ARTICLE X.

CHIMNEYS, FLUES AND VENTS

SECTION 1000. DEFINITIONS.

Flue means a passageway for the purpose of removing products of combustion from solid, liquid, or gas fuel.

Chimney means a vertical masonry or reinforced concrete shaft enclosing one or more flues.

Smoke pipe means a pipe or breaching connecting a heating appliance and a flue.

Gas vent means a flue for removing products of combustion from gas appliances, but not suitable for other fuels.

Type B gas vent means approved vent piping of noncombustible corrosion-resistant material of adequate strength and heat insulating value, and having bell and spigot or other acceptable joints.

Draft hood is a device placed in, and made part of, the smoke pipe or the flue from an appliance, or in the appliance itself, which is designed to (1) insure the ready escape of the products of combustion in the event of no draft, back-draft, or stoppage beyond the draft hood; (2) prevent a back-draft from entering the appliance; and (3) neutralize the effect of stack action of the chimney flue upon the operation of the appliance.

SECTION 1001. FLUES, GENERAL.

1. **Flue connections required.** Every heating apparatus or heat producing appliance requiring a flue connection shall be connected with a flue conforming to the provisions of this article. This shall not include electric appliances; gas appliances, except as specifically required in this article, nor oil fired appliances especially designed for use without flue connection.

2. **Use of nonconforming flues.** Flues not conforming to the requirements of this article for chimneys, metal smokestacks or vents for gas appliances, shall not be used unless listed by Underwriters' Laboratories, Inc., and installed in full compliance with the listing and the manufacturers' instructions, and such use is approved by the North Carolina Building Code Council.

3. **Smoke Pipe Connections.**

(a) No flue shall have smoke pipe connections in more than one story of a building, unless provision is made for effectively closing smoke pipe openings with devices made of noncombustible materials whenever their use is discontinued temporarily,

and completely closing them with masonry when discontinued permanently.

(b) Two or more smoke pipes shall not be joined for a single flue connection, unless the smoke pipes and flue are of sufficient size to serve all the appliances thus connected.

(c) The smoke pipe of a heating appliance shall not be connected into the flue of an incinerator which has the rubbish chute identical with the smoke flue.

SECTION 1002. CHIMNEYS.

1. Construction of Chimneys.

(a) Chimneys hereafter erected within or attached to a structure shall be constructed in compliance with the provisions of this section.

(b) Chimneys shall extend at least 3 feet above the highest point where the pass through the roof of the building and at least 2 feet higher than any ridge within 10 feet of such chimney.

(c) Chimneys shall be properly capped with brick, terra cotta, stone, cast iron, concrete or other approved noncombustible, weatherproof material.

(d) Chimneys shall be wholly supported on masonry or self-supporting fireproof constructions.

(e) No chimney shall be corbeled from a wall more than 6 inches; nor shall a chimney be corbeled from a wall which is less than 12 inches in thickness unless it projects equally on each side of the wall; provided that in the second story of 2-story dwellings corbeling of chimneys on the exterior of the enclosing walls may equal the wall thickness. In every case the corbeling shall not exceed one inch projection for each course of brick projected.

(f) No change in the size or shape of a chimney, where the chimney passed through the roof, shall be made within a distance of 6 inches above or below the roof joists or rafters.

2. Chimneys for heating appliances, low heat industrial appliances and portable type incinerators.

(a). Chimneys for stoves, cooking ranges, warm air, hot water, and low pressure steam heating furnaces, fireplaces, and low heat industrial appliances, other than chimneys for incinerators of nonportable type (see subsection 5), shall be constructed of soild masonry units or of reinforced concrete. The walls shall be properly bonded or tied with corrosion resistant metal anchors.

In dwellings and buildings of like heating requirements the thickness of the chimney walls shall be not less than 4 inches. In other buildings the thickness shall be not less than 8 inches, except that rubble stone masonry shall be not less than 12 inches thick.

(b). Every such chminey hereafter erected or altered shall be lined with a flue lining conforming to the requirements below.

(c). Flue linings shall be made of fire clay or other refractory clay which will withstand the action of flue gases and resist without softening or cracking, the temperatures to which they will be subjected, but not less than 2,000° Fahrenheit, or of cast iron of approved quality, form and construction.

(d). Required clay flue linings shall be not less than $\frac{5}{8}$ of an inch thick for the smaller flues and increasing in thickness for the larger flues.

(e). Flue linings shall be installed ahead of the construction of the chimney as it is carried up, carefully bedded one on the other in type A, type B or fire clay mortar with close fitting joints left smooth on the inside.

(f). Flue linings shall start from a point not less than 8 inches below the intake, or, in the case of fireplaces, from the throat of the fireplace. They shall extend, as nearly vertical as possible, for the entire height of the chimney and be extended 4 inches above the top or cap of the chimney.

(g). Cleanouts for flues or fireplaces shall be equipped with cast iron doors and frames arranged to remain tightly closed when not in use.

(h). When two or more flues are contained in the same chimney, at least every third flue shall be separated by masonry at least 4 inches thick bonded into the masonry wall of the chimney. Where flue linings are not so separated, the joints of adjacent flue linings shall be staggered at least 7 inches.

3. **Chimneys for medium heat industrial appliances, and power boilers.** Chimneys for high pressure steam boilers, smoke houses and other medium heat appliances, other than incinerators, shall be of masonry or reinforced concrete not less than 8 inches thick; provided that stone masonry shall be not less than 12 inches thick; and in addition, shall be lined with not less than 4½ inches of fire brick laid on the 4½ inch bed in fire clay mortar, starting not less than 2 feet below the smoke pipe entrance and extending for a distance of at least 25 feet above the smoke pipe entrance.

4. **Chimneys for high heat industrial appliances.** Chimneys of cupolas, brass furnaces, porcelain baking kilns and other high heat appliances shall be built with double walls, each not less than

8 inches in thickness, with an air space of not less than 2 inches between them. The inside of the interior walls shall be of fire brick not less than 4½ inches in thickness laid on the 4½ inch bed in fire clay mortar.

5. **Chimneys for incinerators of nonportable type.**

(a). Chimneys for non-fuel fired incinerators in which the grate of the combustion chamber does not exceed 9 square feet, in residence buildings, institutional buildings, churches, schools and restaurants, shall be of solid masonry or of reinforced concrete not less than 4 inches thick with a flue lining as specified in subsection 2.

(b). Chimneys for non-fuel fired incinerators in which the grate of the combustion chamber exceeds 9 square feet, in residence buildings, institutional buildings, churches, schools and restaurants, shall be of solid masonry or of reinforced concrete not less than 4 inches thick with a lining of fire brick not less than 4½ inches thick laid on the 4½-inch bed for a distance of not less than 30 feet above the roof of the combustion chamber, and in clay or shale brickwork not less than 8 inches thick beyond 30 feet above the roof of the combustion chamber.

(c). Chimneys for fuel fired incinerators shall be as required for non-fuel fired incinerators with grates exceeding 9 square feet, but the fire brick lining shall extend for not less than 40 feet above the roof of the combustion chamber.

(d). Chimneys for incinerators other than covered above shall be of solid masonry or of reinforced concrete not less than 8 inches thick and have a lining of fire brick not less than 4½ inches thick laid on the 4½-inch bed in fire clay, for the full height of the flue.

(e). Nothing in this section shall prohibit the connection by means of an approved smoke pipe or breeching, of an incinerator to a smoke stack or chimney serving a heat appliance provided the cross sectional area of such stack or chimney is at least 4 times that of the incinerator breeching and such stack or flue meets the requirements for the incinerator so connected.

(f). All flues for non-fuel fired incinerators shall terminate in substantially constructed spark arresters.

6. **Sizes of flues.**

(a). The cross sectional areas of smoke flues shall be designed and proportioned to meet the conditions of temperatures, within and without the flue, thickness of masonry, exposure, shape and material of flue and other influences.

(b). The cross sectional areas of flues and vents for gas burning appliances shall be not less than one square inch per 7,500 hourly Btu input and in no case shall this section be less than 3 inches in diameter. Flues and vents shall have cross sectional areas at least equal to the aggregate areas of the vents of the appliances connected to them.

7. **Use of flues.**

(a). It shall be unlawful to use as a smoke flue, a flue hereafter constructed or placed in a building, or a flue now existing that is not already used as a smoke flue, unless it conforms to the requirements of this section.

(b). Chimneys or flues installed for the use of gas appliances but which are not suitable for solid or liquid fuels, shall be plainly and permanently labeled, "THIS FLUE IS FOR THE USE OF GAS BURNING APPLIANCES ONLY." The label shall be attached at a point near where the vent pipe enters the chimney, or with type B gas vents used in place of a chimney, at a point near where the type B gas vent enters a wall, floor or ceiling.

8. **Flues to be clean.**

(a). Upon the completion of a building or the alteration of existing flues, the flues shall be cleaned and left smooth on the inside.

(b). The city building inspector may require an inspection to be made to assure safe condition of the flue before permitting its use.

9. **Fireplaces.**

(a). The back and sides of fireplaces hereafter erected shall be of solid masonry or reinforced concrete, not less than 8 inches in thickness. A lining of fire brick at least 2 inches thick or other approved material shall be provided unless the thickness is 12 inches.

(b). Fireplaces shall have hearths of brick, stone, tile or other approved noncombustible material supported on a fireproof slab or on brick trimmer arches. Such hearths shall extend at least 20 inches outside of the chimney breast and not less than 12 inches beyond each side of the fireplace opening along the chimney breast. The combined thickness of hearth and supporting construction shall be not less than 6 inches at any point.

(c). Wooden forms or centers used in the construction of that part of the supporting construction which is below the hearth of the fireplace shall be removed when the supporting construction of the hearth is completed.

(d). No heater shall be placed in a fireplace which does not conform to the requirements of this section or is not provided with a flue, except electric or gas heaters of a type specifically approved for such installation.

(e). Spaces between the chimney and joists, beams or girders and any combustible materials shall be firestoped by filling with noncombustible material.

SECTION 1003. METAL SMOKESTACKS.

1. **Construction.**

(a). Metal smokestacks shall be of adequate thickness, properly riveted or welded and, unless structurally self supporting, shall be guyed securely, or firmly anchored to or otherwise supported by the building or structure served thereby.

(b). All metal work shall be painted or galvanized.

(c). Clean-out openings shall be provided at the base of every such stack.

(d). All such stacks hereafter erected, outside or independent of a building, shall be supported on substantial foundations, so designed that the maximum average pressure for both dead and wind loads on the soil shall not exceed ⅔ of the maximum allowable pressure on the soil.

(e). All metal smokestacks used for high heat appliances shall be lined with 4½-inch fire brick laid flat in fire clay mortar extending not less than 25 feet above the smoke pipe entrance.

2. **Height.** Metal smokestacks shall extend to a height of not less than 10 feet above the highest point of any roof within 25 feet.

3. **Exterior stacks.**

(a). Metal smokestacks, or parts thereof, hereafter erected on the exterior of a building shall have a clearance from the wall of not less than 24 inches if the wall is of wood frame construction, and not less than 4 inches if it is of any other type of construction.

(b). No such stack shall be nearer than 24 inches in any direction from a wall opening, exit of fire escape.

(c). When such stack is insulated on the exterior in some approved manner, the clearance herein prescribed may be reduced to ⅔ of those specified.

4. **Interior stacks.**

(a). Metal smokestacks, or parts thereof, hereafter erected within a building other than a one-story building, shall be en-

closed above the story in which the appliance served thereby is located, in walls of noncombsutible construction having a fire resistance rating of not less than one hour, with a space on all sides between the stack and the enclosing walls sufficient to render the entire stack accessible for examination and repair.

(b). The enclosing walls shall be without openings, except doorways equipped with approved self-closing fire doors at various floor levels for inspection purposes.

(c). Where such a stack passes through a roof constructed of combustible materials, it shall be guarded by a galvanized iron ventilating thimble extending not less than 9 inches below and 9 inches above such roof construction. Such thimbles shall be of a size to provide a clearance on all sides of the stack of not less than 18 inches; provided that for stacks of low heat appliances the clearance may be reduced to not less than 6 inches.

(d). Smokestacks shall not be carried up inside of ventilating ducts unless such ducts are constructed as required by this article for smokestacks or smoke flues and such stacks or flues are used solely for venting the room or space in which the appliance served by the smokestack is located.

SECTION 1004. CUPOLA CHIMNEYS.

Chimneys of cupola furnaces, blast furnaces and similar devices, hereafter erected, shall extend at least 20 feet above the highest point of any roof within a radius of 50 feet thereof and be covered on the top with heavy wire netting or other approved spark arrester. No woodwork or other combustible material or construction shall be erected or placed within 3 feet of any part of such chimney.

SECTION 1005. RAISING ADJOINING CHIMNEYS.

