

THE CORPORATION OF THE DISTRICT OF BURNABY

BY-LAW NO. 3097.

A BY-LAW to amend the Burnaby Building By-law 1926.

THE MUNICIPAL COUNCIL of The Corporation of the District of Burnaby ENACTS as follows:-

1. Sections 157 to 185 inclusive of the Burnaby Building By-law No. 540 of The Corporation of the District of Burnaby are hereby repealed and the following, including the titles and sub-titles as hereinafter set forth, is substituted.

CODE FOR THE DESIGN AND INSTALLATION OF GRAVITY

WARM AIR HEATING SYSTEMS

INTENT OF CODE

157. (1) This code is intended primarily to prescribe reasonable provisions based on minimum requirements for safety of life and property from fire, and secondly to provide the highest practical degree of efficiency in heating.

(2) The approval of an installation by the Municipality is not to be construed as relieving the contractor or installer of any responsibility on his part for guaranteeing of system, or of taking any additional precautions as might be required for safety.

DEFINITIONS.

(3) A gravity warm air heating plant shall consist of one or more warm air furnaces, enclosed in a metal or other non-combustible casing, together with necessary appurtenances thereto, consisting of warm air leader pipes and fittings, return air ducts, risers, boxes, fittings, smoke pipe, dampers, registers, and return air grilles, the same being intended for heating the building in which they may be installed--the motive head producing flow in said heating plant depending on the difference in weight between the heated air leaving the casing and the cooler air entering at the bottom of the casing.

(4) A warm air furnace shall consist of a direct fired heater enclosed in a metal or brick casing.

APPLICATIONS, PERMITS, AND FEES.

(5) No person shall commence or undertake the installation, alteration or repair of gravity warm air heating in, on, or about any premises without a Building Permit, being first obtained from the Building Inspector.

(6) In new residences, Building Permits shall cover furnace installations and fees. Minimum fees for replacements shall be One (\$1.00) Dollar.

(7) Every such application shall state the exact location, giving the correct street and street numbers of the premises in, on or about which it is proposed to install, alter or repair gravity warm air heating.

(8) When such application conforms to the provisions of this code, the Building Inspector may issue a permit.

(9) With the issuance of a permit, the Building Inspector shall deliver to the applicant a card setting forth the number of the permit, and the location of the premises in which it is proposed to install, alter, or repair gravity warm air heating, and every furnace man installing, altering or repairing gravity warm air heating shall sign his name on said card, and shall also state on said card his business address and current Burnaby business license number. Such card shall be kept conspicuously posted on the said premises until the completion of the work.

(10) Nothing in this code shall prevent the owner or a member of the family of the owner from installing, altering, or repairing a gravity warm air heating system in a single family dwelling occupied by the owner as a dwelling place; provided, that such owner or person shall secure a permit therefor and comply with all requirements of this code.

ESTIMATING HEAT LOSSES FROM
ROOMS AND BUILDINGS.

(11) The heat loss in British Thermal Units (B.t.u.) per hour from each room to be heated shall be determined in accordance with an approved method.

(12) Gas furnaces shall bear the American Gas Association Seal of Approval and/or the approval of other local regulatory bodies as required.

(13) Oil Burners shall be of a type approved by a recognized laboratory.

(14) The furnace shall satisfy the total B.t.u. loss from the building and shall be selected from the manufacturers' published Output Rating Tables. Register ratings shall be used unless the unit is located within the area being heated, in which case the bonnet rating applies.

FURNACE FOUNDATION

(15) Furnace room floor shall be constructed of brick, cement or other incombustible material. Where heater room floor is not so constructed, a masonry foundation shall be provided which will extend at least 15" beyond the sides and rear of the furnace casing and 36" beyond the front of casing.

ASSEMBLING THE FURNACE

(16) The base ring of any portable warm-air furnace shall be cemented to the foundation, making an air-tight joint. The furnace parts shall be assembled plumb and level in a workman-like manner.

(17) All sections shall be properly fitted. Joints requiring cement shall be well fitted and all bolts shall be drawn up tightly.

CASINGS.

(18) Warm air furnaces shall be enclosed in metal or brick casings.

(19) Sheet metal casings, including casing tops or bonnets shall be made of metal sheets not lighter than 28 U.S. Standard gauge. They shall fit the castings and casing rings closely, so as to be dust tight and shall be securely fastened to the front. The upper casing shall be lined for its full depth.

