

TENTH OFFICIAL SUPPLEMENT
TO THE
OFFICIAL COMPILATION
OF
CODES, RULES AND REGULATIONS
OF THE
STATE OF NEW YORK

January 1, 1954 to December 31, 1954, Inclusive

CARMINE G. DeSAPIO
Secretary of State

1955

STATE BUILDING CODE COMMISSION

Rules and Regulations Pursuant to
Multiple Residence Law

2. Fire-detecting systems in hotels and similar dwellings.

c. Fire-detecting devices.

(1) New fire-detecting systems shall be provided with fire-detecting devices designed to operate on one or both of the following principles:

- (a) Fixed temperature.
- (b) Rate-of-rise.

(As amended May 7, 1954; filed May 28, 1954. Statutory authority §326, Multiple Residence Law)

g. Coded systems. New fire-detecting systems shall be of the coded type where the system contains three or more fire-detecting circuits, or where the aggregate protected floor area exceeds 20,000 square feet, except that a non-coded type system, with an annunciator located at a place within the building where an authorized person is on duty at all times, will be permitted when approved by the department. (As amended May 26, 1954; effective June 1, 1954; filed May 28, 1954. Statutory authority §326, Multiple Residence Law)

4. Sprinkler systems in hotels and similar dwellings.

i. Maintenance. (As amended May 7, 1954; effective June 1, 1954; filed May 18, 1954. Statutory authority §326, Multiple Residence Law)

(1) Sprinkler systems shall be maintained in operative condition, free from mechanical damage, structural failure, water failure or obstruction during the period that the buildings are occupied.

(2) Sprinkler systems shall be inspected by a competent person satisfactory to the department. Such inspection shall be made at least once every three months during the period that the buildings are occupied and within one week prior to the resumption of occupancy after the buildings have been vacant for a period exceeding one month. Such person shall be responsible for the making of all tests to see that all parts of the system are in good repair and working order. A detailed record of each inspection shall be kept, and records shall be open to examination by the department.

State Building Construction Code Applicable to
One- and Two-Family Dwellings

(As amended January 19, 1954; effective February 15, 1954; filed February 17, 1954. Statutory authority §377 of article 18, Executive Law)

Part 1—General Provisions

A 101. Title. These regulations, promulgated pursuant to article 18 of the Executive Law of the state of New York, amending the regulations applicable to one- and two-family dwellings promulgated on November 1, 1951, shall be known as "The State Building Construction Code Applicable to One- and Two-Family Dwellings." They are hereinafter referred to as "this code".

A 102. Purpose. The purpose of this code is to provide basic and uniform regulations in terms of performance objectives, establishing reasonable safe-

guards for the safety, health, and welfare of the occupants and users of buildings and structures, and making adequate performance the test of acceptability.

A 103. Effective date. This code shall take effect on February 15, 1954, and shall supersede the State Building Construction Code Applicable to One- and Two-Family Dwellings promulgated on November 1, 1951.

A 104. Partial invalidity. If any term, part, provision, section, subdivision or paragraph of this code shall be held unconstitutional, invalid or ineffective in whole or in part, such determination shall not be deemed to invalidate the remaining terms, parts, provisions, sections, subdivisions and paragraphs thereof.

A 105. Scope. This code shall apply to new buildings and existing buildings as described in this section.

A 105-1. New buildings. This code shall apply to one- and two-family dwellings, to their accessory structures, and to parts thereof, and to buildings containing mixed occupancies in which the residential portion does not exceed two dwelling units, hereafter erected.

A 105-2. Existing buildings.

A 105-2.1 General. This code shall also apply to existing buildings described in this section as if hereafter erected.

a. A building hereafter occupied as a one- or two-family dwelling, which building was not so occupied when the code became applicable to the municipality in which the building is situated, and to buildings containing mixed occupancies in which the residential portion does not exceed two dwelling units and was not previously so occupied.

b. A dwelling which is moved into, or moved within, municipal limits subject to this code.

c. A dwelling, or a building containing mixed occupancy in which the residential portion does not exceed two dwelling units, which is altered or repaired, when the cost of such alterations or repairs within any 12-month period exceeds 50 percent of the cost of replacement of the dwelling at the beginning of that 12-month period.

A 105-2.2. Roof covering. Whenever more than 25 percent of the roof covering of a dwelling is replaced in any 12-month period, all roof covering on such building shall be made to comply with applicable regulations of this code.

A 105-2.3. Addition or alteration. Any addition or alteration, regardless of cost, made to a dwelling, shall be made in conformity with applicable regulations of this code.

A 105-2.4. Existing uses continued. Except as otherwise herein provided, nothing in this code shall require removal, alteration, or abandonment of, nor prevent continued use or occupancy of, an existing building.

A 105-3. Lodgers. This code is not applicable to a building occupied by one or two families when more than four lodgers reside with any one family. When so occupied, said building becomes subject to the regulations of that portion of the code applicable to multiple dwellings.

A 105-4. Mixed occupancy. A building which is occupied in part for residential use, and in part for some other use not accessory thereto, shall be deemed to be a building of mixed occupancy, and, except for the separation

requirements as set forth in section A 402-3, occupancy other than residential is not regulated by this code.

A 105-5. Maintenance. Buildings subject to this code shall be maintained in a safe and sanitary condition in conformity with the provisions of this code.

A 105-6. Zoning. No provision of this code shall be construed to repeal, modify, or constitute an alternative to any lawful zoning regulation. Where zoning regulations and this code contain distance requirements applicable to the same structure, the greater distance shall control.

A 106. Quality of materials. All materials, assemblies, construction, and equipment shall conform to the regulations of this code, and shall conform to generally accepted standards with respect to strength, durability, corrosion resistance, fire resistance, and other qualities recognized under those standards. All test specimens and construction shall be truly representative of the material, workmanship, and details to be used in actual practice.

A 107. Abbreviations and definitions.

A 107-1. General.

a. Abbreviations, terms, phrases, words, and their derivatives used in this code shall have the meanings given in this section.

b. Words used in the singular include the plural, and the plural the singular. Words used in the masculine gender include the feminine and neuter genders.

A 107-2. Abbreviations.

Btu.	British thermal unit
C.	Centigrade
c	Combustible
cfm	Cubic feet per minute
F.	Fahrenheit
ft	Foot or feet
gpm	Gallons per minute
in.	Inch or inches
nc	Noncombustible
np	Not permitted
psf	Pounds per square foot
psi	Pounds per square inch

A 107-3. Definitions.

Accessory structure. A building, the use of which is incidental to that of the main building, and which is located on the same premises.

Accessory use. A use, occupancy or tenancy customarily incidental to the principal use or occupancy of a building.

Addition. Extension or increase in area or height of a building.

Alley. Narrow supplementary thoroughfare for the public use of vehicles or pedestrians, affording access to abutting property.

Alteration. Any change, rearrangement, or addition to a building, other than repairs; any modification in construction or equipment.

Approved. Approved by the enforcement officer under the regulations of this code, or approved by an authority designated by law or this code.

Attic. Space between top of uppermost floor construction and underside of roof.

Basement. That space of a building that is partly below grade which has more than half of its height, measured from floor to ceiling, above the average established curb level or finished grade of the ground adjoining the building.

Bathroom. Enclosed space containing one or more bathtubs or showers, or both, and which may also contain water closets, lavatories, or fixtures serving similar purposes. See definition of "toilet room".

Building. A structure wholly or partially enclosed within exterior walls, or within exterior and party walls, and a roof, affording shelter to persons, animals, or property.

Building line. Line established by law, ordinance, or regulation, beyond which no part of a building, other than parts expressly permitted, shall extend.

Cellar. That space of a building that is partly or entirely below grade, which has more than half of its height, measured from floor to ceiling, below the average established curb level or finished grade of the ground adjoining the building.

Combustible. Material or combination of materials which will ignite and support combustion when heated at any temperature up to 1352°F. (750°C.).

Construction classification. A classification of buildings into types of construction which is based on the fire resistance of the walls, floors, roof and other structural members. (See table A 402-2.1).

Type 1, fire-resistive construction. That type of construction in which the walls, partitions, columns, floors and roof are noncombustible with sufficient fire resistance to withstand the effects of a fire and prevent its spread from story to story.

Type 2, noncombustible construction. That type of construction in which the walls, partitions, columns, floors and roof are noncombustible and have less fire resistance than required for fire-resistive construction.

Type 3, heavy timber construction. That type of construction in which the exterior walls are of masonry or other noncombustible materials having equivalent structural stability under fire conditions and a fire-resistance rating of not less than two hours; in which interior structural members including columns, beams and girders, are of heavy timber, in heavy solid or laminated masses, but with no sharp corners or projections or concealed or inaccessible spaces; in which floors and roofs are of heavy plank or laminated wood construction, or of any other material providing equivalent fire-resistance and structural properties. Noncombustible structural members may be used in lieu of heavy timber, provided the fire-resistance rating of such members is not less than $\frac{3}{4}$ hour.

Type 4, ordinary construction. That type of construction in which the exterior walls are of masonry or other noncombustible materials having equivalent structural stability under fire conditions and a fire-resistance rating of not less than two hours, the interior structural members being wholly or partly of wood of smaller dimensions than those required for heavy timber construction.

Type 5, frame construction. That type of construction in which the walls, partitions, floors and roof are wholly or partly of wood or other combustible material.

Construction, fireproof. Type 1 fire-resistive construction.

Distance separation. An open space between buildings or between a building and a line on adjoining premises to which a building may be legally built, provided to prevent the spread of fire.

Dwelling. Building containing not more than two dwelling units occupied exclusively for residential uses.

One-family dwelling. Building arranged for one dwelling unit.

Two-family dwelling. Building arranged for two dwelling units.

