cubic feet of air per square foot of floor area per minute, but not less than one-half (½) square foot in cross-sectional area and one-third (⅓) additional square foot for each additional water closet or urinal above two (2) in number; by a skylight of approved noncombustible construction not less than three (3) square feet in area with ventilating openings; or for other than one and two family and multi-family dwellings, by a system of mechanical ventilation or gravity ventilator with an approved siphon-type hood capable of exhausting the air volume specified in Table 19.

115.17. Alcove rooms.—Alcove rooms shall open without obstruction into adjoining rooms and the required light and air shall be based upon the combined floor area. No such alcove space shall be more than sixty (60) square feet in area and the opening to the adjoining rooms shall be not less than eighty (80) per cent of the superficial area of the division wall.

115.18. Institutional Buildings.—In buildings of the institutional use group, every habitable and occupiable room shall be provided with light and ventilation as required in this code for residence uses; except that in buildings for the enforced detention of people, indirect openings to the street or court may be permitted through intermediate corridors or by other approved mechanical and artificial means.

115.19. Places of Public Assembly.—All places of public assembly during occupancy shall be illuminated by sufficient natural or artificial light to permit the reading of an ordinary newspaper. When natural light and ventilation are provided, the required openable window area or other approved devices for natural light and ventilation shall be distributed as uniformly as practicable on at least two sides of the room.

115.2. Artificial Light and Ventilation.—When natural light and ventilation are inadequate to insure the health and safety of human occupants, or when the use and occupancy of a building or part thereof involve the presence of dust, fumes, gases, vapors or other noxious or deleterious impurities that create a fire or health hazard, such building shall be equipped with artificial light and mechanical ventilation as herein provided.

115.21. Intensity of Illumination.—The intensity of illumination of habitable and occupiable rooms shall be equivalent to six (6) foot candles as specified in section 115.11, and of bath and toilet rooms equivalent to three (3) foot candles. All areas and portions of buildings used as places of public assembly other than theaters shall be lighted by electric light to provide a general illumination of not less than one (1) foot candle.

115.22. Mechanical Ventilation.—Where mechanical ventilation is accepted as an alternate for natural means of ventilation or is required under the provisions of this code, equipment and distribution shall comply with section 118, and such systems shall be kept in operation at all times during normal occupancy of the building, room or space so equipped. Mechanical or gravity systems of ventilation shall provide the minimum fresh air supply in cubic feet per minute per square foot of floor area, prescribed in table 19.

115.3. Attic Spaces.—All attic spaces and unoccupied spaces between roofs and top floor ceilings shall be ventilated by not less than two (2) opposite louvres or vents with a total clear area of opening not less than one-half (½) of one (1) per cent of the horizontally projected roof area.

115.4. Crawl Spaces.—Access spaces under grade floor construction and wherever wood, metal or other floor construction subject to corrosion or deterioration is installed above ground without basements shall be provided not less than eighteen (18) inches in depth. Such spaces shall be vented with screened openings having a clear area of not less than one-half (½) of one (1) per cent of the enclosed building area or shall be provided with other equivalent means of artificial ventilation. The screens shall be corrosion-resistive and rodent proof complying with section 116.43.

TABLE 19. REQUIRED MINIMUM FRESH AIR SUPPLY

Use of Room or Space	Air Changes Per Hour	Minimum cu. ft. Per minute Per sq. ft.
Auditoriums and Public Assembly	6	1½ to 2
Bath and Toilet Rooms (Private)	5	2
Bath and Toilet Rooms (Public)	6	3
Convention Halls	6	2
Dance Halls	6	2
Interior Cooking Spaces	6-8	2-3
Institutional (Ward & Class Rooms)	4	2
Institutional (Operating Rooms)	10	4
Kitchens (Private)	3	1½ to 2
Kitchens (Public)	8	4
Living and Bed Rooms	2	½
Locker and Rest Rooms	6	3
Offices and Jails	2	½
Work Rooms		
(Less than 1000 cu. ft. per person)	4	1¼
(1000 cu. ft. or more per person)	2	½
Garages below grade	6	2

115.5. Stairways and Exitways.

115.51. Illumination.—All stairways, exitways and passageways appurtenant thereto in other than one and two-family dwellings shall be equipped with artificial lighting facilities to provide an intensity of illumination of not less than three (3) foot candles at all times that conditions of occupancy of the building require the exitways to be available.