(20) When side collars are used, the casing top or bonnet must be of sufficient height so that the largest warm air pipe can be taken from side without ovaling. In no case shall a distance less than 8 inches be maintained between the top of the furnace and the bonnet.

(21) Any furnace, the casing top or the top of take-off elbows of flat top hoods which shall come within 12 inches of a combustible floor, ceiling or joist, shall be protected by a metal shield, extending not less than 18 inches beyond the casing of said furnace. This shield shall be suspended at least 2 inches below woodwork, allowing free air space between shield and woodwork. No furnace casing or top, coming nearer than 6 inches of ceiling or joists shall be allowed in any case. All metal casing tops shall be insulated with an air space or covered with magnesia, asbestos, boiler covering, or sand.

WARM AIR BASEMENT PIPES.

(22) Ducts not enclosed in partitions--

<u>Diameter Inches</u>	<u>Minimum Weight of tin.</u>	<u>Minimum Thickness of Galvanized Iron</u>	<u>Minimum Thickness of Aluminum Sheet.</u>
less than 12	1C (107 lb.)	30 U.S. Gauge	.016 inch
12 or more	1X (135 ")	28 U.S. Gauge	.020 "

(23) Rectangular Ducts--

<u>Width Inches</u>	<u>Minimum Thickness of Galvanized iron</u>	<u>Minimum Thickness of Aluminum Sheet.</u>
Less than 14	28 U.S. Gauge	.020 inch.
14 or more	26 U.S. Gauge	.025 inch.

(24) Joints and seams of such ducts shall be securely fastened and made substantially air tight. Joints of round

ducts shall have a lap of at least two inches. Any slip type joints shall have a lap of at least 1 inch and be individually fastened. Joints shall be stripped with asbestos or equivalent.

(25) Such ducts shall be securely supported by metal hangers, straps, lugs or brackets. No nails shall be driven through the duct walls and no unnecessary holes shall be cut therein.

(26) All warm air ducts in the basement shall be provided with dampers supported on both sides and located not more than 2 feet from the furnace casing.

(27) Where warm air ducts pass through a masonry wall an air space of 1" must be provided around the pipe.

(28) Portions of such ducts which run in the open, such as those which run approximately horizontal and near the ceiling, shall have clearances as follows:-

- (a) From metal ducts to combustible material, including wood, lath and plaster -- not less than one inch;
- (b) From metal ducts to metal lath and plaster or other non-combustible finish attached to combustible material -- not less than 1/4 inch;
- (c) From metal ducts covered with 1/2 inch or more of non-combustible insulating material -- no clearance required
- (d) From ducts made of asbestos-cement or equivalent to non-combustible material - no clearance required.

WALL STACKS.

(29) Warm air stacks will be constructed entirely of non-combustible material equivalent in structural strength and durability to the following:

<u>Width Inches</u>	<u>Minimum Weight of Tin</u>	<u>Minimum Thickness of Galvanized Iron</u>	<u>Minimum Thickness of Aluminum Sheet</u>
14 or less	1C (107 lbs.)	30 U.S. Gauge	.016 inch
Over 14	1X (135 lbs.)	27 U.S. Gauge	.020 inch

(30) Where such stacks enter the floor of the first story above that in which the furnace is situated, they shall be separated from all combustible material in the floor construction by at least 1/4 inch. Any remaining space around the duct where it enters the floor shall be tightly filled with asbestos-cement or other non-combustible insulating material.

Where it is necessary to cut plates or joists, additional reinforcement shall be installed.

(31) Where such stacks are enclosed in combustible partitions, wall or concealed ceiling spaces, they shall be:

(a) Covered with not less than one thickness of asbestos paper weighing not less than 10 pounds per hundred square feet, with an air space of not less than 1/4 inch provided between the duct and combustible material, unless a non-combustible insulating covering of cellular type at least 1/4 inch thick is provided. (In metal lath and plaster or rock lath and plaster partitions no air space is needed except from wood studs.)

(b) or, be of 1/4 inch thick asbestos-cement or equivalent, separated from combustible material by an air space of at least 1/8 inch.

(32) Where such stacks are located in closets or in unheated spaces, they shall be insulated with not less than 1/4 inch air cell asbestos insulation tightly applied with joints taped, or equivalent.

(33) Warm air pipes, stacks and fittings shall not be located in outside walls unless this construction is unavoidable in the circumstances. In such cases the stacks shall be insulated with a minimum of 1/2" insulation on the 3 outer surfaces.