Dwelling unit. One or more rooms with provision for living, sanitary, and sleeping facilities arranged for the use of one family.

Enforcement officer. A person lawfully empowered to enforce the regulations of this code.

Exit. A way of departure from the interior of a building or structure, to the exterior at street or grade, including doorways, passageways, hallways, corridors, stairways, ramps, fire escapes, and all other elements necessary for egress or escape.

Family. A household constituting a single housekeeping unit occupied by one or more persons.

Fire area. The floor area of a story of a building within exterior walls, party walls, fire walls, or any combination thereof.

Fire limits. Boundary line establishing an area in which there exists, or is likely to exist, a fire hazard requiring special fire protection.

Fireproof. Fire resistive.

Fire resistance. That property of materials, construction or assembly of materials, which under fire conditions prevents or retards the passage of excessive heat, hot gases, or flames.

Fire-resistance rating. Time in hours or parts thereof that a material, construction, or assembly will withstand fire exposure, as determined in a fire test made in conformity with generally accepted standards, or as determined by extension or interpretation of information derived therefrom.

Fire resistive. The quality of materials, assemblies, constructions, or structures to resist fire and prevent its spread; fireproof.

Fire separation. A construction of specific fire resistance separating parts of a building.

Firestopping. A barrier effective against the spread of flames or hot gasses within or between concealed spaces.

Flame spread. The propagation of flame over a surface.

Flame-spread rating. The measurement of flame spread on the surface of materials or their assemblies as determined by tests conducted in conformity with a generally accepted standard.

Floor area. The floor area within surrounding walls of a building, or portion thereof.

Flue. Enclosed passage, primarily vertical, suitable for removal to the outer air of gaseous products of combustion.

Generally accepted standard. A specification, code, rule, guide or procedure in the field of construction or related thereto, recognized and accepted as authoritative.

Grade, finished. Natural surface of the ground, or surface of ground after completion of any change in contour.

Habitable space. Space occupied by one or more persons for living, sleeping, eating, or cooking. Kitchenettes shall not be deemed to be habitable space.

Height, building. Vertical distance measured from curb or grade level to the highest level of a flat or mansard roof, or to the average height of a pitched, gabled, hip or gambrel roof, excluding bulkheads, penthouses and similar constructions enclosing equipment or stairs, providing they are less than 12 feet in height and do not occupy more than 30 percent of the area of the roof upon which they are located.

Hereafter. After the effective date of the acceptance by the municipality of the applicability of the State Building Construction Code.

Interior finish. Material applied directly to walls or ceilings for acoustical correction, surface insulation, decorative treatment, or similar purposes, including but not limited to veneer, wainscoting and paneling. Surface finishes of wallpaper or other materials not more than 1/28-inch thick having no greater fire hazard than wallpaper, shall not be deemed to be interior finish.

Interior trim. Material generally not exceeding 12 inches in width, around openings or on wall or ceiling; including casings, stools, aprons, baseboards, chair rails, picture molds, cornice moldings, and moldings applied for decoration.

Kitchen. Space, 60 square feet or more in floor area, used for cooking or preparation of food.

Kitchenette. Space, less than 60 square feet in floor area, used for cooking or preparation of food.

Legal open space. Open space on the premises, such as yards or courts, or an open space permanently dedicated to public use which abuts the premises.

Load, dead. Weight of all permanent construction, including walls, framing, floors, roofs, partitions, stairways, and fixed building-service equipment.

Load, design. Total load which a structure is designed to sustain.

Load, imposed. All loads, exclusive of dead load, that a structure is to sustain.

Load, live. Load imposed solely by the occupancy.

Load, racking. Load applied in the plane of an assembly in such manner as to lengthen one diagonal and shorten the other.

Lodger. A transient, temporary, or permanent paying guest.

Lot line. Line dividing one premises from another, or from a street or other public space.

Masonry. A construction of units of such materials as clay, shale, concrete, glass, gypsum, or stone, set in mortar, including plain concrete, but excluding reinforced concrete.

Mixed occupancy. Occupancy of a building in part for residential use and in part for some other use not accessory thereto.

Municipality. A city, town or village.

Noncombustible. Material or combination of materials which will not ignite and support combustion when heated at any temperature up to 1382°F. (750°C.), during an exposure of five minutes.

Occupancy. Use of a building, structure, or premises.

Occupied. Used, or intended, arranged or designed to be used.

Opening protective. Assembly of materials and accessories, including frames and hardware, installed in a wall, partition, floor, ceiling or roof opening to prevent, resist or retard the passage of fire, flame, excessive heat or hot gases.

Automatic. Constructed and arranged to operate other than manually; if open, it will close when subjected to a predetermined temperature or rate of temperature rise.

Self-closing. Arranged and equipped with devices which will insure closing after having been opened.

Owner. Owner of the freehold of the premises or lesser estate therein, a mortgagee or vendee in possession, assignee of rents, receiver, executor, trustee, lessee, or other person, firm, or corporation in control of a building.

Premises. A lot, plot, or parcel of land including the buildings or structures thereon.

Property line. Line establishing the boundaries of premises.

Repair. Replacement or renewal, excluding additions, of any part of a building, structure, device, or equipment, with like or similar materials or parts, for the purpose of maintenance of such building, structure, device, or equipment.

Required. Required by this code.

Residual deflection. Deflection resulting from an applied load, remaining after removal of such load.

Roof covering. Material applied to roof surface for protection against the elements. Roof insulation shall not be deemed to be a roof covering.

Self-closing. See definition under "opening protective."

Shall. As used in this code, is mandatory.

Stairway. One or more flights of stairs and the necessary landings and platforms connected therewith to form a continuous passage from one floor to another.

Story. Portion of a building which is between one floor level and the next higher floor level or the roof. If a mezzanine floor area exceeds one third of the area of the floor immediately below, it shall be deemed to be a story. A basement shall be deemed to be a story when its ceiling is 6 or more feet above the finished grade. A cellar shall not be deemed to be a story. An attic shall not be deemed to be a story if unfinished and without human occupancy.

Street. Thoroughfare dedicated and accepted by a municipality for public use or legally existing on any map of a subdivision filed in the manner provided by law.

Street line. Line dividing a lot, plot, or parcel from a street.

Structural damage. Loosening, twisting, warping, cracking, distortion, or breaking of any piece, or of any fastening or joint, in a structural assembly, with loss of sustaining capacity of the assembly. The following shall not be deemed to constitute structural damage: small cracks in reinforced concrete, perpendicular to the reinforcing bars; deformation of sheet material when a structural assembly is under applied load, which increases as such load increases but which disappears when such load is removed.

Structural failure. Rupture; loss of sustaining capacity or stability; marked increase in strain without increase in load; deformation increasing more rapidly than the increase in imposed load.

Structure. An assembly of materials, forming a construction framed of component structural parts for occupancy or use, including buildings.

Toilet room. Enclosed space, containing one or more water closets, which may also contain one or more lavatories, urinals, and other plumbing fixtures. See definition of bathroom.

Ventilation. Supply and removal of air to and from any space by natural or mechanical means.

Ventilation, mechanical. Ventilation by power-driven devices.

Ventilation, natural. Ventilation by opening to outer air through windows, skylights, doors, louvers, or stacks with or without wind-driven devices.

Wall, fire. A wall of noncombustible construction, with qualities of fire resistance and structural stability, which completely subdivides a building into fire areas, and which resists the spread of fire.

Wall, party. A wall on an interior lot line used or adapted for joint service between two buildings or structures.

Yield strength. Stress at which a material exhibits a specified limiting permanent set.

Part 2—Space Requirements

A 201. Habitable space.

A 201-1. *General requirements.* Each habitable space shall be so located in respect to grade level, and so lighted and ventilated, as to provide healthful environment.

A 201-2. *Light.* a. Natural light shall be provided through one or more windows, skylights, transparent or translucent panels, or any combination thereof, that face directly on legal open spaces above the adjoining finished grade, or are above a roof.

b. Each habitable space shall be provided with natural light by means described in this section, in an amount equivalent to that transmitted through clear glass equal in area to 10 percent of the floor area of the habitable space.

A 201-3. *Ventilation.* Habitable space shall be provided with ventilation in accordance with either of the following:

a. Natural ventilation through openable parts of windows or other openings in exterior walls that face legal open spaces above the adjoining finished grade or above a roof, or through openable parts of skylights, providing total clear ventilation area equal to not less than five percent of the total floor area of each habitable space; or

b. Mechanical ventilation providing at least two air changes per hour either of outdoor air, or a mixture of outdoor and recirculated air, in such proportion that a minimum of one air change per hour shall be outdoor air.

A 201-4. *Location in respect to grade level.* Floor level of habitable space shall be not more than four feet below the average adjoining finished grade. No habitable space shall be located in cellars. Play or recreation rooms may be located below grade.

A 202. Kitchens and kitchenettes.

A 202-1. *General requirements.* Kitchens and kitchenettes shall have adequate light and ventilation for the maintenance of sanitary conditions, the safe and sanitary preparation and service of food, the safe use and proper operation of appliances and equipment therein, and for removal of accumulated heat, moisture, and odors.

A 202-2. *Light.* a. Kitchens shall be provided with natural light as set forth in section A 201-2.

b. Kitchenettes shall be provided with natural or artificial light or both, of sufficient intensity and so distributed as to permit the safe use of the space, appliances, and equipment therein.

A 202-3. *Ventilation.* a. Kitchens shall be ventilated as set forth in section A 201-3a, or by mechanical or other means which shall exhaust not less than 100 cubic feet of air per minute and replace such exhausted air by an equal amount of outdoor air or its equivalent. When performance of ventilating equipment is affected by atmospheric conditions and the room air temperature, the equipment shall deliver a minimum of 100 cubic feet of air per minute at least 90 percent of the time.

b. Kitchenettes shall be ventilated by openable areas of not less than three square feet facing legal open spaces, or by mechanical or other means as set forth in paragraph a of this section.