115.52. Multi-family and Institutional Buildings.—In multi-family buildings and in institutional buildings for the care, treatment or education of people, required interior stairways and the hallways shall be provided with windows having a glass area of not less than ten (10) square feet which open on a street, alley, yard or court or with the equivalent source of light for each story through which the stairway passes. Windows in hallways shall be so located that light penetrates the full length of the hallway.

115.6. Courts.—Every court which serves windows for light and ventilation shall have a minimum of three (3) inches for each foot of height or fraction thereof but not less than five (5) feet for outer courts and twice these values for inner courts. Gore courts shall be not less than five (5) feet wide at any point. All courts required for light and ventilation shall be located on the same lot with the building or structure served thereby.

115.7. Rear Yards.—The depth of a rear yard required for light and ventilation for buildings of the residence-use group shall not be less than sixteen (16) feet, except for a corner lot the depth shall not be less than ten (10) feet. For buildings of all other use groups the minimum depth of a rear yard shall be not less than ten (10) feet.

115.8. Motor Vehicle Parking.—Rear and side yard areas may be used for automobile parking spaces or private garages not more than one (1) story in height, when accessory to and only for the use of the occupants of the building; provided that no such parking space shall be located within five (5) feet of a required window opening in the main building and no garage shall be located less than ten (10) feet from a residence unless complying with the requirements of Section 107.7 for attached private garages.

115.9. Shaft Enclosures.—All vertical shafts, other than stairway enclosures, extending through more than one (1) story of a building or structure including dumbwaiter and elevator hoistways shall be enclosed in fire-resistive construction, complying with the requirements of table 5 of the Basic Building Code (see appendix E) and shall be vented as herein specified with skylights, windows or ducts opening to the outer air or with other equivalent means of ventilation.

115.91. Open Shafts.—The enclosing walls of shafts for light and ventilation purposes that are open to the outer air at the top shall be constructed as provided for exterior enclosure walls in section 112.

115.92. Covered Shafts.—The enclosing walls and the top of interior covered shafts shall be constructed of approved masonry walls or other assemblies having a fire-resistance rating of not less than two (2) hours, except as provided in section 115.93.

115.93. One and Two-Family Dwellings.—In one and two-family dwellings which are not more than two and one-half (2½) stories in height of other than fire-resistive construction, interior shafts shall be supported and constructed with materials having a fire-resistance rating of not less than three-quarter (¾) hour.

115.94. Shafts Extending to Roof.—All shafts and hoistways that extend to the roof of a building or structure shall be covered at the top with a skylight of at least three-quarters (¾) the area of the shaftway constructed of approved noncombustible materials and glazed with not less than three-sixteenths (3/16) inch plain glass protected with non-corrosive, noncombustible screens above and below. The skylights herein required may be replaced by one or more side windows of equivalent area provided the sill is not less than two (2) feet above the adjoining roof and the opening is not located on the lot line or within twenty (20) feet of an opening in adjacent walls.

115.95. Shafts Not Extending to the Roof.—All shafts that do not extend into the top story of a building or structure shall be enclosed at the top with construction of the same strength and fire resistance as the construction type in which it occurs, but in no case less than that of the required fire-resistance rating of the shaft enclosure. Such shafts shall be provided with gas and smoke relief ducts or vents or approved mechanical means of ventilation in conformity to the provision of section 118.

115.96. Bottom Enclosures.—All shafts that do not extend to the bottom of the building or structure shall be enclosed at the lowest level with construction of the same strength and fire resistance as the lowest floor through which it passes, but in no case with a fire-resistance rating less than that of the shaft enclosure.

115.97. Thermostatic Control.—In other than one and two-family dwellings, the skylights, windows and other vent relief devices shall be controlled by fusible links designed to operate at a fixed temperature of not more than one hundred and sixty (160) degrees F.; or by electric or pneumatic operation under a rapid rise in temperature at a rate of fifteen (15) to twenty (20) degrees F. per minute; or by other equivalent approved methods.

115.98. Elevator Machine Rooms.—The platform of machine rooms located at the top of elevator shafts, when of solid construction, shall be pierced with one or more vent openings with a gross area of not less than two (2) square feet for each elevator in the enclosure, but in no case less than ten (10) per cent of the shaft area.

115.99. Existing Shaftways.—In all existing shaftways in buildings of the multi-family and hotel use groups, the institutional use group, and assembly use group, and all buildings with an occupancy load of more than seventy-five (75) above or more than forty (40) below grade, which are not already enclosed as herein required, the building official shall direct such construction as he may deem necessary to insure the safety of the occupants.