1. **When required.** Whenever a building is hereafter erected, enlarged or raised so that a wall along a lot line or within 3 feet thereof, extends above the top of a chimney or smoke flue of a neighboring existing building, the owner of the building so erected, enlarged or raised, shall at his own expense, carry up, either independently or on his own building, all chimneys and smoke flues of such adjoining building which are within 10 feet of any portion of the wall extending above such chimney or flue.

2. **Notice to owner.** It shall be the duly of the owner of the building to be erected, enlarged or raised to notify, in writing, at least 10 days before such work is to begin, the city building inspector and the owner of the chimney and flues affected, of his intention to carry up such chimneys and flues as herein provided.

3. **Construction.** The construction of such chimneys and flues shall conform to the requirements of this article, but in no case shall the internal area of an extended flue be less than that of the existing flue.

SECTION 1006. FLUES AND VENTS FOR GAS APPLIANCES.

1. **Flue connections required.** Every gas appliance shall be connected to an effective flue extending to the outer air and conforming to the provisions of subsection 2 of this section, if it is included in any of the following classifications, provided that such connections shall not be required for industrial appliances of such size or character that the absence of a connection does not constitute a hazard to the occupants:

(a). Domestic appliances with input rating in excess of 50,000 Btu per hour, except domestic gas ranges.

(b). Automatically controlled appliances with input rating in excess of 5,000 Btu per hour, except automatic instantaneous water heaters of the single faucet type, where the single faucet is attached to and made a part of the appliance.

(c). Automatically controlled appliances with input rating less than 5,000 Btu per hour, unless equipped with automatic device to prevent the escape of unburned gas at the main burner or burners.

The term "automatically controlled appliance" used in paragraphs (b) and (c) refers to appliances to which the gas supply is automatically turned on and off in accordance with the demand for heat, but does not include appliances equipped with devices or controls governing the supply of gas to the main burners or burners which cannot automatically reduce the gas supply below 30 per cent of the input rating.

(d). Appliances installed in the same room, which if not vented would make the total input rating of unvented gas appliances, not including domestic gas ranges, as great as 30 Btu per hour per cubic foot of room content.

(e). Water heaters installed in bath rooms, bed rooms, or any occupied room normally kept closed.

(f). Space heaters in sleeping quarters for use of transients.

(g). All house heating steam and hot water boilers and warm air furnaces including floor furnaces.

2. **Types of flues.**

(a). **Type A flues:** Chimneys or metal smokestacks, as provided for in sections 1002 and 1003. Type A flues are required for:

(1) all incinerators; (2) all appliances which may be converted readily to the use of solid or liquid fuel; (3) all boilers and furnaces except where the authority having jurisdiction approves the use of Type B Gas Vents; (4) all other appliances except approved appliances which produce flue gas temperatures not in excess of 550° F. at the outlet of the draft hood when burning gas at the manufacturer's input rating.

NOTE: Where authorities approve the use of Type B Gas Vents the boilers and furnaces attached thereto shall bear approval of the American Gas Association or Underwriter's Laboratories.

(In determining whether to permit the use of type B gas vents for venting boilers and furnaces having flue gas temperatures within the limit above specified, building officials should give consideration to the possibility of a change to solid or liquid fuel, and to the possibility of getting an approved chimney installed in case such a change is made. Where local conditions with respect to gas supply are such that change to other fuel is considered unlikely, or where arrangements can be made so that the building official will be notified of the change from gas to other fuel and so that the requirement for a chimney can then be enforced, it is suggested that the building official may safely permit the use of type B gas vents for venting heating boilers and furnaces having flue gas temperatures within the limit above specified).

(b). **Type B gas vents:** Approved vent piping of noncombustible, corrosion-resistant material of adequate strength and heat insulating value, and having bell and spigot or other acceptable joints. Type B gas vents shall be used only with approved gas appliances which are not reqiured by paragraph (a) above to be vented to type A flues, except that they may be used when extended through an existing non-used chimney, whether the chimney is lined or not lined.

(c). **Type C gas vents:** Vent pipes of sheet copper of not less than 24 U. S. gauge or of galvanized iron of not less than 20 U. S. gauge or of other approved corrosion-resistant material, may be used for runs directly from the space in which the appliance is located through a roof or exterior wall to the outer air. Such vent pipes shall not pass through any attic or concealed space nor through any floor. This shall not be construed as prohibiting the use of such vent pipes to vent attic furnaces installed in accordance with the provisions of this code. Installation with reference to clearance from combustible material and passage through wall or roof shall comply with the provisions of subsection 4 of this section.

(3). **Installation of type B gas vents.**

(a). Type B gas vents shall be made up with tight joints.

(b). Type B gas vents shall be installed with a clearance to combustible material or construction whether plastered or unplastered, of not less than one inch, provided that for vents of floor furnaces such clearance shall be not less than 3 inches for

a distance of not less than 3 feet from the outlet of the draft hood, measured along the center line of the vent piping.

(c). Suitable provision shall be made to prevent mechanical injury to type B gas vents where they extend through walls, floors or roofs.

(d). Type B gas vents shall not be used with solid or liquid fuel burning appliances.

4. **Installation of gas vents other than type B.**

(a). Gas appliance vent piping other than approved type B gas vents shall not pass through any attic or concealed space nor through any combustible floor, and shall not pass through any combustible roof except as specified in section 1006-2(c).

Where passing through combustible roofs in accordance with section 1006-2(c) they shall be guarded at the point of passage as specified for passage through combustible walls or partitions in paragraph (b) below. Vent piping may extend through any existing chimney whether the chimney is lined or not.

(b). Gas appliance vent piping other than approved type B gas vents shall not pass through combustible walls or partitions unless they are guarded at the point of passage (1) by metal ventilated thimbles not less than 6 inches larger in diameter than the pipe, or (2) by metal thimbles not less than 4 inches larger in diameter than the pipe with the annular space filled with mineral wool or other approved noncombustible insulating material; or in lieu of such protection all combustible material in the wall or partition shall be cut away from the vent pipe a sufficient distance to provide the clearance required from such vent pipe to combustible material—any material used to close up such opening shall be noncombustible.

(c). Clearances from combustible material to gas appliance vent piping other than approved type B gas vents shall be in accordance with standard practice for safe installation and use as required by section 1100.

5. **Flue mortar.** All flue mortar for flue or vent pipes from gas-burning appliances shall be acid resisting.

6. **Draft hoods.** Every flue connected appliance except an incinerator, unless its construction serves the same purpose, shall be equipped with an effective draft hood which either (1) has been approved as part of the appliance or (2) complies with nationally recognized standards for draft hoods. The draft hood shall be attached to the flue collar of the appliance or as near to the appliance as conditions permit and in a position for which it is designed with reference to horizontal and vertical planes. The draft hood shall be so located that the relief opening is not obstructed by any part of the appliance or adjacent construction.

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7. **Interconnection of vents.** No vent pipe from a gas appliance shall be inter-connected with any other vent pipe, smoke pipe, or flue, unless such gas appliance is equipped with an automatic device to prevent the escape of unburned gas at the main burner or burners. Where a gas appliance vent pipe is joined with a smoke pipe from an appliance burning some other type of fuel, for connection into a single flue opening, they shall be joined by a Y fitting located as close as practicable to the chimney. With liquefied petroleum gases the automatic device to prevent the escape of unburned gas shall shut off the pilot light as well as the main burner or burners.

ARTICLE XI.

HEAT PRODUCING APPLIANCES, HEATING, VENTILATING, AIR CONDITIONING, BLOWER AND EXHAUST SYSTEMS.

SECTION 1100. INSTALLATION STANDARDS.

Heat producing appliances and systems (including incinerators) hereafter installed shall be installed in accordance with standard practices for safe installation and use without danger of overheating combustible material or construction. Ventilating, air conditioning, blower and exhaust systems hereafter installed shall be installed in accordance with standard practices for safe installation and use with all features presenting a possibility of starting or spreading a fire safeguarded to a reasonable degree. Except as otherwise provided in rules duly promulgated by the North Carolina Building Code Council, installation of such appliances and systems in accordance with the "Building Code Standards of the National Board of Fire Underwriters for the Installation of Heat Producing Appliances, Heating, Ventilating, Air Conditioning, Blower and Exhaust Systems" shall be deemed to be the standard practice for safe installation and use. (See Article XXII).

SECTION 1101. BOILER AND FURNACE ROOMS.

(a). Heating boiler and furnace rooms in public buildings, instiutional buildings, places of assembly, hotels, and multifamily houses shall be separated from other parts of the building by noncombustible construction having a fire resistance rating of not less than one hour.

(b). Boiler rooms housing one or more steam boilers carrying more than 15 pounds pressure with a rating of more than 10 boiler horsepower, in other than factories, shall be separated from the rest of the building by noncombustible construction having a fire resistance rating of not less than 2 hours, with door openings protected by approved fire doors.

SECTION 1102. DRYING ROOMS.

Drying rooms or dry kilns hereafter placed within a building shall be constructed entirely of noncombustible materials. When the heating pipes are not placed overhead they shall be so shielded as to preserve at all times a clear space of not less than 2 inches between them and the contents.

SECTION 1103. ASH PITS.

Ash pits or receptacles for ashes shall be of iron, brick or other noncombustible material. The walls of ash pits shall be of masonry not less than 8 inches thick. The floor and, in case such ash pit is covered, the roof shall be of fireproof construction; provided that when such pit is not covered the ceiling of the room in which it is located shall be of fireproof construction. Openings, if any, shall be protected by metal doors fitting tightly into metal frames which shall be securely fastened to the walls or roof.

SECTION 1104. SPECIAL REQUIREMENTS FOR FURNACE AND FUEL ROOM AREAS IN SCHOOL BUILDINGS.

(a). Furnace and fuel room areas shall be separated from other sections of the building by an 8 inch masonry wall with no opening into this area except to the outside of the building. The roof or ceiling construction shall have a fire resistance rating of not less than 2 hours.

(b). In existing school buildings the furnace and fuel room areas shall be separated from other sections of the building by an 8 inch masonry wall with no openings into this area except to the outside of the building. An existing roof construction not having a fire resistance rating of 2 hours shall be protected with two layers of plaster on metal lath, one inch thick, and the two layers separated by a two inch air space. Care shall be taken to chamfer the plaster 2 inches into the surrounding masonry walls to secure a draft tight seal.

ARTICLE XII.

PLACES OF ASSEMBLY, THEATRES, MOTION PICTURE THEATRES, ASSEMBLY HALLS AND GARAGES.

SECTION 1200. GENERAL.

1. Seating arrangements.

(a). In places of assembly in which seats in rows are provided, except in churches and other places for religious assembly, grandstands, stadiums and reviewing stands, individual seats shall be provided for the persons congregating therein.

(b). The width of seat allotted for each person shall be not less than 18 inches.

(c). Seats in rows, whether fixed or movable, shall, except in boxes or loges not exceeding 60 square feet in area, be not less than 30 inches apart from back to back measured in horizontal direction.

(d). When individual fixed seats are provided or reqiured no seat shall have more than 7 seats intervening between it and an aisle; provided that if the seatings are fixed chairs with self-raising seats so spaced that when the seats are raised there is an unobstructed space of not less than 18 inches horizontal projection between the rows of seats, and doorways leading directly to exit corridors are provided not more than 5 feet apart along the sides of the auditorium, the number of seats in a row shall not be limited.

(e). In places of assembly used regularly for theatrical, operatic or similar performances, or for the display of motion pictures, the seats, except in boxes or loges not exceeding 60 feet in area, shall be fixed and shall be separated by arms.

(f). In boxes or loges not exceeding 60 square feet in area, and in other location where loose chairs are permitted, not more than one chair shall be provided for each 6 square feet of floor space occupied by such chairs.

2. Aisles.

(a). Every aisle shall lead to an exit door, or to a cross aisle, that is, an aisle running parallel with the seat rows and leading to an exit door.

(b). The width of an aisle running at right angles to the seat rows, in places of assembly in which seating is provided, shall be not less than 36 inches plus ¼ inch for every foot of length of such aisle, from its beginning to an exit door or to a cross aisle,

or between cross aisles. Cross aisles shall be not less in width than the widest aisle with which they connect.

(c). Steps shall not be placed in aisles unless the gradient would otherwise exceed one foot rise in 10 feet run. Steps, when necessary, shall be grouped, and so far as practicable isolated steps shall be avoided. Such steps shall extend across the full width of the aisles and shall be illuminated; treads and risers shall conform to the requirements for exit stairs in section 604-6.

(d). Aisles shall be used only for passage to and from seats and shall be kept unobstructed at all times.

3. **Galleries and balconies.** In galleries, balconies or other locations, where seatings are arranged on platforms or successive tiers, and the height of the rise from one platform to another below and in front of it exceed 21 inches, a substantial railing not less than 26 inches high shall be placed at the edge of the platform along the entire row of seats.