(34) All risers shall be braced in such a manner as not to obstruct the flow of air but to retain the full capacity throughout.

REGISTERS.

(35) When baseboard or wall registers are used, they shall be properly sealed to the stackhead in such a manner as to prevent any leakage of air between the head and the register.

(36) For any system having not more than two warm air openings, at least one of these openings shall be without valve or louvers and the pipe thereto shall be without a damper.

RETURN AIR

(37) Return air shall be conducted to the heater through a continuous system of ducts. Air shall not be recirculated from any basement section not used for living quarters.

(38) The air supply to the furnace may be taken from within the building or may be taken partially from outside and partially from within. All joints in the duct system should be made dust tight by wrapping such joints with strips of pasted asbestos paper or equivalent.

(39) Portions of return air ducts within 6 feet of the furnace shall be constructed entirely of metal of the following weights and gauges:

(40) Ducts not enclosed in partitions-round ducts as outlined in subsection 23 hereof.

(41) Rectangular ducts as outlined in subsection 24 hereof.

(42) Ducts enclosed in partitions as outlined in subsection 31 hereof.

(43) Where the installation of such ducts in walls, floors, or partitions requires the removal of any fire-stopping spaces around the duct, both the top and the bottom shall be tightly stopped with asbestos, mineral wool, or other non-combustible insulation material.

(44) Where spaces between studs in walls or partitions, or spaces between joists in floors are used as ducts, the portions of such spaces so used shall be cut off from all remaining unused portions by tight-fitting stops.

(45) The interior of combustible ducts shall be lined with metal at points where there might be danger from incandescent particles dropped through the register, such as directly under floor registers and at bottom of vertical ducts.

(46) No vertical stack for return air shall be connected to grilles on more than one floor.

(47) Where a boot or shoe is connected to the casing at the base, the opening shall not extend higher than a line on the level of the top of the grate of a coal fired furnace, the top of the hearth of oil fired furnaces, or the burner line of gas equipment, unless suitable radiation baffles are provided. The width of the shoe shall be of proper measurement to make the area at all points at least equal to that of the round or square pipe.

(48) Wherever the space between joists is used to convey return air overhead, all bridging and bracing shall be removed and a dust proof sheet metal bottom shall be constructed. If more area is required two or more spaces may be used, or a pan may be constructed to extend below the joint to obtain the required area. The connection from this pan to the boot or shoe shall be made of galvanized iron or other metal of equal gauge. Care shall be exercised to make all inside surfaces as smooth as possible.

(49) Return air faces shall have a free area equal to or greater than that of the duct to which it attaches.

(50) When a return air face is placed in a seat or side wall, the open work of the face must extend down to within 1" of the floor and the throat opening to the basement duct work shall be at least equal to the required basement duct area. No vertical return air face shall extend more than 14" above the floor line.

SMOKE PIPE

(51) The smoke or vent pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of metal not lighter than No. 24 U.S. Standard Gauge, and installed in accordance with the furnace manufacturers' recommendations. It must have no opening for attaching fireplace, stove, range, water heater, gas or ventilating connection. It shall be lock seamed or rivetted; all joints shall slip not less than $1\frac{1}{8}$ inches and it shall be supported by means of metal or wire hangers spaced not more than 6 feet apart. All smoke pipes having a diameter exceeding 7 inches shall be made

of iron of not less than 22 U.S. Standard Gauge.

(52) All smoke pipes shall be provided with a check damper manually or automatically operated, placed on the side of the pipe. When a cross damper is used it must be placed between the check damper and the furnace.

(53) No smoke pipe shall project through any external wall or window. No furnace connection is to be made to a chimney without a cast iron or steel cleanout having first been provided in the flue.

(54) The smoke or vent pipe shall extend into the chimney thimble at least 2 inches but must not project past the chimney lining.

(55) Whenever it is necessary, in installing or altering any warm air heating plant, to cut joists or supporting members, proper headers shall be put in, and additional supports shall be provided when necessary to prevent weakening of the structure, in a manner subject to the approval of the inspector. Where warm air stacks or risers enter the wall, in any building under construction, the studdings shall be set directly over and under the adjacent joists by the general contractor or builder leaving a net space of not less than 14 inches between studs and between joists.

CHIMNEY.

(56) The following provisions shall be made by the owner or building contractor in any building wherein a gravity warm-air heating system is to be installed. Provide a chimney for the furnace, constructed in a manner to comply with the Provincial Fire Marshall's Regulations, as adopted by the Corporation of Burnaby.