SECTION 116.0. WATERPROOFING, RATPROOFING AND TERMITE PROTECTION

116.1. Foundation Wall, Cellar and Basement Waterproofing.—Where habitable or occupiable spaces are located below grade, foundation walls below the ground level shall be dampproofed and adequately drained to insure a dry basement or cellar.

116.2. Foundation Wall Reinforcement.—When required by lateral water pressure, the reinforcement of eight (8) inch concrete basement walls supported laterally at the top and bottom shall consist of not less than one-half (½) inch round verticals spaced twelve (12) inches on centers and one-half (½) inch round horizontals spaced twenty-four (24) inches on centers. For all conditions of support, the reinforcement shall be determined by accepted engineering analysis.

116.3. Soil Drainage.—When required by soil conditions, subsurface drainage shall be provided under the foundation slab in conformity to section 110.8.

116.4. Ratproof Apron.

116.41. Grade Protection.—Beneath the exterior wall of every building or enclosed part thereof, and every enclosed shed, porch or other enclosed structure which is not supported on a continuous masonry wall, there shall be a complete masonry or concrete rat wall at least four (4) inches thick.

116.42. Height of Apron.—The rat wall shall extend not less than six (6) inches above and twenty-four (24) inches below grade, except in the case of buildings having a concrete floor which is continuous with the rat wall in which case such rat wall may stop at the floor slab. Rat walls shall not be assumed to give protection from frost action or serve as load bearing foundation walls.

116.43. Protection of Wall Openings.—All openings in the apron required for ventilation in section 115.4 or for other purposes shall be guarded with corrosion-resistive rodent-proof shields of not less than No. 22 gage perforated steel sheets or No. 20 B & S gage aluminum or No. 16 gage expanded metal or wire mesh screens with not more than one-half (½) inch mesh openings.

116.44. Protection of Grade Floor Slab Openings.—Exterior walls shall be effectively tied to the slab without open spaces between slab and walls. All access openings in the slab shall be closed with concrete, masonry, metal or other corrosion-resistive noncombustible covers of adequate strength to support the floor loads. Pipe, conduit, cable and similar openings shall have snugly-fitting collars to eliminate all open spaces.

116.45. Wall Chases.—The backs and sides of chases in exterior walls including recessed apron walls shall be made water-tight and when less than eight (8) inches of masonry is exposed to the weather, it shall be waterproofed with a mastic membrane, cement coat or other approved method.

116.5. Protection of Lumber.

116.51. Grade Construction.—All untreated wood in exterior walls at grade shall be supported on concrete or other masonry walls or piers laid in cement mortar and, where required, all wood shall be impregnated with approved preservative and termite-proof treatments.

116.52. Wall Pockets.—Wood girders framing into masonry walls shall have one-quarter (¼) inch air spaces on both sides and ends for ventilation purposes or otherwise protected with approved preservative treatments.

116.53. Cellar Columns.—No wood posts shall be used in damp locations in cellars or basements or below grade level except when decay-resistant or approved pressure-treated materials are used, or adequate ventilation is provided to prevent decay. All wood posts shall rest on concrete pedestals as provided in section 111.4.

116.6. Termite Shields.—Where conditions indicate existance of termites, buildings shall have termite protection consisting of metal shields of unpierced aluminum, copper, galvanized steel of not less than No. 26 U. S. gage or its equivalent or of other corrosion-resistive materials shall be bedded continuously in cement mortar on top of masonry foundation walls extending not less than two (2) inches beyond the face of the wall and bent downward at an angle of forty-five (45) degrees to form a protecting hood.

116.7. Removal of Building Debris.—No loose wood, form material or other debris subject to decomposition shall be buried or left under floors, porches, or around foundation walls.

SECTION 117.0.—PLUMBING AND WATER SUPPLY

Whereas the Plumbing Code of the City of Detroit, Michigan is nationally recognized as providing safe standards and is being considered as a basis for a national plumbing code, it is, therefore, provided that the same is incorporated herein by reference and the provisions of said City of Detroit Plumbing Code shall apply to all installations made in the City of Birmingham with the exception of the sections on plumbing specifically covered herein.