4. **Places of Outdoor Assembly.** For unenclosed places of assembly such as grandstands, stadiums, reviewing stands, and tents except as otherwise specifically provided by rules duly promulgated by the North Carolina Building Code Council, the Standard For Grandstands, Tents and Other Places of Outdoor Assembly, as adopted by the American Standards Association ASA Z20.2 amended and listed as pamphlet number 102 "Places of Outdoor Assembly," 1957 Edition, published by the National Fire Protection Association shall be deemed to be the deemed to be the generally accepted good practice.

5. **Bleacher Seating for Indoor Assemblies.**

a. *Where Permitted.*

Bleacher seating installed in conformance with the following requirements may be used in school gymnasiums, recreation buildings and other buildings of like occupancy. Bleacher seating (seats without backs) shall not be permitted in theatres, auditoriums, and buildings of like occupancy. (Rollaway, telescoping and fold-up bleacher seats without backs shall conform to the requirements of bleacher seating).

b. *Design Standards.*

1. The materials, design, fabrication and construction of bleacher type gymnasium seats used in school gymnasiums, etc., shall comply with approved construction standards for the safety to life property and in compliance with Article IX.

2. Bleacher seating shall be so designed and assembled that the maximum expansion, contraction, settlement or misalignment likely to occur will not cause stresses in excess of those permissible, nor jeopardize the structure or its occupants. It

shall be of such design as to remain stable, so as not to be overturned. Members comprising the seating, walkways, railings, bracing, and supporting members shall be structurally sound.

3. Tiers of bleacher seating shall be self-contained having within themselves all the necessary parts to withstand and restrain all forces which might reasonably be developed during human occupancy.

4. Bleacher type gymnasium seats shall be designed to support in addition to their own weight a uniformly distributed live load of not less than 100 pounds per square foot of gross horizontal projection of the bleacher seating. All seats and footboard members shall be designed for live loads of not less than 120 pounds per linear foot.

5. Bleacher seating shall be designed to resist a horizontal swaying force applied to the seats in a direction parallel to the length of the seats, of 24 pounds per linear foot of seats, and in a direction perpendicular to the length of the seats, of 10 pounds per linear foot of seats.

6. Members in which the stresses are greater under a partial loading of the bleacher seating than under full load shall be designed to meet the conditions causing the largest stress.

7. Railings or guards shall be capable of sustaining a vertical load of 100 pounds per linear foot and a horizontal thrust of 50 pounds per linear foot.

c. *Materials.*

1. All supporting members of footboards and seatboards of portable bleachers must be of non-conbustible materials.

2. The materials used in the construction of fixed bleacher seating and their supports must be the same as required for floor construction and its supports. (The materials required will depend upon the type of construction of the building where they are installed, see Article VII for floor construction).

3. Where space under fixed bleacher seating is used for any purpose, the bleacher seating assembly overhead must have a fire resistance rating of not less than two hours in buildings of fire resistive construction and not less than one hour for other buildings.

d. *Aisles.*

1. All bleacher seating containing more than eleven rows, or when a railing or guard along the front is installed, must be provided with aisles so located that no seat of a row shall have more than eleven seats between it and the nearest aisle. Aisles shall be provided as required above when vertical distance between seats exceeds twelve inches.

2. There shall be not more than fifteen rows of bleacher seating in a tier without a cross-aisle running the entire width of seating. Each tier of fifteen rows must have sufficient exits to the ground independent of bleacher seating below or above it. In no case shall the highest level of seats of any bleacher type seating (seating without back rests) be more than eleven feet above the floor or surface at the front of the bleacher seating.

3. Aisles shall be not less than 40" in width except that aisles serving not more than sixty seats may be 30" in width. Where an aisle is divided by a portal, column or other obstruction, each part shall be not less than 24" wide. Where the entrance to an aisle is elevated above the floor level, such aisle shall be provided with a stairway or ramp whose width is not less than the width of the aisle.

4. Steps or ramps shall be provided for aisles. Steps shall not be placed in aisles to overcome differences in level unless the gradient shall exceed one foot in 10 feet of run. Where steps are required, they shall be provided on same level with the footrests or seatboards except that when the rise of seating platforms exceeds 11 inches, an intermediate step shall be provided the full width of the aisles and so proportioned as to provide two steps of equal rise per platform. When the rise of the seating platform exceeds 18 inches, two intermediate steps shall be provided the full width of the aisles and so proportioned as to provide three steps of equal rise per platform.

e. *Seating.*

1. The horizontal distance back to back of seats shall be not less than 30 inches for seats having back rests or not less than 22 inches for bleacher type seats. Where the same level is used for both seats and footrests these levels shall be not less than 22 inches in width. There shall be a space of not less than 12 inches between the back of each seat and the front of the seat immediately behind it. All measurements shall be taken between plumb lines.

2. The width of footboards (footrests) in bleacher seating shall be not less than 9½ inches and that of seat boards not less than 7½ inches. Where the same level is not used for both seat foundations and footrests, footrests, independent of seats, shall be provided.

3. In portable seating, the open space between footboards and seatboards or other horizontal members, shall not be more than nine inches at any point running the entire length of the seating.

4. The distance between the top of footboard and top of seat shall be not less than 16".

f. *Railings and Guards.*

1. Railing or guards not less than 42 inches high above the aisle surface or platform tread, whichever is adjacent, shall be provided along those portions of the backs and ends of all bleacher seating where the seats are more than four feet above the floor.

2. Where the front footrest of any bleacher seating tier is more than 2 feet above the floor, railings or guards not less than 33 inches high above such front footrests shall be provided.

3. Vertical openings between the top railing or guard and walkway surface below, if more than 18 inches in height, shall be not more than 11 inches. When bleacher seating is used adjacent to a wall, railings or guards may be omitted from those portions where such walls afford equivalent safeguard.

4. Provisions (by the use of guard rails or other physical barriers) shall be made to discourage entrance by public to areas under tiers of seating.

g. *Exits.*

1. The usual line of travel, from any seat to the nearest exit on the seating area, shall be not greater than 150 feet.

2. Sufficient exits in compliance with Section 602 of the Code shall be provided from each space to be occupied by bleacher type seating with the number of occupants figured on the basis of 18" of seating width allotted for each person.

3. Exits for the building as a whole must be provided in accordance with Section 602.

SECTION 1201. STAGE.

(a). No stage for theatrical or similar performances, including drama, opera, vaudeville and the like, which requires or uses a curtain, portable or fixed scenery, lights, mechanical appliances, or any of them, shall be erected, placed or maintained hereafter in a building except in conformity with the provisions of this section.

(b). Every such stage now existing, if reconstructed or altered, shall be made to conform with the provisions of this section.

(c). Stages in school buildings and stages in buildings used exclusively for the showing of motion pictures may, in the discretion of the Insurance Commissioner, be exempt from the requirements of this section.

2. **Enclosure walls.**

(a). Such stage shall be separated from all other parts of the building by masonry walls having a fire resistance rating of not

less than 2 hours and with openings protected as required in subsection 3, 6 and 8 of this section; except that in motion picture theatres, school auditoriums, clubs and similar places of assembly, where the stage or platform does not exceed 10 feet in depth and is without provisions for scenery, separation between the stage and the auditorium shall not be required. Such separating walls shall extend from the foundation to at least 4 feet above the roof, except where the roof is of fireproof or semifireproof construction, in which case the walls shall be carried up tightly against the underside of the roof slab.

(b). There shall be no window opening in such stage enclosure wall within 5 feet of a lot line other than a street line.

3. **Proscenium Wall Openings.** Each opening other than the proscenium opening in the wall which separates the stage from the auditorium shall be protected by an approved self-closing fire door.

4. **Appurtenant rooms.**

(a). Dressing rooms, scene docks, property rooms and other rooms or compartments appurtenant to the stage shall be separated from other parts of the building by fire partitions.

(b). Such rooms shall be separated from the stage by fire partitions, and shall have floors and roofs of fireproof construction.

(c). In no case shall openings other than the necessary doorways at the stage level, connect such rooms with the rest of the stage.

(d). No such room shall be placed over or under the stage.

5. **Dressing Rooms.**

(a). Dressing rooms shall have exits independent of the auditorium exits.

(b). Unless they are ventilated by windows in conformity with the requirements of Article V, dressing rooms shall be ventilated by a mechanical air conditioning or ventilating system providing not less than 6 changes of air per hour.

6. **Curtain.**

(a). Except as provided in paragraph (g) below, proscenium openings shall be protected with a proscenium curtain conforming to the following paragraphs (b) to (f), inclusive.

(b). The proscenium opening shall be provided with a curtain of noncombustible material constructed on a rigid steel frame, having a lap of 2 feet at the top and 18 inches at each side, sliding at each side in a rigid steel groove, which shall have a minimum

depth of 12 inches. The curtain grooves shall be securely fastened to the proscenium wall and the curtain at its lowest position shall rest on masonry at least 12 inches thick extending from the foundation to the curtain or upon a strip of linoleum, cork or rubber composition directly affixed to such masonry.

(c). The proscenium curtain shall be so arranged and maintained that, in case of fire, it will be released automatically and instantly by an approved heat-actuated device, and will descend safely and close completely the proscenium opening. It shall also be equipped with effective devices to permit prompt and immediate closing of the proscenium opening by manual means.

(d). No part of such curtain shall be supported or fastened to combustible material.

(e). The curtain with its mounting shall be so designed as to close the opening, prevent the passage of flame, hot gases and smoke from a severe fire on the stage and to show no glow on the auditorium side for a period of 15 minutes.

(f). Complete details of any proposed proscenium curtain and curtain installation, including mechanism and structural supports, shall be submitted, together with satisfactory proof that such installation meets the requirements as to strength, fire resistance and smoke-tightness when subjected to a fire test with exposing temperatures reaching not less than 1700 degrees F. at the end of 15 minutes. Approval shall be obtained before erection is started. After completion, operating tests of the curtain shall be made and approval of its functioning obtained before a public performance is staged.

(g). Where the stage does not have a rigging loft or fly gallery, the proscenium curtain may be of roll type, lift-up type, or overlapping close-in type, of non-combustible materials so constructed and mounted as to prevent the passage of flame, hot gases and smoke, and show no glow on the auditorium side when exposed to a fire temperature rising to not less than 1350° F. at the end of 15 minutes.

7. **Construction.**

(a). All that portion of the stage except that used for the working of scenery, traps and other mechanical apparatus for the presentation of a scene, approximately equal to the width of the proscenium opening, and all appurtenant rooms and compartments shall be of fireproof construction.

(b). The rigging loft, entire fly galleries, including pin rails, shall be of noncombustible material.

(c). The roof over the stage shall be of fireproof construction.

8. **Doors and windows.**

(a). Door openings leading from the stage directly to the outer air shall be equipped with approved self-closing fire doors. Door openings in the proscenium wall shall be equipped with approved self-closing fire doors. All other door openings connecting with the stage shall be equipped with approved automatic or self-closing fire doors.

(b). Windows shall be approved fire windows.

9. **Ventilators.**

(a). Over the stage there shall be provided one or more ventilators of metal or other noncombustible material, equipped with movable shutters or sash, having an aggregate clear area of not less than ⅛ the area of the stage, constructed to open automatically and instantly by approved heat-actuated devices. Suitable means for manual operation shall be provided in addition.

(b). If glass is used in the construction, only wired glass shall be used in such parts where the breaking of glass would cause it to fall on the stage.

10. **Shelving.** All shelving and closets in dressing rooms, property rooms or storage rooms, shall be constructed of metal, slate or other noncombustible material.

11. **Lights.**

(a). The troughs or frames for footlights and border lights shall be of noncombustible materials.

(b). The suspension lines of border lights shall be of wire for at least 10 feet from the frames.

12. **Location of electrical switchboard.** The switchboard for the electrical equipment of the stage shall be so located that it will be accessible at all times, and will be protected from falling objects and from the storage or placing of stage equipment against it.

SECTION 1202. ENCLOSURES FOR MOTION PICTURE PROJECTORS.

(a). Motion picture projectors using nitrocellulose film shall be operated or set up for operation only within an approved enclosure, not less than 8 feet wide, 10 feet deep and 8 feet high for one projection machine, and not less than 14 feet wide, 10 feet deep and 8 feet high for 2 machines.

(b). The walls and ceilings of the enclosure shall be of a form of construction having a fire resistance rating of not less than one hour. Only noncombustible materials shall be used in the

construction of the enclosure walls. All joints shall be sufficiently tight to prevent the discharge of smoke.

(c). The enclosure shall have at least 2 exit doors, each not less than 30 inches wide and 6 feet high, protected by an approved self-closing fire door.

(d). Two openings for each motion picture projector shall be provided; one for the projectionist's view (observation port) shall be not larger than 200 square inches, and the other through which the picture is projected (projection port) shall be not larger than 120 square inches. Where separate stereopticon, spot or flood light machines are installed in the same enclosure with picture machines, not more than one opening for each such machine shall be provided for both the operator's view and for the projection of the light, but two or more machines may be operated through the same opening; such openings shall be as small as practicable and shall be capable of being protected by approved automatic shutters.