A 203. Bathrooms and toilet rooms.

A 203-1. General requirements. Bathrooms and toilet rooms shall have provisions for privacy. Lighting shall be adequate for maintenance of sanitary conditions, and ventilation shall be sufficient to remove odors and excessive vapor.

A 203-2. Light. Light shall be either natural or artificial or both, so distributed and of sufficient intensity to permit the maintenance of sanitary conditions of the room and of the plumbing fixtures.

A 203-3. Ventilation. Ventilation shall be provided either by openable areas, the total of which shall be not less than $1\frac{1}{2}$ square feet, facing legal open spaces, or by other means, such as mechanical ventilation or ducts with gravity circulation, exhausting at least 20 cubic feet of air per minute, and replacing the same by an equal amount of outdoor air or its equivalent.

A 204. Attics, crawl spaces, flat roofs. Ventilation shall be provided in unheated attics, spaces below flat roofs, and crawl spaces. Location and net areas of ventilation openings shall be such as to minimize deterioration of the structural members from condensation or other causes, in conformity with generally accepted standards.

A 205. Stairs.

A 205-1. General requirements. a. Stairs may serve in common two dwelling units.

b. Stairs, both interior and exterior, shall be arranged and constructed to provide safe ascent and descent. A fixed stair shall be provided where travel is required between two stories, each of which contains a habitable space or a recreation room, and between the first story and basement or cellar. Disappearing or folding stairs may be used between two stories above grade where only one of them contains a habitable space or a recreation room.

A 205-2. Treads. a. Minimum widths of treads shall be:

- 9 inches, plus nosing at least 1 inch wide; or
- 10 inches, where without nosing;

except that treads of folding or disappearing stairs intended for occasional use only shall have a minimum width of six inches.

b. Winder treads at converging ends of winders, exclusive of minimum one-inch nosings, shall be not less than four inches wide unless the winders are guarded at the converging ends by continuous handrails which prevent walking where the tread widths are less than six inches. If the winder treads are without a minimum one-inch nosing, the tread widths in these locations shall be not less than five inches and seven inches, respectively.

c. Winder tread widths at distance of 18 inches from the converging ends shall be not less than the tread widths as set forth in paragraph a of this section.

d. Treads shall be level and all other than winder treads shall be uniform in width, with no variation exceeding $\frac{1}{8}$ inch in any one run of stairs.

A 205-3. Risers. a. Maximum heights of risers shall be:

- stairs having treads with nosing, $8\frac{1}{4}$ inches;
- stairs having treads without nosing, $7\frac{3}{4}$ inches;

except that the maximum height of risers of folding or disappearing stairs, exterior stairs to basements or cellars, and of other stairs intended for occasional use only, shall be nine inches.

b. There shall be no variation exceeding $\frac{1}{8}$ inch in the height of risers in any one run of stairs.

A 205-4. *Width.* Widths of stairs connecting habitable spaces shall be not less than two feet eight inches clear between handrails or between handrails and opposite wall surface; except that stairs from a second story to a third story, and stairs to a basement and to a cellar shall not be less than two feet four inches clear between handrails or between handrail and opposite wall surface.

A 205-5. *Headroom.* The minimum clear headroom over any portion of any fixed stair tread shall be not less than six feet six inches measured vertically from the surface of the tread.

A 205-6. *Handrails and railings.* a. Stairs or steps of more than three risers shall have a handrail or railing parallel to the stair slope on at least one side. Where one or both sides of such stairs or steps are open, railings shall be provided on the open sides.

b. Window openings on stairs or landings, and well openings, shall be guarded by railings or other equivalent protection.

c. Top surfaces of handrails and railings shall be not less than 30 inches nor more than 36 inches in height above the floor or tread level. On stair runs, the height shall be measured directly above the riser face.

d. Clearance between handrail and supporting wall shall be not less than 1½ inches.

A 205-7. *Light.* Treads of stairs shall be lighted by either natural or artificial light of sufficient intensity to allow safe ascent or descent.

A 206. Exits.

A 206-1. *General requirements.* In addition to a primary exit from a dwelling, there shall be provided a secondary exit or, in lieu thereof, one or more openings for emergency use.

A 206-2. *Openings for emergency use in dwellings not more than three stories in height.* a. At least one opening or secondary exit shall be provided at each floor level containing a habitable space or recreation room.

b. Such openings shall include doors, openable parts of windows, or openable panels, located so as to provide ready access to legal open spaces.

c. Such openings shall have a minimum area of five square feet, with a minimum dimension of 16 inches, with bottom of openings no higher than three feet above finished floor in all above-grade stories, and no higher than four feet six inches where required in basement and cellar.

A 206-3. *Exits for dwellings more than three stories in height.* Every building exceeding three stories in height shall have exits from every story which shall provide safe, continuous passage to a legal open space and which shall comply with one of the following requirements:

a. One interior stairway enclosed in a fire separation as set forth in section A 402-3. All openings in such enclosures shall be provided with a self-closing opening protective as set forth in section A 402-4.

b. Two interior stairways with all doors opening upon such stairways equipped with a self-closing device.

c. One interior stairway with all doors opening upon such stairway equipped with a self-closing device, and one exterior stairway or fire escape providing exit from each dwelling unit on any story.

d. One interior stairway equipped with an automatic sprinkler system, with all doors opening upon such stairway equipped with a self-closing device.

A 206-3.1. *Width of interior exit stairs.* All interior exit stairways in dwellings more than three stories in height shall be at least three feet wide, and in all other respects shall comply with section A 205.

A 206-4. Exits for buildings with mixed occupancy. Exits for buildings containing mixed occupancy shall conform with the provisions set forth in section A 206-3.

Part 3—Structural Requirements

A 301. General requirements. a. Buildings and parts thereof shall be capable of sustaining safely their own weight and the loads to which they may be subject.

b. Buildings shall be constructed and integrated so that loads are transmitted to the soil without undue differential settlement, unsafe deformation or movement of the building or of any structural part.

c. Wherever structural material or assemblies are subject to deterioration and might become structurally unsound if unprotected, protection in conformity with generally accepted standards for the material involved shall be provided. Causes of such deterioration include, among others, action of freezing and thawing, dampness, corrosion, wetting and drying, and termites and other destructive insects.

d. Buildings built in soil which is water bearing at any season of the year shall be constructed so that ground and surface water will not penetrate into habitable spaces, basements and cellars.

A 302. Soil-bearing value.

A 302-1. General requirements. The bearing value of the soil shall be determined in order that foundations may be proportioned so as to provide a minimum of absolute and differential settlement. Soil or pile tests, presumptive bearing values of the soil, reduction factors for pile groups, and pile-driving formulas, referred to in this code, shall be in conformity with generally accepted standards.

A 302-2. Determination. a. For buildings 40 feet or less in height, the allowable bearing value of the soil upon which the building rests shall be the presumptive bearing value or shall be determined by field loading tests made in conformity with generally accepted standards.

b. For buildings more than 40 feet in height, where the footing load on the soil exceeds 1000 psf, there shall be a minimum of one test pit or boring for every 2,500 square feet or part thereof of grade-floor building area, carried sufficiently into acceptable bearing material to establish its character and thickness. At least one boring shall be carried to a minimum depth below grade equal to the height of building, or to that minimum depth which shows 25 continuous feet of fine sand or better bearing material than fine sand, or five feet of bed rock, below the deepest proposed footing. A record of all borings made by core drill or spoon showing the foot-by-foot character of the soil, the ground water level, and the number of blows required for each foot of penetration of the spoon, shall be kept and certified by the architect or engineer in charge. The subsurface exploration apparatus including the size of spoon, weight and the drop shall be in conformity with generally accepted standards. Wash borings shall be deemed unacceptable. Boring samples taken at each significant change of soil strata and at five-foot intervals thereafter shall be retained and made available to the enforcement officer. When in his opinion additional subsurface information is required because of the variable geology of the site, additional test pits or borings shall be made.

c. For buildings more than 40 feet in height, when the building load is transferred to the soil by spread footings, the allowable bearing values of the successive layers of soil determined by test pits or borings shall be the presumptive bearing values and, if required by the enforcement officer, shall

be substantiated by field loading soil tests made on undisturbed, natural soil at the level of the proposed foundation with fill, if any, removed.

d. For buildings more than 40 feet in height, when the building load is transferred to the soil through the medium of friction or bearing piles, the capacity of a pile group shall be the number of piles multiplied by the capacity of one pile and by a reduction factor for friction piles. The capacity of a pile shall be determined by either of the following methods or by an approved combination of them with a limit determined by the strength of the pile as a structural member: a field loading pile test, with a minimum of two test piles; or a generally accepted pile-driving formula.

A 302-3. *Performance criteria for field loading soil test.* Under field loading soil test, the total settlement caused by the proposed load on the soil, measured after a period during which no settlement has occurred for 24 hours, shall not exceed $\frac{3}{4}$ inch. The additional settlement caused by a 50 percent increase in the proposed load, measured after a period during which no settlement has occurred for 24 hours, shall not exceed 60 percent of the total settlement as previously measured under the proposed load.

