State Building Construction Code

applicable to

General Building Construction

Printed February 1, 1978

State of New York
Hugh L. Carey, Governor

STATE BUILDING CONSTRUCTION CODE

applicable to

General Building Construction

New York (State). Laws, Statutes, etc.

STATE OF NEW YORK

HUGH L. CAREY, GOVERNOR

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FOREWORD

The State Building Construction Code and amendments thereto are promulgated by the State Building Code Council pursuant to Article 18 of the Executive Law.

The regulations in the several portions of the Code are identified by a letter prefix before the number of each section:

One- and Two-Family Dwellings	——A
Multiple Dwellings	——B
General Building Construction	——C
Plumbing	——P

The portion applicable to General Building Construction effective December 1, 1964 was amended January 1, 1971 by adding provisions for the physically handicapped, and amended and reprinted January 1, 1973. Since that time it has been further amended September 15, 1973, April 1, 1975, April 1, 1976 and April 1, 1977.

This printing, dated February 1, 1978, includes all the amendments which became effective since January 1, 1973.

The year mark which appears in the left margin above the section number, indicates the effective date of the amendment for the section.

The year mark which appears to the left of a sub-section, indicates the effective date for the sub-section.

The key for the effective dates of amendments to the Code since January 1, 1973 is as follows:

1973 effective September 15, 1973
1975 effective April 1, 1975
1976 effective April 1, 1976
1977 effective April 1, 1977

The official version of the Code for legal purposes is found in Volume 9 Executive (B) of the "Official Compilation of Codes, Rules and Regulations of the State of New York" published by the Secretary of State and designated 9 NYCRR for citation.

The numbers in parentheses refer to numbering used in Volume 9 of the "Official Compilation of Codes, Rules and Regulations of the State of New York."

The State Building Code Council is concerned with regulations for the construction of buildings and the installation

therein of equipment that is essential to building operation and maintenance, such as plumbing, heating, electrical, ventilation and fire-protection equipment. The purpose of its regulations is to encourage the standardization of construction practices, equipment and material and eliminate restrictive, obsolete and conflicting building regulations which unnecessarily increase costs, retard use of new materials or provide unwarranted preferential treatment to materials, products or methods of construction; and to establish reasonable safeguards for the safety, health and welfare of the occupants and users of buildings.

The facilities for code drafting and for technical research which have been established under the provisions of the law enable the Council to provide an up-to-date code for the benefit of the municipalities of the State. It acts as a central clearinghouse, investigating detailed data on materials, methods and equipment. It has established a procedure for acceptance of new materials and new construction methods, and makes its findings available to the municipalities. Such data are invaluable to municipalities, and especially to local building officials charged with building code administration and enforcement.

The administration and enforcement of the Code are the responsibility of the local municipality pursuant to its own administrative ordinance.

Zoning, which regulates the use of land and buildings, remains the prerogative of the municipalities.

The municipalities of the State have the option to accept or not to accept the applicability of the State Building Construction Code. Those municipalities which have already accepted the applicability of the Code obtain without further action the protection afforded by these amended regulations.

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Part 1

General Provisions

C 101 (800.1) **TITLE**

These regulations, promulgated pursuant to Article 18 of the Executive Law of the State of New York, shall be known as the State Building Construction Code applicable to general building construction. They are hereinafter referred to as this Code.

C 102 (800.2) **PURPOSE**

The purpose of this Code is to provide basic and uniform regulations in terms of performance objectives, establishing reasonable safeguards for the safety, health, and welfare of the occupants and users of buildings and their accessory structures, and making adequate performance the test of acceptability.

C 103 (800.3) **EFFECTIVE DATE**

This Code was first promulgated on February 20, 1956. Sections of this Code were amended as of December 1, 1964 and January 1, 1971. There was a general revision of this Code, resulting in numerous changes, effective January 1, 1973. Since then, sections of this Code have been amended effective September 15, 1973, April 1, 1975, April 1, 1976 and April 1, 1977.

C 104 (800.4) **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.

C 105 (801) **SCOPE**

C 105-1 (801.1) **New Building**

This Code shall apply to buildings for business, mercantile, industrial, storage, assembly, institutional,

and miscellaneous occupancies and uses, including their accessory structures and parts thereof, and to buildings containing mixed occupancies, but shall not apply to non-residential farm buildings outside of fire limits.

C 105-2 (801.2) Existing Buildings

C 105-2.1 (801.2a) General

This Code shall also apply to existing buildings, described in this section, to be occupied or used for business, mercantile, industrial, storage, assembly, institutional, and miscellaneous occupancies and uses, to their accessory structures, and to parts thereof, as if hereafter erected, but shall not apply to nonresidential farm buildings outside of fire limits.

a——A building hereafter occupied for occupancies or uses described above, which building was not so occupied when this Code became applicable to the municipality in which the building is situated.

b——A building moved into, or moved within, municipal limits subject to this Code, which is to be occupied for occupancies or uses described above.

c——A building occupied for uses described above which is altered or repaired, when the cost of such alterations or repairs within any six-month period exceeds 50 per cent of the cost of replacement of the building at the beginning of that six-month period.

d——A building whose occupancy or use is changed to one of the following: business, mercantile, industrial, storage, assembly, institutional, and miscellaneous occupancy and use; or whose fire hazard classification is changed.

C 105-2.2 (801.2b) Roof Covering

Whenever more than 25 per cent of the roof covering of a building is replaced in any six-month period, all roof covering on such building shall be made to comply with applicable regulations of this Code.

C 105-2.3 (801.2c) Addition or Alteration

Any addition or alteration made to a building shall be made in conformity with applicable regulations of this Code.

C 105-2.4 (801.2d) Existing Uses Continued

Except as otherwise herein provided, nothing in this Code shall require removal, alteration, or abandonment of, nor prevent continued occupancy or use of, an existing building.

C 105-3 (801.3) Mixed Occupancy

A building which is occupied or used by two or more occupancies or uses classified in section C 202, or in part by residential occupancies, shall be deemed to be a building of mixed occupancy, and that part of the building occupied or used for other than residential purposes is regulated by this Code.

C 105-4 (801.4) Maintenance

Buildings or parts thereof subject to this Code shall be maintained in a safe and sanitary condition in conformity with the provisions of this Code.

C 105-5 (801.5) Zoning

No provision of this Code shall be construed to repeal, modify, or constitute an alternative to any lawful zoning regulation.

C 105-6 (801.6) Prohibited Uses

Offensive, obnoxious, or hazardous occupancy shall not be permitted on the premises of a building herein classified in section C 202-1 as group C1, C2, C5 or C6 occupancy; such prohibited uses include, but are not limited to, a business, trade, industry, or purpose which is noxious or offensive by reason of the emission of odors, dust, smoke, gas, or noise, or in which flammable or explosive materials are involved except as may be incidental to the customary use of such building.

General Provisions

C 105-7 (801.7) **Fallout Shelters**

This Code shall not apply to fallout shelters intended for emergency use where such fallout shelters are constructed or installed or proposed to be constructed or installed to provide safety and security to the occupants in accordance with approved specifications, standards, or regulations.

C 105-8 (801.8) **Workmanship**

Workmanship shall conform to generally accepted good practice in the applicable trade.

C 106 (802.1) **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.

C 107 (802.2) **ACCEPTABILITY**

a——Compliance with applicable provisions of generally accepted standards, except as otherwise prescribed in this Code, shall constitute compliance with this Code.

b——Deviations from applicable provisions of generally accepted standards, when it shall have been conclusively proved that such deviations meet the performance requirements of this Code, shall constitute compliance with the Code.

C 108 (803) **ABBREVIATIONS AND DEFINITIONS**

C 108-1 (803.1) **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.

C 108-2 (803.2) Abbreviations

Btu	British thermal unit
C.	Centigrade
c	Combustible
cfm	Cubic feet per minute
F.	Fahrenheit
ft	Foot or feet
gal	Gallon or gallons
gpm	Gallons per minute
in.	Inch or inches
max	Maximum
min	Minimum
nc	Noncombustible
np	Not permitted
p	Permitted
psf	Pounds per square foot
psi	Pounds per square inch
un	Unlimited

C 108-3 (803.3) Definitions

accessory structure. A structure, the use of which is incidental to that of the main building, and which is attached thereto, or 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 in building equipment.

approved. Approved by the enforcement officer under the regulations of this Code, or approved by

an authority designated by law or this Code or acceptable in accordance with the condition set forth in section C 107.

assembly space. A room or space where more than ninety-nine persons congregate or gather for amusement, athletic, civic, dining, educational, entertainment, patriotic, political, recreational, religious, social, sports, or similar purposes. See definition of **occupied space.**

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. See definition of **structure.**

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 is not noncombustible. See definition of **noncombustible.**

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 section C 202-2 and table C 202-2.

——**type 1, fire-resistive construction.** That type of construction in which the walls, partitions, col-

umns, floors and roof are noncombustible with sufficient fire resistance to withstand the effects of a fire and prevent its spread from story to story. See section C 402-1d.

——**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. See section C 402-1d.

——**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 2 hours; the 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; the floors and roofs are of heavy plank or laminated wood construction, or of any other material providing equivalent fire-resistance and structural properties, or construction is as set forth in the generally accepted standards.

——**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 2 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.

convalescent home. A building used for the accommodation and care of persons recuperating from illness.

corridor. Passageway or hallway which provides a common way of travel to an exit or to another passageway leading to an exit. See definition of **exit.**

court, inner. An open, uncovered, unoccupied space surrounded on all sides by the exterior walls of a building or structure or by such walls and an interior lot line of the same premises.

court, inner, width. Least horizontal dimension.

court, inner, depth. Least horizontal dimension measured perpendicular to the width.

court, outer. An open, uncovered, unoccupied space which has at least one side opening on a legal open space.

court, outer, width. Least horizontal dimension measured across the open end of the court.

court, outer, depth. Least horizontal dimension measured perpendicular to the width.

curb level. The elevation of the curb established by the municipal authority. See section C 203-1g.

distance separation. An open space between buildings on the same premises or between a building and an interior lot line, provided to prevent the spread of fire.

draft curtain. A curtain or baffle, extending downward from a roof or ceiling, to stop drafts and bank up heat from a fire. See definition of **heat banking area.**

enforcement officer. A person lawfully empowered to enforce the regulations of this Code.

exit. That portion of the way of departure from the interior of a building or structure to the exterior at street, or grade level accessible to a street, consisting of:

a——corridors, stairways and lobbies enclosed in construction having a fire-resistance rating, including the door opening thereto from a habitable, public or occupied space; or

b——an interior stairway; or

c——a horizontal exit; or

d——a door to the exterior at grade; or

e——an exterior stairway, or ramp.

fallout shelter. A building, structure, or other real property, or an area or portion thereof, constructed, altered or improved to afford protection against

harmful radiation resulting from radioactive fallout, including such plumbing, heating, electrical, ventilating conditioning, filtrating and refrigeration equipment and other mechanical additions or installations, if any, as may be an integral part thereof.

fire alarm system. An approved installation of equipment for sounding a fire alarm.

fire- and smoke-detecting system. An approved installation of equipment which automatically actuates a fire alarm when the detecting element is exposed to fire, smoke or abnormal rise in temperature.

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

fire damper. An approved automatic or self-closing noncombustible barrier designed to prevent the passage of air, gases, smoke, or fire through an opening, duct or plenum chamber.

fire hazard classification. A classification of occupancy or use of a building based on the fire load or danger of explosion therein.

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

fire load. The combustible contents within a building during normal use.

fireproof. Fire resistive.

fire protection equipment. Apparatus, assemblies or systems either portable or fixed, for use to prevent, detect, control or extinguish fire.

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 retardant wood. Wood that has been treated by an approved pressure impregnation process with fire-retardant chemicals in accordance with generally accepted standards, and is legibly marked as to its performance characteristics. When used as a structural element or as furring, flame-spread rating shall be no greater than 25 with no evidence of progressive combustion, and test shall be for at least 30 minutes. When used as interior finish or trim, flame-spread rating shall be in conformity with section C 403-2, and test shall be for at least 10 minutes.

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

firestopping. A barrier effective against the spread of flames or hot gases within or between concealed spaces.

flame-resistant material. Material which is flame resistant by nature or has been made flame resistant in conformity with generally accepted standards.

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.

flammable. Capable of igniting within 5 seconds when exposed to flame, and continuing to burn.

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.

gasvent. Enclosed passage used for removal to the outer air of products of combustion from gas-fired equipment only.

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. Restaurants for employees and occupants, kitchens serving them, and kitchenettes shall not be deemed to be habitable space. See definitions of **assembly space, nonhabitable space, occupied space, public space,** and **exit.**

hallway. An enclosed passageway leading to a stairway or other required exit, which provides common access to rooms or exitways in the same story in a building. See definition of **passageway.**

hangar. A building in which aircraft are stored, serviced, or repaired.

heat banking area. Area of the upper portion of a story under the ceiling or roof, within draft curtains, or between walls or partitions or any combination thereof in which heat banks up to actuate sprinklers and, or open smoke vents. See definition of **draft curtain.**

heater room. Space containing central heat producing or heat transfer equipment.