(e). Each opening shall be provided with an approved gravity shutter set into guides not less than one inch at sides and bottom, and overlapping the top of the opening by not less than one inch when closed. Shutters shall be of not less than 10-gauge iron or its equivalent, or of ¼-inch hard asbestos board. Guides shall be of not less than 10-gauge iron or its equivalent. Each shutter shall have a fusible link above it, and there shall also be one located over each upper projector magazine which, upon operating, will close all the shutters. There shall also be provided suitable means for manually closing all shutters simultaneously from a point within the projection room near each exit door. Shutters on openings not in use shall be kept closed.

(f). All shelves, furniture and fixtures within the enclosure shall be constructed of noncombustible material.

(g). Ventilation shall be provided by one or more mechanical exhaust systems which shall draw air from each arc lamp housing and from one or more points near the ceiling. Systems shall exhaust to outdoors either directly or through a noncombustible flue used for no other purpose. Exhaust capacity shall be not less than 15 cubic feet nor more than 50 cubic feet per minute for each arc lamp plus 200 cubic feet per minute for the room itself. Systems shall be controlled from within the enclosure and have pilot lights to indicate operation. The exhaust system serving the projection room may be extended to cover rooms associated therewith such as rewind rooms, but ventilation of these rooms shall not be connected in any way with ventilation or air conditioning systems serving other portions of the building.

(h). Exhaust ducts shall be of noncombustible material, and shall either be kept one inch from combustible material or covered with ½ inch of noncombustible heat insulating material.

(i). Fresh air intakes other than those direct to the open air shall be protected by approved fire shutters arranged to operate automatically with the port shutters.

(j). Provisions shall be made so that the auditorium lights can be turned on from inside the projection room and from at least one other convenient point in the building.

SECTION 1203. USE OF ROOFS.

1. **For assembly.** It shall be unlawful to use or permit the use of the roof of a building or structure as a place of assembly unless it has been designed for that purpose and provided with adequate exits.

2. **For household purposes.** No roof of a building shall be used for hanging out clothing or for drying wash, or for other household purposes unless there shall be provided suitable guard rails, fences, parapets or other safeguards along the edges of such roof or that part of it where the uses herein specified are permitted.

3. **Other purposes.**

(a). The use of roofs for promenades, gardens, and other purposes shall conform to rules to be promulgated by the North Carolina Building Code Council.

(b). No roof shall be used for manufatcuring, business, storage or office or place for living except with the approval of the city building inspector.

SECTION 1204. GARAGES.

1. **Garages combined with other occupancies.** No garage shall be attached to or form a part of a building of other occupancy except as provided in subsections 2, 3, or 4 of this section.

2. **Garages not exceeding 600 square feet in area.**

(a). A garage not exceeding 600 square feet in area may be attached to or form a part of a residence building or a business building if separated from other occupancies by walls, partitions and ceilings of materials to restrict the passage of gases, smoke and odor from the garage to other parts of the building.

(b). Materials and construction provided for this purpose shall be at least equivalent in fire resistance and gas tightness to one-inch tongue and groove wooden boards, on garage side of supporting studs, free of knot holes, with gypsum wall boards not

less than ⅜-inch in thickness nailed through the wooden boards into the studs and rafters, using 2-inch nails, and with 4-inch strips of gypsum wall board similarly nailed over all butting joints of the gypsum wall board and with gypsum plaster filling at intersection of walls and of walls with ceilings and floors. Metal lath and gypsum plaster or gypsum lath and plaster will be acceptable.

(c). Openings from the building into garage shall be restricted to a single doorway; such opening shall be provided with a metal, metal covered or solid wooden door of not less than 1¾ inches nominal thickness equipped with an approved self-closing device.

(d). Floors shall be without pits or depressions.

3. **Garages not exceeding 3,000 square feet in area.** A garage not exceeding 3,000 square feet in area may be attached to or form a part of any building provided separation from other occupancies shall be by walls and floor and ceiling constructions of at least one-hour fire resistance, and with all connecting openings provided with self-closing fire doors. Floors shall be without pits or depressions.

4. **Garages exceeding 3,000 square feet in area.**

(a). A garage exceeding 3,000 square feet in area may be located within or attached to a building occupied for any other purpose provided it is separated from such other occupancy by masonry walls having a fire resistance rating of not less than 3 hours and by floors and ceilings of fireproof construction or semi-fireproof construction.

(b). Walls, floors and ceilings which effect such separation shall be continuous and unpierced by openings of any kind; provided that door openings equipped with self-closing fire doors leading to salesrooms or offices that are operated in connection with such garages shall not be prohibited; and provided also that the use of elevators and stairways to other stories accessible only by vestibules or balconies, constructed and arranged as required for fire towers, shall be permitted.

5. **Truck loading or unloading area.** A truck loading or unloading area within a building occupied as a store shall be separated from other parts of the building by construction having a fire resistance rating of not less than one hour, and any load bearing part of the building within the loading area shall also have a fire resistance rating of not less than one hour.

6. **Ramps.** Ramps connecting floors of garages, which are not considered as required exit ways under Article VI, need not be enclosed in sprinklered garages, nor in open air parking garages conforming to subsection 7 of this section.

7. **Open Air Parking Garages.**

(a). Parking garages which have not less than 50 per cent of two sides open at each story, and which are used exclusively for the parking and storage of passenger motor vehicles limited in size to nine persons per vehicle, shall be classed as open air parking garages.

(b). Open air parking garages shall not have any other occupancy above the garage and shall not be used for automobile repair work other than such servicing as washing, lubrication, tires and sale of motor fuels.

(c). Exterior enclosure walls shall not be required for open air parking garages except that on every side facing and located within 15 feet of an interior lot line, an enclosure wall shall be provided of noncombustible construction with a fire resistance rating of not less than 2 hours. Curbs at least 6 inches high, and a substantial protective railing not less than 3 feet 6 inches above the floor shall be provided at every exterior opening above street level and where exterior walls are omitted.

(d). Open air parking garages in which cars are personally (not mechanically) parked shall be provided with at least two exit ways remote from each other from each parking level or floor, but shall be exempt from the requirements for additional exit ways in Section 602.

(e). Open air parking garages shall be of fireproof construction, semifireproof construction, or of noncombustible construction.

(f). The height and area per floor of open air parking garages of fireproof and semifireproof construction shall not be limited. When of noncombustible construction, the structure shall not exceed 5 parking floors in height above grade nor 30,000 square feet in area per floor. Columns, girders and beams of steel and iron shall conform to the provisions of Section 914. Open web steel joists shall conform to provisions of Section 916. The increase of areas for street frontage as allowed by this Code (See Table 404) shall not be applicable to open air parking garages.

(g). Elevators may be installed in open air parking garages to transport employees and cars from floor to floor. Such lifts need not be enclosed with fire resistive construction but the shaft shall be fully enclosed and protected from floor to ceiling with wire mesh or other approved noncombustible material in every story. Enclosures for elevator machinery shall conform to provisions of Section 921.

(h). The sale of motor fuels such as gasoline and oils shall be permitted only on the street floor of open air parking garages where two sides are completely open. The area directly above

the pumps shall be of fireproof or semifireproof construction for a radius of 30 feet measured from the center of each pump. Gasoline storage tanks must be buried in the ground and covered with at least two feet of earth or enclosed in a fireproof vault of approved construction. Fill pipes and vents for storage tanks shall be located outside the building.

(i). Basement or below street level parking where sale of motor fuels is contemplated shall be subject to review by the Commissioner of Insurance.

8. **Floors.** Garage floors of other than earth construction which drain to sewers or storm drains shall be provided with an oil separator or trap. Where floor areas are extensive, a series of such drains shall be provided. The contents of oil separators or traps shall be collected at frequent intervals and removed from the premises. Floors in repair sections shall be concrete or other materials that may be readily cleaned.

9. **Basement garages.** Basement and sub-basement garages shall be continuously ventilated by a mechanical ventilating system with positive means for both the inlet and exhaust of at least 1 cubic foot of air per minute per square foot of floor area. Control of either the exhaust or inlet fan shall be close to the entrance door. The ventilating equipment may be combined with the heating system.

10. **Heating.**

(a). In garages exceeding 600 square feet in area, direct fired heating appliances, other than unit heaters located at least 8 feet above the floor, shall be located in a room used for no other purpose and cut off from the garage by noncombustible construction having a fire resistance rating of not less than 3 hours. Openings in the above mentioned cut-offs shall be restricted to those necessary for heating pipes and ducts.

(b). Where gasoline dispensing equipment is located within a travel distance of 25 feet from the entrance to the heater room, the floor of the heater room shall not be below grade level.

ARTICLE XIII.

SAFEGUARDS DURING CONSTRUCTION

SECTION 1300. GENERAL.

The provisions of this article shall apply to all work in connection with the erection, alteration, removal or demolition of buildings or structures.

SECTION 1301. SCAFFOLDS.

1. **Construction.** All scaffolds shall be safely constructed and firmly supported, properly secured and of sufficient width, to insure the safety of persons working thereon, or passing under or near them.

2. **Guard rails and toe boards.**

(a). Every scaffold, the platform level of which is more than 6 feet above the ground or above a permanent or temporary floor, other than iron workers' scaffolds and carpenters' bracket scaffolds, shall be provided with guard rails not less than 36 inches high above the platform level, and with solid toe boards not less than 6 inches high above the platform level, extending its entire length and along the ends, except where ramps or runways connect with them, unless otherwise enclosed or guarded.

(b). On suspended, swinging and pole scaffolds the space between guard rails and toe boards shall be filled with wire mesh screens securely attached.

3. **Overhead protection.** When objects are likely to fall on a scaffold from above a substantial overhead protection shall be provided not more than 10 feet above the scaffold platform.

4. **Planking.** Planks used for the platform of scaffolds shall be not less than 2 inches thick, nominal dimensions, of sound, seasoned lumber. The clear span between supports shall not exceed 10 feet.

5. **Scaffolding.** Where a large amount of scaffolding is used, the city building inspector may require the use of noncombustible material or of fire retardant treated lumber. The city building inspector may also require the flameproofing of tarpaulins.

SECTION 1302. SIDEWALK SHEDS.

1. **Sheds required.** Whenever a building or structure within 10 feet of a street line is to be erected or raised to exceed 40 feet in height, or whenever such a building or structure more than 40

feet in height is to be demolished, the owner or the person doing or causing such work to be done shall erect and maintain during such work adjacent to the street lines, a shed of sufficient strength and stability to sustain safely the weight of materials that may be placed thereon and to withstand the shocks incident to the handling of such materials or their preparation for use and to the accidental jars from trucks passing or delivering material.

2. **Railings and toe boards.** When the roof of such shed is used for storage of materials or for the performance of work of any kind, substantial railings not less than 3 feet high and solid toe boards not less than 6 inches high shall be placed along the open sides and ends of such roof.

3. **Walkway.** Such shed shall be constructed to afford an unobstructed walkway for pedestrians, not less than 8 feet high and 5 feet wide.

4. **Maintenance.** Such shed shall remain in place until the building is enclosed, or, in case of a demolition, until the building has been reduced to 20 feet in height.

SECTION 1303. TEMPORARY FENCE OR BARRICADE.

During a building operation the owner or person doing or causing such work to be done, shall, unless released by the city building inspector, erect and maintain along the street lines of the building or structure, during such building operation, a substantial fence not less than 6 feet high. Such fence may extend not more than 6 feet from the street line into the highway, and shall be built solid for its full length except for such openings, provided with sliding doors or doors swinging inwards, as may be necessary for a proper prosecution of the work.

SECTION 1304. HOISTS.

1. **Interior hoists.**

(a). Temporary construction hoists on the interior of buildings or structures shall have the car substantially constructed, the guides rigidly secured and overhead machinery safely supported.

(b). The floor openings or other spaces through which they operate shall be enclosed on all sides and for their full height, except for the necessary doors for loading and unloading, with barriers so constructed that heads, arms or legs cannot be thrust through them or loose material cannot fall through.

2. **Exterior hoists.**

Temporary construction hoists on the exterior of buildings or structures shall be erected on sufficiently solid foundations to avoid injurious settlement or distortion.

3. **Elevators.**

(a). When a building exceeding 60 feet in height is to be equipped with one or more elevators, at least one of such elevators shall be installed, in a fireproof shaft, as soon as construction conditions permit.

(b). Such elevator shall be maintained in operative condition and ready for service at all times, in charge of a competent operator.

(c). No elevator shall be used for the transportation of persons during construction operations, unless it is equipped for passenger service in conformance with law or ordinance.

4. **Hoisting machinery.**

(a). Hoisting machinery, including boilers, if any, shall be placed to avoid unnecessary hazards and to provide ample room for the free and safe movement of operation.

(b). Such machinery shall be enclosed to exclude unauthorized persons and if placed outside the building further protection against falling objects shall be provided.