A 302-4. *Performance criteria for pile test.* a. The test load shall be twice the proposed pile load, applied in increments of one quarter of the proposed pile load, with readings of settlements taken to the nearest $\frac{1}{32}$ inch and plotted against load. The test load may be increased to more than twice the proposed pile load value until the gross settlement is approximately one inch. At each step the load shall remain unchanged until there is no settlement in a two-hour period, and the test load shall remain in place until there is no settlement in 48 hours.

b. The total test load shall then be removed in decrements not exceeding one-quarter of the total test load at intervals of not less than one hour, with rebound read after each removal of load and plotted against load and with the final rebound recorded 24 hours after removal of the last decrement. The allowable pile load shall be the lesser of one half of that load which caused:

A gross settlement of one inch, or

A net settlement (gross settlement minus total rebound) equal to 0.01 inch per ton times total test load in tons,

with a limit determined by the strength of the pile as a structural member.

A 303. Allowable stresses of materials.

A 303-1. *General requirements.* Safe working stresses shall be assigned to materials in accordance with their classification either as controlled materials or ordinary materials, and these stresses shall not be exceeded unless specifically permitted in section A 304-10.

A 303-2. *Controlled materials.* The safe working stresses of materials which have been identified and certified for quality and strength by a recognized authoritative inspection service, grading organization or testing laboratory, or are identified by manufacturer, producer, and mill test as meeting generally accepted standards, shall conform to the specification and stresses for such materials in such standards. When a material is formed and cast in the field, tests prior to the construction and during the construction shall be made, and the composition and strength of the material shall be certified by any of the above appropriate agencies and by the architect or engineer responsible for the design.

A 303-3. *Ordinary materials.* Materials which do not conform to the requirements for controlled materials shall be considered ordinary materials,

and their quality and safe working stresses shall conform to the specifications and stresses for ordinary materials in generally accepted standards. When quality and safe working stresses are not so specified, they shall be determined by test in conformity with generally accepted standards. When a material is formed and cast in the field, tests during the construction shall be made and its composition and strength certified by any of the appropriate agencies designated under section A 303-2, and by the architect or engineer responsible for the design.

A 304. Design loads.

A 304-1. *General requirements.* A building and all parts thereof shall be of sufficient strength to support the design loads and to resist the deformations caused by such loads to which they may be subjected, without exceeding the allowable stresses as described in section A 305-1. Such loads shall include the dead load and the following imposed loads where applicable: live, snow, soil pressure including surcharge, hydrostatic head, and impact loads.

A 304.2. Live loads.

A 304-2.1. *General.* a. Loads set forth in table A 304-2.2 do not include unusual concentrations, such as, but not limited to, storage units, floor-to-ceiling bookracks, and elevator machine loads. Where such loads occur, suitable provisions shall be made for their support.

b. Where such unusual concentrations do not occur, structural members, and flooring spanning between the supporting structural members, shall be designated to support the uniformly distributed loads or the concentrated loads set forth in table A 304-2.2, whichever produce the greater stress.

c. Uniformly distributed live loads on beams or girders, when such structural members support 150 square feet or more of roof area or floor area per floor, may be reduced as follows:

When the dead load is not more than 25 psf, the reduction shall be not more than 20 percent:

When the dead load exceeds 25 psf and the live load does not exceed 100 psf, the reduction shall be not more than the least of the following three criteria:

60 percent,

0.08 percent times square feet of area supported,

100 percent times (dead load psf plus live load psf) divided by (4.33 times live load psf).

d. For columns, girders supporting columns, bearing walls, and foundation walls, supporting 150 square feet or more of roof area or floor area per floor, the uniformly distributed live loads on these members shall be not less than the following percentages of the total live loads on the following levels:

80 percent on the roof;

80 percent on the floor immediately below the roof;

80 percent on the floor next below the roof;

75 percent on the third floor below the roof;

70 percent on the fourth floor below the roof.

A 304-2.2. *Uniformly distributed and concentrated live loads.* Uniformly distributed and concentrated live loads shall be the greatest loads produced by the intended use and occupancy, but in no case less than the minimum live load in conformity with the following table:

TABLE A 304-2.2—UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS

Location	Uniformly distributed loads, psi	Concentrated loads in pounds ¹
First floor of each dwelling unit.....	40	250
Other floors	30	250
Stair treads	75 ²	250
Attics:		
Accessible by stair or ladder in areas where the ceiling height is:		
4 feet 6 inches or more.....	30	250
less than 4 feet 6 inches.....	20	150
Accessible by scuttle or means other than a stair, and of such height that household goods may be stored therein.....	20	150
Inaccessible (load for emergency access)...	10	
Roofs used as promenades.....	30	250
Other roofs	(³)	200
Garages for passenger cars	75	2,000 ⁴

¹ Applied at any location on an area 1 inch in diameter except for garages where load is applied at any location on an area 12 inches square.

² Stringers of stairs need be designed only for uniform load.

³ For minimum imposed load, see section A 304-10c.

⁴ Or actual load increased 50 per cent for impact, whichever is larger.

A 304-3. *Snow loads.* Minimum snow loads shall be in accordance with table A 304-3 and the snow map on page 25, and shall be applied normal to the roof surface.

TABLE A 304-3.—SNOW LOADS¹
In pounds per square foot

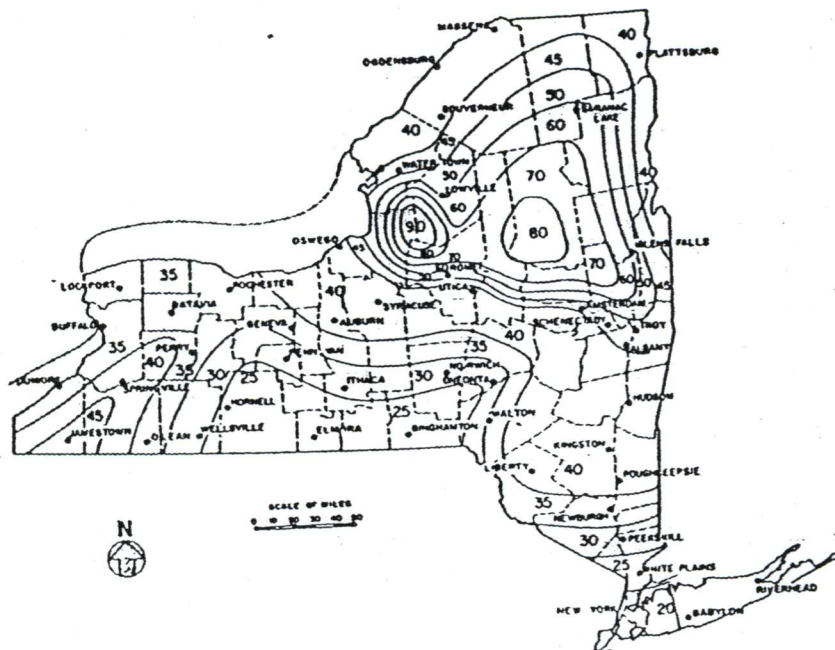
Zone numbers on snow map	Roof slope from horizontal ²					
	0°	20°	30°	40°	50°	60° or more
20	20	18	11	6	2	0
25	25	22	14	7	3	0
30	30	27	17	9	3	0
35	35	31	20	10	4	0
40	40	35	23	12	4	0
45	45	40	25	13	5	0
50	50	44	28	15	5	0
60	60	53	34	18	6	0
70 ³						
80 ³						
90 ³						

¹ For minimum imposed loads see section A 304-10c.

² For slopes between those tabulated, compute loads by straight-line interpolation.

³ For snow zones 70, 80, and 90 on snow map, use same tabular values as for zone 60.

SNOW MAP OF NEW YORK STATE



Numbers Indicate Zones Within Lines

A 304-4. *Wind loads.* Minimum wind loads shall be in accordance with tables A 304-4a and A 304-4b, and shall be applied normal to the surface.

TABLE A 304-4a.—WIND LOADS: WALLS, EAVES,
AND CORNICES¹

In pounds per square foot

At height above grade in feet	Walls	Eaves and cornices ²
26 to 40.....	18	36
16 to 25.....	15	30
0 to 15.....	12	24

¹ Exterior walls shall be capable of withstanding wind load on both the interior and exterior surfaces, acting non-simultaneously.

² Load acting upward.

TABLE A 304-4b.—WIND LOADS: ROOFS
In pounds per square foot

Mean elevation of roof above grade level in feet	Direction of load ¹	Slope from horizontal ²			
		0° to 20°	20° to 30°	30° to 60°	Over 60°
21 to 40	Downward	5	5	5 to 14	14
	Upward	17	17 to 14	14	14
0 to 20	Downward	5	5	5 to 11	11
	Upward	14	14 to 11	11	11

¹ Downward and upward loads act non-simultaneously.

² For slopes between 20° and 30° with wind acting upward, and between 30° and 60° with wind acting downward, compute loads by straight-line interpolation.

A 304-5. *Overturning force and moment due to wind.* a. The overturning force shall be the wind load. The wind load shall be the load set forth in table A 304-4a, and shall be applied only to the windward vertical surface above the horizontal plane under consideration, and to the rise of the roof. The resisting force shall be the dead load of the structure above the horizontal plane under consideration, plus the strength of material and fastenings establishing continuity with the structure below.

b. The moments of stability and overturning shall be computed about the leeward edge of the horizontal plane under consideration.

c. The moment of stability of the structure above the horizontal plane under consideration shall be not less than $1\frac{1}{2}$ times the overturning moment due to wind.

A 304-6. *Sliding force due to wind.* The sliding force due to wind load, equal to the overturning force, determined in conformity with section A 304-5, shall be resisted by the dead load of the structure above the horizontal plane under consideration, by anchors, and where applicable, by soil friction, providing a total resisting force equal to not less than $1\frac{1}{2}$ times the sliding force. Anchors used to resist overturning may also provide resistance to sliding.

A 304-7. *Uplift force.* Uplift force due to wind or hydrostatic head shall be resisted by dead load, acting directly or through anchors or fastenings, equal to not less than $1\frac{1}{4}$ times the uplift force.