——**high capacity.** Containing equipment having an individual or combined rated gross capacity of 1,000,000 Btu per hour or more, or capable of operating at more than 15 psi for steam or more than 30 psi or 250° F. for hot water.

——**moderate capacity.** Containing equipment having an individual or combined rated gross capacity from 250,000 to 1,000,000 Btu per hour, and operating at less than 15 psi for steam or less than 30 psi or 250° F. for hot water.

——**low capacity.** Containing equipment having a rated gross capacity of less than 250,000 Btu per hour, and operating at less than 15 psi for steam or less than 30 psi or 250° F. for hot water.

height, building. The height of a building is expressed in both feet and stories. See sections C 203-1g and C 203-1h.

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

hoistway. Vertical opening, space, or shaftway in which an elevator or dumbwaiter is installed.

horizontal exit. Protected opening through or around a fire wall, connecting two adjacent floor areas, each of which furnishes an area of refuge, and from each of which required exits lead to legal open spaces.

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 at least 25 feet wide permanently dedicated to public use which abuts the premises.

load, dead. Weight of all permanent construction, including walls, framing, floors, roof, 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.

lobby. A public lounge or waiting place adjacent to and connected with other spaces and a passageway which serves as a principal entrance or exit.

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

luminous ceiling. Light transmitting panels suspended below light sources and supported from the construction above.

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.

mezzanine. An intermediate floor between the floor and ceiling of any space that is completely open or provides adequate visibility.

mixed occupancy. Occupancy of a building in part for one use and in part for some other use not accessory to the first use.

municipality. A city, town or village.

noncombustible. Material or combination of materials which will not ignite, support combustion, or liberate flammable gas when subjected to fire when tested in accordance with generally accepted standards.

nonhabitable space. Space used as kitchenettes, pantries, bath, toilet, laundry, rest, dressing, locker, storage, utility, heater, and boiler rooms, closets, and other spaces for service and maintenance of the building, and those spaces used for access and vertical travel between stories. See definition of **habitable space.**

nursing home. A building used for the accommodation and care of persons with, or recuperating from, illness or incapacity, where nursing services are furnished.

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

occupancy classification. A classification of buildings into occupancy groups based on the kind or nature of occupancy or use. See **appendix.**

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

occupied space. Space within a building wherein persons normally assemble, work or remain for a period of time, including space for public use where not more than ninety-nine persons congregate. See definitions of **assembly space, habitable space, non-habitable space** and **public space.**

old-age home. A building used for the accommodation and care of persons of advanced age.

open parking structure. A structure for the parking of motor vehicles having at least 75 per cent of two exterior sides of each story permanently open.

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, or combustion products or other approved fire control signal.

——**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.

parking lift, automobile. Mechanical device for parking automobiles by movement in any direction.

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

projection, street. Any part of a structure or material attached thereto extending or projecting beyond the street building line, including but not limited to architectural features, marquees, fire escapes, signs, flag poles.

property line. Line establishing the boundaries of premises.

public space. Space within a building for public use where more than ninety-nine persons congregate,

such as lobbies, lounges, reception, ball, meeting, lecture and recreation rooms, banquet and dining rooms and their kitchens, and swimming pools.

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.**

shaft. A vertical opening or enclosed space extending through two or more floors of a building, or through a floor and roof.

shall. As used in this Code, is mandatory.

sleeping room. Room used for sleeping primarily for single tenant occupancy.

smoke-detecting system. See definition of fire- and smoke-detecting system.

smoke pipe. Enclosed passage, used to convey the products of combustion of any fuel to a flue.

smoke stop. A partition in corridors, or between spaces, to retard the passage of smoke, with any opening in such partition protected by a door equipped with a self-closing device.

smokestack. Enclosed passage, primarily vertical, used for removal to the outer air of products of combustion of any fuel.

sprinkler system. A system of piping and appurtenances designed and installed in accordance with generally accepted standards so that heat from a fire will automatically cause water to be discharged over the fire area to extinguish it or prevent its further spread.

stage. Place used for theatrical presentations or other entertainments, whereon movable scenery, or other accessories are used.

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.

standpipe system. Approved installation of piping and appurtenances, whereby all parts of a building can be quickly reached with an effective stream of water.

store. Enclosed space used for the display and sale of merchandise, or sale of service, to the general public. Space used for cigar or newspaper stand and similar uses in a public lobby or similar location, is not deemed to be a store.

story. Portion of a building which is between one floor level and the next higher floor level or the roof. See sections C 203-1h and C 203-1i.

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 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.

tier. Main floor, mezzanine, loge, balcony, gallery or other similar level, on which seats are provided.

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.

vestibule. An enclosed space, with doors or opening protectives, to provide protected passage between the exterior and interior of a building, or between spaces within a building.

wall, curtain. A nonbearing wall between columns or piers that is not supported at each story.

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, panel. A nonbearing wall built between columns in skeleton construction and wholly supported at each story.

wall, parapet. Free standing portion of a wall above the roof.

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

wall, spandrel. Portion of an exterior wall between top of one opening and bottom of another opening in the story directly above.

watchman's system. An approved installation of equipment for the purpose of recording the rounds of a watchman.

yard. An open unoccupied space on the same lot, plot or parcel of land on which the building stands, which extends the entire length of the front or rear or interior lot line.

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

C 109 (804.1) **SAFETY DURING CONSTRUCTION**

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 all utilities and public facilities, including among others, fire hydrants, fire alarm boxes, police call boxes, street lights, and manholes, shall be kept unobstructed during construction.

c——Fuel-burning equipment furnishing temporary heat during construction, except portable equipment, shall be provided with a smoke pipe, chimney or flue to convey the products of combustion to the exterior without creating a health hazard. Confined spaces having portable fuel-burning equipment shall be adequately ventilated so as to prevent dangerous accumulation of products of combustion.

C 110 (804.2) **SAFETY DURING DEMOLITION**

a——Safe and sanitary conditions shall be provided where demolition and wrecking operations are being carried on. Work shall be done in such manner that hazard from fire, possibility of injury, danger to health, and conditions which may constitute a public nuisance will be minimized, in conformity with generally accepted standards.

b——Access to utilities and public facilities, including among others, fire hydrants, fire alarm boxes, police call boxes, street lights, and manholes, shall be kept unobstructed during demolition.

c——Gas, electric, sewer, heat, power, water and other service connections shall be disconnected, removed, or sealed, in conformity with the applicable regulations of the public utility or the municipal agency having jurisdiction.

Part 2

Space Requirements

C 201 (810) **GENERAL REQUIREMENTS**

a——All buildings occupied or used in whole or in part for purposes within the scope of this Code, shall be designed and constructed so as to comply with all the requirements hereinafter set forth concerning size, light, heat, ventilation, and all facilities, in order to provide safe and healthful environment.

b——The term, **accessory use,** shall have a uniform meaning and shall apply in the same manner and under the same conditions or restrictions to all buildings.

C 202 (811) **CLASSIFICATION OF BUILDINGS**

Buildings for the purpose of this Code shall be classified by groups in respect to the occupancy or use, the type of construction, and the fire hazard, as set forth in sections C 202-1, C 202-2, and C 202-3, respectively, and in respect to the number and physical condition of the occupants in buildings of group C6 occupancy. **See definitions** and **appendix.**

C 202-1 (811.1) **Classification by Occupancy or Use Groups**

Group C1——Business:

Buildings in which the primary or intended occupancy or use is the transaction of administrative, business, civic, or professional service, and where the handling of goods, wares, or merchandise, in limited quantities, is incidental to the primary occupancy or use. Newsstands, lunch counters, barber shops, beauty parlors, and similar service facilities are considered as incidental occupancies or uses.

Group C2——Mercantile:

Buildings in which the primary or intended occupancy or use is the display and sale to the public of goods, wares, or merchandise.

Group C3——Industrial:

Buildings in which the primary or intended occupancy or use is the manufacture or processing of products of all kinds, including operations such as

making, altering, assembling, bottling, canning, finishing, handling, mixing, packaging, repairing, cleaning, laundering, and similar operations.

Group C4——Storage:
Buildings in which the primary or intended occupancy or use is the storage of, or shelter for, goods, merchandise, products, vehicles, or animals.

Group C5——Assembly:
Buildings in which the primary or intended occupancy or use is the assembly for amusement, athletic, civic, dining, educational, entertainment, patriotic, political, recreational, religious, social, sports, or similar purposes, subclassified as follows:

Group C5.1 for not more than six hundred persons;

Group C5.2 for more than six hundred, but not more than fifteen hundred persons;

Group C5.3 for more than fifteen hundred persons;

Group C5.4 churches, synagogues, mosques and similar places of worship;

Group C5.5 schools, colleges and similar places of education.

Group C6——Institutional:
Buildings in which the primary or intended occupancy or use is for persons domiciled or detained under supervision, subclassified as follows:

Group C6.1 for persons whose movements are not limited and have a normal sense of perception.

Group C6.2 for persons whose movements are limited because of illness, physical or mental handicap, except nursing, and old-age homes regulated by the State Building Construction Code applicable to multiple dwellings.

Group C6.3 for persons detained or confined in a mental hospital or for correctional or penal purposes.

Group C7——Miscellaneous:
Nonresidential buildings in which the primary or intended occupancy or use is not included in groups C1 to C6 inclusive, accessory structures attached to, part of, or supported by, the buildings; buildings temporary in character.

TABLE C 202-2. (I-811)—MINIMUM FIRE-RESISTANCE REQUIREMENTS OF STRUCTURAL ELEMENTS
(by types of construction; fire-resistance ratings in hours)

Structural element	Construction classification								
	Type 1 (Fire-resistive)		Type 2 (Non-combustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5[8] (Wood frame)	
	1a	1b	2a	2b		4a	4b	5a	5b
Exterior:									
Bearing walls	4	3	2	nc	2	2	2	¾	c
Nonbearing walls[1, 2]	2	2	2	nc	2	2	2	¾	c
Panel and curtain walls[1, 2]	¾	¾	¾	nc					
Party walls[3]	4	3	2	2	3	2	2	2	2
Interior:									
Fire walls[4]	4	3	2	2	3	2	2	2	2
Bearing walls or partitions	4	3	2	nc	2	¾	c	¾	c
Partitions enclosing stairways, hoistways, shafts, other vertical openings; and corridors:	2[6]	2[6]	2[6]	2[6]	2[6]	2[6]	2[6]	¾	¾
Construction separating tenant spaces[5]	1	1	1	1	1	1	1	¾	¾
Columns, beams, girders and trusses (other than roof trusses):									
supporting more than one floor, or one floor and a roof	4	3	2	nc	c	¾	c	¾	c
supporting one floor or a roof	3	2	¾	nc	c	¾	c	¾	c
Floor construction including beams	3	2	1	nc	c	¾	c	¾	c
Roof construction including purlins, beams and roof trusses	2[7]	1[7]	¾[7]	nc	c	¾	c	¾	c

1 Rating may be required due to distance separation in conformity with section C 401-3.
2 For exceptions, see section C 401-3.3b and section C 401-3.4b.
3 Party walls shall comply with section C 401-7.
4 Fire walls shall comply with section C 402-2.
5 For other requirements, see table C 402-4.
6 In buildings not more than three stories in height, 1 hour in type 1 construction; ¾ hour in type 2, 3, and 4 construction. For exceptions, see section C 402-4.7.
7 For exceptions, see sections C 402-3d and C 402-3e.
8 Not permitted within fire limits.

C 202-2 (811.2) Classification by Type of Construction

a——Buildings shall be classified by types of construction, based on their relative fire safety. Certain of such types shall be classified as subtypes, based on the relative fire-resistance ratings of the materials and assemblies of which they are constructed, as follows:

Subtypes 1a and 1b are both fire-resistive construction, but vary as to the degree of fire resistance of their structural elements.

Subtypes 2a, 4a and 5a are those in which all structural elements are required to be protected with fire-resistive materials of the ratings designated for those subtypes.

Subtypes 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, except where a specific requirement for the protection of exit enclosures and first floor by fire-resistive materials is established.

b——The fire resistance of each structural element for each type and subtype shall be that set forth in table C 202-2.

c——Openings in fire walls, fire separations, shafts and exit enclosures shall be provided with opening protectives as required by section C 402-4.11.

d——A building which conforms to the type of construction required by its occupancy, height and area, need not comply with the requirements for a higher type of construction even though a portion of its construction is of such higher type.

1977 e——Where a building is constructed of two or more types of construction, the construction classification of the entire building shall be the lowest of such types of construction; except that where a fire wall separates two types of construction, each type is permitted to be regulated separately for maximum height and fire area as set forth in tables C 203-1a, 1b, 1c and 1d, under the following conditions:

1) Such fire wall shall be of noncombustible material and shall conform to the requirements of section C 402-2.

2) The fire-resistance rating of such fire wall shall be that required for the higher type of construction.