117.1. Plumbing Defined.—The Term plumbing shall mean and include:

(a) All piping, fixtures, appliances and appurtenances in connection with the drainage, ventilation of the same or water supply system within a building, residence or structure;

(b) The construction and connection of any drain or waste pipe carrying domestic sewage from a point outside of the foundation walls of any building, residence or structure with the sewer service lateral at the curb or other disposal terminal, and the alteration of any such system, drain or waste pipe, except minor repairs to faucets, valves, pipes, appliances and removing stoppages;

(c) The water service piping from a building, residence or structure to the mains in the street, alley or other terminus;

(d) The water piping and plumbing appliances, including the water pressure system other than municipal systems, within the building, residence or structure,

(e) A plumbing and drainage system so designed and vent piping so installed as to keep the air within the system in free circulation and movement, and to prevent with a margin of safety unequal air pressures of such force as might blow, siphon or affect trap seals, or retard the discharge from plumbing fixtures or permit sewer air to escape into the building, residence or structure.

117.2. License Required.—No plumbing work shall be performed except by a master or journeyman plumber licensed under the laws of the State of Michigan and registered with the City of Birmingham. Registration fee shall be $1.00 for master and 50c for journeyman plumbers. Nothing herein contained shall prohibit any bonafide owner from personally installing plumbing in his own residence, provided that said owner shall:

(1) Apply for and secure a permit covering the work proposed.
(2) Pay the required fee.
(3) Do the work himself or herself in accordance with this code.
(4) Apply for inspection.
(5) Receive approval of the Plumbing Inspector.

117.3. Permits. Before any work is commenced on plumbing installations a permit shall be obtained from the Building Department. Fees for plumbing permits shall be as established by resolution of the City Commission. See Section 104.6.

117.4. Inspections.—It shall be the duty of the plumber to whom the permit is issued to notify the Building Department when the installation is ready for test or inspection. No plumbing or part thereof shall be covered or concealed until it has been inspected, tested and accepted.

117.5. Existing Unsafe Installations.—Any existing installations of plumbing or drainage, deemed unsafe and dangerous to public safety and health in whole or in part, shall be made to comply with the provisions of this code. Any surface or roof drainage which creates a structural or health hazard, or any other nuisance to the owners or occupants of adjacent premises or to the public by reason of discharge into, onto or across any adjacent building, premises or public thoroughfare shall be abated by the owners of the improperly drained area.

117.6. Workmanship.—In the process of installing, repairing, replacing, moving or removing any plumbing or drainage; floors, walls, ceilings, or any other part of the building shall be left in good repair and safe structural condition. Care shall be exercised in cutting and notching and no structural member shall be weakened to such an extent that it will not carry the load for which designed. Unnecessary cutting and notching deeper than required for the plumbing installation shall be deemed as poor workmanship. Workmanship shall be of such character as to secure the results sought to be obtained in all sections of this code.

117.7. Septic Tanks.—When a sewer is not available the building official may grant a permit for the use of a septic tank or other sewage treatment tank, provided; such tanks shall be constructed in accordance with the recommendations of the State Department of Health. Whenever a sewer is available use of existing treatment tanks shall be discontinued and connections made to such sewer.

117.8. Water Supply.—Every building in which people live, work or congregate shall be provided with a supply of clean, cool and potable water in sufficient quantity to maintain all water supply and plumbing fixtures in a safe and sanitary manner. Cross connections of the city water supply with any private system shall not be permitted. No private wells shall be installed within the City of Birmingham without first having secured a permit therefor from the City Commission.

117.81. Domestic Hot Water Supply Systems.—Domestic hot water heaters, range boilers and water backs of heating boilers shall be equipped with temperature and pressure safety relief devices as provided in Section 114.9.

On all new installations of domestic water heaters an automatic shut-off shall be provided on the fuel supply to prevent overheating of the water and consequent damage to plumbing.

117.9. Drainage.—The drainage system conveying storm water from roofs, paved areas and courts, except that pertaining to private garages on the rear of lots, shall be connected to the storm sewer, combined sewer, or other approved disposal terminal. All subsoil drains shall be connected to the drainage or plumbing systems of the building within the lot lines.

All roof drains shall have approved strainers except when draining to hanging gutters. Catch basin and intercepters may be required by the building official when corrosive liquids, grease, abrasive substances or harmful chemicals likely to injure drain, sewer or waste pipes are involved.