CONTROLS

(57) HAND FIRED COAL

Manual Controls consisting of a regulator and chains attached to ashpit draft door and check damper.

(58) GAS FIRED

Gas fired furnaces shall bear the C.S.A. seal of approval and/or the approval of other local regulatory bodies as required and shall be equipped with the following controls - room thermostat, limit switch, safety pilot and switch or valve, automatic control valve, manual shut-off valve in supply line, pilot valve, pressure regulator and draft diverter.

(59) OIL FIRED

The oil burner shall be approved as set forth in paragraph 13 and shall be equipped with the following controls; room thermostat, limit switch, barometric damper, ignition safety control or pressure atomizing and rotary burners or a flow control valve on vaporizing pot type burners.

(60) STOKER FIRED

The following controls are required: room thermostat, limit control, barometric damper, hold-fire control, and out-fire control.

(61) CONVERSION GAS AND OIL BURNERS.

Conversion gas and oil burners shall be approved as required under subsections 58 and 59 above and shall be installed with the same control devices as above specified.

(62) Maximum setting of limit control shall not exceed 250 deg. Fahrenheit.

(63) PIPELESS FURNACES

Pipeless or one pipe furnaces: when but one duplex grating is used for both warm air and cold air in a so-called pipeless furnace, the area of the cold air intake shall be at least equal to the area of the warm air outlet of the grating. The inner and outer casings of this type of furnace shall be made of galvanized iron not lighter than No. 26 U.S. Standard gauge. A uniform air space shall be maintained at all points between the inner and outer casing. In no case shall the top of the furnace be allowed closer than twenty (20) inches to the grating.

(64) Where joists are cut to accommodate such a furnace, headers shall be put in and braced.

(65) The furnace shall be selected from the manufacturers' rating tables.

(66) All installation precautions covered by subsections 1 to 65 inclusive shall apply.

(67) OIL BURNER INSTALLATIONS

Oil burner installations and all appurtenances thereto shall be installed in accordance with the rules and regulations of the Provincial Fire Marshall's office.

Supplement.

All heating installations in public buildings shall be installed in standard furnace chambers as required by regulation 26 of the said Chimney Regulations pursuant to the "Fire Marshall Act."

CODE FOR THE DESIGN AND INSTALLATION OF FORCED WARM AIR AND WARM AIR WINTER AIR CONDITIONING SYSTEMS.

INTENT OF CODE

158. (1) This code applies to the installation of Forced Warm Air and Warm Air Winter Air Conditioning Systems and is intended to prescribe reasonable provisions, based on minimum requirements, for safety to life and for protecting property from fire.

(2) In no way is the approval of an installation by the Municipality to be construed as relieving the contractor or installer of any responsibility on his part of guaranteeing the system or of taking any additional precautions as might be required for safety.

DEFINITIONS.

(3) Warm air winter air conditioning systems shall consist of one or more warm air heat exchangers within individual housings, or within one common housing; one or more motor-driven centrifugal fans; smoke or vent pipes; individual leader pipes or trunk line systems, or both; with necessary locking type dampers for warm air and return air lines; automatic controls; registers and intakes; filters or air washers; humidifiers and any other appurtenances as may be required.

(4) An individual supply system shall consist of separate ducts, of round or rectangular cross sections, extending from the heating unit.

(5) A trunk line system consists of one or more main ducts with branches.

(6) Return air ducts are a part of the recirculating system and may be individual or trunk lines, or a combination of both.

APPLICATIONS, PERMITS AND FEES

(7) No person shall commence or undertake the installation, alteration or repair of any Forced Warm Air and Warm Air Winter Air Conditioning System, in, on, or about any premises without a Building Permit being first obtained from the Building Inspector.

(8) In new residences Building Permits shall cover furnace installations and fees. Minimum fees for replacements shall be One (\$1.00) Dollar.

(9) Every such application shall state the exact location giving the correct street and street numbers of the premises, in, on, or about which it is proposed to install, alter or repair the Forced Warm Air and Warm Air Winter Air Conditioning System.

(10) When such application conforms to the provisions of this code, the Building Inspector may issue a permit.