3) Where the lower of the types of construction has a combustible roof, the fire wall shall extend above the combustible roof.

4) Exterior wall openings in the higher type of construction, located within 10 feet horizontally from the fire wall, shall be equipped with opening protectives. See section C 401-4.1e.

1973 f——Where portions of a building are of different heights, the height of the building shall be the greater height, except as set forth in section C 203-1j, and except that where a fire wall separates such portions, each such portion is permitted to be regulated separately for type of construction and maximum height and fire area, under the conditions set forth in section C 202-2e.

C 202-3 (811.3) Classification by Fire Hazard

a——Buildings of group C1 occupancy shall be classified as low hazard.

b——Buildings of group C2 occupancy shall be classified as moderate hazard.

c——Buildings of group C3 and C4 occupancies shall be classified on the basis of the fire load, as low hazard, moderate hazard, or high hazard, as follows:

low hazard (groups C3.1 and C4.1) where the average fire load for the entire fire area is not more than 80,000 Btu per square foot;

moderate hazard (groups C3.2 and C4.2) where the average fire load for the entire fire area is more than 80,000 Btu per square foot, but not more than 160,000 Btu per square foot;

high hazard (groups C3.3 and C4.3) where the average fire load for the entire fire area exceeds 160,000 Btu per square foot; or where explosives are processed or stored or where explosive mixtures, dangerous gases, or uncontrollable reactions can occur that endanger life or become a fire hazard.

d——Buildings of group C5 and C6 occupancies shall be considered as low hazard for determining distance separation as set forth in table C 401-3.2.

C 203 (812) HEIGHT, FIRE AREA AND TYPE OF CONSTRUCTION

C 203-1 (812.1) General Requirements

a——The height and fire area of a building shall be determined by the occupancy and use group, the construction classification, the fire protection equipment, and the fire hazard classification of the building.

b——Buildings shall be 100 feet or less from a street, road or driveway providing access for fire-fighting equipment.

c——A building erected within more than one fire limit shall comply with the requirements of the more restrictive fire limit.

d——Zoning or fire-limit regulations that impose more restrictive height or fire-area limitations than required by this section shall control.

e——The maximum fire area permitted for the highest story of a building determines the maximum fire area for each story of the building.

f——In buildings of type 2, 3, and 4 construction, more than three stories in height, the floor of the lowest story and all construction below, shall be type 1.

g——The height in feet of a building shall be determined from a datum established by the average elevation of paved open spaces which are suitable for the approach of fire department equipment, and curb levels where established, both of which are within 50 feet of the exterior walls of the building; where such distance is exceeded the height in feet shall be determined as set forth in section C 203-1h. Such height shall be measured from such datum 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 and other roof construction as set forth in section C 203-1i (5).

h——The height in stories of a building shall be determined from a datum established by the average elevation of the finished grade adjoining the exterior walls of the building, where such walls face legal open space or abut other open space which is level for 10 feet or more. Areaways, driveways, and entrances of abrupt change in elevation and totaling 10 per cent or less of the length of the wall shall not be included in determining the average elevation.

i——The following locations shall not be deemed to be a story:

(1) A mezzanine with a floor area less than 10,000 square feet and less than one third of the floor area of the space wherein the mezzanine is contained.

(2) A basement where the finished floor immediately above is less than 7 feet above the average elevation of the finished grade as described in this section.

(3) A cellar.

(4) An attic not meeting the requirements for habitable space.

(5) Roof construction enclosing stairs or equipment other than for elevators, provided they are less than 12 feet in height and do not occupy more than 30 per cent of the area of the roof on which they are located; and elevator hoistway and elevator machine rooms.

j——A building of low or moderate hazard occupancy having a height of one story for the major portion and two stories for the remainder shall be classified as a one-story building provided it is in conformity with the following:

(1) The area per story of the two-story portion is not more than 10 per cent of the gross floor area of the one-story portion.

(2) The two-story portion is separated from the one-story portion as set forth in table C 402-4.

(3) The two-story portion is of a type of construction as required for its height, fire area, and occupancy, except that the type of construction shall be at least that required for the one-story portion.

(4) The two-story portion is used for low hazard occupancy accessory to the occupancy of the one-story portion.

(5) Exits from the second story are enclosed to the exterior in construction having a fire-resistance rating conforming to the requirements of table C 202-2.

(6) The building is not increased in height on the basis of a sprinkler installation as provided in section C 203-1.2c.

k——In a two-story building of type 5 construction, having a cellar or basement that is not a story, the exterior walls of the cellar or basement shall be of masonry construction extending the full height of the basement or cellar.

TABLE C 203-1a. (I-812)—HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C1, C2, C3, and C4 OCCUPANCY
See sections C 203-1.1 and C 203-1.2 for increased height or fire area; see section C 406-4 for sprinkler requirements.

Maximum Height		Basic fire area by construction classification in square feet								
		Type 1 (Fire resistive)		Type 2 (Noncombustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)[1]	
In stories	In feet	1a	1b	2a	2b		4a	4b	5a	5b
LOW HAZARD—C1, C3.1, C4.1										
1	un	un	un	un	18,000[3]	21,000[3]	18,000[3]	12,000[3]	9,000	6,000
2	40	un	un	21,000	15,000	18,000	15,000	9,000	6,000	3,000
3	55	un	un	18,000	np	15,000	12,000	6,000	np	np
4	70	un	un	15,000	np	12,000	9,000	np	np	np
5	85	un	un	12,000	np	np	np	np	np	np
6	100	un	un	np	np	np	np	np	np	np
More than 6	More than 100	un	un	np	np	np	np	np	np	np
MODERATE HAZARD—C2, C3.2, C4.2										
1[2]	un	un	un	18,000[3]	15,000[3]	15,000	15,000	8,000	6,000	4,000
2	40	un	30,000	15,000	12,000	12,000	12,000	6,000	4,000	2,000
3	55	un	28,000	12,000	np	9,000	9,000	np	np	np
4	70	un	26,000	10,000	np	np	np	np	np	np
5	85	un	24,000	np	np	np	np	np	np	np
6	100	un	22,000	np	np	np	np	np	np	np
More than 6	More than 100	un	np	np	np	np	np	np	np	np
HIGH HAZARD—C3.3, C4.3[4]										
1	un	24,000	15,000	8,000	6,000	6,000	6,000	4,000	3,000	2,000
2	40	23,000	14,000	7,000	5,000	5,000	5,000	np	np	np
3	55	22,000	13,000	6,000	np	np	np	np	np	np
4	70	21,000	12,000	np	np	np	np	np	np	np
5	85	20,000	np	np	np	np	np	np	np	np
More than 5	More than 85	np	np	np	np	np	np	np	np	np

1 Not permitted within fire limits.
2 For aircraft hangars, basic fire areas may be increased 25 per cent.
3 Fire area of a one-story building may be unlimited provided that the building is located outside the fire limits, has open unobstructed space on all sides accessible for fire fighting, as set forth in section C 203-1.1a, and such space shall be at least 50 feet wide. Heat banking areas, and an automatic sprinkler system as set forth in sections C 402-4.4 and C 511-4, respectively, shall be provided.
4 See section C 406 for fire protection equipment requirements.

TABLE C 203-1b. (II-812)—HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C5 OCCUPANCY

See sections C 203-1.1 and C 203-1.2 for increased height or fire area; see section C 406-4 for sprinkler requirements[2].

Maximum Height		Basic fire area by construction classification in square feet								
In stories	In feet	Type 1 (Fire resistive)		Type 2 (Noncombustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)[1]	
		1a	1b	2a	2b		4a	4b	5a	5b
1	un	un	un	16,000	12,000	12,000	12,000	6,000	6,000	6,000
2	40	un	un	14,000	6,000	6,000	6,000	np	np	np
3	55	un	un	12,000	np	np	np	np	np	np
4	70	un	24,000	10,000	np	np	np	np	np	np
5	85	un	22,000	np	np	np	np	np	np	np
6	100	un	20,000	np	np	np	np	np	np	np
More than 6	More than 100	un	np	np	np	np	np	np	np	np

1 Not permitted within fire limits.
2 Exhibition buildings with a fire area of more than 32,000 square feet shall be provided with heat banking areas and an automatic sprinkler system as set forth in sections C 402-4.4 and C 511-4, respectively.

TABLE C 203-1c. (III-812)—HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C6 OCCUPANCY
See sections C 203-1 and C 203-1.1 for increased fire area; see section C 406-4 for sprinkler requirements.

Maximum Height		Basic fire area by construction classification in square feet								
In stories	In feet	Type 1 (Fire resistive)		Type 2 (Noncombustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)[1]	
		1a	1b	2a	2b		4a	4b	5a	5b
BUILDINGS OF GROUP C6.1 OCCUPANCY										
1	un	un	un	un	18,000	18,000	15,000	9,000[2]	6,000[2]	6,000[2]
2	40	un	un	21,000	15,000	15,000	12,000	6,000[2]	3,000[2]	np
3	55	un	un	18,000	np	12,000	9,000	np	np	np
4	70	un	un	15,000	np	np	np	np	np	np
5	85	un	un	12,000	np	np	np	np	np	np
6	100	un	un	9,000	np	np	np	np	np	np
More than 6	More than 100	un	un	np	np	np	np	np	np	np
BUILDINGS OF GROUP C6.2 OCCUPANCY										
1	un	un	un	14,000	6,000	6,000	6,000	4,000[2]	3,000[2]	3,000[2]
2	40	un	un	12,000	4,000	4,000	4,000	np	np	np
3	55	un	un	10,000	np	np	np	np	np	np
4	70	un	un	8,000	np	np	np	np	np	np
5	85	un	un	np	np	np	np	np	np	np
6	100	un	un	np	np	np	np	np	np	np
More than 6	More than 100	un	np	np	np	np	np	np	np	np
BUILDINGS OF GROUP C6.3 OCCUPANCY										
1	un	24,000	15,000	8,000	6,000	np	np	np	np	np
2	40	23,000	14,000	7,000	np	np	np	np	np	np
3	55	22,000	13,000	6,000	np	np	np	np	np	np
4	70	21,000	12,000	np	np	np	np	np	np	np
5	85	20,000	np	np	np	np	np	np	np	np
6	100	19,000	np	np	np	np	np	np	np	np
More than 6	More than 100	np	np	np	np	np	np	np	np	np

1 Not permitted within fire limits.
2 Not permitted unless the building is equipped with an automatic sprinkler system.

TABLE C 203-1d. (IV-812)—HEIGHT AND FIRE AREA FOR OPEN PARKING STRUCTURES

See sections C 203-1.1 and C 203-1.2 for increased fire area; and section C 108-3 (Open Parking Structure) for enclosing wall requirements.

Number of parking levels[1]	Basic fire area by construction classification in square feet								
	Type 1 (Fire resistive)		Type 2 (Noncombustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)	
	1a	1b	2a	2b		4a	4b	5a	5b
1	un	un	un	un	np	np	np	np	np
2	un	un	un	30,000	np	np	np	np	np
3	un	un	un	30,000	np	np	np	np	np
4	un	un	un	30,000	np	np	np	np	np
5	un	un	50,000	30,000	np	np	np	np	np
6	un	un	50,000	30,000	np	np	np	np	np
More than 6	un	un	50,000[2]	30,000[3]	np	np	np	np	np

1 Parking permitted on roof in addition to the parking level indicated.
2 Not more than 10 stories.
3 Not more than 8 stories.

C 203-1.1 (812.1b) Increase in Fire Area on Basis of Accessibility and Special Occupancy 1977

a——The fire areas set forth in tables C 203-1a, C 203-1b, C 203-1c and C 203-1d are based on a building having frontage on one street or legal open space at least 50 feet wide. If a building faces or abuts such streets or spaces on two sides, the fire area may be 50 per cent larger than the basic areas shown in these tables; on three sides, 75 per cent larger; on four sides, 100 per cent larger—providing each such street or open space is served by fire hydrants, and the roadways are maintained clear, unobstructed, and accessible at all times for fire-fighting equipment.

b——The fire area of a building of group C5.5 occupancy of not more than two stories in type 2a construction and one story in types 2b and 3 construction may be unlimited subject to the following:

The building is located outside fire limits.

There is legal open space at least 40 feet wide on all sides.

Interior stairways are separately enclosed.

On the second story the maximum distance of travel from an exit door of a room or space to a stairway is 120 feet.

On the first story the maximum distance of travel from an exit door of a room or space to an exterior door is 150 feet; and the maximum distance of travel from a stairway to an exterior exit door is 50 feet.

1977 c——The fire area of a building of type 2b, 3 or 4 construction and of group C1 occupancy, for use as an indoor tennis court without seating for spectators in the tennis court area, shall be permitted to be unlimited subject to the following:

The building shall be not more than one story in height and an accessory structure attached thereto shall be of type 1 or 2 construction and not more than two stories in height;

Required exits from the tennis court area shall open directly to the exterior at grade, and required exits from the accessory structure shall not open upon the tennis court area;

The tennis court area shall be separated from the accessory structure by noncombustible construction having a fire-resistance rating of at least two hours and glazed vision panels in such separation shall be of wired glass or shall be protected by sprinkler heads located within the accessory structure; and

Durable signs worded OCCUPANCY OF THIS BUILDING BY MORE THAN 99 PERSONS IS PROHIBITED shall be posted so as to be visible throughout the building.