SECTION 118.0. AIR CONDITIONING, REFRIGERATION AND MECHANICAL VENTILATION

118.1. Approved Systems.—All air conditioning, refrigerating, ventilating, cooling and air exhaust systems hereafter installed, and all alterations or additions to existing systems in buildings, and structures heretofore or hereafter erected shall be of an approved type complying with the provisions of this code and the Basic Code. Nothing herein contained shall be deemed to nullify the federal, state or municipal rules and regulations governing the storage and use of flammable and explosive gases and chemicals, or the requirements of the Interstate Commerce Commission or other federal statutes governing the transportation and use of hazardous gases, explosives and other flammable substances. The provisions of the American Standard Safety Code for Mechanical Refrigeration listed in appendix B shall be deemed to meet the provisions of this code; except as otherwise specifically provided herein.

118.12. Unit Refrigerating Systems.—All self-contained units designed either for use in the conditioned space or for use in a central system with air ducts distribution which require no external construction other than water or electrical connections shall be of an approved type and the gas, plumbing and electric connections shall conform to the requirements of sections 117 and 121. In buildings of residential, business, commercial and industrial groups no permit shall be required for the installation of self-contained unit refrigerating systems with capacities of not more than six (6) pounds of group 1 refrigerants.

118.13. Site Assembled Systems.—All built-up and site assembled installations used either as direct or indirect systems with group 2 or group 3 refrigerants shall have all parts containing refrigerants enclosed in vapor tight and fire-resistive machinery rooms or located in accessory structures not connected to the main buildings in accordance with section 119.41.

118.14. Certificate of Approval.—A permit shall be required for all new installations and for alterations or additions to existing installations or where required for the remedying of existing defective installations, except as herein provided. No refrigerant other than provided for in the American Standard Safety Code and specified in the certificate of approval shall be employed in the system.

118.15. Tests.—Every part of a refrigerating or air conditioning system containing the refrigerant shall be tested for tightness by the manufacturer at not less than the minimum specified test pressures; and no air conditioning, refrigerating or ventilating system requiring a permit shall be operated or permitted to be operated until it has been approved by the building official. All tests shall be conducted in accordance with the American Standard Safety Code and the approved rules adopted thereunder.

118.16. Existing Approvals.—Existing air conditioning, refrigerating and ventilating equipment heretofore legally installed may be continued in use, providing the public safety is not endangered thereby and the system is maintained in a safe operating condition as required by the building official. If the continued use of existing equipment is unsafe, he shall order such use to cease until all defects are remedied.

118.17. Power of Condemnation.—Whenever a system or any part thereof is found to be unsafe to life or property, it shall be forthwith condemned and no such system shall thereafter be restored to use until it has been made safe and approved for use.

118.18 Inspections and Certificates.—All systems requiring permits shall, upon their completion, be inspected by the building official. If found safe and in conformity to the provisions of this code, he shall issue a certificate which shall be kept posted in a conspicuous location. Refrigerating systems in buildings of the public assembly or institutional use groups shall be inspected periodically. Upon inspection or reinspection of an air conditioning, refrigerating, or ventilating system, any defects or deficiencies in any part of the system which require repair to insure safe operation shall be immediately rectified before the system is returned to use.

118.19. Housekeeping.—All air conditioning and refrigerating systems shall be operated and maintained in a clean and orderly manner, free from accumulations of dust, oily waste or other debris and all piping and machinery shall be kept readily accessible at all times for inspection and repair. Ducts, cooling and heating coils shall be kept clean, and unit filters shall be cleaned or renewed to insure unimpeded air flow and fire safety.

118.2. Accidents.—The owner, lessee or person in charge of air conditioning or refrigerating systems shall immediately notify the building official of each and every accident to a person involving medical attention or damage to apparatus or property of one hundred (100) dollars or more on or about or in connection with the installation; and he shall afford the building and other authorized administrative officials every facility for investigation. The removal of any part of the damaged construction or operating mechanism from the premises is forbidden until permission has been granted by the building official.

118.3. Classification of Refrigerants. Refrigerants shall be classified in accordance with the Standard Safety Code.

118.4. Location and Installation of Systems.—No air conditioning or refrigerating systems shall be installed in public hallways, lobbies, stairways, or other exitways of any building, or in elevator or dumbwaiter shafts, except that a direct sealed unit system containing not more than six (6) pounds of group 1 refrigerant may be installed in exit corridors provided free exit passage is not obstructed thereby and such installation is approved by the building official. Refrigerant piping crossing passageways or corridors in any building shall be erected with not less than seven (7) feet clearance above the floor; and no such piping shall be located in any duct work of the system.