(11) With the issuance of a permit, the Building Inspector shall deliver to the applicant a card setting forth the number of the permit, and the location of the premises in which it is proposed to install, alter, or repair the Forced Warm Air and Warm Air Winter Air Conditioning System, and every furnace man installing, altering or repairing said heating plant shall sign his name on said card, and shall also state on the card his business address and current Burnaby business licence number. Such card shall be kept conspicuously posted on said premises until the completion of the work.

(12) Nothing in this code shall prevent the owner or a member of the family of the owner from installing, altering or repairing a Forced Warm Air heating system in a single family dwelling occupied by the owner as a dwelling place; provided, that such owner or person shall secure a permit therefor and comply with all requirements of this code.

ESTIMATING HEAT LOSSES FROM
ROOMS AND BUILDINGS.

(13) Refer to Item 11 (Section 157).

SELECTION OF THE FURNACE

(14) Gas furnaces shall bear the C.S.A. Seal of Approval and/or the approval of other local regulatory bodies as required.

(15) Oil burners shall be of a type approved by a recognized laboratory. "Approved" means listed or labelled under the inspection serial of:

- i) Canadian Standard Association, or
- ii) Underwriters' Laboratories of Canada, or
- iii) Factory Mutual Laboratories, or
- iv) Underwriters' Laboratories Incorporated.

(16) The furnace shall have a rated capacity equal to the B.t.u. heat loss of the building, and shall be selected from the Manufacturers' published Output Rating Tables.

CENTRIFUGAL FAN-MOTOR FILTERS.

(17) The centrifugal fan shall be of the pressure type with self-aligning bearings, resilient mounted and grounded against radio interference.

(18) The motor shall be of the "long hour duty" type, resilient mounted, and equipped with a thermal switch.

(19) Filters shall not be used in a hand-fired coal installation unless equipped with automatic controls.

(20) Filters shall fit to form a tight seal. The filter area shall be such that the velocity through the filter will not exceed 300 ft. per minute.

(21) Filters shall be of a type that will not burn freely or emit large volumes of smoke or other objectionable products of combustion when attacked by flames. Liquid adhesive coating used in filters shall have a flash point of not less than 350° F. closed up.

SELECTION OF DUCTS AND INTAKES.

(22) The Cold Air intake to the heating unit shall be equal to the area in square inches of the Warm Air output.

INSTALLATION

(23) The floor upon which the unit is to be placed shall be constructed of brick, cement, or other incombustible material. Where heater room floor is not so constructed, a masonry foundation shall be provided which will extend at least 15" beyond the sides and rear of casing and 36" beyond the front of casing.

(24) In buildings where it is necessary to place a furnace chamber on a combustible floor, a minimum of 4" clearance shall be provided between said floor and the bottom of the heat exchanger with provision made for an air space between the base and the floor. A minimum floor covering of 1" insulation, covered with 16 Gauge galvanized iron with edges turned down to protect insulation, shall be provided in all cases.

(25) The base of the unit cabinet shall be of dust-tight construction and shall be set level and the cabinet panels shall be sealed at the floor in a dust-tight manner.

(26) The unit shall be set plumb and in a workmanlike manner. All sections and joints shall be properly fitted. Joints or flanges requiring cement or gaskets shall be well fitted and all bolts or metal screws shall be drawn up tight.

(27) The heating unit and blower shall be encased in a non-combustible material so constructed as to be dust tight.

WARM AIR BASEMENT PIPES

(28) Round pipe:

Up to and including 12 in. not lighter than 30 U.S. gauge galvanized iron or 0.016 inch aluminum.

Up to and including 24 in. not lighter than 26 U.S. gauge galvanized iron or 0.020 inch aluminum.

Joints shall lap 2" and be stripped with asbestos paper or equivalent.

(29) Rectangular Ducts.

Up to and including 14 in. wide, not lighter than 28 U.S. Gauge galvanized iron or 0.020 inch aluminum; to 36 in. wide not lighter than 26 U.S. gauge galvanized iron or 0.025 inch aluminum. To 50 in. wide not lighter than 24 U.S. gauge galvanized iron or .030 inch aluminum. To 60 in. wide not lighter than 22 U.S. gauge galvanized iron or .040 inch aluminum. All duct sections 24 in. or wider and over 48 in. in length, shall be cross broke on top and bottom and shall have standing seams or angle iron braces.

(30) No warm air duct, round or rectangular, shall come in contact with masonry walls, but shall be separated by a one inch air space.

(31) It is not the intention of this code to eliminate the use of other satisfactory, non-combustible materials in the construction of ducts.