(c). When such hoisting machinery is placed within a building or structure, or within 10 feet of any part thereof, only noncombustible materials shall be used for the exterior covering of the enclosures.

(d). If hoisting machinery is operated by steam with boiler on or adjacent to premises, suitable spark guards shall be provided for smoke stack.

SECTION 1305. FLOORING.

1. **Working floor.** In buildings or structures using skeleton construction, the entire tier of beams on which construction of the frame is proceeding, known as the working floor, shall be planked over, except spaces required for construction work, for raising or lowering materials and for stairways or ladders.

2. **Permanent floors.** In buildings or structures using skeleton construction the permanent structural floor, except for necessary temporary openings, shall be installed as the construction progresses. There shall be not more than 4 unfilled floors above the highest permanent floor, nor more than one unfilled floor between permanent floors.

3. **Wood construction.** In buildings of ordinary construction or heavy timber construction the structural floor shall be laid for each story as the building progresses, or if double floors are not to be used, the floor 2 stories below the one where work is under way shall be planked over.

SECTION 1306. FLOOR OPENINGS. All floor openings, unless guarded by permanent enclosures or full-height temporary barriers, shall be covered with substantial temporary flooring, or guarded on all sides by substantial railings not less than 4 feet high set at least 2 feet from the edges of the openings, and by toe boards not less than 6 inches high set along the edges of the openings, except for such parts of the openings as are necessarily open for traffic purposes.

SECTION 1307. ROOFS AND SKYLIGHTS OF ADJOINING BUILDINGS. When a building or structure is to be carried above the roof of an adjoining building, protection for the sky-lights and roof of such adjoining building shall be provided, at his own expense, by the person constructing or causing the construction of such building or structure; provided that if the owner, lessee or tenant of the adjoining building should refuse permission to have the roofs and skylights protected, the responsibility and expense for the necessary protection shall devolve on the person refusing this permission.

SECTION 1308. STAIR FACILITIES.

1. **Temporary Stairs.** When the construction of a building has progressed to a height exceeding 60 feet above grade or when a building exceeding 60 feet in height is undergoing alterations, unless one or more permanent stairways have been installed, at least one temporary stairway shall be provided, continued in height as rapidly as the work progresses to the highest floor that has been installed, and maintained in serviceable condition until a permanent stairway has been completed.

2. **Ladders.** Until either permanent or temporary stairways are installed, suitable substantial ladders securely fastened at top and bottom, shall be provided and maintained to provide means of reaching the various levels.

SECTION 1309. FIRE PROTECTION.

1. **Reinforced concrete construction.**

(a). In every building of reinforced concrete construction, forms of combustible material shall be stripped from the concrete and removed from the building as soon as practicable.

(b). No part of such building shall be used for the storage of combustible materials until such forms have been removed in that part of the building.

2. **Standpipes.** In all buildings in which standpipes are required by law or ordinance, such standpipes shall be installed as the construction progresses, in such a manner that they are always ready for fire department use to the topmost floor construction that has been installed. Such standpipes shall be provided with a fire departments connection on the outside of the building at the street level, and with one outlet at each floor. All outlets, connections and fitting shall be designed to fit the fire department equipment.

3. **Fire extinguishers.**

(a). In every building operation wherever a tool house, storeroom or other shanty is placed, or a room or space is used for storage, dressing room or workshop, at least one approved hand pump tank or portable chemical extinguisher of nonfreezing type or protected against freezing shall be provided and maintained in an accessible location.

(b). When a water supply of not less than 100 gallons per minute at 25 pounds nozzle pressure, ready for use at all times, is installed as the building operation progresses, a small hose, 50 feet in length, with a ½ inch nozzle, may be substituted for each such fire extinguisher.

4. **Access to fire extinguishing equipment.** During building operations, free access from the street to fire hydrants, and to outside connections for standpipes, sprinklers or other fire extinguishing equipments, whether permanent or temporary, shall be provided and maintained at all times. No material or construction equipment shall be placed within 10 feet of such hydrant or connection, nor between it and the center line of the street.

SECTION 1310. HEATING.

1. **Permanent heat.** The permanent heating equipment shall be installed and put in operation as soon as practicable.

2. **Temporary heat.**

(a). When salamanders or other temporary heating devices are used, if a temporary heating plant is impracticable and until a permanent heating plant is installed, they shall not be set on combustible flooring or platforms unless thoroughly insulated therefrom by a bed of sand or cold ashes not less than 4 inches thick, or by other efficient protection, extending at least 2 feet horizontally beyond such device on all sides. The legs of such

devices, which shall be at least 12 inches long, shall rest on the insulation and shall not extend through it.

(b). Such devices shall be so located that there is a clearance of not less than 6 feet above nor less than 2½ feet on all sides. between such device and unprotected woodwork or combustible material, equipment or construction. Nor shall such devices be placed within 10 feet in any direction of tarpaulins or canvas covers, except as such tarpaulins or covers are flameproof in an approved manner.

(c). Salamanders and similar heating devices shall be of a substantial type with protective screen covers, and shall be under constant supervision so long as they are in use.

SECTION 1311. WELDING AND CUTTING.

1. **Protective shield.** When gas welding or cutting is done above or within 10 feet of combustible material, or above a place where workers are employed or where persons are likely to pass, noncombustible shield shall be interposed to protect such materials and persons against sparks, and hot metal or oxide.

2. **Gas and fuel tanks.**

(a). Tanks of fuel gas, unless secured on a special truck, shall not be moved unless the caps of such tanks are in place, nor shall they be stored without the caps in place.

(b). Suitable cradles shall be used for lifting or lowering oxygen or fuel tanks to reduce to a minimum the possibility of dropping tanks. Ordinary rope slings shall not be used.

(c). Tanks supplying gases for gas welding or cutting shall be located at no greater distance from the work than is necessary for safety. Such tanks shall be securely fastened in place, and, unless unavoidable, in an upright position.

(d). Tanks supplying gases for gas welding or cutting shall be so stored or set in place for use that they are not exposed to the rays of the sun or to high temperatures. Combustible material shall not be permitted near such tanks.

(e). Closed spaces shall be ventilated properly while welding or cutting is being done therein.

3. **Cutting steel.**

(a). Before steel beams or other structural shapes or elements of construction are cut by means of a gas flame, they shall be secured by ropes or chains to prevent dropping or swinging.

(b). Operators of welding and cutting equipment shall be protected from the rays of the arc or flame by gloves, and by helmets, hand shields or goggles equipped with suitable filter lenses.

SECTION 1312. WATCHMAN.

1. **When required.** When deemed necessary by the city building inspector, a competent watchman shall be kept on duty at all times when no work of construction, or alteration is actually going on.

2. **Periodic inspection.** A thorough inspection of the entire building shall be made at the close of each day's work by someone designated and instructed for that purpose who shall report conditions to the watchman on duty.

SECTION 1313. STORAGE OF MATERIAL.

1. **Within the building.** Material or equipment needed in a building operation, if stored within the building, shall be so placed that they will not load any part of the construction in excess of the weights for which it was designed, nor interfere with the safe prosecution of the work.

2. **Outside building.**

(a). Materials and equipment shall not be stored in a street, alley, sidewalk or any other public space except by special permission of the city building inspector and under such conditions as required by law.

(b). In whatever manner building material may be stored or equipment set up in a street, a safe walkway not less than 4 feet wide, unobstructed for full length and adequately lighted at all times shall be maintained for use of the public.

3. **Covering material.** Material stored within the building or within 10 feet of the building which require covering shall be protected by noncombustible material.

SECTION 1314. DISPOSAL OF WASTE.

Waste material and rubbish shall not be stored nor allowed to accumulate within the building or in the immediate vicinity, but shall be removed from the premises as rapidly as practicable. Combustible waste and rubbish shall be removed at least daily. No material shall be disposed of by burning on the premises or in the immediate vicinity. Dry material or rubbish shall be wetted down, if necessary, to lay dust or prevent being blown about.

SECTION 1315. WARNING LIGHTS.

All pits, excavations, fences, barriers, builder's equipment, building materials or rubbish in or upon a street, alley, sidewalk or any other public space, shall have placed upon or by them. illuminated lamps with red globes, flares or other approved lights,

in such manner that there shall be one light at each end, and at intermediate points as may be necessary to afford proper warning after darkness.

SECTION 1316. BASEMENT DRAINAGE.

Before the foundation walls of a building or structure are completed, adequate drainage facilities shall be provided to prevent water accumulating in the excavation or basement.

SECTION 1317. LIGHTING.

All parts of building or structures under construction and all sheds, scaffolds and other equipment in connection therewith, where work is being performed or persons must necessarily pass, shall be adequately lighted to insure safety.

SECTION 1318. TEMPORARY WIRING.

Transformers, wiring, equipment and over current protection shall be so installed as to reduce fire hazards and injury to persons. Portable electrical equipment shall be protectively grounded in accordance with the National Electrical Code.

SECTION 1319. SANITATION.

1. **Toilets.** Until permanent provision is made, suitable and adequate temporary toilet facilities shall be provided during the erection or alteration of a building.

2. **Water.** An adequate supply of pure, cool drinking water shall be provided for workers during hours of employment.

SECTION 1320. ACCIDENTS.

1. **First Aid.** On every building operation, a first aid cabinet containing, among other things, a supply of iodine or mercurochrome and asceptic gauze bandages shall be provided and maintained.

2. **Medical attention.** Arrangements shall be made for prompt medical attention in case of need.

SECTION 1321. DEMOLITION.

1. **Procedure.** In the demolition of buildings, other than buildings of wood frame construction, one story at a time shall be completely removed. No wall, chimney, or other construction

shall be allowed to fall in mass on an upper floor. Bulky material, such as beams and columns, shall be lowered and not allowed to fall.

2. **Chutes.**

(a). Chutes for the removal of material and debris shall be provided in all such parts of demolition operations that are more than 20 feet above the point where the removal of material is effected.

(b). Such chutes shall be completely enclosed. They shall not extend in an unbroken line for more than 25 feet, but shall be equipped at intervals of 25 feet or less with substantial stops to prevent descending material from attaining dangerous speeds.

(c). The bottom of each chute shall be equipped with a gate or stop, with suitable means for closing or regulating the flow of material.

3. **Sprinkling.** Chutes, floors, stairways and other places affected shall be sprinkled sufficiently to keep down the dust.

ARTICLE XIV.

ELEVATORS, MOVING STAIRWAYS AND AMUSEMENT DEVICES.

The enforcement of the provisions of this article of the Building Code shall be under the jurisdiction of the Department of Labor.

SECTION 1400. GENERAL.

(a). Elevators, moving stairways, and amusement devices, hereafter erected or installed, or hereafter altered shall be constructed, installed and maintained in accordance with the provisions of this article and with rules duly promulgated by the Commissioner of Labor, or, in the absence of such rules, with generally accepted good practice.

(b). Except as otherwise specifically provided in this code or in rules duly promulgated by the Commissioner of Labor, "The American Standard Safety Code for Elevators, Dumbwaiters and Escalators," approved by the American Standards Association, shall be deemed to be the generally accepted good practice.

SECTION 1401. REPAIR.

Repairs or changes to elevators, moving stairways, and amusement devices which involve the type of elevator or its motive power, or the safety devices or operating mechanism shall not be made until proper notice has been given to the Commissioner of Labor.

SECTION 1402. DESIGN AND EQUIPMENT.

1. **Carrying capacity.**

(a). Elevators hereafter installed or altered shall be designed to sustain safely in all parts the load to be carried. Such loads per square foot of car platform area shall in no case be less than 75 pounds for power driven passenger elevators; 50 pounds for hand power passenger elevators; and 50 pounds for power driven freight elevators having platform areas not exceeding 100 square feet.

(b). The safe carrying capacity of every elevator shall be conspicuously posted in or on the car or platform.

2. **Car safety devices.** Every elevator, suspended with wire ropes, except sidewalk elevators having a rise of not more than 15 feet, shall be equipped with safety devices for bringing the

car or platform to rest without serious injury to persons riding thereon whenever its speed becomes excessive.

3. **Car and door interlocks.** Every elevator hereafter installed or altered shall be equipped with a device that will automatically prevent the car or platform from being normally moved until all car doors and hoistway doors are in the closed position.

4. **Limit devices.** Every elevator hereafter installed or altered shall be equipped with efficient limit devices that will prevent the car or platform moving beyond its line of travel at either end.

5. **Emergency exit.** Every passenger elevator car shall be provided with a trap door in the top of adequate size to provide easy egress for passengers in case of accident.

6. **Lighting.** All elevator cars or platforms shall be properly lighted when in service.

7. **Freight compartment.** No elevator car shall have attached above, below or on any side a freight compartment or similar device.

8. **Moving stairways.**

(a). Moving stairways shall be designed to safely support in all the parts the loads to be carried and shall be marked by the manufacturer with the safe load to be carried and the speed.