A 304-8. *Soil pressures and hydrostatic head loads.*

A 304-8.1. *General.* Retaining walls and parts of the building below ground shall be designed to withstand the following loads, if applicable, and such loads shall be in addition to other imposed loads: lateral load, from adjacent soil; lateral load, from hydrostatic head; lateral load, from surcharge or fixed or moving loads; uplift from hydrostatic head.

A 304-8.2. *Free-standing retaining walls.* a. The moments of stability and overturning shall be computed about the bottom base edge on the low earth side. The moment of stability shall be not less than $1\frac{1}{2}$ times the overturning moment.

b. The resisting force due to soil friction shall be not less than $1\frac{1}{2}$ times the sliding force.

A 304-9. Horizontal impact loads. a. Nonbearing partitions enclosing dwelling units shall be designed to resist without displacement at top or bottom a minimum linear load of 10 pounds per foot, applied at mid-height.

b. Parapet walls and railings, including handrailings both interior and exterior, shall be designed to resist a lateral impact at the top equivalent to a minimum linear load of 50 pounds per foot.

A 304-10. Combined loads. a. The stress due to wind may be ignored if it is less than one third of the stress due to dead load plus imposed load excluding wind load.

b. If the stress due to wind exceeds one third of the stress due to dead load plus imposed load excluding wind load, the allowable stress of the material may be increased by one third.

c. On roofs not used as promenades, the minimum imposed load shall be 20 psf perpendicular to the roof surface, where snow plus wind loads total less than 20 psf.

d. On roofs and eaves, snow or live load, and the wind load, shall be considered as acting simultaneously in such combination as imposes the greater stress.

A 304-11. Elevator machine loads. The loads on, and the safe working stresses and permissible deflections of, the supports of elevator machines shall be in conformity with generally accepted standards.

A 304-12. Loads imposed during construction. All flooring, structural members, walls, bracing, scaffolding, sidewalk sheds or bridges, hoists and temporary supports of any kind incidental to the erection, alteration, or repair of any building shall be of such strength as to suffer no structural damage when subject to the temporary loads and wind imposed during construction.

A 305. Analysis and test of structural assemblies.

A 305-1. General. The capacity of an assembly to sustain dead and imposed loads without exceeding the allowable stresses shall be determined by any one of the following procedures, or by an approved combination of them:

a. Design analysis in conformity with generally accepted engineering practice to establish that stresses in component structural material will not exceed safe working stresses defined in generally accepted standards, or in the absence of such standards, exceed safe working stresses interpreted and established from test results with due consideration given to the reliability, durability, and uniformity of the material and its behavior under stress. In no case shall the assigned safe working stress exceed two-thirds of the yield strength nor one-half of the ultimate strength of the material unless specifically permitted in section A 304-10. When safe working stresses are assigned to a material, the structural characteristics and reasonable uniformity of the material, as utilized, shall be assured by conformity with generally accepted standards.

b. Tests made in conformity with generally accepted standards of assemblies truly representative of the construction to be used, in order to establish that such assemblies conform to the performance criteria set forth in section A 306.

c. Comparison with an approved assembly of known characteristics and behavior under load, which assembly is directly comparable, in all essential characteristics, to the assembly under consideration.

A 305-2. *Load test on completed work.* a. Safe performance under load tests or other suitable tests, if required by the enforcement officer and made in conformity with generally accepted standards, shall be evidence of the acceptability of the construction.

b. The assembly shall be capable of sustaining the dead load and two times the uniformly distributed imposed load, excluding impact, without structural failure for a minimum of 24 hours.

A 306. Performance criteria under test.

A 306-1. *General requirements.* Buildings and their structural components subject to this code shall, when submitted to the tests set forth in this section, meet the performance criteria prescribed for each test. Failure to meet the test criteria shall be evidence of noncompliance with this code.

A 306-2. *Under imposed load.* When the assembly reacts by bending under the uniformly distributed imposed load, excluding impact, the deflection shall not exceed $1/360$ of the span when the inside is to be plastered. When the inside is not to be plastered, the deflection shall not exceed $1/240$ of the span. When a roof is not to be used as a promenade, and the underside is not to be plastered, the deflection shall not exceed $1/180$ of the span.

A 306-3. *Under $1\frac{1}{2}$ times imposed load.* a. Under its dead load and $1\frac{1}{2}$ times the uniformly distributed imposed load, excluding impact, the assembly shall sustain the load without structural damage. In testing floor assemblies and assemblies in compression, the load shall be applied twice.

b. For floor assemblies, the residual deflection from first application of the load shall not exceed 25 per cent of the maximum deflection under load. After the second application of the load, the total residual deflection shall be not more than 1.1 times the residual deflection resulting from the first application of the load.

A 306-4. *Under two times imposed load.* Under its dead load and two times the uniformly distributed imposed load, excluding impact, the floor, roof, and wall assembly shall sustain load without structural failure, for a minimum of 24 hours.

A 306-5. *Impact loads.* Under an impact load of 60 pounds falling four feet for floors, $1\frac{1}{2}$ feet for walls, roofs and nonbearing partitions enclosing dwelling units, on an area 10 inches in diameter, applied perpendicular to the assembly at its center, the assembly shall sustain no structural damage.

A 306-6. *Racking loads.* Where exterior walls and partitions react by racking, the racking deformation, while the assembly is sustaining the imposed load, shall not exceed $1/400$ of the height of the wall. Under $1\frac{1}{2}$ times the load there shall be no structural damage, and under two times the load there shall be no structural failure.

A 306-7. *Transmitted loads.* Fastenings and connections shall be capable of transmitting, without failure, twice the loads for which they are designed.

A 307. Exterior protection.

A 307-1. *General requirements.* Whenever structural materials or assemblies are subject to deterioration and may become structurally unsound under the proposed condition of use, adequate protection shall be provided.

A 307-2. *Exterior materials.* The exterior facing or covering of walls and roofs shall be resistant to the causes of deterioration as set forth in section A 301c, without loss of strength or attachment which may render it unfit for use. The materials of such exterior facing or covering shall be treated if necessary to give the required protection.

A 307-3. Flashing. Whenever water can penetrate the exterior or cause damage to the interior of the assembly or structure, flashing or other barrier shall be provided to prevent its entrance or to redirect it outward.

A 307-4. Waterproofing. a. Foundation walls of cellars and basements, and floors in contact with the soil, shall be constructed or treated so as to prevent the penetration of ground and surface water.

b. Metallic structural elements in exterior walls not inherently corrosion resistant shall be protected against the effects of rain and moisture.

A 307-5. Grade protection. Materials and assemblies subject to deterioration when in continued contact with surface water or melting snow, shall be treated so as to withstand such deterioration, or be placed so that they will not be in contact with such elements.

A 308. Protection from destructive insects.

A 308-1. General requirements. Where local conditions require protection against termites and other destructive insects, the construction, soil treatment, and protection of openings shall prevent their access to vulnerable parts of the structure, in conformity with generally accepted standards.

A 309. Materials requirements.

A 309-1. General requirements. All structural units of natural or manufactured materials shall comply with applicable specifications of authoritative agencies, or shall be subjected to test in conformity with generally accepted standards in order to determine their characteristics.

A 310. Safety during construction.

A 310-1. General requirements. a. Construction, within the scope of this code, shall be performed in such manner that the workmen and public shall be protected from injury, and adjoining property shall be protected from damage, by the use of scaffolding, underpinning, or other approved methods.

b. Access to the use of all utilities and to all public facilities, including among others, fire hydrants, fire-alarm boxes, police call boxes, street lights, and manholes, shall be kept unobstructed during construction.

Part 4—Fire-Safety Requirements

A 401. Prevention of exterior fire spread.

A 401-1. General requirements. In order to retard the spread of fire, dwellings and accessory structures shall be located and constructed so that the distance between buildings and the fire resistance of exterior walls and of roof coverings are commensurate with the fire hazard involved.

A 401-2. Determination of fire hazard.

A 401-2.1. Within fire limits. When fire limits are established by municipalities, such fire limits shall, for the purposes of this code, be designated as follows:

Fire limits A comprising the areas containing highly congested business, commercial and, or industrial occupancies, wherein the fire hazard is severe, and,

or

Fire limits B comprising the areas containing residential, business and, or commercial occupancies, or in which such uses are developing, wherein the fire hazard is moderate.

A 401-2.2. Outside the fire limits. All those areas not included in fire limits A or B are designated herein as outside the fire limits.

A 401-2.3. Municipalities having fire limits. In municipalities which designate fire limits, dwellings and accessory structures within such fire limits shall be constructed in accordance with the requirements set forth in section A 401 applicable to buildings within such fire limits. In such municipalities, dwellings and accessory structures outside such fire limits shall be constructed in accordance with the requirements set forth in section A 401 applicable to buildings outside the fire limits.

A 401-2.4. Municipalities having no fire limits. Dwellings and accessory structures located in municipalities which do not designate any area or areas as a fire limit shall be constructed in accordance with the requirements set forth in section A 401 applicable to buildings outside the fire limits.

A 401-3. Distance separations.

A 401-3.1. How measured. Distance separation shall be the clear distance measured between the exterior walls of two buildings on the same or adjacent premises, or the distance from a proposed building to a line on adjacent premises to which a building may legally be built.

A 401-3.2. When required. a. Distance separations set forth in table A 401-3.2 shall be required.

b. Distance separations shall not be required when either the proposed or existing building is one story in height and has an area of not more than 100 square feet.

c. Exterior walls or portions thereof may encroach upon the distance separation required by a type of construction, provided those portions of such walls which encroach are built of the higher type of construction imposed by the lesser distance separation.

d. Exterior walls or portions thereof located beyond the required distance separation shall be exempt from the requirements imposed by distance separations.

e. When a building does not exist on the adjacent premises, the distance from the proposed building to the common lot line, when required, shall be half of the required distance separation, but not less than three feet.

f. When the height or construction of the exterior walls of the proposed and existing buildings is not the same, the applicable distance separation shall be that set forth for the higher building or for the building having exterior walls with the lower fire-resistance rating, whichever is greater.