C 203-1.2 (812.1c) Increase in Fire Area and Height on Basis of Sprinkler Installation

a——Increase in either the fire area or the height of a building shall be permitted on the basis of installation of an automatic sprinkler system, in conformity with paragraphs b and c of this section.

b——A fire area in buildings of group C1, C2, C3.1, C3.2, C4.1, C4.2, and C5 occupancy, and open parking structures may be increased 100 per cent over the basic areas shown in tables C 203-1a, C 203-1b, and C 203-1d or the increased areas permitted in accordance with section C 203-1.1, providing the building is equipped with an automatic sprinkler system.

c——The height of buildings of group C1, C2, C3.1, C3.2, C4.1 and C4.2 occupancy may be increased 15 feet or one story when the building is equipped with an automatic sprinkler system, provided that the fire areas do not exceed the basic areas shown in table C 203-1a, or the increased areas permitted in accordance with section C 203-1.1, except that buildings of type 3 or 4a construction shall not exceed four stories in height.

C 203-2 (812.2) Existing Buildings

a——Except within fire limits A (see section C 401-2.1), a building of type 5 construction, not exceeding three stories or 40 feet in height, existing prior to the effective date of this Code, may be altered or converted to group C1, C2, C3, or C4 occupancy or use of low or moderate hazard classification pro-

vided that such building, when so altered or converted, complies in all other respects with the requirements of this Code.

b——Where an existing building of low or moderate hazard classification is altered or repaired as set forth in section C 105-2.1c, public space in such building shall not require a 9-foot height as set forth in section C 208-1, provided the public space is at least 8 feet high, and the alteration does not increase the building height, nor increase the floor area of any story or floor level.

C 203-3 (812.3) Open Parking Structures

a——Open parking structures shall be used only for the parking or storage of motor vehicles; however, the sale of gasoline and oil, and greasing and repair services, shall be permitted on the street level. The area used for such services shall be separated from the parking area by construction having a fire-resistance rating in conformity with section C 402-4.10.

b——Enclosure walls shall not be required except on sides located within 10 feet of an interior lot line. No temporary enclosures of combustible material shall be used where enclosure walls are omitted.

c——Curbs, railings, and bumper blocks shall be provided in conformity with section C 304-9.

d——Parking shall not be permitted more than 4 feet below the curb level unless that story or parking level of the structure partly or wholly below grade is type 1 construction.

C 204 (813) YARDS AND COURTS

C 204-1 (813.1) General Requirements

a——Required windows or other openings providing natural light and ventilation for habitable space shall open upon yards or courts or other legal open spaces or any combination thereof which comply with the requirements of this section.

b——Zoning regulations shall take precedence over less restrictive requirements of this section.

c——Yards and courts shall be measured from the building outward, and shall not begin higher than the floor level of the first story in which there are required windows or other openings on such yard or court for light and ventilation.

d——Yards and courts shall be open and unobstructed for their required area and full height, except that window sills, belt courses and other architectural or ornamental projections shall not project more than 4 inches from a wall, nor shall an exterior screened stairway project more than 4 feet 6 inches into a yard or court.

e——Yards shall be provided with access to a street, either directly or through an unobstructed passage of fire-resistive construction not less than 3 feet wide and 7 feet high.

f——Any recess or offset of a court shall have a minimum width of 5 feet and the depth of such recess or offset shall not exceed its width.

C 204-2 (813.2) **Yards**

a——A rear yard shall be provided at the rear of a building which contains group C6 occupancy where required openings for natural light and ventilation of habitable space are located in a rear wall. For such buildings not more than 40 feet in height, on interior lots, the minimum rear yard depth shall be 20 feet. For each foot that the rear wall of the building or portion thereof exceeds 40 feet in height, measured from the level of the rear yard, the depth of the rear yard shall be increased 3 inches. For such buildings on corner lots, the first 50 feet of the rear yard, measured from the side street line, may be reduced to one half of the depth of the rear yard required on an interior lot.

b——If a side yard is provided or required, it shall be not less than 5 feet in width, at any point. For each foot that the side wall of a building or portion thereof exceeds 30 feet in height, the width of a required side yard shall be increased 2 inches.

C 204-3 (813.3) Courts

a——Outer courts shall have a minimum width of 3 inches for each foot of height of the enclosing walls but not less than 5 feet measured at any point. The depth of an outer court shall not exceed four times the width.

b——Inner courts shall have a minimum width of 4 inches for each foot of the height of the enclosing walls, but the least horizontal dimension of such courts shall be not less than 10 feet. The depth of an inner court shall be at least 1½ times the width.

c——An air intake of fire-resistive construction shall be provided at or near the lowest level of every inner court, connecting directly with a street or yard. Such intake shall have a minimum dimension of 3 feet and a minimum cross-sectional area of 20 square feet, and shall be unobstructed throughout, except that where such air intake is not used as a passage, gates or grilles which do not interfere with ventilation may be installed.

C 205 (814) SPACE

a——Space shall be classified as habitable, occupied, public, and nonhabitable.

b——Habitable, occupied, and public spaces shall be so arranged, located, lighted, and ventilated as to provide safe and healthful environment.

c——Nonhabitable space shall have such of those requirements set forth in paragraph b above as may be necessary for the intended use.

d——Food storage spaces shall be constructed so as to be verminproof and rodentproof.

e——Public kitchen, medical laboratory, treatment, and similar space shall have walls and floors constructed of nonabsorbent materials which are easily cleanable.

f——Walking surfaces to which persons have access and which are elevated more than 18 inches above adjacent surfaces, including but not limited to bridges, balconies, and mezzanines, shall be protected by parapet walls or guardrails at least 3 feet

in height and meeting the requirements set forth in section C 304-9, except where such guardrails will interfere with the intended use, as for example, lecture platforms, loading platforms and similar construction.

g——Where exposed beams project below the ceiling of habitable or occupied space, and such beams occupy an area of 5 per cent or more of the area of the ceiling, the height of the space shall be measured from finished floor to the underside of the beams; where the ratio is less than 5 per cent, the height shall be measured to the ceiling, and the height to the underside of such beams shall be not less than 7 feet.

C 206 (815) HABITABLE SPACE

C 206-1 (815.1) Size

a——Habitable space shall have a minimum height of 7 feet 6 inches, measured from finished floor to finished ceiling.

b——Habitable spaces shall contain not less than 80 square feet of floor area and shall have a minimum horizontal dimension of 7 feet.

C 206-2 (815.2) Location in Respect to Grade Level

Floor level of habitable space shall be not more than 4 feet below the average adjoining finished grade; except that below-grade space is permitted as habitable space provided the grade adjoining one exterior wall for the width of the habitable space is at or lower than the floor level of the habitable space, the depth is not more than four times the height, and such space conforms to all other requirements for habitable space. Public space, occupied space and play or recreation rooms may be located below grade.

C 207 (816) OCCUPIED SPACE

a——Occupied space shall have a minimum height of 8 feet, measured from finished floor to finished ceiling.

b——Areas below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

c——Occupied space in buildings less than 100 square feet in gross area shall have a minimum clear height of 6 feet 8 inches.

C 208 (817) PUBLIC SPACE

C 208-1 (817.1) Height

Public space shall be at least as high as is required for occupied space, except that public space in buildings of group C5.1, C5.2 and C5.3 occupancy shall have a minimum height of 9 feet, measured from finished floor to finished ceiling, and public space below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

C 209 (818) NONHABITABLE SPACE

C 209-1 (818.1) Height

Nonhabitable space, except crawl spaces and attics, shall have a minimum height of 7 feet, measured from floor to ceiling.

C 209-2 (818.2) Location of Toilet Rooms

a——Toilet rooms shall be accessible from any sleeping space without passing through any other sleeping space.

b——Unless located within habitable space or directly connected with sleeping space, toilet rooms shall be provided in each story containing habitable space, and shall be accessible thereto.

c——Toilet rooms shall be provided in readily accessible locations, convenient to public spaces. Water closets and urinals shall be arranged so as to assure privacy and prevent direct view from outside the room in which located.

d——Toilet rooms shall be in separate rooms for each sex, where there are five or more employees,

and shall be readily accessible to their regular working places. Toilet rooms for more than five females shall have adequate rest facilities in conformity with generally accepted standards.

e——Toilet rooms shall not open directly into any public kitchen or other space used for the cooking or preparation of food.

f——Bathroom, shower room, toilet room and similar space shall have waterproof floors; such waterproofing shall extend 6 inches or more above the floor except at doors, so that the floor can be flushed or washed without leaking.

g——Toilet rooms and bathrooms shall provide privacy.

C 209-3 (818.3) Glazing in Doors, Shower Stalls, Fixed Panels and Bathtub Enclosures

a——Glazing in doors, shower doors and enclosures, and bathtub doors and enclosures shall be so sized, constructed, treated or combined with other materials as to minimize effectively the possibility of injury to persons in the event the glazing is cracked or broken.

b——Glazing in doors, fixed side panels adjoining doors and interior partitions; where such glazing extends to within 18 inches of floor level, shall conform to the requirements of paragraph a of this section or, in lieu thereof in fixed panels, permanent construction shall be provided to guard against accidental human impact.

c——Shatter-resistant material may be substituted for glass intended to be used as described in this section. Where used in exits such material shall conform to the requirements of sections C 403-1, C 403-4 and C 403-5.

d——Where generally accepted standards require glazing to be identified, each piece shall be permanently and legibly marked in conformity with the requirements of the generally accepted standards.

C 210 (819) LIGHT AND VENTILATION

C 210-1 (819.1) General Requirements

a——All spaces, except closets or similar spaces, shall be provided with artificial light.

b——Habitable spaces shall be provided with both natural light and artificial light.

c——Habitable spaces shall be provided with natural ventilation, and may also be provided with mechanical ventilation.

d——The tops of windows or equivalent sources of natural light and ventilation in habitable space shall not be more than 18 inches below finished ceilings, unless the top of at least one such source in each room is at least 7 feet above the finished floor.

e——Occupied spaces shall be provided with either natural ventilation or mechanical ventilation.

f——Public spaces shall be provided with either natural ventilation or mechanical ventilation.

g——Artificial light and mechanical ventilation shall comply with sections C 507-2 and C 508-3.

h——Required lighting or ventilating openings shall not face on a street, alley or other space permanently dedicated to public use of lesser width than required for yards or courts, except that the width of such street, alley, or space may be credited in the computation to establish the width or depth of yards or courts.

C 210-2 (819.2) Natural Light for Habitable Space

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 above a roof on the same premises.

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

c——The lighting area equivalent to clear glass shall be increased to 12½ per cent of the floor area if the natural light is from a single light area located entirely in one wall which is more than 15 feet distant from the opposite wall, or if the distance from the jamb of the light area is more than 9 feet from an intersecting wall. No part of any habitable space shall be more than four times its clear height distant from the lighting opening.

C 210-3 (819.3) Natural Ventilation for Habitable Space

a——Natural ventilation shall be provided 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 on the same premises, or through openable parts of skylights.

b——Each habitable space shall be provided with natural ventilation through openable parts of the openings described in this section which are equal in area to not less than 5 per cent of the total floor area of each habitable space.

c——The openable ventilating area shall be increased to 6¼ per cent of the floor area if the ventilation is from a single ventilating area located entirely in one wall which is more than 15 feet distant from the opposite wall, or if the distance from the jamb of the ventilating area is more than 9 feet from an intersecting wall. No part of a habitable space shall be more than four times its clear height distant from the ventilating opening.

C 210-4 (819.4) Ventilation for Occupied Space and Public Space

Occupied space and public space, if provided only with natural ventilation, shall comply with the requirements for natural ventilation of habitable space set forth in section C 210-3.

C 210-5 (819.5) Ventilation for Nonhabitable Space

a——The following spaces shall be provided with natural ventilation by openings which comply with the requirements of section C 210-3, or with me-

chanical ventilation as set forth in section C 508-3. The minimum openable area of the opening for natural ventilation shall be as set forth in table C 210-5.

TABLE C 210-5. (I-819)—MINIMUM OPENABLE AREAS FOR NATURAL VENTILATION

Space	Minimum openable area
Kitchenettes, bathrooms, toilet or shower rooms connected to, or in, habitable space . .	3 square feet
Bathrooms, toilet or shower rooms used by public, or employees	1 square foot per water closet; minimum 3 square feet
Cellars, basements	Openings of sufficient area to provide adequate ventilation

b——Spaces which contain central heat producing, air conditioning and other equipment, shall be ventilated to the outer air, and air from these spaces shall not be recirculated to other parts of the building.