118.41. Machine Room Enclosure.—Machine rooms for all air conditioning and refrigerating systems containing fifty (50) pounds or more of group 2 and group 3 refrigerants shall be enclosed with vapor-tight construction of not less than two (2) hours fire resistance with one and one-half (1½) hour self-closing fire doors or the approved labeled equivalent complying with section 119.8. No openings shall be provided that will permit the escape of the refrigerant to other parts of the building. The exit door shall open directly to the outer air, or the machinery room shall be provided with a vestibule with self-closing fire door at both entrance and exit.

118.42. Emergency Ventilation.—The machinery room shall be ventilated to the outer air, either by windows or approved mechanical exhaust systems as specified in the standard. No flame producing device or hot surfaces at a temperature above eight hundred (800) degrees F. shall be permitted in the machine room and all electrical equipment shall conform to the requirements of the National Electrical Code for electric installations in hazardous locations.

118.43. Quantity of Refrigerant.—Not more than three hundred (300) pounds of refrigerant shall be stored in approved containers in the machinery room. Quantities in excess of three hundred (300) pounds shall be stored in a separately enclosed accessory room or building enclosed in three (3) hour fire-resistive construction.

118.44. Disposal of Waste Refrigerant.—The containers into which refrigerants are discharged or withdrawn from a refrigeration system shall comply with the Interstate Commerce Commission regulations and specifications for shipping containers. When refrigerant is added to a system, except in unit systems containing not more than six (6) pounds of refrigerant, it shall be charged on the low pressure side; and no containers shall be left connected to a system except while charging or withdrawing refrigerant. Refrigerants withdrawn from a system shall be transferred in the approved containers and shall not be discharged into any sanitary sewer or plumbing system, but shall be disposed of in accordance with the provisions of section 117.

118.5. Equipment and Operating of Systems.

118.51. Blower Shut-Off.—All ventilating and air conditioning systems using fans or blowers shall have an approved manually operated blower shut-off switch in an accessible location for quickly closing down the fan in case of fire. In recirculation systems servicing more than one (1) story of a building, or more than one (1) fire area of a single story, the fan shall be arranged to shut down automatically if the air temperature reaches one hundred and twenty-five (125) degrees F. in any part of the system.

118.52. Smoke Detector.—When the life safety of any use and occupancy is exceptionally hazardous or when required for automatic operation of exhaust systems, all mechanical ventilation and air conditioning systems shall be provided with an approved smoke detector.

118.53. Emergency Valve and Tank.—All refrigerating systems employing more than one hundred (100) pounds of group 2 or group 3 refrigerants shall be provided with an emergency tank equipped with a quick-acting, readily accessible and identified gate valve to purge the system of all refrigerant in the event of fire, complying with section 403 of the Basic Building Code.

118.54. Steam and Hot Water Heating Equipment.—The installation of all steam and hot water apparatus in air conditioning systems shall comply with the requirements of section 113 and 114 for piping, flues and flue connections. Direct heating units when used in air conditioning systems shall be equipped with an approved temperature limit-control device. The steam pressure in heating coils of all air conditioning systems shall not exceed fifteen (15) pounds per square inch gage pressure.

118.55. Piping and Valves.—All piping, tubing and valves used in construction and installation of a refrigerating or air conditioning system shall conform to accepted engineering practice governing pressure piping and shall be suitable for the refrigerant used therein, and no construction materials shall be used that might deteriorate under the chemical action of either the refrigerant or lubricating oil, or combined action of both. Brass and copper pipe and hard copper tubing shall comply with sections 117. Vertical refrigerating piping extending through two (2) or more stories shall be enclosed in two (2) hour fire-resistive shaft enclosures with vent relief above the roof; unless erected on the exterior of the building in other than interior courts or air shafts. All insulated and uninsulated refrigerant piping other than piping located on the exterior of the building or structure, or when located in a flue vented to the outer air, shall be installed so as to be accessible for visual inspection and maintenance, except when required to be protected against mechanical injury, or when located in the enclosed cabinet of an approved refrigerating unit. In systems operating on group 1 refrigerants, the piping may be carried through floors provided it is enclosed in fire-resistive ducts or shafts vented to the outside air.

118.56. Hangers and Supports.—All equipment piping, tubing and other accessories containing refrigerant shall be fully supported in an approved manner by hangers and supports of metal or other approved noncombustible material and such supports or hangers shall be used for no other purpose.