(32) Joints and seams of such ducts shall be securely fastened and made substantially air tight. Slip joints shall have a lap of at least one inch and be individually fastened. Joints shall be stripped with asbestos or equivalent.

(33) Such ducts shall be securely supported by metal hangers, straps, lugs or brackets. No nails shall be driven through the duct walls and no unnecessary holes shall be cut therein.

(34) Portions of such ducts which run in the open, such as those which run approximately horizontal and near the ceiling, shall have clearances as follows:

(a) From metal ducts to combustible material, including wood lath and plaster -- not less than one inch.

(b) From metal ducts to metal lath and plaster or other non-combustible finish attached to combustible material-- not less than 1/4 inch.

(c) From metal ducts covered with 1/4 inch or more of non-combustible insulating material--no clearance required.

WALL STACKS OR RISERS

(35) Ducts enclosed in partitions shall be constructed of the weights or gauges stated below:

<u>Width Inches</u>	<u>Minimum Weight of Tin</u>	<u>Minimum Thickness of Galvanized Iron.</u>	<u>Minimum thickness of Aluminum Sheet</u>
14 or less	1C (107 lb.)	30 U.S. Gauge	.016 inch
over 14	1X (135 lb.)	28 U.S. Gauge	.020 inch

(36) Where such stacks enter the floor of the first storey above that in which the furnace is situated, they shall be separated from all combustible material in the floor construction by at least 1/4 inch. Any remaining space around the duct where it enters the floor shall be tightly filled with asbestos-cement or other non-combustible insulating material.

(37) Such ducts shall be securely fastened, supported by metal hangers, straps, lugs, or brackets. No nail shall be driven through the duct walls and no unnecessary holes shall be cut therein.

(38) Where such ducts enter the floor of the first storey above that in which the furnace is situated, the space around the duct at such points shall be tightly filled with asbestos-cement or other non-combustible insulating material.

(39) Where such ducts enter the floor, partition or enclosure of combustible construction within horizontal distance of 6 feet from the furnace, they shall be separated from the combustible construction by at least 5/16 inch for a distance of 6 feet, from the primary heating surface of the furnace. This space at the point where it enters the floor or partition shall be tightly filled with asbestos-cement or other non-combustible insulating material.

(40) Where such ducts are located in closets they shall be insulated with an approved fire-resistant insulating covering.

(41) Where the installation of such ducts in walls, floors, or partitions requires the removal of any fire-stopping, the spaces around the duct, at top and bottom, shall be tightly stopped with asbestos, mineral wool or other non-combustible insulation material.

(42) Insulation of Ducts.

(a) All trunk ducts or branches run in unexcavated spaces, unheated attics, garages or similar spaces shall be insulated with not less than 1" hair felt or equivalent, which shall be securely fastened in an approved manner.

(b) All ducts passing through masonry walls shall have a clearance of at least 1/4" from all parts of the wall.

(c) All supply ducts shall be installed at least 1/4" from masonry walls.

(d) Warm air pipes, stacks and fittings shall not be located in outside walls unless this construction is unavoidable in the circumstances. In such cases the stacks shall be insulated with a minimum of 1/2" insulation on the 3 outer surfaces.

RETURN AIR SYSTEM.

(43) Return air shall be conducted to the heater through continuous ducts, except that under-floor spaces may be used as ducts for return of air from rooms directly above, provided such spaces are not over 2 ft. in height to bottom of floor joists and are cleaned of all combustible material and are tightly and substantially enclosed. Air shall not be recirculated from any basement section not used for living quarters.

(44) Portions of such ducts within 6 ft. of the heater shall be constructed in accordance with subsections 28 and 29.

(45) All other return air ducts may be constructed of metal, or 1" (nominal) wood board, or other approved material.

(46) Where the installation of such ducts in walls, floors, or partitions requires the removal of any fire-stopping, the spaces at top and bottom shall be tightly stopped with asbestos, mineral wool or other non-combustible insulation material.

(47) Where spaces between studs in walls or partitions, or spaces between joists in floors are used as ducts, the portion of such spaces so used shall be cut off from all remaining un-

used portions by tight fitting stops. Bottoms of all return air joists spaces shall be lined with smooth, air-tight material. All crossed bracing should be removed and joists properly reinforced.

(48) The interior of combustible ducts shall be lined with metal at points where there might be danger from incandescent particles dropped through the register, such as directly under floor registers and at bottom of vertical ducts.