TABLE A 401-3.2—MINIMUM DISTANCE SEPARATIONS
In feet

Distance separations set forth below shall be increased 25 percent for buildings 1001 to 1500 square feet in area; 50 percent for buildings 1501 to 2000 square feet in area; 75 percent for buildings 2,001 to 2,500 square feet in area; 100 percent for buildings more than 2,500 square feet in area.

Fire limits	Height in stories	Noncombustible walls with fire-resistance ratings of—		Combustible walls with noncombustible exterior facings giving protection of—		Combustible walls with combustible exterior facings
		At least $\frac{3}{4}$ hour	Less than $\frac{3}{4}$ hour	At least $\frac{3}{4}$ hour	Less than $\frac{3}{4}$ hour	
Within fire limits A	1	Not required	10 ¹	np	np	np
	2	Not required	np	np	np	np
	3	Not required	np	np	np	np
	4 or more	Not required	np	np	np	np
Within fire limits B	1	Not required	5 ¹	5 ¹	np	np
	2	Not required	8	8	np	np
	3	Not required	np	np	np	np
	4 or more	Not required	np	np	np	np
Outside the fire limits	1	Not required	3 ¹	Not required	5 ¹	8 ¹
	2	Not required	5	Not required	8	10
	3	Not required	8	Not required	10	12
	4 or more	Not required	np	np	np	np

¹ The minimum distance separation between adjacent one-story private garages of this type of construction not exceeding 750 square feet in area may be 3 feet.

A 401-3.3. *Construction limitations within fire limits.* a. Types of construction shall conform to the requirements set forth in table A 401-3.2.

b. Open porches, verandas, and balconies or enclosed porches with at least 60 percent of glass area on three sides, may be constructed of combustible materials provided they do not extend outward more than 10 feet from the building, or upward more than four feet above the ceiling of the second story, and not less than three feet distant at any point from a lot line or from similar appurtenances on another building; if they exceed said limitations, they shall be constructed of noncombustible materials.

A 401-3.4. *Construction limitations outside the fire limits.* a. Types of construction shall conform to the requirements set forth in table A 401-3.2.

b. Porches, verandas, and balconies of combustible construction shall be not less than three feet distant at any point from a lot line or from similar appurtenances on another building.

A 401-4. *Openings in exterior walls.* Openings in exterior walls within a distance separation of less than three feet or within 1-1/2 feet of a lot line, shall be equipped with opening protectives having minimum fire-resistance rating of three-quarter hour.

A 401-5. *Eaves, cornices, and trim.* a. Eaves and main exterior cornices may project beyond the building face not more than one-third of the re-

quired distance separation, but this regulation shall not be deemed to authorize any projection beyond the lot line.

b. Building trim may project beyond the building face not more than one-sixth of the required distance separation, but this regulation shall not be deemed to authorize any projection beyond the lot line.

c. Eaves, cornices and exterior trim shall be of noncombustible materials when the distance between such eaves, cornices or trim of adjoining buildings is less than three feet.

A 401-6. *Roof coverings.* Roof coverings shall be capable of resisting fire commensurate with the severity of exposure and shall be installed in conformity with generally accepted standards.

A 401-6.1. *Classification.* Roof coverings shall be classified on the basis of their resistance to exterior fire exposure as determined by tests made in conformity with generally accepted standards, as follows:

Class 1, 2, or 3 roof coverings are those which are capable of resisting severe, moderate, or light fire exposure, respectively, and which do not give off flying brands.

Class 4 roof coverings are those which are moderately effective in resisting light fire exposure, afford a slight degree of heat insulation to the roof deck, and are likely to give off flying brands.

A 401-6.2. *Limitation of use.* a. Within the fire limits, roof coverings shall be class 1, 2, or 3; except that where the distance separation between buildings is more than five feet and the horizontal projected area of the roof does not exceed 500 square feet, class 4 roof coverings may be used.

b. Outside the fire limits, roof coverings shall be class 1, 2, or 3; except that where the distance separation between buildings is more than 10 feet, class 4 roof coverings or wood shingles may be used.

A 401-7. *Party walls.* a. When dwellings are joined at a common lot line, each dwellings shall be separated by party walls in conformity with the requirements set forth in this section.

b. Party walls shall form a continuous fire and smoke barrier between adjoining buildings from foundation to or through the roof, and in the event of removal or collapse of construction on one side shall not endanger the support of construction on the opposite side and shall be capable of serving as exterior walls.

c. Party walls shall be constructed of noncombustible materials and shall extend not less than six inches above roofs of combustible construction. When a roof is of noncombustible construction above the wall and for a distance of at least 18 inches on each side of the wall, a party wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

d. Party walls shall be made smoketight at their junction with exterior walls and the exterior wall shall be protected with noncombustible construction for a distance of at least 18 inches on each side of the party wall. In lieu of such protection at the end of party walls in type 5 construction, the party wall shall project through the exterior wall at least six inches.

e. When combustible members, such as joists and beams, are framed into party walls, such combustible members shall not extend through the wall but shall have at least four inches of solid noncombustible material below and at the sides and ends of such members.

f. The fire-resistance rating of party walls shall be the same as required for fire walls, as set forth in table A 402-2.3.

g. Concealed spaces in cornices and eaves shall be firestopped at the ends of party walls.

h. Openings shall not be permitted in party walls.

A 402. Prevention of interior fire spread.

A 402-1. *General requirements.* Dwellings shall be constructed, arranged and separated into fire areas so as to confine and restrict the spread of fire.

A 402-2. Division by fire walls.

A 402-2.1. *Maximum fire areas.* The maximum fire area in a dwelling, within exterior walls, party walls, fire walls, or any combination thereof, shall not exceed the following:

TABLE A 402-2.1.—MAXIMUM PERMITTED FIRE AREAS
Based on fire-resistance ratings of structural elements

Construction classification ^a	Floor	Other structural elements except exterior and fire walls	Maximum area in square feet
Type 1	2 hr	¾ hr or more	Unlimited
Type 2a	¾ hr	¾ hr	8000
Type 2b	nc	nc	5000
Type 3	¾ hr	¾ hr	5000
Type 4a	¾ hr	¾ hr	5000
Type 4b	c	c	3000
Type 5a	¾ hr	¾ hr	3000
Type 5b	c	c	2500

^a Types 2a, 4a and 5a are those in which all structural elements are hereby required to be protected with fire-resistive materials and to have the ratings above designated. Types 2b, 4b and 5b are those in which the structural elements generally are not required to be protected nor to have any specific fire-resistance rating.

A 402-2.2. *Construction.* a. Fire walls shall form a continuous fire and smoke barrier between fire areas, and shall be stable under fire conditions.

b. Fire walls shall be constructed of noncombustible materials and shall extend not less than six inches above roofs of combustible construction. When a roof is of noncombustible construction above the wall and for a distance of at least 18 inches on each side of the wall, a fire wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

A 402-2.3. *Required fire resistance.* a. Fire walls in dwellings of type 1 construction shall have a minimum fire-resistance rating of two hours.

b. Fire walls in all dwellings other than type 1 construction shall have the following minimum fire-resistance ratings:

TABLE A 402-2.3.—FIRE-RESISTANCE RATINGS
OF FIRE WALLS
In hours

Height of dwelling	Base-ment or cellar	First story	Inter-mediate stories	story
One story without basement or cellar	—	1		
One story and basement or cellar	2	2		
Two stories without basement or cellar	—	2		2
Two stories and basement or cellar	3	2		2
Three or more stories without basement or cellar	—	3	2	2
Three or more stories and basement or cellar	3	2	2	2

A 402-3. *Division by fire separations.*

A 402-3.1. *General requirements.* a. Fire separations shall be provided between dwelling units and occupancies other than residential to prevent the spread of fire.

b. Stairways and passageways serving in common two dwelling units, as an exit, shall be enclosed by fire separations. Stairways and passageways leading to an exit and passing through or adjoining another dwelling unit or an occupancy other than residential shall be separated therefrom by a fire separation.

A 402-3.2. *Construction.* a. Fire separations and their supporting construction shall form a continuous fire and smoke barrier.

b. Fire separations between dwelling units and occupancies other than residential shall be continuous and any openings therein shall be protected with self-closing opening protectives.

A 402-3.3. *Required fire resistance.* Fire separations shall have a fire-resistance rating of at least three-quarter hour.

A 402-4. *Openings in fire walls and fire separations.* Openings in fire walls and fire separations shall be protected by opening protectives having fire-resistance ratings as set forth in table A 402-4.

TABLE A 402-4.—OPENING PROTECTIVES FOR
INTERIOR WALL OPENINGS

Fire-resistance rating of wall or separation in which opening occurs, in hours	Fire-resistance rating of opening protective, in hours
2 or more	1 1/2
1 or 3/4	3/4

A 403. *Prevention of fire spread within a dwelling.*

A 403-1. *General requirements.* Concealed spaces within wall, partition, floor, stair, attic, or cornice construction, and around chimney, pipe and duct openings in such construction, shall be firestopped to prevent the passage of flame, smoke, fumes, and hot gases.

