(3) The outlet of an exhauster-equipped Type L venting system serving oil fuel fired appliances approved for use with such venting systems shall be not less than 1 foot from any building opening nor less than 2 feet from an adjacent building; and not less than 7 feet above grade or walkways.

(4) The outlet shall be so arranged that flue gases are not directed so as to jeopardize people, overheat combustible structures or enter building openings in the vicinity of the outlet.

803.4—MARKING OF GAS VENTS

Gas vents which are not suitable for use with solid or liquid fuel burning appliances shall be plainly and permanently labeled:

"This flue is for appliances which burn gas only, do not connect to incinerators or solid or liquid fuel burning appliances," unless permission to omit this marking is granted by the Building Official.

803.5—INSTALLATION

(a) Type B and type BW gas vents and type L venting systems shall be installed in full compliance with the terms of their approval.

(b) Metal pipe vents shall be installed with minimum clearances from combustible material as follows:

(1) Appliances without draft hoods, 18 inches;

(2) Appliances equipped with draft hoods, 9 inches;

(3) Approved appliances with draft hoods except incinerators, 6 inches; Does not agree with Table 1

(4) Boilers and furnaces equipped with approved conversion burners and with draft hoods, 9 inches.

(c) Where a metal pipe vent passes through an exterior wall constructed of combustible material, except as provided in Section 803.5(c) (4), it shall be guarded at the point of passage by a ventilating metal thimble not smaller than the following:

(1) For gas burning appliances that have not been found by test by an approved agency to have flue gas temperatures of 550° F. or less—6 inches larger in diameter than the vent pipe;

(2) For gas burning appliances, with draft hoods, except incinerators, and approved as a result of tests and listing by a nationally recognized testing laboratory—4 inches larger in diameter than the vent pipe, unless there is a run of not less than 6 feet of vent pipe in the open, between the draft hood outlet and the thimble, in which case the thimble may be 2 inches larger in diameter than the vent pipe;

(3) For incinerators and appliances, without draft hoods—12 inches larger in diameter than the vent pipe.

(4) In lieu of thimble protection all combustible material in the wall shall be cut away from the vent pipe a sufficient distance to provide the clearance required by Section 803.5(b) from such vent pipe to combustible material, with any material used to close up such opening entirely non-combustible.

(d) Where a metal pipe vent passes through a roof constructed of combustible material it shall be guarded at the point of passage as specified for passage through a combustible exterior wall by Section 803.5(c) or by a non-combustible non-ventilating thimble not less than 4 inches larger in diameter than the vent pipe and extending not less than 18 inches above and 6 inches below the roof with the annular space open at the bottom and closed only at the top.

803.6—SPECIAL VENTING ARRANGEMENTS

(a) APPLIANCES WITH SEALED COMBUSTION CHAMBERS: Venting arrangements for appliances with sealed combustion chambers with integral venting systems need not comply with this article when such appliances are installed in accordance with the conditions of their approval.

(b) VENTILATING HOODS AND EXHAUST SYSTEMS

(1) Ventilating hoods and exhaust systems serving commercial cooking appliances may be used to vent gas-burning appliances installed in commercial applications. The connector from the appliance shall terminate under the hood 18 inches from any grease filter or screen installed in the hood.

(2) When automatically operated appliances, such as water heaters, are vented through natural-draft ventilating hoods, dampers other than

fire dampers shall not be installed in the exhaust system. When the ventilating hood or exhaust system is equipped with power means of exhaust, the appliance control system shall be so interlocked as to permit appliance operation only when the power means of exhaust is in operation.

804.0—APPLIANCES BURNING SOLID OR LIQUID FUEL.

(Excerpt From A1A Bulletin)

(a) Every heat producing appliance burning solid or liquid fuel shall be connected to a chimney that is suitable and safe for such use, except as provided in sections 803.2(b) through 804.0(d).

(b) Kerosene heaters and stoves and direct fired heaters that are approved specifically for use without a chimney connection, may be installed in accordance with the conditions of such approval, except such heaters and stoves shall not be installed in sleeping quarters and in institutional occupancies.

(c) Oil burning appliances approved for use with Type L venting systems may be connected to a Type L venting system.

(d) Industrial appliances which are designed for use without a connection to a chimney and which do not create a health or fire hazard when installed in a large well ventilated space may be installed without such connection when the design is in accordance with accepted engineering practices.