C 211 (820) ACCESS AND VERTICAL TRAVEL BETWEEN STORIES OTHER THAN REQUIRED EXITS

C 211-1 (820.1) Stairways and Stairs

a——Stairways, in addition to those that serve in a required exit, shall be of the fixed type and shall be arranged and constructed for safe ascent and descent. Stairs shall be of sufficient width to serve the occupants.

b——Ornamental stairs with winders shall have a minimum width of 5 feet, width of treads exclusive of nosing shall not be less than 7 inches at any point.

c——Treads, risers, handrails and railings shall comply with the requirements of section C 212-4.

C 211-2 (820.2) Elevators

a——Elevators shall be installed in enclosed hoistway shafts which conform to the fire-resistive requirements as set forth in table C 202-2. Not more

than four elevators shall be installed in a hoistway designed for more than one elevator.

b——A stairway or other exit shall be accessible from every elevator entrance landing unless the area served is otherwise provided with required exits.

c——Elevators shall not be in a common enclosing shaft with a stairway.

d——Passenger elevators shall be provided in buildings of group C6 occupancy, as set forth in section C 512-1.

C 212 (821) EXITS

C 212-1 (821.1) General Requirements

a——Every building and structure shall be provided with exits, which shall be arranged, constructed and proportioned in number and width to the number of occupants, the construction and height of the building, and its fire protection equipment, so that all occupants may escape safely from the building in case of emergency.

b——Safe continuous exit shall be provided from the interior of the building or structure to a street or other legal open spaces at grade level connected to a street. Railings, curbs, or other effective barriers shall be provided to insure that automobile parking or other obstruction does not encroach on the space required for exit travel.

c——A required exit from habitable, occupied or public space in a building shall not lead through a kitchen serving a public dining room, a garage, or a moderate or high hazard occupany.

d——Exits shall be enclosed as set forth in table C 202-2, except as set forth in section C 212-6 and section C 402-4.7.

e——The required width of exits shall not be diminished throughout the path of travel to the exterior of the building. Exits shall be plainly marked with directions to a designated termination at a place of safety, as provided in section C 507-2.3, and shall be lighted at all times by natural or artificial light of intensity sufficient for safe travel.

f——Exit from any room may lead through other rooms of the same tenancy except exit shall not lead through bathrooms or kitchens. Each tenant's space shall be provided with means of egress to required exits.

g——Fire escapes shall not be permitted as exits but exterior stairways are permitted as exits in conformity with section C 212-8.

h——Slide escapes shall not be permitted as exits.

i——The minimum width of exits shall be 44 inches, except for doors as set forth in table C 212-5.1; for stairways as set forth in sections C 212-4.1d and C 212-4.1e; and except that such width may be 36 inches for required stairways in buildings not more than two stories in height, and for stairways to mezzanines, if any, where the floor area of the upper level is not more than 2500 square feet. The width of an exit shall be measured at the narrowest point in the line of travel, except that handrails may project on each side a distance not exceeding 3½ inches, and door jambs may project into the required width of doorways not more than 2 inches for each 22-inch unit of width. In determining the width of exits, the capacity of exit stairways and ramps is not required to be cumulative from story to story, except where two or more stairways or ramps join and continue as a single unit. Where exits from assembly space join with exits from other occupancies on the same story, their widths shall be cumulative. The capacity of exit tunnels and enclosed mezzanine passageways is not required to be cumulative at points of entry.

j——Exits shall be located so that they are readily accessible and visible, and arranged so that there are no dead ends, except that dead ends extending not more than 50 feet are permitted in group C1, C2, C3.1, C3.2, C4.1 and C4.2 occupancy, and not more than 20 feet in group C5, C6.1 and C6.2 occupancy. Exits shall not be concealed nor the direction to exits obscured by mirrors, draperies, paneling or other objects, furnishings, or finish.

k——Exits and ways of departure shall be maintained so as to provide free and unobstructed egress from all parts of the building. No locks or fastenings

to prevent free escape from the inside of any building shall be installed, except that in buildings of group C6.3 occupancy, locks or fastenings on exit doors may be installed provided that supervisory personnel is continually on duty, and that effective provisions are made to remove occupants in case of emergency.

l——Where there is more than one group occupancy within a building, exits from each occupancy shall conform to the requirements for such occupancy.

m——If a roof is used or occupied for purposes other than incidental access by the occupants, exits shall be provided for such occupancy or use as required by this Code.

n——High or moderate capacity heater rooms, refuse rooms or rooms having incinerators, refrigerating machinery as set forth in section C 508-1.6d, oil-filled transformers or equipment producing or using hazardous gas or vapor, shall not have an opening between such space and an exit, lobby, or occupied space not accessory thereto, unless such opening is through an intervening vestibule having a fire-resistance rating as set forth for the enclosure of such equipment. When serving a high capacity heater room such vestibule shall be ventilated to the outer air. Where such rooms are located above or below an exit, lobby or occupied space, the horizontal separation shall be of masonry construction having a fire-resistance rating of not less than 2 hours.

o——Rooms and elevated spaces more than 300 square feet in area containing equipment described in paragraph n of this section shall have two exits, except that approved fixed noncombustible construction providing means for reaching grade may be substituted for one exit. Where such rooms are located on a roof, there shall be at least one door to roof and another approved means of access to roof that is remote from such door. Means for reaching grade from roof shall consist of at least one stairway or, where such stairway is not required, shall consist of approved fixed noncombustible construction.

p——Elevated spaces for equipment or storage with an area of more than 100 square feet and less than 300 square feet, which are not required to be enclosed shall have a stair at least 22 inches wide, a fixed ladder of noncombustible construction at least 18 inches wide, or a spiral stair at least 22 inches wide.

C 212-2 (821.2) Passageways, Ramps, Tunnels, and Horizontal Exits

a——Passageways, corridors, ramps, tunnels, and vestibules shall have a minimum floor-to-ceiling height of 7 feet 6 inches, and a minimum width of 44 inches, except as required by table C 212-2. They shall be designed to keep their length to a minimum. Smoke stops shall be provided at intervals not exceeding 150 feet in group C3.3, C4.3, C6.2 and C6.3 occupancies, and 300 feet in other occupancies. Smoke stops in buildings of low and moderate occupancy, may be maintained in an open position provided they are equipped with means for both manual and automatic release. For automatic release, smoke detectors shall be provided on both sides of the smoke stop door, and release shall be actuated as set forth in section C 511-9a.

b——Waiting space is permitted to be open to a corridor where a guardrail or other barrier is provided between the waiting space and corridor, and the waiting space is sprinklered, except that in lieu of sprinklers, the following shall be permitted:

Waiting space shall not exceed 100 square feet in area.

Construction of space shall conform to the requirements for corridors.

c——Where two or more exit passageways or ramps converge into each other, the common exit thus formed shall be at least equal in width to three fourths of the combined widths of the exits, except as set forth in section C 212-1i. The capacity of exit passageways, aisles, corridors, and tunnels shall be based on the same unit exit widths as set forth in table C 212-8b for stairways.

d——Where passenger elevators discharge at the street floor into a corridor or passageway, leading

to the street, the corridor or passageway shall be not less than 5 feet in width for five or less elevators and not less than ½-foot additional width for each additional elevator. If stairways also discharge into the same corridor or passageway, the width of the corridor or passageway shall not be less than three fourths of the combined required width for stairways and elevators.

e——Ramps which serve as an exit or part thereof shall not have a gradient of more than 1 in 10, and their surfaces shall be non-slip. Ramps shall conform to the requirements of section C 212-4 in so far as applicable, except that intermediate handrails shall not be required. No handrails shall be required where ramps have a slope of less than 1 in 12. One 22-inch unit of ramp width shall be considered the equivalent of one unit of stairway width. Ramps shall have an unobstructed width of at least 44 inches throughout their length except that handrails may project not more than 3½ inches into such width on each side. Ramps located in an exit passageway, aisle, corridor or tunnel, shall be the full width of such passageway, aisle, corridor, or tunnel. Floors of areas of different levels on opposite sides of a horizontal exit shall be connected by a ramp, or by stairs with not less than three risers.

TABLE C 212-2. (I-821)—MINIMUM WIDTH OF PASSAGEWAYS, AISLES, CORRIDORS, AND TUNNELS

Occupancy	Component	Location	Minimum width in inches
C1 and C2	Main aisles	Leading to exit	60
	Secondary aisles ...	Leading to main exit aisle	44
C3	Main tunnels and passageways	Leading to the exterior	96
	Secondary tunnels and passageways.	Leading to exit	60
	Corridors	Leading to passageway	44
C5	Main corridors	In schools	96[1]
	Secondary corridors.	In schools	72
	Side aisles	In churches	24
C6	Aisles and corridors	Used for bed traffic	96

1 A corridor shall be considered a main corridor whereby an assembly space, or more than six classrooms open into such corridor. If lockers are placed in the corridors, this dimension shall be measured between the doors of such lockers when standing open.

f——Where a stairway connects with, or is continued in any direction by means of, a ramp, or where a ramp changes direction, there shall be a level area or platform the full width of the ramp or stairs, and not less than 3 feet in length. Where a door enters upon a ramp there shall be a level area or platform extending at least one third the width of the door beyond the jamb on each side. The pitch of the ramp shall not interfere with the full swing of the door, nor shall such swing of door decrease the required width of the ramp.

g——Horizontal exits which serve as a required means of exit shall have a continuously available path of exit travel leading from each side of the horizontal exit to an enclosed stairway or other required exit leading to legal open spaces outside the building. The floor area on either side of a horizontal exit shall be sufficient to hold the occupants of both floor areas, allowing not less than 3 square feet of floor area per person. Exit openings serving areas on both sides of a wall shall be protected by opening protectives, and shall consist of doors swinging in opposite directions with a sign on each side of the wall indicating which door is the exit from that side, except that only one such door is required where fire area on each side is occupied by not more than 50 persons, as determined by table C 212-8a. Bridges and open-air or enclosed balconies that form a part of the horizontal exit shall be constructed of noncombustible material, and floors shall be solid and unpierced. Access to bridges and unenclosed balconies shall be through a landing as set forth in section C 212-4.3b.

h——The capacity of a horizontal exit shall be determined as for a doorway, in accordance with table C 212-8b.

C 212-3 (821.3) Seating, Aisles, Railings, and Exit in Buildings of Group C5 Occupancy

C 212-3.1 (821.3a) Theaters

a——In theaters seating more than three hundred persons, seats shall be securely fastened to the

floor, except that in railed-in enclosures, boxes, or loges with level floors and having not more than twelve seats, such seats need not be so fastened.

b——In seating arranged in rows, there shall be not more than seven seats between any seat and an aisle, except that the number of seats in a row shall not be limited when the seats are of the self-raising type and there is an unobstructed passage not less than 16 inches wide between the edge of the seat in its lowered position and the horizontal projection of any part of the back of the chair in the row ahead. Where the number of seats is not limited, the rows and passages shall lead to side aisles not less than 4 feet wide, on which there are exit doors spaced not more than 10 feet apart. Seats, benches, and aisles shall conform to generally accepted standards, and the requirements of table C 212-3.1.

c——Steps shall be provided in longitudinal aisles only when the slope of such aisles exceeds 1 in 10. Steps shall be the full width of the aisles, shall be illuminated, and shall conform to the requirements for interior stairways in regard to treads and risers as set forth in table C 212-4.1. Where, because of the slope, level surfaces other than treads are required, such surfaces shall be not less than 24 inches in width.