(b). Moving stairways shall have an angle of inclination of not to exceed 30° with the horizontal and shall have widths of not less than 24 inches nor more than 48 inches measured between the hand rails which shall move at the same speed as that of the steps. The moving stairways shall have solid sides with no paneling on the step side between the hand rails and the steps. Treads and landings shall have non-slip surfaces.

(c). Every moving stairway shall have mechancially applied brakes with emergency stop switch or button, speed governors and other safety measures as may be required by the Commissioner of Labor.

9. **Machinery Enclosure.** Safe and convenient means of access for authorized persons shall be provided to elevator and dumbwaiter machine rooms and overhead machinery spaces. Access over roofs shall be permitted only where the roof is substantially level.

SECTION 1403. RIDING ON FREIGHT ELEVATORS RESTRICTED.

It shall be unlawful for any person, other than the operator or those necessary to handle freight, to ride on a freight elevator. This shall not prohibit the carrying of freight on a passenger

elevator. Every freight elevator shall have a notice posted conspicuously thereon as follows: PASSENGERS ARE FORBIDDEN TO RIDE ON THIS ELEVATOR.

SECTION 1404. AMUSEMENT DEVICES.

Amusement devices shall be equipped with safety clutches. The cars or receptacles which persons are permitted to occupy shall have hand rails of sufficient number and height, or other approved appliances or safeguards, to prevent persons from being thrown therefrom or coming in contact with structural members.

SECTCION 1405. CERTIFICATE.

1. **Required in all cases.** It shall be unlawful for the owner to operate or permit the operation or use of a passenger elevator, freight elevator, moving stairway or amusement device, hereafter installed or constructed, until a certificate shall have been obtained from the Commissioner of Labor.

2. **Issuance.** The commissioner of Labor shall, within a reasonable time after being requested to do so, inspect and test or cause to be inspected and tested every elevator or amusement device hereafter installed or constructed, or hereafter altered, and if same is found to be safe and in conformity with the provisions of this article and the rules, shall issue a certificate to that effect.

3. **Temporary permission to use.** Nothing herein contained shall prevent the temporary use by special permission of the Commissioner of Labor of an elevator during construction; provided a notice is conspicuously posted on or in connection with such elevator to the effect that such elevator has not been officially approved.

SECTION 1406. INSPECTION.

1. **When required.**

(a). The Commissioner of Labor shall make or cause to be made an inspection of every passenger elevator at least once in every 3 months, and of every freight elevator, moving stairway and every amusement device at least once in every 6 months.

(b). At least once a year the inspection shall include a safety test.

(c). Seasonal amusement devices which have been out of use for a period exceeding 30 days shall not be operated again until reinspected by the Commissioner of Labor.

2. **Notice of repairs.**

(a). Upon notice from the Commissioner of Labor repairs found necessary to such an elevator or amusement device shall be made without delay by the owner or person in control of such elevator or amusement device.

(b). In case defects exist which make the continued use of such elevator or amusement device dangerous to life or limb, the use of such elevator or amusement device shall cease; and it shall not be used again until a reinspection has been made after necessary repairs and a new certificate has been issued.

3. **Certification.** After every inspection which shows an elevator or amusement device to be safe and in conformity with the requirements of this code the Commissioner of Labor shall issue a certificate to that effect.

SECTION 1407. ACCIDENTS.

1. **To be reported.** The owner or person in control of an elevator, moving stairway or amusement device shall immediately notify the Commissioner of Labor of each accident to a person or apparatus on, about or in connection with such elevator, moving stairway or amusement device, and shall afford him every facility for investigating such accident and the damage resulting therefrom.

2. **Investigation.** The Commissioner of Labor shall make or cause to be made an investigation and shall place on file in his office a full report of such investigation. Such report shall give in detail all material facts and information available and the cause or causes so far as they can be determined, and shall be open to public inspection at all reasonable hours.

3. **Operation discontinued.** When an accident involves the failure or destruction of a part of the construction or of the operating mechanism, the elevator, moving stairway or amusement device shall not be used again until it has been made safe. The Commissioner of Labor may, if deemed necessary, order the discontinuance of the elevator, moving stairway or amusement device until a new certificate has been issued.

4. **Removal of parts restricted.** No part of the damaged construction or operating mechanism shall be removed from the premises until permission has been granted by the Commissioner of Labor.

SECTION 1408. OPERATION.

Every passenger elevator, except automatic elevators and moving stairways, and every amusement device shall be in charge of a competent, reliable operator.

SECTION 1409. FIRE DEPARTMENT USE.

In buildings equipped with more than one elevator, at least one elevator shall be kept in readiness at all times for fire department use.

ARTICLE XV.

MISCELLANEOUS EQUIPMENT

SECTION 1500. LIGHTING.

1. **When required.** Provision for artificial lighting shall be made in all those parts of buildings to which the public has access, whenever natural light is inadequate.

2. **Protection.** In all buildings, except residence buildings, in which flammable materials are likely to come in contact with the flame, all open flames and incandescent mantle lighting appliances shall have approved substantial wire guards, screens or other devices to prevent setting fire to such materials.

3. For further information on electrical installations see Article XVI.

SECTION 1501. GAS PIPING.

1. **Installation.**

(a). Piping for any and all types of gas used for lighting or fuel purposes in buildings and structures shall be installed to conform with generally accepted good practice.

(b). Except as otherwise specifically provided in this code or in rules duly promulgated by the Building Code Council, the "Recommended Good Practice Requirements for the Installation, Maintenance and Use of Piping and Fittings for City Gas" and "Gas Systems for Welding and Cutting" and "Liquefied Petroleum Gases" of the National Board of Fire Underwriters shall be deemed to be the generally accepted good practices.

2. **Inspection.** No person shall use or permit the use of a new system or an extension of an old system of gas piping in a building or structure before the same has been inspected and tested to insure the tightness of the system, and a certificate has been issued by the city building inspector.

3. **Certificate.** The city building inspector shall, within a reasonable time after being requested to do so, inspect and test or cause to be inspected and tested a system of gas piping that is ready for such inspection and test, and if the work is found satisfactory and the test requirements are complied with, he shall issue a certificate to that effect.

4. **Supplying gas.** It shall be unlawful to supply gas to a system of gas piping in a building or structure before the required certificate has been issued.

5. **Existing work.** Nothing herein shall prohibit the continued use of existing systems of gas piping without further inspection or test, unless the city building inspector has reason to believe that defects exist which make the system dangerous to life or property.

SECTION 1502. SHUT-OFF VALVES.

An outside valve shall be installed on every gas, vapor or fluid service pipe regardless of size that supplies large stores or factories, or places of assembly such as churches, theatres, motion picture theatres, schools, and hospitals and on every such service pipe 2½ inches or larger in diameter and on every gas service where pressure exceeds 10 inches of water.

SECTION 1503. OPENINGS AROUND PIPES AND DUCTS.

(a). All openings around conduits, pipes or ducts shall be filled with approved noncombustible material or shall be closed off by close fitting noncombustible material at the ceiling and floor line or on each side of the wall.

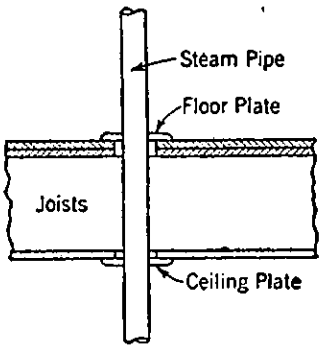

Fig. 10

Protection of pipe openings through walls, floors and ceilings. When floors are waterproofed or drainage by scuppers is provided, the sleeve should extend six inches above the floor.

SECTION 1504. RECOMMENDED STANDARDS AND SAFEGUARDS IN CONNECTION WITH HAZARDOUS MATERIALS AND PROCESSES.

Except as specifically provided for by N. C. State Law or otherwise provided by rules promulgated by the N. C. Building Code Council, the Standards and Safeguards as recommended by the National Fire Protection Association shall be deemed acceptable good practice in connection with hazardous materials and processes as outlined in the following pamphlets:

Fire Extinguishing Appliances.

10. Portable Fire Extinguishers
13. Sprinkler Equipments
14. Standpipe and Hose Systems

Flammable Liquids.

30. Containers for Flammable Liquids
31. Oil Burning Equipments
32. Dry Cleaning Plants
33. Paint Spraying and Spray Booths
34. Dip Tanks
37. Internal Combustion Engines, also Coal Gas Producers
38. Discharging Flammable Liquids from Tanks Cars, and Petroleum Pipe Lines
39. Stove and Range Oil Burners
310. Small Heating and Cooking Appliances (Kerosene and Fuel Oil)
566. Bulk Oxygen Systems

Combustible Solids.

40. Nitrocellulose Motion Picture Film
41. Photographic and X-Ray Nitrocellulose Film
42. Pyroxylin Plastic in Factories
43. Pyroxylin Plastic in Warehouses and Stores
44. Combustible Fibres
47. Lumber Storage
495L. Explosives Ordinance for cities
663. Woodworking Plants

Hazardous Gases.

50. Acetylene Equipment
51. Gas Systems for welding and Cutting
53. Gasoline Vapor Gas Machines
54. City Gas Piping and Fittings
57. Coloring of Fruits and Vegetables
58. Liquefied Petroleum Gases

Explosive Dust.

60A. Pulverized Fuel Systems
61. Starch Factories, Terminal Grain Elevators, Flour and Feed Mills
63. Dust Explosions in Industrial Plants, Prevention of
64. Dust Ignitions in Country Grain Elevators
68. Explosion Venting

Construction.

81. Fur Storage
82. Incinerators
83. Electric Cars and Trolley Buses, Including Houses and Yards Supplement
84. Merchandise Vaults
85. Airplane Hangars—Supplement
86. Open for Japan, Enamel and other Flammable Finishes
87. Piers and Wharves
88. Garages—Supplement
90. Air Conditioning, Warm Air Heating, Air Cooling and Ventilating Systems—Supplement
91. Blower and Exhaust Systems for Dust, Stock and Vapor Removal
92. Waterproofing of Floors and Drainage, and Installation of Scuppers
101. Building Exists Code
203. Roof Coverings
213. Spark Arresters
231. General Storage
232. Protection of Records
701. Flameproof Textiles

ARTICLE XVI.

ELECTRICAL INSTALLATIONS

Except as may be otherwise provided by rules promulgated by the Building Code Council, the electrical systems of a building or structure shall be installed in conformity with the 'National Electrical Code," as approved by the American Standards Association and as filed in the office of Secretary of State.

The electric wiring of houses or buildings for lighting or for other purposes shall conform to the regulations prescribed by the organization known as National Board of Fire Underwriters.

In order to protect the property of citizens from the dangers incident to defective electric wiring of buildings, it shall be unlawful for any firm or corporation to allow any electric current for the purpose of illuminating any building belonging to any person, firm, or corporation to be turned on without first having had an inspection made of the wiring by the building inspector and having received from the inspector a certificate approving the wiring of such building. It shall be unlawful for any person, firm, or corporation engaged in the business of selling electricity to furnish any electric current for use for illuminating purposes in any building or buildings of any person, firm, or corporation, unless the said building or buildings have been first inspected by the inspector of buildings and certificate given as above provided.

ARTICLE XVII.

FIRE EXTINGUISHING AND ALARM EQUIPMENT

SECTION 1700. GENERAL.

1. **Construction.** Fire extinguishing equipment installed in accordance with standards of the National Board of Fire Underwriters shall be deemed to conform to the provisions of this article unless inconsistent therewith.

2. **Appliances.** Appliances, fittings and devices bearing the label of Underwriters' Laboratories, Inc., or listed in "List of Inspected Fire Protection Equipment and Materials," issued by Underwriters' Laboratories, Inc., and that are listed for the purposes intended shall be accepted as conforming to the requirements of this article.

SECTION 1701. STANDPIPES.

1. **Standpipes required.** Buildings hereafter erected, except open air parking garages conforming to section 1204-7, shall be equipped with standpipes as follows:

(a). Buildings exceeding 50 feet in height shall have standpipes not less than 4 inches in diameter.

(b). Buildings exceeding 75 feet in height shall have standpipes not less than 6 inches in diameter.

(c). On stages arranged or intended for theatrical, operatic or similar performances, one 2½-inch standpipe on each side of the stage.

2. **Number.** The number of standpipes shall be such that all parts of every floor area can be reached within 30 feet by a nozzle attached to 100 feet of hose connected to a standpipe.

3. **Location.** Standpipes shall be so located that they are protected against mechanical and fire damage, with outlets within stairway enclosures, as near the stairway as possible, or outside or immediately inside of the exterior walls, within one foot of a fire tower or exterior stairway or fire escape.

4. **Construction.**

(a). Standpipes shall be constructed of wrought iron or steel; and shall be designed to withstand a working pressure of not less than 100 pounds per square inch in excess of the static head of water due to the height of the standpipe.

(b). Standpipes shall extend from the lowest story of the building to the topmost story; provided that standpipes serving parts of buildings that are not of the full height of the building, need extend only to the top story of that part.