805.0—APPLIANCES BURNING GAS FUEL.

(a) Every heat producing appliance burning gas fuel shall be connected to a chimney, gas vent or one of the special venting arrangements of section 515 and Chapter IX that is suitable and safe for such use, except as provided in sections 805.0(b) through 805.0(e).

(b) Gas burning ranges, hot plates, laundry stoves and residential type clothes dryers that are approved specifically for use without a vent, may be installed in accordance with the conditions of such approval.

(c) Gas burning water heaters with inputs not over 5,000 Btu per hour, single-faucet automatic instantaneous water heaters, booster type water heaters with inputs not over 50,000 Btu per hour whose capacity is limited to 12.5 gallons, gas refrigerators, counter appliances, room heaters except when installed in sleeping quarters and in institutional occupancies, other gas burning appliances not provided with flue collars and specialized equipment of limited input that are approved specifically for unvented use may be installed in accordance with conditions of such approval, except as provided by section 805.0(d).

(d) When any or all of the appliances listed in section 805.0(c) are installed so that the aggregate input rating exceeds 30 Btu per hour per cubic foot of room or space in which they are installed, they shall be chimney or vent connected or provided with approved means for exhausting the flue gases to the outside atmosphere. When the room or space in which they are installed is directly connected to another room or space by a doorway, archway, or other opening of comparable size, which cannot be closed, the volume of such adjacent room or space may be included in the calculations.

(e) Industrial appliances which are designed for use without a connection to a chimney or vent and which do not create a health or fire hazard when installed in a large well ventilated space may be installed without such connection when the design is in accordance with accepted engineering practices.

806.0—CHIMNEY AND VENT CONNECTORS, WHEN REQUIRED

Connectors shall be used to connect appliances to the vertical chimney or vent unless the chimney or vent is attached directly to the appliance.

807.0—MATERIALS FOR CHIMNEY OR VENT CONNECTORS

a. Connectors shall be made of noncombustible material capable of withstanding the flue gas temperatures produced by the appliance and of sufficient thickness to withstand physical damage. The material of connectors shall also be resistant to corrosion. Connectors for appliances installed in attics shall be of Type B or Type L vent material for approved gas appliances with draft hoods or of Type L vent material for oil appliances approved as suitable for Type L vents. For other appliances allowed in attics, a chimney shall be attached directly to the appliance.

b. Connectors used for gas appliances having draft hoods and for listed conversion-burner-equipped appliances having draft hoods may be constructed of material having resistance to corrosion and heat not less than that of No. 28 gauge galvanized steel, or they may be of Type B of Type L vent material.

c. Connectors made of Type L vent material may be used with gas, oil, and solid fuel burning residential appliances including residential incinerators.

808.0—LENGTH OF CHIMNEY OR VENT CONNECTOR

A connector shall be as short and straight as possible. The appliance shall be located as close as practicable to the chimney, gas vent, or venting system. The horizontal run of an uninsulated connector to a natural-draft chimney, or vent, shall be not more than 75 per cent of the height of the vertical portion of the chimney or vent above the connector, unless part of an engineered venting system.

809.0—SIZE OF CONNECTOR

The connector, for its entire length, shall be not smaller than the flue collar of the appliance unless otherwise recommended by the appliance, chimney, or vent manufacturer.

810.0—CLEARANCES FOR CONNECTORS

a. Clearances for connectors from combustible material shall be in accordance with Table 1, 305.10 or 305.28, except as provided in section 810.b.

b. Connectors may be installed with lesser clearances to combustible material provided the combustible material is protected as provided in Table 2.

811.0—LOCATION OF CONNECTORS

When the connector used for a gas appliance having a draft hood must be located in or pass through a crawl space or other cold area, that portion of the connector shall be of listed Type B or Type L vent material or be provided with equivalent means of insulation.