118.57. Soldered Joints on Copper Tubing.—Soldered joints on copper tubing used in all refrigerating systems in buildings for institutional and assembly uses (use groups F and H) and in refrigerating systems containing more than twenty (20) pounds of refrigerant gas in buildings of other use groups shall be fabricated using solders or alloys with melting points of not less than one thousand (1000) degrees F.

118.58. Discharge Lines.—Discharge lines from condensers and other equipment shall not be directly connected to the waste or sewer system but shall discharge over and above the rim of a trapped and vented plumbing fixture or other interceptor or into a separate storm water sewer as provided in section 117.

118.59. Water Connections.—Discharge water lines from condensers shall be connected to prevent siphoning into potable water supply line and no water used for removing heat from a refrigerating system shall be discharged into any water supply directly or indirectly intended for domestic purposes or human consumption.

118.6. Air Inlet and Outlet Openings.

118.61. Exterior Openings.—Fresh air intakes with less than thirty (30) feet exposure distance to openings in adjoining walls or buildings shall be protected with approved automatic fire shutters, curtains or other approved opening protectives complying with section 118.9. Exterior fresh air intake and exhaust openings when located on a street or alley lot line shall be installed not less than twelve (12) feet above grade; and all intakes shall be protected by approved corrosion-resistive screens. Exterior exhaust openings shall be provided with approved protecting guards, covers, or other approved means of preventing the creation of a nuisance; and shall not circulate air downward in such manner as to strike pedestrians. The discharge outlet shall be located not less than twelve (12) feet above grade and not less than twenty (20) feet horizontally from a fire escape, exterior stairway or other required exitway.

118.62. Interior Openings.—Interior air inlet and outlet openings within buildings and structures shall be located not less than three (3) inches above floors, except that approved mushroom type inlets may be located under the seats in places of public assembly equipped with fixed seats.

118.7. Duct Linings and Coverings.—All ducts shall be constructed of approved, noncombustible, corrosion-resistive materials in accordance with the requirements of section 113.6. Ducts may be independently erected or may be incorporated in the walls or other parts of the structure, provided that the portion of the structure forming the duct enclosure meets the minimum requirements for strength and fire resistance of table 5. Ducts shall be made reasonably air-tight throughout, without openings other than those required for the proper operation and maintenance of the air conditioning or ventilating system. Ducts and all parts of the duct system shall be substantially supported and securely fastened to the structural members of the building with supports of approved, durable, noncombustible materials.

118.71. Plenum Chambers.—Plenum chambers shall conform to all the minimum requirements for duct systems, and when such chambers are enclosed in walls or partitions, the enclosure shall be constructed in accordance with the requirements of section 112 for enclosure walls, but in no case shall the fire-resistance rating be less than two (2) hours.

118.72. Return Ducts.—Return ducts, other than vertical, shall be so constructed that the interior is accessible to facilitate the removal of possible accumulations of dust and other combustible and flammable matters. Where corridors or hallways are used as return ducts, an approved smoke detector or other device shall be provided to stop the exhaust fan automatically and instantaneously in the presence of smoke. The louvres provided for the transmission of air to and from air-conditioned spaces to such corridors shall be arranged to close automatically after stopping of the fans and shall be equipped with auxiliary manually operated closing devices which can be readily closed in emergency.

118.73. Supply Ducts.—Supply ducts, other than vertical, shall conform to the requirements for return ducts, except when the entire air supply passes through either a water spray or approved filter as specified in section 118.8.

118.74. Location of Ducts.—All ducts shall be installed so that they will not vitiate the strength of any structural member and so as not to be subject to mechanical damage. Metal ducts shall be installed not nearer than one (1) inch to any combustible construction unless protected by approved insulating material complying with section 118.75.

118.75. Linings and Coverings.—Only approved noncombustible materials shall be used for duct lining; nor shall combustible coverings be used on the outside of ducts carrying air at temperatures greater than one hundred and seventy-five (175) degrees F. All coverings shall be adequate to prevent a temperature of more than two hundred and fifty (250) degrees F. on the exterior exposed surface.

118.76. Firestopping.—The firestopping of floors, partitions and walls shall not be destroyed where ducts pass through floors, ceilings, walls, or partitions, nor shall the effectiveness of the fire protection be impaired around structural members as required in section 103.1 and table 5 of the Basic Building Code.

118.77. Flammable Residues.—Ducts for exhaust ventilation and air conditioning systems which discharge or contain flammable vapors, dust or other solid residues shall extend to the exterior of the structure in the most direct manner possible and shall not pierce floors except when enclosed with construction of the required fire resistance as defined by the fire grading in table 29; nor shall such ducts transporting flammable matters extend through fire walls, nor shall they be incorporated in the structural elements of the building. Such discharges shall be piped directly to the outside of the building; and the discharge outlet shall be located to comply with section 118.6.