(c). When more than one standpipe is required in a building, they shall be connected at their bases by pipes of a size equal to that of the largest standpipe, to permit water from any source to supply all the standpipes.

(d). Where the water supply is furnished by a gravity tank or a pressure tank located in the building at or above the topmost outlet, a check valve shall be provided below the tank and a stop valve between the check valve and the tank.

(e). Standpipes shall be equipped in every story with 2½-inch hose connection and valves located not more than 5 feet above the floor level.

(f). Sufficient stop valves or check valves shall be provided to permit cutting off any standpipe riser without interrupting the supply to other risers from any source of supply. Stop valves which are located above the ground floor and which must be closed to permit continued use of one standpipe in case of failure of another, shall be arranged to permit operation from the ground floor or from the pump room.

(g). Only approved fittings, connections and valves shall be used in the construction of standpipes.

5. **Fire department connection.**

(a). Standpipes shall be equipped with approved outside Siamese connections, having check valves in each inlet. The pipe from the standpipe to the Siamese connection shall be at least 4 inches in diameter.

(b). There shall be at least one Siamese connection to each standpipe riser, except that where more than 4 risers are connected to a single system the city building inspector may permit a lesser number of such connections suitably distributed to meet the needs of the local situation.

(c). Siamese connections shall be placed not less than 18 inches nor more than 36 inches above the level of the adjoining ground or sidewalk.

(d). The thread of such connections shall be uniform with that used by the local fire department. Substantial caps to protect the threads shall be provided on each connection.

(e). Each such connection shall be suitably marked with raised letters reading "Standpipe."

(f). Just inside of the building in a horizontal section of the standpipe connection, an approved straightway check valve shall be placed, with an automatic drip connection valve between the check valve and the exterior Siamese connection to prevent freezing.

6. **Hose.**

(a). Standpipes located inside of buildings, shall have approved fire hose, sufficient to reach all parts of the floor area but not in excess of 100 feet, attached to each outlet.

(b). Each line of hose shall be provided with washers at both ends and fitted with smooth-bore play pipe or nozzle. For 2½-inch hose the nozzles shall have a discharge outlet of 1 to 1⅛ inches.

(c). Hose shall be kept on approved hose racks or in approved hose cabinets.

7. **Water supply.**

(a). Standpipes shall be supplied under full pressure from an adequate water supply or the water supply shall be furnished automatically by the opening of a hose outlet or by the operation of suitably located thermostats; except in dwellings, churches, and other buildings having floor areas of less than 2,500 square feet in which not less than one approved 2½-gallon fire extinguisher is provided for each floor area; and except in sprinklered buildings in which 1½-inch hose is connected to the sprinkler risers in each floor area; and except in buildings which, because of occupancy or type of construction, do not, in the opinion of the city building inspector require such constant and automatic water supply.

(b). Such water supply shall be furnished by a street main in which the pressure is sufficient to maintain a pressure of not less than 15 pounds per square inch at outlets in the top story of the building with a flow of 500 gallons per minute from a hydrant within 200 feet of the building; or by a gravity tank of not less than 5,000 gallons capacity, having the bottom not less than 25 feet above the outlets in the top story of the building; or by a pressure tank of not less than 4,500 gallons capacity (3,000 gallons of water), located in the top story or on the roof of the building; or by automatic pumps having a combined capacity of not less than 500 gallons a minute.

(c). When a tank which supplies a standpipe is also used for ordinary house supply and is located at the required height, the inlet to the house supply pipe shall be placed at a height above the bottom of the tank to reserve for fire purposes not less than the quantity of water specified for such purposes.

(d). When the pressure on an outlet exceeds 50 pounds per square inch, an approved adjustable reducer or regulator, set to maintain a pressure of approximately 50 pounds per square inch on the discharge side with a flow of 200 gallons per minute through the hose and nozzle, shall be provided.

8. **Pumps.**

(a). In buildings 150 feet or more in height and in buildings requiring a standpipe and exceeding 10,000 square feet in area, unless the required water supply is furnished by an automatic pump of the capacity prescribed in this section, approved fire pumps shall be installed in addition to the water supply that is provided, and permanently connected to the required standpipe systems.

(b). The capacities of such pumps shall be not less than 500 gallons per minute for a 4-inch standpipe; not less than 750 gallons per minute for a 6-inch standpipe or two interconnected 4-inch standpipes; not less than 1,000 gallons per minute for two or more 6-inch standpipes.

(c). Such pumps shall have an adequate source of power and shall be supplied from street mains or from well systems or other storage systems furnishing not less than one hour's supply at the rated capacity of pump.

9. **Tests.**

(a). Upon the completion of a standpipe installation and at least every two years thereafter, every standpipe shall be tested in the presence of a representative of the fire department assigned to witness such test.

(b). Such test shall consist of a static pressure test, with all outlets closed, equivalent to the designed pressure due to the height of the standpipe. Flow tests shall also be made to prove that the standpipe, line valves, check valves and Siamese connections are free from obstructions and are workable, and the fire pump is in good condition.

10. **Maintenance for use.** Standpipes required by this code shall be maintained in readiness for use at all times.

SECTION 1702. SPRINKLER EQUIPMENTS.

1. **Sprinklers required.** In buildings hereafter erected, or altered to increase the area or height, approved automatic sprinkler equipments shall be installed and maintained as specified in the following paragraphs. The areas specified shall be the area enclosed by exterior walls or fire walls or a combination thereof, except that in buildings of fireproof construction and semifire-

proof construction the area shall be that enclosed by exterior walls, fire walls or fire partitions or a combination thereof.

(a). Buildings over 2 stories in height used for the manufacture, sale or storage of combustible goods or merchandise (not including garages) and exceeding in area 10,000 square feet when of fireproof construction or semi-fireproof construction.

(b). Buildings over 2 stories in height used for the manufacture, sale or storage of combustible goods or merchandise (not including garages) and exceeding in area 7,500 square feet when of types of construction other than fireproof construction and semi-fireproof construction.

(c). Buildings exceeding 2 stories in height or in excess of 2,000 square feet in area on any floor above the first or ground floor, hereafter erected or altered, so that suitable access, as defined below, to each story above the basement is not provided on at least one side of the building. Suitable access shall be deemed as requiring a usable opening through the wall at each story at least 32 inches wide, 48 inches high and with the sill not more than 32 inches above the floor; the openings shall be so spaced that there will be one opening for each 50 feet of frontage.

(d). Garages exceeding 6 stories in height.

(e). Garages for storage of loaded commercial trucks, exceeding 2,000 square feet in area and of other than fireproof construction.

(f). Bus garages exceeding 2 stories in height.

(g). Basement garages housing more than 3 motor vehicles.

(h). Garages located in buildings in which one or more stories or parts thereof above such garages are occupied for other purposes when such garages have a capacity of 20 or more passenger automobiles, or are used as bus terminals for 3 or more buses, or are used for the storage and loading of 2 or more trucks.

(i). Basements having an area exceeding 3500 square feet, when used for the manufacture, sale or storage of combustible goods or merchandise, except that in public buildings, institutional buildings and residence buildings, the automatic sprinkler equipments will be required only in such portions as are used for storage purposes or as work shops.

(j). In buildings occupied as a place of assembly and having a stage arranged for theatrical, operatic or similar purposes, approved automatic sprinkler equipments shall be provided under the roof of the stage, under the gridiron, the rigging loft and fly and tie galleries, under the stage, in dressing rooms, scene docks, workshops and storage rooms.

(k). When adequate heat is not provided and in the opinion of the city building inspector the hazard is not severe, such sprinkler system may be replaced by a system having approved automatic sprinklers, but with supply only from a fire department connection on the building front, or with an approved protective device with fire department connection on the building front, by which water can be applied to or directed at the fire by suitable control equipment from outside the building; there being in each case an approved automatic fire alarm system connected to an outside gong or to the central station of a supervising company.

2. **Installation and approval.**

(a). Required automatic sprinkler equipments shall be installed in accordance with detailed drawings of the complete sprinkler layout which have been submitted to and approved by the city building inspector. Except as otherwise provided, or in duly adopted rules, the "Standards of the National Board of Fire Underwriters for the Installation of Automatic Sprinkler Equipments," shall be deemed to be approved methods of design and installation.

(b). Sprinkler systems shall be designed to withstand, when ready for service, a water pressure of not less than 200 pounds per square inch for two hours without leakage at joints, valves, fittings or any part of the piping.

(c). When ready for service, the entire system shall be inspected and tested in the presence of the city building inspector. Defects developed by such inspection and test shall be corrected before final approval.

(d). Only approved sprinklers, fittings, connections and valves shall be used in the installation of sprinkler systems.

(e). Every sprinkler system shall be provided with an approved outside screw and yoke valve or indicator gate valve, located to be readily accessible, to control all sources of water supply except that from the fire department connection.

(f). Branches from underground water mains to sprinkler systems shall be flushed out thoroughly before connecting them to sprinkler riser.

3. **Water supply.** Except as otherwise provided in paragraph K of subsection 1, each sprinkler system shall have at least one automatic water supply of adequate pressure, capacity and reliability, as determined by the city building inspector.

4. **Fire department connections.**

(a). Every sprinkler system shall be equipped with one or more approved fire department connections. The pipe from the sprinkler system to the hose connection shall be not less than 4 inches in size, except that 3-inch pipe may be used to connect a single hose connection to a 3-inch or smaller riser.

(b). There shall be a fire department hose connection on each street frontage, or, when the building sets back of the street lines, on each accessible exterior wall; provided that when a frontage or exterior wall is less than 50 feet in length no such connection will be required on that frontage if the required connections are provided on the other frontages.

(c). Hose connections shall be so located as to permit prompt and easy attachment of hose.

(d). The thread of such connection shall be uniform with that used by the local fire department. Screw caps shall be provided on each connection.

(e). Each such connection shall be suitably marked with raised letters reading, "FIRE DEPT. CONNECTION—AUTO. SPRINKLERS," or, when only stories below grade are equipped, "FIRE DEPT. CONNECTION—BASEMENT SPRINKLERS" (or "CELLAR SPRINKLERS").

(f). An approved straightway check valve shall be installed in each fire department connection, located as near as practicable to the point where it joins the system. The pipe between the outside hose connection and the check valve shall be arranged to drain in an approved manner.

SECTION 1703. AUTOMATIC FIRE ALARM SYSTEMS.

Automatic fire alarm systems required by this code shall be subject to inspection and test at intervals not exceeding 3 months conducted under contract by a qualified organization which shall also provide maintenance service.

SECTION 1704. AMUSEMENT PARK PROTECTION.

Within the grounds of every amusement park, fire hydrants, properly placed, connected by a system of pipes to an adequate water supply, with sufficient hose, properly housed, to reach into each building, shall be installed. All equipment shall be designed to fit the local fire department equipment.

ARTICLE XVIII.

SIGNS AND OUTDOOR DISPLAY STRUCTURES

SECTION 1800. GENERAL.

1. **Permit.**

(a). No display sign shall hereafter be erected, or attached to, suspended from or supported on a builidng or structure until a permit for same has been issued by the city building inspector.

(b). No permit for a display sign shall be issued until the required bond has been filed.

2. **Bond.** The owner or persons in control of a display sign suspended over a street or extending into a street more than 15 inches beyond the building line shall execute a bond in a sum to be fixed by the official having control over streets, with sureties approved by such official, indemnifying the municipality against all loss, cost, damage or expense incurred or sustained by or recovered against the municipality by reason of the construction or maintenance of such display sign.

3. **Exemption.** The provisions of this article, except as to safety, shall not apply to a sign not more than 10 square feet in area, announcing, without display or elaboration, only the name of the proprietor and the nature of his business; nor to a wall sign not exceeding one square foot of display surface, on a residence building stating merely the name and profession of an occupant; nor to a sign, not exceeding 10 square feet of display surface, on a public building giving the name and nature of the occupancy and information as to the conditions of use or admission; nor to a wall sign not exceeding 2½ square feet of display surface, nor a ground sign, advertising in either case the sale or rental of the premises upon which it is maintained; nor to street signs erected by the municipality; nor to temporary signs or banners legally authorized.

SECTION 1801. ALTERATIONS.

1. **Structural.** No display sign shall hereafter be altered, rebuilt, enlarged, extended or relocated except in conformity with the provisions of this article.

2. **Movable parts.** The changing of movable parts of signs that are designed for changes, or the repainting of display matter shall not be deemed to be alterations within the meaning of this section.

SECTION 1802. CONSTRUCTION.

1. **Wall Signs.**

(a). Display signs placed against the exterior walls of buildings shall not extend more than 15 inches outside of the wall surface.

(b). Such signs shall not exceed 40 square feet in area, unless made of noncombustible materials, provided that mouldings and cappings may be of wood.

(c). Such signs shall not extend beyond the top or ends of the wall surface on which they are placed.