812.0—INSTALLATION OF CONNECTORS

a. A connector to a masonry chimney shall extend through the wall to the inner face or liner but not beyond, and shall be firmly cemented to masonry. A thimble may be used to facilitate removal of the chimney connector for cleaning, in which case the thimble shall be permanently cemented in place with high-temperature cement.

b. No chimney connector or vent connector shall pass through any floor or ceiling.

c. Connectors for approved residential and low heat gas appliances with draft hoods, except incinerators, shall not pass through walls or partitions constructed of combustible material unless made of approved Type B or Type L material and installed with not less than listed clearances to combustible material or made of single wall metal pipe and guarded by a ventilated metal thimble not less than 4 inches larger in diameter than the vent connector.

d. Connectors of low heat appliances except approved residential and low heat gas appliances with draft hoods shall not pass through walls or partitions constructed of combustible material unless they are guarded at the point of passage by metal ventilated thimbles not less than 12 inches larger in diameter than the connector; or metal or burned fire clay thimbles built in brickwork or other approved fireproofing materials extending not less than 8 inches beyond all sides of the thimble.

e. In lieu of thimbles of combustible material in the wall or partition shall be cut away from the connector a sufficient distance to provide the clearance required from such connector. Any material used to close up such openings shall be noncombustible insulating material.

f. No connector of any medium or high heat appliance shall pass through any wall or partition constructed of combustible material.

g. Connectors shall maintain a pitch or rise of at least ¼ inch to the foot (horizontal length of pipe) from the appliance to the chimney.

h. Connectors shall be installed so as to avoid sharp turns or other construction features which would create excessive resistance to the flow of flue gases. No device which will obstruct the free flow of flue gases shall be installed in a connector. This shall not be construed to prohibit the use of devices specifically approved for installation in a connector, such as heat raclaimers, draft regulators, and safety controls.

i. Connectors shall be securely supported and joints fastened with sheet-metal screws, rivets, or other approved means.

i. The entire length of a connector shall be readily accessible for inspection, cleaning, and replacement, unless listed materials are used and previous approval has been obtained from the authority having jurisdiction.

k. A vent connector shall not be connected to a chimney flue servicing a fireplace unless the fireplace opening is sealed or the chimney flue which vents the fireplace is permanently sealed below the connection.

813.0—INTERCONNECTION OF CHIMNEY AND VENT CONNECTORS

a. Connectors shall not be connected to a chimney, vent, or venting system served by a power exhauster unless the connection is made on the negative pressure side of the exhauster.

b. Two or more fuel-burning appliances when connected to a single chimney or vent shall have sufficient draft available for safe combustion in each appliance and removal of all the products of combustion safely to the outdoors. Gas and oil appliances so connected shall be equipped with primary safety controls.

814.0—DAMPERS

a. Manually operated dampers shall not be placed in chimneys, vents or connectors of stoker fired, liquid or gas-burning appliances. Fixed baffles on the appliance side of draft hoods and draft regulators shall not be classified as dampers.

b. Automatically operated dampers shall be of approved type designed to maintain a safe damper opening at all times and arranged to prevent the initiation or increase of firing unless the damper is opened to a safe position.

815.0—DRAFT HOODS FOR GAS APPLIANCES

a. A draft hood shall be provided for every vented gas appliance, except incinerators, dual oven type combination ranges sealed combustion system appliances and units designed for power burners or for forced venting.

b. The draft hood supplied with or forming a part of approved vented appliances shall be installed without alteration, exactly as furnished and specified by the appliance manufacturer. If a draft hood is not supplied by the appliance manufacturer when one is required, it shall be supplied by the installing agency and be of an approved type, and in the absence of other instructions shall be the same size as the appliance flue collar. When a draft hood is required with a conversion burner, it shall be of an approved type supplied by the installing agency or as recommended by the manufacturer.

c. The draft hood shall be in the same room as the combustion air opening of the appliance. In no case shall a draft hood be installed in a false ceiling, in a different room, or in any manner that will permit a difference in pressure between the draft hood relief opening and the combustion air supply. The draft hood supplied for gas conversion burners shall be so located that the burner is capable of safe and efficient operation.

d. A draft hood shall be installed in the position for which it was 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.

816.0—DRAFT REGULATORS

a. Gas appliances connected to chimneys, other than those required to be installed with draft hoods, shall not be installed with draft regulators unless in accordance with the appliance manufacturer's instructions.

b. A draft regulator shall be provided in the chimney connector of each liquid fuel burning appliance unless the appliance is approved for use without one.

c. Solid fuel-burning appliances when installed with draft regulators to reduce draft intensity shall be installed and set in accordance with the instructions furnished with the appliance or the draft regulator.

d. A barometric draft regulator, if used, shall be installed in the same room or enclosure as the appliance in such a manner that no difference in pressure between the air in the vicinity of the regulator and the combustion air supply will be permitted.