118.8. Air Filters.—Air filters shall be of approved types, constructed of flame-resistive materials. The flash point of liquid adhesive coating used on air filters shall be not less than three hundred and fifty (350) degrees F. The use of oil filters that may be subject to flowing or dripping oil shall be prohibited.

118.9. Fire Dampers and Opening Protectives.

118.91. Fire Division Walls.—An approved fire door or an approved automatic fire shutter complying with the provisions of section 119.8 shall be provided at each side of a fire division wall which is pierced by a duct of an air conditioning or ventilating system. Such opening protective shall be installed so as to be readily accessible for inspection and repair.

118.92. Fire Dampers.—When fire doors are not practical, approved automatic fire dampers shall be constructed of noncombustible materials and installed in the prescribed locations complying with the Standard Safety Code for Refrigeration.

SECTION 119.0—FIRE SAFETY AND FIRE PROTECTION

119.1. Fire Walls.—All fire walls for the purpose of subdividing a building into limited fire areas, complying with table 6 of the Basic Building Code, or which separate two (2) or more buildings to restrict the spread of fire shall be ground-supported, or shall be so constructed as to be self-supporting in the event of collapse of adjoining construction on one side. In fireproof construction, the fire walls may be supported on columns and girders protected to afford the same fire resistance as the wall; and when offset, the floor construction shall be of the same fire resistance required for the fire wall. The fire-resistance ratings of fire walls shall be in no case less than two (2) hours, nor in any case less than the fire grading of the use group specified in table 30.

TABLE 30.—FIRE HAZARD CLASSIFICATION

Use group	Fire grading in hours
1 and 2-family dwellings	¾
Multi-family dwellings	1½
Hotels, boarding and lodging houses and dormitories	2
Institutional	2
Assembly	3
Business	3
High hazard	4 or more

For comprehensive table, see table 16, Basic Building Code.

119.11. Hollow Fire Walls.—When wood or other combustible structural members frame into hollow masonry fire walls or walls built of hollow masonry units, all spaces shall be filled solidly for the full thickness of the wall and for a distance of not less than four (4) inches above and below and between the structural members with concrete or other noncombustible materials.

119.12. Combustible Insulation.—Fire walls may be faced with cork, fiber board or other combustible insulation materials if cemented directly to the fire wall without intervening air spaces and protected on the exposed surface with an approved noncombustible veneer or shall be treated to be noncombustible.

119.13. Height of Fire Walls.—Except as herein provided, fire walls shall extend, not less than eighteen (18) inches above the roof with flashing on both sides and shall be coped with weather-resisting and noncombustible materials. In buildings of the residential use group, fire walls may be stopped six (6) inches above the top of the roof sheathing, provided the junction of wall and roof framing is thoroughly firestopped and no combustible materials extend through the wall; and when the roof construction has a fire-resistance rating not less than that of the fire grading for the specific use, the fire wall may stop at the roof level if completely firestopped.

119.14. Frame Construction.—All fire walls in frame construction shall extend through exterior walls and other intersecting walls of less fire resistance than the fire wall to the outside of all combustible wall and roof sheathing.

119.2. Fire Divisions.—Fire divisions in buildings of mixed occupancies to establish complete separation both horizontally and vertically between such adjoining uses in any one building or structure shall be constructed to develop the fire-resistance ratings corresponding to the fire grading on both sides.

119.21. Business Separation.—In all buildings of the residential use group in which retail business is conducted in the first story, subject to the restrictions of the zoning laws, the ceilings and enclosing partitions between the business and dwelling portions and the exitways from the dwelling areas shall be protected to afford not less than three-quarter (¾) hour fire resistance.

119.22. Party Walls.—Party walls erected between two (2) buildings with flat roofs shall extend not less than six (6) inches above the roof and shall be flashed and coped as for fire walls. In buildings and structures of the residential use group, the roofs of which slope at an angle of thirty (30) degrees or more to the horizontal, party walls may stop at the level of the top of the roof boards provided no combustible material passes through the wall and the junction of roofs and wall is completely firestopped as required in section 119.9. The fire-resistance rating of party walls not required to restrict the allowable areas specified in table 6 of the Basic Building Code for each use group and type of construction shall conform to the