(49) No vertical stack for return air shall be connected to grilles on more than one floor.

(50) All ducts shall be securely suspended from adjacent building members. No nails shall be driven through duct or stack walls, and no unnecessary holes shall be cut therein.

(51) Where an outside cold-air intake is used it must be equipped with a close-fitting damper and insect screen.

(52) Insulation of Ducts (Return Air)

(a) All trunk ducts or branches which run in unexcavated spaces, unheated attics, garages or similar spaces shall be insulated with not less than 1" hair felt or equivalent, which shall be securely fastened in an approved manner.

(b) All ducts passing through masonry walls shall have a clearance of at least 1/4" from all parts of the wall.

(c) All return air ducts shall be installed at least 1/4" from masonry walls.

(d) Risers or stacks in outside walls shall have 1/2" of insulation applied to the three outer surfaces.

DAMPERS.

(53) In an individual duct system, each duct shall be provided with a volume damper with substantial mounting and positive locking device.

(54) In a trunk system, each branch duct shall be provided with a damper. Where main duct branches into two or more trunks leaving the bonnet, each trunk shall be provided with volume or squeeze damper to regulate air volume in each trunk. All dam-

pers shall be provided with positive locking devices.

(55) Approved automatic back draft louvers shall be installed in all warm air supply ducts to attached private garages.

SMOKE PIPE

(56) The smoke or vent pipe shall be as short and direct as consistent with the location of the furnace. It shall be made of metal not lighter than No. 24 U.S. Standard gauge, and installed in accordance with furnace manufacturers' recommendation. It must have no opening for attaching fireplace, stove, range, water heater, gas or ventilating connection. It shall be lock seamed or riveted; all joints shall slip not less than $1\frac{1}{8}$ " and it shall be supported by means of strap hangers spaced not more than 6 feet apart. All smoke pipes having a diameter exceeding 7 inches shall be made of iron of not less than 22 gauge U.S. Standard.

CHIMNEY.

(57) The following provisions shall be made by the owner or building contractor in any building wherein a Forced Warm Air Heating system is to be installed. Provide a chimney for the furnace, constructed in a manner to comply with the Provincial Fire Marshall's Regulations, as adopted by the Corporation of Burnaby.

CONTROLS

(58) STOKER FIRED

The controls for a stoker fired system shall consist of a room thermostat, fan control, limit control, hold-fire control, barometric damper and out-fire control.

(59) OIL FIRED.

(a) Pressure atomizing burners and rotary burners shall be controlled by a room thermostat, limit switch, fan control, ignition safety switch and barometric damper to conform to manufacturers' specifications.

(b) Vaporizing pot-type burners shall be controlled by a room thermostat, limit control, fan control, flow control valve and barometric damper. A manual control valve and approved oil filter shall be placed in the fuel line near the source of supply.

(60) GAS FIRED

The controls shall consist of a room thermostat, limit control, fan control, automatic control valves, safety pilot and switch or valve, pressure regulator, manual gas cock and pilot cock. Gas supply shall automatically be cut off with electric failure or failure of pilot flame. An approved draft diverter shall be installed.

(61) CONVERSION GAS AND OIL BURNERS

Conversion oil and gas burners shall be approved as required in subsections 59 and 60 hereof and shall be installed with the same control devices as above specified.

(62) OIL BURNER INSTALLATIONS

Oil burner installations and all appurtenances thereto shall be installed in accordance with the rules and regulations of the Provincial Fire Marshall's office.

(63) OLD HOUSE WORK

When a forced warm air or warm air, winter air conditioning system is to be installed in an old building, this ordinance shall apply in its entirety.

(64) Existing stackheads, risers and registers may be used provided they meet safety requirements.

(65) No basement return shall be allowed where it shall reduce air needed for combustion or be a source of objectionable dirt.

(66) Where a pressure type fan is installed to an existing warm air furnace, subsections 1 to 65 inclusive hereof shall apply where applicable.

(67) All heating installations in public buildings shall be installed in standard furnace chambers as required by Regulation 26 of the said Chimney Regulations pursuant to the "Fire Marshall Act."

159. This By-law may be cited as the Burnaby Building By-law 1926 Amendment By-law 1951.

DONE AND PASSED in open Council this Eighth (8th)
day of January, A.D. 1951.

RECONSIDERED AND FINALLY PASSED this Fifteenth
(15th) day of January, A.D. 1951.



W R Beavish

REEVE

Charles B. Brown

CLERK