(d). Wall signs shall be securely attached to the building by means of metal anchors, bolts or expansion screws. Signs shall not be fastened by nails or staples to wooden blocks or nailing strips built into the masonry.

2. **Projecting signs.**

(a). No projecting sign shall project from the face of the building or structure over a street, alley or other public space more than 10 feet, but in no case shall any such sign project beyond a line drawn perpendicularly upward from 2 feet inside the curb line.

(b). A clear space of not less than 10 feet shall be provided below all parts of such signs.

(c). Projecting signs shall be securely attached to the building or structure by bolts, anchors, chains or guys.

3. **Ground signs.**

(a). Ground display signs shall not exceed 30 feet in height above the ground on which they rest.

(b). Lighting reflectors may project beyond the face of the sign.

(c). An open space at least 3 feet high shall be maintained between the bottom of the sign and the ground; provided that necessary supports extending through such space, and the filling of such space with lattice or slats leaving at least 50 per cent of the space open shall not be prohibited.

(d). Within the fire limits, such signs when more than 13 feet high shall be constructed of noncombustible materials, except that mouldings and cappings may be of wood.

4. **Roof signs.**

(a). Display signs that are placed above or supported on the top of a building or structure shall be constructed of noncombustible materials, except that mouldings and cappings may be of wood.

(b). An open space of not less than 6 feet shall be maintained below the bottom of the sign, except for necessary vertical supports.

(c). Within the fire limits, no roof sign shall be supported by or braced to wooden beams or other wood construction of a building or structure over 40 feet in height.

5. **Location.** No sign shall be so placed as to obstruct or interfere with a required doorway or other required means of egress, or so as to prevent free passage from one part of a roof to any other part thereof.

6. **Design.**

(a). All signs shall be designed according to generally accepted engineering practice to withstand wind pressures as specified in section 804. The loads shall be distributed to the structural members of the building in such a way that these members will not be overstressed.

ARTICLE XIX.

SAFETY TO LIFE REQUIREMENTS FOR HERETOFORE ERECTED BUILDINGS

SECTION 1900. CERTIFICATE OF OCCUPANCY.

Upon written request from the owner, the city building inspector shall issue a certificate of occupancy for a building heretofore erected, after verification by inspection, provided that at the time of issuing such certificate there are no violations of law or orders pending.

SECTION 1901. DETERMINING AND POSTING OF FLOOR LOADS.

In every business building or storage building heretofore erected, in which heavy loads or concentrations occur or machinery is introduced, the owner or occupant shall cause the weight that each floor will safely sustain to be estimated by a competent person and filed wih the city building inspector, and when accepted by him posted as required for new buildings by section 803-10.

SECTION 1902. MEANS OF EGRESS.

1. **General.**

Within a reasonable time, as fixed by a written order of the city building inspector, every building heretofore erected, other than dwellings and farm buildings, shall be provided with exit facilities adequate for the safety of the occupants. Such exit facilities shall be as approved by the city building inspector, but shall not provide less safety to the occupants than that obtained by compliance with the provisions of this section.

2. **Number and location of exit ways.**

(a). Every story exceeding 3,000 square feet in area shall have at least 2 separate exit ways (as defined in Section 600).

(b). The number and location of exits shall be such that it will not be necessary to travel more than a distance of 125 feet from the door of any room, or from any point on a floor not divided into rooms, to reach the nearest exit from the floor, except that in office buildings, and in sprinklered buildings, and in buildings of fireproof or semifireproof construction, such travel distance may be 150 feet.

(c). In multifamily houses having more than one apartment above the second story, every apartment shall have access to at least two exit ways. Such exit ways may use common or com-

municating corridors or hallways, but the two required exit ways from any one apartment shall not use a common interior stairway.

(d). Every room used as a place of assembly shall have at least two exit doorways.

(e). Every place of assembly having a capacity greater than 200 persons shall have exit ways conforming as to number and width with sections 6.23 (d) and 6.23 (e).

(f). Institutional occupancies shall be provided with at least two exit ways in accordance with section 613.

3. **Minimum requirements for existing stairways.**

(a). The stairways in one of the required exit ways from any story or stories occupied by a total of 6 or more persons shall have treads not less than 7 inches in width and risers not higher than 9½ inches nor more than 1.2 times the width of tread. Winder treads shall have a width of not less than 6 inches measured one foot from the narrow end. This paragraph shall not be construed as modifying the pitch and tread requirements for any new stairway construction.

(b). All exit stairs shall be guarded at the sides by well secured balustrades or other acceptable guards wherever such are needed for the safety of users, and shall have a hand rail on at least one side.

4. **Fire escapes.** Exterior fire escapes hereafter constructed on heretofore erected school buildings, theatres and institutional buildings shall conform to the requirements for exterior stairways in section 607. Exterior fire escapes hereafter constructed on other buildings shall conform to the following minimum requirements:

(a). They shall be constructed of noncombustible materials.

(b). They shall be constructed with stairs not less than 22 inches wide between rails, having risers not higher than 9 inches and having treads not narrower than 6 inches. Ladders may be used from the upper landing of a fire escape to the roof.

(c). Unless the stair leading to the ground at the foot of the fire escape is permanently fixed, it shall be constructed with counter-balancing devices that permit it to be easily and quickly released and placed in rigid position for use.

(d). They shall be of sufficient strength to sustain a live load of 100 pounds per square foot or loads of 300 pounds spaced 3 feet center to center, each bearing on an area one foot wide by the depth of the tread, whichever will produce the greater stress.

(e). They shall be so placed that they can be readily and safely reached by the occupants of the building.

(f). They shall be so located that safe egress will be provided at the foot either directly or through an enclosed exit way to a street or to an open space that communicates with a street.

(g). They shall be spacious enough that the movements of those using the fire escapes will not be retarded.

(h). All balconies and stairs shall be provided with substantial guard railings at least 4 feet high, without any openings greater than 8 inches in width, except that for buildings not over 5 stories high, triple guard rails equally spaced, with top rail not less than 42 inches high may be used. (Height for stairs is to be measured at center of tread.) The landings, platforms, and the treads of all stairs shall be so designed that the accumulation of snow and ice will be reduced to a minimum.

(i). Except on buildings not exceeding three stories in height and on buildings of wood frame construction, all doors opening on or within 10 feet of the fire escape shall be approved self-closing fire doors, and any windows opening on or within 10 feet of the fire escape shall be approved fire windows; provided that where the occupancy inside these windows or doors is such as to present a light fire hazard or is sprinklered, or the overall exit arrangements are such that this protection is of minor importance, the city building inspector may waive this requirement.

5. **Spiral slide or tubular fire escapes.** Slide type fire escapes hereafter installed to provided additional means of egress from heretofore erected buildings shall be of approved type and conform to the following:

(a). They shall not be used to provide means of egress from buildings exceeding 70 feet or 6 stories in height. The pitch and design shall be such that a person using the chute will be discharged without injury. Doors at the entrance to the chute shall have approved panic bar releases and shall swing with the exit travel and be so installed that they will not obstruct the use of the chute. If doors are installed at the lower end of the chute, they shall be equipped with a releasing device on the inside such as a kick plate.

(b). All sheet metal used for the chute shall be corrosion resistant, shall not be painted on the inside and shall be maintained so as to be free from rust. Any part of the chute with which the user may come in contact shall be free from cracks, crevices, or any projection or roughness which may cause injury or reduce the effectiveness of the chute.

(c). All chutes shall be of sufficient size and ample strength and be supported in a substantial manner.

6. **Vertical Openings which shall be protected.**

(a). All interior stairways, including moving stairways and elevators, shall be enclosed or their floor openings otherwise protected, in accordance with subsections 7 and 8 of this section, except that stairways and elevators as follows shall be exempt from such requirements:

(1) Stairways and elevators which are not required to be enclosed in new construction. See sections 604-2 (d) and 921-1 (b).

(2). Stairways and elevators in buildings of other than institutional occupancy, not over 2 stories in height.

(3). Stairways and elevators in buildings of other than institutional occupancy, not over 4 stories in height, where the stories above the second are used for storage only.

(4). Stairways and elevators in sprinklered buildings of residence or business occupancy not over 4 stories in height.

5. Stairways and elevators in sprinklered buildings of storage occupancy of any height.

7. **Required protection for vertical openings.**

(a). Except as provided in paragraphs (b) and (c) below, required enclosures for vertical openings shall have a fire resistance rating of not less than one hour. In buildings of fireproof and semi-fireproof construction such enclosures shall consist of noncombustible materials.

(b). In any building of fireproof or semi-fireproof construction, or of other construction not over 4 stories high, and in any sprinklered building, required enclosures may be constructed of ¾-inch gypsum plaster on metal lath on each side of studs, or equivalent, or of wired glass in metal framework.

(c). In any building not over 4 stories high and in any sprinklered building, existing enclosures or parts thereof constructed of plaster on wood lath or equivalent, and in good repair, may be continued in use provided they are effectively fire stopped at the basement ceiling.

(d). An enclosure required by this section may include both elevators and stairs but two or more separate stairways shall not be in a single enclosure.

(e). In lieu of a full enclosure, stairways, including moving stairways, may be protected with an enclosure at the head or at the foot of each stairway from one floor to another. The construction of such enclosures shall be in accord with the requirements of paragraphs (a), (b) and (c) above.

(f). In lieu of an enclosure, floor openings for elevators in factory and industrial occupancies may be protected by substantial guards or gates with approved trap doors at each floor opening. Such trap doors shall be constructed to form a substantial floor surface when closed, and arranged to open and close by action of the elevator in ascending or descending. The guards or gates and trap doors shall be kept closed when the shaftway is not in use.

8. **Door and window openings in required enclosures for vertical openings.**

(a). All openings in required enclosures for vertical openings except window openings to the exterior of the building, shall be protected with doors in accordance with the following paragraphs. Movable transoms in such enclosures are prohibited.

(b). Doors in such enclosures shall be metal doors or metal covered doors or solid wooden doors of the flush type of not less than 1¾-inch nominal thickness, except that existing doors in acceptable existing enclosures or parts thereof in any building not over 4 stories high and in any sprinklered building, may be any substantial wood doors having any wood panels less than ½ inch thick covered on the side opposite the stair side with sheet steel not thinner than No. 28 U. S. gauge, securely attached with bolts or screws. Any glass in doors or fixed transoms shall be wired glass.

(c). Doors in such enclosures, except doors opening into apartments, shall be self-closing.

9. **Path of exit travel from stairway to street.**

(a). All interior stairways required to be enclosed shall lead directly or through an enclosed exitway to a street or to an open space that communicates with a street.

(b). The enclosure of such exit way shall conform to the requirements applying to the stair enclosure. The enclosure shall separate from the exit way all basement occupancies, and all unsprinklered office and business occupancies except those of a size and character which do not constitute a serious life hazard from fire, such as news stands, cigar stands, lunch counters and small offices.

10. **Exit doors.**

(a). Doors in required exit ways from places of assembly and from stores having a sales floor area in excess of 2500 square feet, shall be hung to swing open in the direction of exit travel. Panic hardware shall be installed in accordance with section 610-4.

(b). Revolving doors shall be used in exit ways only under the conditions specified in section 610-3, paragraphs b, c, and d.

11. **Exit Signs, Lighting, and Maintenance.** Exit ways shall be equipped with signs and be lighted and maintained in accordance with section 611, subsections 2, 3, and 4.

SECTION 1903. ROOFING REPAIRS.

(a). No roofing on an existing roof shall be renewed or repaired to a greater extent than 1/10 of the roof surface, except in conformity with the requirements of section 922.

(b). The placing of new roofing conforming to section 922 over existing combustible roofing shall not be prohibited; provided the existing roofing is removed for a distance of 4 inches along all edges of the roof and replaced by strips of weatherproof material over which the new roofing shall extend.

SECTION 1904. CHIMNEYS, FLUES AND SMOKESTACKS.

(a). All existing chimneys which upon inspection by the building official are found to be without flue lining and with open mortar joints which will permit smoke or flame to be discharged into the building or which are cracked as to be dangerous shall be made safe by means of a standard flue lining or with a corrosion resistant metal pipe one inch less in diameter than the interior of the chimney with the entire annular space between the lining and the walls of the chimney filled with a cement mortar and otherwise repaired if necessary or they shall be removed.

(b). Existing flues and smokestacks of metal which are corroded or improperly supported shall be replaced, unless suitable repairs are made.

SECTION 1905. HEAT PRODUCING APPLIANCES.

In case the installation of an existing heat producing appliance, heating, ventilating, air conditioning, blower or exhaust system does not conform to the code requirements for new installations, the city building inspector may order such changes in the installation as may be necessary to remove existing fire hazards.

SECTION 1906. FIRE EXTINGUISHING.

1. **Standpipes.** Buildings other than sprinklered buildings not over 6 stories in height, which are not provided with 4-inch or larger standpipes shall be equipped with standpipes in accordance with section 1701.