Table C 212-3.1. (II-821)—MINIMUM DIMENSION REQUIREMENTS FOR SEATS, BENCHES, AND AISLES

Component	In theaters, in inches	In outdoor assemblies, in inches
Seats		
Spacing back to back	32	28
Space between back of one seat and front of the one immediately behind[1]	12	10
Width of fixed seats	19	19
Seats without dividing arms, or benches	18	18
Benches, spacing back to back	22	22
Aisles		
Width when seats are on one side only	30	30
Width when seats are on both sides	36	36

1 Measured between the edge of the seat in its lowered position and the horizontal projection of any part of the back of the chair in the row ahead.

d——Longitudinal aisles shall be increased in width toward the exit at the rate of ¼ inch for each foot of length of such aisle from its beginning to an exit door or cross aisle, or between cross aisles, except that where an exit is provided at each end the aisle shall be of uniform width. Such width shall be not less than the average of the smallest and largest widths required for an aisle with an exit at one end. No aisle may be diminished in width at any point of travel toward an exit.

e——An aisle which connects with or borders on an entrance shall be at least 4 feet wide at such point.

f——Facias of boxes, balconies, and tiers shall have railings not less than 26 inches high above the floor. Railings at the ends of aisles extending to the facia shall be at least 30 inches high for the width of the aisles, or 36 inches high if at foot of steps, except that, if the aisle is level for a distance of 2 feet from the bottom step to the facia, the railing shall be at least 32 inches high. Cross aisles, except where the backs of seats on the front of the aisle project 24 inches or more above the floor of the aisle, shall be provided with railings at least 26 inches high. Handrails shall be provided on the wall side of balcony wall aisles. Railings shall be constructed in conformity with section C 304-9b.

g——One or more cross aisles shall be provided in mezzanines, balconies, and other open tiers above the main floor having more than ten rows of seats, and shall be spaced so that there shall be not more than seven rows of seats between any row and a cross aisle.

h——The number of exits required in mezzanines, balconies, or other open tiers above the main floor, shall be as set forth in table C 212-8c. Cross aisles shall lead to exits at each end. Such exits shall be located not more than one fourth the length of the cross aisle from the end of such cross aisle and shall be at least 44 inches in width. Additional exits, at least 44 inches wide, shall also be provided so that the distance between exits on a side aisle does not exceed 75 feet. Required exits shall lead directly to a foyer or hallway communicating with an exit stairway. No step shall be permitted in any cross

aisle except that one step leading to an aisle may project into the cross aisle.

i——Where there are twenty-seven or more rows and four or more blocks of seats on the main floor, cross aisles shall be provided dividing the number of rows approximately equally and so that no block of seats has more than twenty-two rows. Such cross aisles shall connect either two longitudinal aisles or one longitudinal aisle and one exit door, but are not required to extend through a side block of seats where neither a side aisle nor an exit door is required or provided. A cross aisle shall extend to each side exit not served by a side aisle, but such cross aisle is not required to extend through a central block of seats when a crossover is provided in front of the first row of the central block of seats. Such crossover shall meet all the requirements of a cross aisle, except that where there are less than forty rows of seats in the central block, the width may be 36 inches.

j——The width of cross aisles shall be at least that of the widest aisle with which they connect or the width of exit which they serve, but no cross aisle shall have a clear unobstructed width of less than 44 inches where there are four or fewer blocks of seats; 48 inches where there are five blocks of seats; 60 inches where there are more than five blocks of seats.

k——The difference in levels between seat platforms in balconies or tiers shall not exceed 22½ inches, except as applied to a platform immediately above or below a cross aisle. Seat platforms shall be at least 32 inches in depth, except that where the difference in platform levels is more than 15 inches, the platforms shall be at least 36 inches in depth. No seat platform shall be nearer than 8 feet to the ceiling. Seat platforms shall be continuous across the aisle except where the rise between platforms is 4 inches or less, and except at the first platform above a cross aisle. Where the rise between seat platforms is 4 inches or less, aisles shall be ramped with a slope not exceeding 1 in 8.

l——Aisles shall be used only for passage to and from seats, and shall be kept unobstructed.

m——Where space in a lobby or foyer is designated as waiting space, additional exits shall be provided for such space on the basis of one person for each 3 square feet of area. Such waiting space shall not encroach upon the required width of exits. Where such waiting space is not directly connected to the street through the main lobby, there shall be provided an unobstructed corridor or passageway leading to the street, to a legal open space, or to the main entrance, of a width adequate for the capacity of the waiting space.

n——Space for standees at the rear cross aisles, where permitted, shall not exceed 6 feet in depth and shall have a clear passageway of at least 7 feet maintained to the exits and entrances. No seats or chairs shall be permitted in standing room space.

o——Where any main floor doorway, other than to the lobby, does not open directly on a street, the passageway connecting it with the street shall be without openings other than those for entrances and exits, and any difference in level between such passageways and the street shall be ramped with a slope not exceeding 1 in 10.

p——Where the capacity is more than fifteen hundred persons, required exits shall open to at least two streets or legal open spaces. Each such legal open space shall connect directly to a street.

q——No turnstiles or other devices to restrict the movement of person shall be installed in any place of assembly in such manner as to interfere in any way with required exit facilities. Where turnstiles are used, swinging type exit doors also shall be provided.

r——Where doors are hung on top and bottom pivots, they shall not, when opened, project more than 6 inches into the required clear width of the exit.

s——Dressing rooms shall be provided with independent means of exit leading directly to the exterior. Dressing rooms located below the stage level shall have two means of exit.

t——At least two exits from the stage shall be provided at the stage level. These exits shall be on op-

posite sides of the stage. Openings in the proscenium wall between stage and auditorium shall not be considered as exits. Two means of exit shall be provided from fly galleries and from the gridiron.

C 212-3.2 (821.3b) Indoor Assembly Seating Other Than in Theaters

a——Fixed seating, aisles, and exits shall be in conformity with section C 212-3.1, except as provided in paragraph f of this section. Where loose seats or chairs for more than three hundred persons are provided, they shall be secured together in units of at least five, except as permitted in paragraphs b and c of this section.

b——Loose seats or chairs for not more than six hundred persons in buildings of group C5.4 and C5.5 occupancy, are not required to be secured together.

c——Chairs not secured to the floor may be permitted in restaurants, night clubs, and similar occupancies, provided that in the area used for such seating there shall be not more than one chair for each 15 square feet of floor area and adequate aisles to reach exits are maintained at all times.

d——Each room or space furnished with tables and chairs shall be arranged so that convenient access shall be provided by aisles to each exit. Aisles which lead to exits shall be unobstructed and shall be at least 36 inches wide.

e——Steps in aisles shall be grouped, and shall be illuminated. Treads and risers in aisles shall comply with the requirements of section C 212-4.

f——In group C5.5 occupancy, lecture halls without a stage, with fixed seating for not more than three hundred persons and where the number of seats in a row is not limited, shall be in conformity with section C 212-3.1 with the following exceptions:

Exit doors spaced not more than 10 feet apart in side aisles are not required where exits are provided in accordance with table C 212-3.2.

Where rows of seats are on platforms at different levels, such platforms may be extended as steps in the aisles.

The maximum distance of travel from any point in such space to an exit shall be not more than 75 feet. Adequate illumination shall be provided at all times during occupancy and emergency lighting shall be provided in conformity with section C 507-2.2.

TABLE C 212-3.2. (IIA-821)—NUMBER AND WIDTH OF EXITS FOR LECTURE HALLS IN BUILDINGS OF GROUP C5.5 OCCUPANCY

Capacity of lecture hall in persons	Exits	
	Minimum number	Minimum width per exit in inches
Less than 51	1	36
51 to 125	2	44
126 to 200	3	44
201 to 300	4	60

C 212-3.3 Outdoor Assembly (821.3c)

a——Outdoor assembly, grandstands and tents, and seats, benches and aisles therein, shall be in conformity with generally accepted standards, the requirements of this section, and table C 212-3.1.

b——In seating arranged in rows, there shall be not more than eight loose seats, or ten fixed seats, or fifteen step-type backless seats, between any seat and an aisle.

c——The seat platforms of grandstands not more than 20 feet in height may be of combustible material. Portable grandstands shall be constructed of noncombustible or flame-resistant material.

d——Where loose seats or chairs are provided they shall be secured together in units of at least five. Each unit shall be secured to prevent displacement during occupancy. In permanent outdoor assemblies, seats and footrests shall be fastened securely in place, except that in a box or loge, containing not more than sixteen seats or chairs, they need not be fastened in place provided that there is at least 5 square feet of floor area for each seat or chair.

e——Aisles shall be increased in width ¼ inch for every foot of length from the beginning toward an

exit, or toward a cross aisle, or between cross aisles. Where an exit is provided at both ends of an aisle or cross aisle, such aisle or cross aisle shall be at least the average required width throughout.

f——The number of rows of seats between cross aisles shall not exceed twenty for the first block of seats, nor fifteen for the succeeding blocks. Where there is only one cross aisle above or below a block of seats, the number of rows of seats exiting to such cross aisle shall not exceed fifteen for the first block, nor ten for the second block.

g——The distance between exits from a cross aisle shall not exceed 100 feet. Where the length of a cross aisle is not more than 50 feet, only one exit shall be required.

h——No step shall be permitted in any cross aisle. Steps in longitudinal aisles shall be the full width of the aisle, and shall conform to the requirements of table C 212-4.1.

i——Aisles shall be used only for passage to and from seats, and shall be kept unobstructed.

j——The minimum width of corridors, passageways or ramps shall be 44 inches, which shall be increased ¼ inch for each foot of length from the beginning toward an exit door or gate. No turnstiles shall be permitted in any required exit.

k——Every cross aisle, corridor, passageway, ramp or stairway shall lead to an outside exit doorway or gateway on the main exit level, or to an adequate open space leading to an outside exit.

C 212-4 (821.4) Stairways

C 212-4.1 (821.4a) General Requirements

a——At least one stairway shall continue to the roof in buildings three or more stories in height and having not more than 3 stairways, except where the slope of the roof exceeds 15 degrees. In such buildings having more than 3 stairways, at least two stairways shall continue to the roof. Stairways which do not continue to the roof shall be connected at the

top story by corridors to the stairways which do continue to the roof or to each other.

b——Access to the roof by scuttle and ladder shall be provided for a building two stories in height, where the roof is not accessible by a stairway, and where the slope of the roof is 15 degrees or less.

c——Roofs of buildings three or more stories high, with a slope of 15 degrees or less, which are accessible from stairways, fire escapes, or ramps, shall have a parapet wall or railing not less than 3 feet in height, except where all means of access are interconnected by walkways with walls or railings on both sides not less than 3 feet in height.

d——Stairways which serve as a required exit from any story shall be arranged, and of such size, construction, and materials that they will provide safe ascent or descent. They shall terminate at street level and be connected to a street, or other legal open space, and they shall conform to all requirements of this section and table C 212-4.1, except that minimum headroom shall be 6 feet 6 inches for exit stairs of open parking structures and group C7 occupancy, where employees only are permitted above the grade-level story. In buildings three or more stories in height, such stairways shall be enclosed to provide continuous passage from the highest landing to a landing at grade level without leaving the stairway enclosure.

e——Spiral stairs at least 22 inches wide of noncombustible construction may be used as exits from mezzanine floors not more than 300 square feet in area, and from a fly gallery or gridiron.

f——Noncombustible stairs, at least 22 inches wide, having an inclination of not more than 60 degrees to the horizontal, are permitted as exits from open mechanized parking structures not exceeding eight parking levels in height where no persons other than employees are permitted above the grade-level story. Such stairs shall extend continuously from the street parking level to the roof with an unobstructed landing at each parking level; open sides shall be guarded with substantially constructed screened enclosures or railings at least 36 inches

high, floor openings shall be protected with adequate railings; handrails shall conform to the requirements of table C 212-4.1.

g——Terminal and intermediate landings shall be at the same level as the floor of any story from which doors are provided for entrance or departure to stairways. Such landings shall be at least 6 inches wider than any door opening upon them and at least 42 inches wide, but in no event less than the width of the stairway of which they are a part. There shall be a clearance of at least 22 inches from the edge of a door to any obstruction at any point in the arc of its swing, except that in buildings of group C3 occupancy such clearance shall be at least 44 inches. Door saddles, if any, shall not be more than ¾-inch high and their top edges shall be beveled or rounded, except that in garages door saddles shall be not more than 2 inches high.

h——A unit of width for stairways shall be 22 inches. Credit for fractions of units shall not be allowed except that a credit of one-half unit shall be allowed for 12 inches of clear width added to one or more 22-inch units of width. The capacity of stairways shall be in accordance with table C 212-8b, except that where the story height exceeds 10 feet, the tabulated number of persons per 22-inch unit may be increased by one for each 16 inches of height in excess of 10 feet, plus one person additional for each 5 square feet of unobstructed floor space on the landings within the stair enclosure. The depth of landings and platforms shall be equal to the width of the stairs. The stairway capacity may be increased by 100 per cent and the door capacity by 50 per cent where the entire building is equipped with a sprinkler system that is not otherwise required. No exit stairway shall exceed 132 inches in width.

i——Treads shall be set level and true, and top surfaces shall not vary more than ⅛ inch in any run. Risers shall not vary more than ⅛ inch in height on any run. Stair treads and landings shall be provided with nonslip surfaces.

j——Stairs or steps shall have not less than three risers except as provided in section C 212-5.1h. Such

stairs or steps shall have a guardrail on the open side, or a screened enclosure as set forth in section C 212-4.3b.

k——Stairs less than 44 inches in width shall be provided with a handrail on at least one side, and if 44 inches or more in width, on both sides. If stairways are 88 inches or more in width, they shall also be provided with intermediate handrails spaced not more than 66 inches on center. Handrails may be of wood.

l——Landings shall be provided with guardrails on their open sides.

m——Handrails shall be started at the first tread both top and bottom and shall have no obstruction on or above them tending to break a handhold, and the ends of handrails shall be returned to the wall or newel post.

TABLE C 212-4.1. (III-821)—DIMENSION REQUIREMENTS FOR EXIT STAIRS, HANDRAILS, AND GUARDRAILS

Component	Minimum[1]			Maximum		
	Height	Length	Width	Height	Length	Width
Vertical rise of any run of stairs:						
Group C5 occupancy				8 ft.[4]		
Other than group C5				12 ft.		
Headroom over landing floors and tread nosing	7 ft.					
Stairway			44 in.			132 in.
Landing:						
Terminal		50 in.[3]	44 in.			
Intermediate		44 in.	44 in.			
Tread exclusive of nosing[2]		44 in.	9½ in.		132 in.	
Riser[2]		44 in.		7¾ in.	132 in.	
Handrail:						
Top above landing floor	33 in.			36 in.		
Top above tread nosing	30 in.			36 in.		
Projection from finished wall						3½ in.
Clearance to finished wall			1½ in.			
Guardrail:						
Top above landing floor	33 in.					
Top above tread nosing	30 in.					