A 403-2. Location of firestopping. a. Concealed vertical spaces in walls and partitions shall be firestopped at each floor level and at the ceiling of the uppermost story so that such spaces will not be continuous for more than one story, or communicate with concealed horizontal spaces in the floor or roof construction.

b. When combustible materials form a part of the concealed space between surface finish and the base to which they are applied, the concealed space shall be filled with noncombustible material, or be firestopped so that no dimension of such concealed space exceeds eight feet vertically or 20 feet horizontally.

c. Space between floor joists with ceilings attached directly to the joists shall be firestopped for the full depth of the joists at all points of support, under supported walls and partitions having a required fire-resistance rating, and under all partitions separating dwelling units.

d. Concealed space in stairs shall be firestopped so as not to communicate at the top and bottom of the stairs with concealed space in the floor construction.

e. Cornices and eaves shall be firestopped at the ends of fire walls, and at intervals of not more than 20 feet.

f. In buildings of type 3, 4, and 5 construction, the space in attics or between combustible floor or roof construction and a suspended ceiling, shall be firestopped so that no area of such concealed space shall be greater than 3,000 square feet.

A 403-3. Material for firestopping. Wood blocking, wood construction, or noncombustible material which can be firmly fixed in position to prevent the passage of flames and hot gases for a period of time equal to or greater than that provided by wood of two-inch nominal thickness, is acceptable for firestopping, except that noncombustible firestopping materials shall be used in noncombustible construction.

A 403-4. Attic fire shutters. Ventilating shutters in interior walls and ceilings through which air is discharged into or supplied from attic spaces, shall close automatically in case of fire in order to prevent the spread of fire to the attic.

A 404. Interior finishes.

A 404-1. General requirements. Interior finish materials, in burning, shall not give off gases which are harmful or toxic in small concentrations.

A 404-2. Classification of interior finish materials. Interior wall and ceiling finish materials shall be classified in accordance with their surface flame-spread ratings determined by tests conducted in conformity with generally accepted standards, and as follows:

Class	Surface flame-spread rating
A	0 to 30
B	31 to 75
C	76 to 225
D	226 to 500

A 404-3. Limitation of Use. a. Interior wall and ceiling finish materials in required enclosed exits shall be class A or B.

b. Interior wall and ceiling finish materials in any location other than in an enclosed exit shall be class A, B, or C, except that in dwellings not exceeding two stories in height, class D may be used.

A 405. Fireplaces.

A 405-1. General requirements. Fireplaces and similar construction intended for burning fuel in open fires shall be designed and constructed of noncombustible material, shall be stable and structurally safe, shall be

connected to chimneys in conformity with the requirements set forth in section A 504-3, and shall be insulated so that, when in use, nearby or adjacent combustible material and structural members shall not be heated to temperatures in excess of 175°F.

A 405-2. *Hearths and linings.* Hearths and linings or other parts of fireplaces exposed directly to flame shall be of materials that will not melt, disintegrate, spall, or shatter at temperatures up to 2000°F.

A 405-3. *Mantels and trim.* Wood mantels and trim on fireplaces shall be protected and attached so that they cannot be heated to temperatures in excess of 175°F. or ignited by sparks or embers from the fire.

406. Fire protection from heat-producing equipment.

A 406-1. *General requirements.* a. Heat-producing equipment shall be mounted on noncombustible floor construction, or on protected combustible floor construction; shall be installed with sufficient clearance from adjacent walls and other combustible material to prevent their ignition; and when the ceiling above can be heated to temperatures in excess of 175°F., it shall be protected for a distance of three feet on all sides of the heat producing equipment by noncombustible material providing 10 minutes or more of fire protection, except when such ceiling is constructed of noncombustible material and has a fire-resistance rating of at least three-quarter hour.

b. Where heat-producing equipment is installed on the first floor or above and is located in an enclosed space, such space shall have enclosure walls, floor, and ceiling with an over-all fire-resistance rating of three-quarter hour or more and a noncombustible interior finish providing 10 minutes or more of fire protection to the combustible members. Such enclosures shall not have openings to other parts of the dwelling except a door-opening equipped with a self-closing door having a fire-resistance rating of 20 minutes or more.

407. Private garages.

A 407-1. *General requirements.* a. Private garages shall be separated from adjoining parts of dwellings by distance, or by materials and construction, to retard the spread of fire from within the garage to the dwelling. Floors in such garages shall be of noncombustible material that will not absorb inflammable liquids.

b. Floors of garages shall be placed or arranged so that heavier-than-air inflammable vapors cannot spread to fixed sources of ignition.

c. Construction of garages and arrangement of fixed installations shall be such that toxic gases originating within garages shall not spread to the dwellings; nor shall air for heating or ventilation be circulated through garages to dwellings.

d. For purposes of this code, a carport with not more than two enclosing walls, shall not be deemed to be a garage.

A 407-2. *Separation requirements.* a. An open breezeway five feet or more in length shall be acceptable as distance separation, providing a firestop is placed between the roof and ceiling at the garage end of the breezeway. A firestop may be of two-inch nominal thickness of wood or of wood faced with noncombustible material on the garage side.

b. When the open breezeway is less than five feet in length, separation by fire-protective materials and construction shall be required. Such construction shall be smokelight and finished on the garage side to a distance of five feet from the dwelling with noncombustible material to prevent the ignition of combustible members of such protected parts for 10 minutes or more. Parts of garage walls, floors and ceilings that are in common with dwelling walls, floors or ceilings, shall have a combined fire-resistance rating of 30 minutes or more.

A 407-3. *Passageway to dwellings.* a. Passage between an attached or built-in garage and a dwelling shall be through a door-opening equipped with

a self-closing door having a fire-resistance rating of not less than 20 minutes. Such door shall not open directly into a room used for sleeping purposes.

b. The top of the sill of a door-opening between a garage and dwelling shall be at least eight inches above the level of the garage floor.

A 407-4. *Permissible equipment.* Any permanent heating or other appliance with an open flame, for use within a garage, shall be installed not less than six feet above the floor level.

Part 5—Equipment Requirements

A 501. *General requirements.* a. Plumbing, heating, electrical, mechanical, elevator and other equipment and systems shall be designed, installed, and located so that under normal conditions of use such equipment and systems will not be a potential danger to health or welfare, or a potential danger because of structural defects, or a potential source of ignition, and will not create excessive noise, or otherwise become a nuisance.

b. Equipment and systems shall be made of approved materials, shall be free from defective workmanship, and shall be designed and installed so as to be durable, without need for frequent repairs or major replacements. Equipment requiring operation, inspection, or maintenance shall be located so that easy access to it is provided.

c. Equipment and systems shall be designed and installed in conformity with generally accepted standards, and as required or otherwise provided herein.

d. New installation of equipment in existing buildings, and alterations and extensions to existing equipment and systems, shall conform with the requirements of this code.

e. Equipment and systems shall be subjected to such tests as are appropriate which will disclose defects and leaks. No equipment or part of a system shall be covered or concealed until it has been tested and approved.

f. Equipment and systems shall be capable of performing their functions satisfactorily without being forced to operate beyond the safe design capacity.

g. Equipment and systems subject to freezing shall be adequately protected against freezing.

h. Moving parts of equipment which may be a potential hazard shall be guarded to protect against accidental contact.

A 502. Plumbing.

A 502-1. *General requirements.* a. Plumbing systems shall conform with the requirements of section A 501 and shall be designed, constructed and maintained so as to guard against fouling, clogging, and depositing of solids.

b. Plumbing systems shall be installed in such manner as not to weaken structural members nor cause damage or deterioration to any part of the building through fixture usage.

c. Plumbing systems shall be maintained in a sanitary and serviceable condition.

A 502-2. *Public water supply or public sewer: when deemed available.*

a. The source of water supply for a dwelling shall be a public water supply system when such system is within 100 feet of the premises of the dwelling and a connection may be made lawfully thereto.

b. The means of sewage disposal for a dwelling shall be a public sanitary or combined sewer system when it is within 100 feet of the premises of the dwelling and a connection may be made lawfully thereto.

c. The means for storm water disposal shall be a public storm or combined sewer system when it is within 100 feet of the dwelling and a connection may be made lawfully thereto.

A 502-3. *Water supply.* a. Pure and wholesome water from an approved source shall be available at all times on the premises of every dwelling. The domestic water supply system of the dwelling shall be connected to such approved source, and shall not be subject to contamination.

b. Water supply systems shall be designed and installed so as to provide at all times a supply of water to plumbing fixtures, devices and appurtenances in sufficient volume and at pressures adequate to enable them to function satisfactorily and without undue noise under all normal conditions of use.

c. Water supply systems shall be designed and installed so that water used for purposes of cooling or heating shall not be reintroduced into the domestic water supply system nor be distributed through such equipment to plumbing fixtures.

A 502-4. *Domestic hot water systems.* Domestic hot water systems shall be provided with safety devices arranged to relieve hazardous pressures and excessive temperatures.

A 502-5. *Plumbing fixtures.* a. Plumbing fixtures shall be made of smooth nonabsorbent material and shall be free from concealed fouling surfaces.

b. Plumbing fixtures shall be installed with regard to spacing so as to be reasonably accessible for their intended use.

c. Plumbing fixtures shall be located in spaces that are accessible, lighted, and ventilated.