1 For exceptions, see section C 212-1i.

2 The product obtained by multiplying height of riser by width of tread, expressed in inches, shall be not less than 70 nor more than 77½.

3 42 inches in 36-inch wide stairways.

4 12½ feet in exterior stairways.

n——Not more than two required stairways shall discharge through a common passageway or lobby on the grade-level story to each street, except that in buildings of group C5.5 occupancy not more than four such stairways may discharge through a common passageway or lobby.

o——No winders shall be permitted in required stairways.

C 212-4.2 (821.4b) Interior Stairways

a——Stair treads, risers and landings shall be solid, except that stairs from boiler, engine or mechanical equipment rooms, or from buildings or structures without enclosing walls, may have perforations or openings not exceeding ½ inch in lesser dimension.

b——Stairs, treads, risers and landings shall be constructed of noncombustible material, except in buildings of type 4 or 5 construction, two stories or less in height.

C 212-4.3 (821.4c) Exterior Stairways

a——Exterior stairways shall terminate in a legal open space, with access to a street. No part of an exterior stairway shall be within 5 feet of any interior lot line.

b——Access to exterior stairways from any floor area shall be through exit doors at floor level, and the platform on which the door opens shall be not less than 4 inches nor more than 7¾ inches below the floor level or the door shall open on a landing having the same level as the floor of that story, where means are provided to prevent accumulation of snow and ice on the landing. Perforations or openings not exceeding ½ inch in lesser dimension, are permitted in treads, landings and platforms. In buildings three or more stories high, open sides of exterior stairways shall be protected with substantially constructed noncombustible screened enclosure at least 48 inches high, except that in buildings of group C5.5 occupancy such screened enclosures

shall be at least 60 inches high. Adjacent wall openings shall be protected in conformity with section C 401-4.1f.

c——Exterior stairways on buildings of type 4 or 5 construction, not more than two stories high, may be constructed of wood provided bearing and supporting members are not less than 4 inches, and all other members are not less than 2 inches in their least dimension. Balconies and platforms shall be securely attached to a wall or supported by columns. Treads and risers shall be as set forth in table C 212-4.1. Exterior stairways of wood shall not be permitted on buildings of group C5, C6.2 or C6.3 occupancy.

d——The platforms and landings shall be guarded by railings, and the stairs by handrails, conforming to the requirements of table C 212-4.1.

e——Exterior stairways and landings on buildings more than 2 stories in height of group C5 occupancy shall be protected with suitable overhead noncombustible construction.

f——Construction shall be in conformity with generally accepted standards.

C 212-4.4 (821.4d) Smokeproof Towers

a——Smokeproof towers, if substituted for a required enclosed exit stairway, shall be of noncombustible construction, shall conform to all the requirements for, and shall have the same capacity as, interior stairways and shall be enclosed in conformity with section C 402-4.7.

b——No opening shall be permitted in the enclosure which separates the stairway from the interior of the building. Access to the stairway shall be provided from every story through a vestibule, balcony, or landing, open to a street or to a legal space.

c——Access from spaces in the building to vestibules, balconies or landings, shall be without the use of a key through doorways not less than 40 inches wide. Such doorways shall be equipped with self-closing doors swinging with the exit travel.

Space Requirements

C 212-4.5 (821.4e) Escalators

a——Escalators operating in the direction of exit travel, and escalators operating in the direction opposite to that of exit travel which are equipped at the head of each flight with a readily accessible device for stopping all flights simultaneously, shall be permitted as an alternative to one required means of egress in buildings not exceeding five stories in height, if enclosed in conformity with the requirements of section C 402-4.7.

b——Escalators shall be installed in conformity with section C 512-3. The minimum width measured between balustrading at a vertical height of 27 inches above the nose line of the treads, shall not be less than 42 inches, which shall be considered as two units of exit width. The depth of the step tread in the direction of travel shall be not less than 15¾ inches, and the rise between treads shall not exceed 8½ inches. Landings shall be provided similar to those required for stairways.

c——No continuous rise shall be more than two stories or 40 feet.

d——The capacity of escalators used as exits shall be determined as for exit stairways.

C 212-5 (821.5) Doors and Doorways

C 212-5.1 (821.5a) General Requirements

a——Doors in required exits shall swing outward in the direction of exit travel, except that doors from individual rooms may swing inward provided that such rooms are not occupied by more than fifty persons, do not contain a high hazard occupancy, are not more than 1000 square feet in area, and wherein the distance to a door does not exceed 50 feet; and as set forth in paragraph b of this section. Vertically operated doors and shutters shall not be permitted in an exit. Doors on stairways shall not have openings therein. Doors on a corridor shall not have openings therein, nor shall transoms above such doors be permitted, except that louvers and transoms are permitted in doors of toilet rooms and sink

closets and except as set forth in paragraph b of this section.

b——Doors in openings between exit passageways and classrooms in group C5.5 occupancy and between such passageways and patients' rooms in group C6 occupancy shall be permitted with louvers, vision panels and transoms, providing such rooms are under continuous supervision whenever occupied.

c——Exit doors from any floor area or occupied space shall be readily openable, shall be arranged so that they can not be locked against exit from such area or space, and shall be equipped with self-closing and other necessary devices which will maintain them in normally closed position, except that self-closing opening protectives, other than those to stairways, may be maintained in an open position provided they are equipped with means for both manual and automatic release. For automatic release, a smoke detector shall be provided near each such opening protective on the occupied side, and release shall be actuated as set forth in section C 511-9a.

d——The exit doors to the exterior of buildings of group C3.3, C4.3, and C5 occupancy, and exit doors from assembly spaces, shall be equipped with approved fire exit bolts which release when pressure is applied to the releasing devices. Such releasing devices shall be bars or panels extending not less than two thirds of the width of the door, shall be placed not less than 30 inches nor more than 44 inches above the floor, and shall clearly indicate the latch side or push side of the door. Fire exit bolts are not required on the main entrance doors or similar doors without spring latches and which are unlocked when the space is occupied.

e——No swing-type exit door shall be more than 44 inches in width nor less than that set forth in table C 212-5.1. Each unit of width for doorways shall be 22 inches, and credit for fractions of units shall not be allowed except that a credit of one-half unit shall be allowed for 12 inches of clear width added to one or more 22-inch units in an opening. A 40-inch door shall be accepted as two units. Where a doorway is

divided into two or more separate door openings, each such opening shall be measured separately in computing the number of units of exit width.

f——The total width of exit doorways or openings shall be not less than required to provide for the total number of persons served by such exit doorways or openings, as determined in accordance with section C 212-8. The total width of exit doorways or openings, through which an exit stairway discharges, shall be at least equal to the width of that stairway.

g——No doorway shall be less than 6 feet 8 inches in height.

h——A grade-story main exit door to the exterior shall open on a level grade, or a landing not less in depth than the swing of the door, extending at least 12 inches beyond each side of the door jamb. Such grade or landing shall be not less than 4 inches nor more than 7¾ inches below the level of the door

TABLE C 212-5.1. (IV-821)—MINIMUM WIDTH OF EXIT DOORS[1]

Location	Minimum width of door, in inches
From an occupied space having two exits	28
From an occupied space where one exit is permitted	36[2]
From a corridor to an enclosed stairway	40[2]
From a stairway to a door discharging to grade level or exterior	44[2]
From an assembly space, capacity less than 300 persons	44[2]
From an assembly space requiring double doors, each leaf	30
From an occupied space having an area not exceeding 150 square feet intended for no more than two occupants	28
From one fire area through an opening in a fire wall	40
From the main exit of a building to the exterior	
where one door is provided	44
where double doors are provided, each leaf	36
From the emergency exit from a boiler room	22
From a boiler room having one exit	36
From space where there is bed traffic	44
From projection room, work rooms intended for one person, and area not exceeding 100 square feet	24
Doors required for physically handicapped (clear opening)	32
Through an overhead garage door (wicket type)	28

1 Where a space falls into more than one group occupancy, the larger door width shall be provided.
2 Minimum door width of 30 inches is permitted where there is more than one door in a doorway.

sill. A landing shall be provided at other than a main entrance, and shall be at least one riser above the adjoining grade.

i——Grade-level exit doors from required stairways and passageways shall swing in the direction of exit travel and shall be hung to swing without obstructing the required width of exit passage. In assembly space the main entrance doors shall not be considered as more than one half of the required exit width.

C 212-5.2 (821.5b) Revolving Doors

a——Not more than 50 per cent of the required exit doors may consist of revolving doors, and there shall be at least one swinging door within 20 feet of each revolving door.

b——Wings of revolving doors shall be released by ordinary body pressure so that they shall readily hold back independently. The clear width of the resulting opening on each side shall be not less than 22 inches.

c——The capacity of revolving doors shall be computed from table C 212-8b on the basis of the minimum width of opening with the wings folded back.

d——Revolving doors shall not be permitted as a required exit from any building of group C5 occupancy for more than two hundred persons, or from any building of group C6.2 or C6.3 occupancy.

C 212-6 (821.6) Exit Enclosures

a——Exits shall be enclosed as set forth in table C 202-2, except as set forth in paragraph b of this section and in section C 402-4.7. Corridors and required interior stairways in buildings more than two stories in height shall be separated from each other. Not more than one opening to such stairways shall be provided on each story, and the opening shall be from a corridor or from a vestibule conforming to the requirements for exits. In a two-story building where two required interior stairs are open to and connected by an exit corridor, such stairs shall be sepa-

rated from each other by at least one opening protective at each level.

b——Stairways without enclosures are permitted from an open mezzanine, balcony or other open tier above the main floor.

c——Stairways from buildings or structures without enclosing walls are not required to be enclosed provided such buildings or structures conform to the requirements of paragraphs d and f of section C 401-3.2.

d——No openings shall be permitted in stairway enclosures except the required doors for entrance or exit as set forth in section C 212-6a, windows in exterior walls, and window or skylight at roof.

e——Exits from upper stories shall be enclosed to the exterior of the building with construction which complies with the requirements set forth in table C 202-2 and section C 402-4.7.

f——Where a required exit stairway serving the upper stories of a building is continued in the same enclosure to one or more stories below the main floor, the portion of the stairway above the main floor shall be separated from the portion of the stairway below the main floor by an enclosure in conformity with section C 402-4.7. An unenclosed stairway from a mezzanine, balcony, or other open tier above the main floor shall not continue to a space below exit discharge at grade level without effective provision being made by change in direction of the run of the stairs, or by separation, so as to make clear the direction of egress to the street and prevent unintentional travel below such exit level.

g——Where a stairway enclosure follows the rake of the stairs, the soffit shall be protected by construction at least equivalent in protection to that of the stairway enclosure.

C 212-7 (821.7) Distance of Travel to, and Location of, Exits

a——Exits shall be independent of, and as remote from each other as is practicable, and shall be readily accessible to occupants of the building.

b——Exits shall be so located that the maximum distance of travel measured from the most remote point on the floor of a fire area to an exit enclosure along the natural and unobstructed path of travel, shall not exceed the distances shown in table C 212-7.

TABLE C 212-7. (V-821)—MAXIMUM TRAVEL DISTANCE TO EXITS

Occupancy	First or grade story		Above- and below-grade stories[3]	
	Unsprinklered	Sprinklered	Unsprinklered	Sprinklered
C1	175	250	150	225
C3.1	175[1]	250[2]	150	225
C4.1	175[1]	250[2]	150	225
C2	150	200	150	200
C3.2	150	200	100	150
C4.2	150	200	100	150
C3.3	100	150	75	100
C4.3	100	150	75	100
C5	150	200	100	150
C6.1	150	200	125	150
C6.2	125	150	100	125
C6.3	100	125	75	100

1 The maximum travel distance may be 450 feet in one-story buildings of type 1 or 2 construction with no fire load, provided that every part of the noncombustible roof truss is more than 35 feet above the floor and the roof deck is not covered with a combustible vapor seal, insulation, or roof covering.

2 The maximum travel distance may be 450 feet in one-story buildings wherein unlimited fire area is permitted.

3 The maximum travel distance on a floor located more than 15 feet below finished grade shall be 75 feet in unsprinklered buildings and 100 feet in sprinklered buildings.