A 502-6. *Sewage drainage system.* a. Every plumbing fixture shall be drained to a sewage drainage system and such system shall be connected to a public sewer or to an adequate and approved system of sewage disposal.

b. Every dwelling shall have access on the premises to an adequate and approved means of sewage disposal.

c. Where a public sewer is not available, a system shall be provided to receive and dispose of sewage without health hazard or nuisance.

d. Sewage or other waste which may be deleterious to surface or subsurface waters, shall not be discharged into the ground or into a waterway unless it has first been rendered harmless through subjection to treatment in conformity with generally accepted standards.

e. Where a drainage system may be subject to backwater, suitable provisions shall be made to prevent its overflow into the building.

f. Any substance which will clog the pipes, produce explosive mixtures, destroy the pipes or their joints or interfere unduly with the sewage disposal process, shall be prevented from entering the building drainage system.

g. Each fixture directly connected to the sewage drainage system shall be equipped with a water seal trap.

h. Adequate cleanouts shall be provided and arranged so that the pipes may be readily cleaned.

i. The drainage system shall be designed so as to provide adequate circulation of air in all pipes in order that siphonage, aspiration, or pressure will not cause a loss of trap seal under ordinary conditions of use.

j. Each vent terminal shall extend to the outer air and be installed so as to minimize the possibilities of clogging, frost closure, the return of foul air to the building, or the creation of a nuisance to adjacent premises.

k. Whenever a structure is to be built higher than the vent terminal of an adjacent building and thereby adversely affects the vent system of the adjacent building or when such vent is a potential nuisance to the occupants of the higher structure, then the owner of the higher structure shall at his expense and with the consent of the owner of the adjacent building, cause such vent to be extended or altered to correct the condition.

l. Drains provided for fixtures, devices, appliances, or apparatus containing food, water, sterile goods or similar materials, shall be equipped with air breaks.

m. Drains provided for fixtures, devices, appliances or apparatus which have interior surfaces not readily accessible to permit effective cleaning, shall be indirectly connected.

A 502-7. *Storm drainage.* a. Roofs and paved areas, including yards and courts, shall be drained. Storm drainage shall be conveyed to an adequate

and approved system of storm water disposal where available. Storm water shall be discharged in such manner that water will not flow onto sidewalks.

b. Where a drainage system may be subject to backwater, suitable provision shall be made to prevent overflow into the building.

c. Leaders and gutters, if used, shall be constructed of noncombustible material, except that wood leaders and gutters may be used for buildings not more than three stories high.

A 502-8. *Minimum plumbing facilities.* a. Wherever public water supply is available to a one- or two-family dwelling, there shall be provided within each dwelling unit at least:

- One kitchen sink,
- One water closet,
- One bathtub or shower, and
- One lavatory.

b. Wherever public water supply is not available, there shall be provided on the premises means for sanitary disposal of sewage without health hazard or nuisance.

A 503. Gas piping equipment and systems.

A 503-1. *General requirements.* a. Gas piping equipment and systems, including systems for liquefied petroleum gas, shall be in conformity with the requirements of section A 501.

b. Gas piping systems shall be of approved materials resistant to the corrosive effects of gases conveyed by them. Systems shall be designed and installed so as to remain gastight, safe and operative under conditions of use. The use of other than rigid pipe shall be limited so as not to be a potential hazard.

c. Gas piping installed in cinder fill or other corrosive material shall be protected against corrosion.

d. Cleanouts shall be provided where condensate, dirt or other foreign matter may collect.

e. Gas piping and equipment shall not be located in ducts, chimneys, stairways, or exits.

f. Gas piping systems shall be designed and installed so as to provide a supply of gas sufficient to meet the maximum expected demand of the installed gas-burning appliances connected thereto.

A 503-2. *Shutoff valves.* a. The gas piping system shall be provided with a valve in an accessible location for shutting off the supply from the main source.

b. An easily accessible shutoff valve or cock shall be provided in the piping in close proximity to, and ahead of, every gas appliance or outlet for a gas hose connection.

A 503-3. *Service equipment for other than liquefied petroleum gas.* a. Gas meters shall be located in spaces that are dry, well ventilated, readily accessible, and protected against extreme heat. Gas meters shall be located as near as practicable to the point of entry of the gas service.

b. Gas services, gas meters, and gas pressure regulators shall be located so that they are protected from damage.

A 503-4. *Gas refrigerators.* a. Gas refrigerators shall be installed with clearance for ventilation.

b. Refrigerator parts serving as flues shall be resistant to the action of the products of combustion.

A 503-5. *High pressure gas.* a. Buildings supplied with gas at pressure exceeding 1 psi gage shall have all exterior wall openings below grade and within 10 feet of the gas service pipe made gastight. Where openings are provided for service pipes of any kind to enter such buildings below grade the openings shall be made gastight and the pipe shall be protected from damage by settlement or corrosion.

b. Any service connection supplying gas at a pressure in excess of 1 psi gage shall be provided with a device to reduce such pressure to not more than $\frac{1}{2}$ psi gage prior to entering the meter.

A 503-6. *Liquefied petroleum gas.* a. Gas in liquid form shall not be permitted within buildings.

b. Liquefied petroleum gas shall not be vaporized by devices utilizing open flame or open electrical coil.

c. Containers shall be designed, stored, and located so as not to be a hazard to the premises served, or to the surrounding property.

d. Gas service entrance into buildings shall be above ground, and shall be protected from damage by settlement or corrosion. Exposed exterior wall openings located below and within five feet horizontal distance of gas service entrance shall be made gastight.

e. Systems shall be provided with safety devices to relieve excessive pressures, and shall be arranged so that the discharge terminates at a safe location.

A 504. Heating.

A 504-1. *General requirements.* a. Heating systems shall conform with the requirements of section A 501.

b. Dwellings intended for occupancy between the first day of November and the first day of May of the following year shall be provided with heating equipment designed to maintain a temperature of not less than 65°F. at a distance of three feet and more from exterior walls, and at a level of five feet above the floor, in habitable spaces, kitchenettes, bathrooms and toilet rooms. The capability of the heating equipment to maintain such indoor temperature shall be based on the average of the recorded annual minimum outside temperatures for the locality.

A 504-2. *Heat-producing equipment.*

A 504-2.1. *Combustion space.* Fuel-burning heat-producing equipment shall have combustion space designed and constructed to withstand the maximum temperature attained.

A 504-2.2. *Smoke control.* Fuel-burning heat-producing equipment shall be designed and installed so that the emission or discharge into the atmosphere of smoke, dust, particles, odors or other products of combustion will not create a nuisance or be detrimental to the health, comfort, safety or property of any person.

A 504-2.3. *Fuel supply connection.* Fuel-burning equipment, except that which is fully portable, shall be permanently fastened and connected in place. Fuel supply connection to such equipment shall be made with pipe or tubing of solid metal.

A 504-2.4. *Installation and clearance.* Heat-producing equipment installed on, or adjacent to, combustible materials shall be in conformity with the requirements of section A 406-1 and the location, insulation, clearance, and the control of the equipment shall be such that the temperature on the surface of the combustible materials will not exceed 175°F.

A 504-2.5. *Air supply.* a. Direct-fired heat-producing equipment and the enclosure in which it is located shall be provided with a supply of air adequate both for complete combustion at the rated gross output of the equipment and for the ventilation of the enclosure to prevent the accumulation of heat.

b. Rooms containing fuel-burning equipment shall have such air supply provided by means of one or more openings to the exterior, or by means of fixed openings to interior spaces having openings to the exterior.

A 504-2.6. *Removal of products of combustion.* a. Equipment for burning solid or liquid fuel shall be connected to suitable chimneys or flues and shall not be connected to gasvents.

b. Gas-fired equipment shall be connected to a suitable chimney, flue or gasvent when the discharge of products of combustion into the space where the equipment is installed would be a hazard.

A 504-2.7. *Safety devices.* a. Equipment capable of developing hazardous pressures or temperatures shall be provided with means to relieve safely such pressures and temperatures.

b. Controls for the safe operation of automatically operated heat-producing equipment shall be provided to function as follows:

When failure or interruption of flame or ignition occurs, the fuel supply shall be cut off.

When a predetermined temperature or pressure is exceeded, the input of additional heat shall be prevented or reduced to a safe rate.

When the water level in a steam boiler drops below a predetermined level, the fuel supply shall be cut off.

c. Fuel-burning equipment operating with automatic ignition and liquefied petroleum gas, shall be arranged to shut off automatically the gas supply to the main burner and pilot light in the event of pilot light or main burner failure.

A 504-2.8. *Covering.* Covering for surfaces of heat-producing equipment shall be of noncombustible materials.

A 504-3. *Chimneys, flues, and gasvents.*

A 504-3.1. *General requirements.* a. Chimneys, flues, gasvents and their supports shall be designed and constructed so as to be structurally safe, durable, smoketight and capable of withstanding the action of flue gases without softening, cracking, corroding, or spalling.

b. Such facilities shall effectively convey the products of combustion to the outer air without creating a nuisance.

c. Masonry chimneys, except approved prefabricated chimneys, shall have noncombustible foundations.

d. Openings for smoke pipes or gasvent connections shall be provided with means for easy connection without restriction of flue.

e. Fuel burning equipment and fireplaces located in different tenancies shall not be connected to the same flue.

A 504-3.2. *Draft.* Chimneys, flues, and gasvents shall provide sufficient draft to develop the rated output of the connected equipment.

A 504-3.3. *Fire safety.* Chimneys, flues, and gasvents shall be located, designed and constructed so that under conditions of use, the temperature of any combustible materials adjacent thereto, insulated therefrom, or in contact therewith, does not exceed 175°F.

A 504-3.4. *Location of outlets.* Flue and gasvent outlets shall be located so as not to be lower than the level of the top of any window or other exterior opening which is within 15 feet measured horizontally from the outlet, nor shall such outlets be located less than two feet above the level of any unprotected combustible part of any building or construction when such part is within 10 feet of the outlet.

A 505. Electrical wiring and equipment.

A 505-1. *General requirements.* Electrical wiring and equipment shall conform with the requirements of section A 501, and shall be designed and installed so as not to be a potential source of ignition of combustible material or a potential source of electrical hazard.

A 506. Elevators.

A 506-1. *General requirements.* Elevators and the appurtenances necessary for operation shall conform with the requirements of section A 501, and shall be designed and installed so as to be free from physical and fire hazards.