C 212-8 (821.8) Determination of Required Widths, Number, and Types of Exit

1977 a——Exits shall be provided in conformity with the requirements of section C 212-1. Every space and subdivision including a fire area, story, mezzanine or flat roof, occupied or customarily used by persons, shall be provided with at least two exits except as set forth in tables C 212-8c and C 212-8d. The width, number, and type of exits shall be determined in accordance with the following procedure:

First, using table C 212-8a, divide the gross floor

area within the inside perimeter of the space by the applicable floor area per person to determine the number of persons for which exits are to be provided; where the proposed number of persons will be more than that computed by using table C 212-8a, exits shall be provided for the larger number; and where an exit from a mezzanine discharges through the floor below, the floor area of the mezzanine shall be added to the area of the main floor for the purpose of determining the number of persons for which exits are to be provided;

Second, using table C 212-8b, obtain the required total width of exits, the discharge capacity of which is not less than that for the number of persons for which exits are to be provided;

Third, using tables C 212-7, C 212-8c and C 212-8d, determine the minimum number of exits required; and,

Fourth, establish the types of exits as set forth in paragraphs b, c, d, and e of this section.

b——The number of required exits shall consist of enclosed stairways or smokeproof towers from above- and below-grade levels, with the following alternatives permitted in lieu of one stairway or tower where two or more are required: an enclosed ramp; a horizontal exit; an exterior stairway in buildings not exceeding five stories in height, except as set forth in paragraph c of this section; an enclosed escalator in buildings not exceeding five stories in height; a spiral stair as set forth in section C 212-4.1e; an open stairway as set forth in section C 212-6.

TABLE C 212-8a. (VI-821)—FLOOR AREA PER PERSON
In square feet

Occupancy	First or grade story	Above- or below-grade stories
C1	200	150
C3.1	200	150
C4.1	300	250
C2		
Retail and similar stores	50	50
Foodmarket, clothing, department and similar stores	100	100
Auto showrooms, furniture, hardware and similar stores	150	150
C3.2	150	100
C4.2	250	200
C3.3	100	75
C4.3	200	150
C5		
Space containing seats	6[1]	6[1]
Designated waiting and standee space	3	3
Dance halls, restaurants, lodge rooms	15	15
Classrooms	20	20
Court rooms, lecture rooms, waiting room, reading rooms, laboratories	40	40
Billiard rooms, bowling alleys, golf schools, archery ranges	50	50
Other space	40	40
C6.1	150	100
C6.2	150	100
C6.3	100	75

1 For floor area actually occupied by seats. If the entire floor area is considered, or if the seats exceed 21 inches in width, and the distance back to back of seats is 36 inches or more, use 10 square feet.

TABLE C 212-8b. (VII-821)—CAPACITY OF STAIRWAYS AND DOORS TO STAIRWAYS
In number of persons per 22-inch unit of exit width

Occupancy	Stairways[1]	Doors[3]
C1	60	90
C3.1	60	90
C4.1	60	90
C2	50	80
C3.2	50	80
C4.2	50	80
C3.3	30	50
C4.3	30	50
C5	60[2]	90[2]
C6.1	50	80
C6.2	50	80
C6.3	30	50

1 For increased capacity when story height exceeds 10 feet, or when the building is sprinklered, see section C 212-4.1h.
2 100 for tiers or floor areas not more than one story above the grade story.
3 Where the building is sprinklered, capacity shall be increased 50 per cent.

Space Requirements

TABLE C 212-8c. (VIII-821)—MINIMUM NUMBER OF EXITS IN BUILDINGS OF GROUP C5 OCCUPANCY

Capacity of floor or tier, in persons	Minimum number	
	Main floor	Mezzanine, balcony or other open tier above the main floor
	Required exits[1]	Required exits
Less than 51	1	2
51 to 300	2	2
301 to 600	3	3
601 to 750	4	4
751 to 1200	4	4
1201 to 1500	5	5
1501 to 1800	5	6
For each additional 600 in excess of 1800	1	1

1 See section C 212-3.2f.

c——In buildings of group C5.5 and C6.1 occupancy exceeding three stories in height and in buildings of group C6.2 and C6.3 occupancy of any height, an exterior stairway shall not be permitted. For exception see section C 212-4.3c.

d——In buildings of group C5.1, C5.2 and C5.3 occupancy, not exceeding five stories in height where two or more enclosed stairways are required, exterior stairways shall be permitted for not more than one half the total required number of stairways.

e——In a two-story building of group C1, C2, C3.1, C5.1, C5.4 and C5.5 occupancy, an exterior balcony having at least two exterior stairways is permitted as the only exit under the following conditions:

1) Exterior balcony shall have no dead ends.

2) Balcony and stairway shall be constructed of heavy timber or noncombustible materials.

3) Exits from interior spaces shall open directly onto such balcony.

4) Width of such balcony shall be at least 5 feet.

TABLE C 212-8d. (IX-821)—LOCATIONS WHERE ONE EXIT IS PERMITTED[4, 5]

Applicable only to spaces that open to a corridor or directly to the exterior at grade.

Occupancy	Description of location and floor area in square feet[1]	Where distance of travel to an exit in feet does not exceed	
		Sprinklered	Unsprinklered
C1[3] C3.1[3] C4.1[3]	Below grade, less than 2000	100	75
	Grade and above grade, less than 2500	100	100
	Garages as provided in section C 213-1d	100	100
C2[3] C3.2[3] C4.2[3] C6.1[3]	Below grade, less than 1000, and no person regularly employed	75	50
	Grade and above grade, less than 2000	100	75
C3.3 C4.3	Below grade, less than 500, no person regularly employed	50	50
	Grade and above grade, less than 1500	50	50
C5[2]	Motion picture projection booths using nonflammable film	—	—
C6.2 C6.3	Utility rooms below grade less than 500, no person regularly employed	—	—
	Grade, less than 1500	50	50

1 See also section C 212-1o.
2 See section C 212-3.2f.
3 A mezzanine not more than 2000 square feet in area and no dimension greater than 50 feet is permitted to have one exit.
4 One exit is permitted from a story of a building of low hazard occupancy not more than 3 stories in height, and from a story of a buiding of moderate hazard occupancy not more than 2 stories in height; provided no upper story is more than 2000 square feet in area; and there is at east one opening for emergency use in each tenancy. Such openings shall be openable from the inside without the use of tools, shall have a minimum area of 4 square feet, with a minimum dimension of 18 inches.
5 One exit is permitted from a cellar or basement in a building of low or moderate hazard occupancy, provided no person is regularly employed therein, and the area does not exceed 1000 square feet.

C 213 (822) GARAGES AND OPEN PARKING STRUCTURES

C 213-1 (822.1) General Requirements

a——Motor vehicles may be parked or stored in the open upon the premises, but no vehicle may be parked or stored nearer than 5 feet from an opening in a noncombustible wall which is equipped with an opening protective, or nearer than 10 feet from a combustible wall or from an opening in a noncombustible wall which is not equipped with an opening protective.

b——The storage or handling of gasoline or other flammable liquids, and the refinishing of motor vehicles, shall be in conformity with generally accepted standards.

c——Garages shall be arranged and constructed so that flammable or toxic gases or vapors cannot spread to fixed sources of ignition. Floors or decks shall be constructed of noncombustible materials that will not absorb flammable liquids. Each floor or roof deck upon which vehicles are stored shall be pitched for drainage.

d——An above-grade garage space or open parking structure with a floor area of more than 5000 square feet shall be provided with at least two exits; where located below-grade and the floor area exceeds 2000 square feet, at least two exits are required. Pass-through doors shall conform to section C 212-5.1 with bottom of doors not more than 12 inches above floor level.

e——Where two or more exits are required, an automobile ramp connecting not more than three parking levels is permitted as one of the exits.

f——If ramps are used for vehicle travel from street to garage floor or from floor to floor, the slope shall not exceed 15 per cent. Ramps leading to a street shall terminate not less than 20 feet from such street.

g——If roof decks are used for the parking or storage of motor vehicles, the open sides of decks shall be protected by parapet walls or railings. (For bumper-block requirements, see section C 304-9).

h——Central heating equipment for a garage shall be separated as required in section C 402-4.9, and all heating equipment installed in such garage shall comply with the requirements of section C 504-2.14.

i——Above-grade garages in excess of 5000 square feet in area and below-grade garages in excess of 1000 square feet in area shall be provided with mechanical ventilation in conformity with section C 508-3.

j——Garages shall be provided with fire protection equipment in conformity with section C 406.

k——Garage areas in excess of 1000 square feet shall be provided with electric light in conformity with section C 507-2.

C 213-2 (822.2) Garages in, or Attached to, Buildings

a——A garage in, or attached to, a building of any occupancy or use, shall be separated from other space by fire-resistive material and construction. The separation shall comply with section C 402-4.

b——Access between a building of any occupancy or use and a garage shall be as set forth in section C 402-4.10.

C 214 (823) PROJECTION BEYOND THE STREET LINE

C 214-1 (823.1) General Requirements

a——No part of any building or structure shall project beyond the street line so as to encroach upon a public street or space, unless specifically permitted by the municipality.

b——Any part of a building, or sign attached thereto, projecting beyond the street line, shall be constructed so that it can be removed at any time upon demand by the municipality without causing the building to become structurally unsafe.

C 214-2 (823.2) Marquees

Marquees, where permitted, shall be not less than

10 feet above the curb level at any point, shall be constructed of noncombustible materials, shall be securely supported from the building construction, and shall be properly drained.

C 215 (824) FACILITIES FOR THE PHYSICALLY HANDICAPPED

C 215-1 (824.1) General Requirements

a——For the purpose of this section, facilities for the physically handicapped shall include plumbing, heating, electrical, ventilating, air conditioning, refrigerating equipment, elevators, dumbwaiters, escalators, walks, ramps, parking space, floor surfaces, water fountains, telephones, door hardware and other fixtures and elements affecting the functional use of buildings by the physically handicapped.

b——Buildings set forth in table C 215-1 shall be equipped with facilities to provide access and a safe environment for the physically handicapped. Cumulative gross floor area shall be the sum of the gross areas of all floor levels of one or more buildings of the same occupancy on the same premises.

c——The provisions of this section shall be supplemental to, and take precedence over other less restrictive provisions of this Code.

d——Buildings that require facilities for the physically handicapped shall be as set forth in table C 215-1.

TABLE C 215-1. (I-824)—BUILDINGS THAT REQUIRE FACILITIES FOR THE PHYSICALLY HANDICAPPED

Occupancy group	Where the cumulative gross floor area exceeds:
C1, C2, C3.1	50,000 square feet[1]
C5.1, C5.2, C5.3	5,000 square feet
C5.4	5,000 square feet
C5.5 and C6.2	Required in all cases
C6.1[2]	20,000 square feet
Mixed occupancy	[3]

1 For exception, see section C 215-1e.
2 Where determination by per cent results in a number containing a decimal of .5 or more, use the next higher number.
3 See section C 215-1i.

e——Facilities for the physically handicapped shall be provided for at least 25 per cent of the occupied space in a building of C1, C2, and C3.1 occupancy, except as follows:

Such facilities are not required for public spaces having a seating capacity of less than 100 persons.

Such facilities are not required for buildings designed for more than one tenant, where such tenant space is 20,000 square feet or less in area, and where the tenant has no access to other parts of the building.

Such facilities shall be provided for at least 25 per cent of a tenant space exceeding 20,000 square feet in a building designed for more than one tenant, where the tenant has no access to other parts of the building.

f——In buildings of group C5.1, C5.2, C5.3 and C5.4 occupancies, assembly spaces shall have a level area reserved for use by the physically handicapped and such area shall be sufficient for at least two wheelchairs or two per cent of the seating capacity, whichever is larger. The clear area for each wheelchair shall be not less than 60 inches from front to back and not less than 36 inches from side to side. The location of the area shall be such as to permit normal participation by the physically handicapped without obstructing passage to aisles or exits.

g——In buildings of group C6.1 occupancy, at least two sleeping rooms or 2 per cent of the total number of such rooms, whichever is larger, shall be equipped with facilities for the physically handicapped.

h——In buildings of group C6.2 occupancy, at least 10 per cent of the total number of sleeping rooms shall be equipped with facilities for the physically handicapped.

i——In a building of mixed occupancy where the sum of the areas of each of the occupancies is more than that indicated in table C 215-1 for the largest single occupancy of the mixed occupancy, facilities for the physically handicapped shall be required in

such largest occupancy, except as set forth in paragraph e of this section.

C 215-2 (824.2) Path of Travel

C 215-2.1 (824.2a) General Requirements

a——There shall be at least one path of travel consisting of walks, ramps, lobbies, elevators or passageways, or a necessary combination thereof, that provides free and unobstructed access to, and exit from the building. Path of travel shall extend from a public or private roadway, or from an automobile parking space reserved for use by the physically handicapped, to occupied spaces and public spaces within buildings set forth in table C 215-1.

b——The distance along the path of travel from a public or private roadway, or from an automobile parking space reserved for use by the physically handicapped, to a building entrance door shall not exceed 200 feet.

c——Path of travel shall have a durable, finished surface. Steps or abrupt changes in level are not permitted.

d——Path of travel shall extend to at least one public toilet room for each sex and to at least one public drinking fountain.

e——Guardrails at least 32 inches in height shall be provided at the sides of the path of travel where the adjoining surface drops more than 12 inches within three feet thereof. One dimension of opening in guardrail shall not exceed 6 inches.

f——Path of travel shall be provided with artificial light as set forth in section C 507-2.1b.

C 215-2.2 (824.2b) Walks

a—— Walks shall have a width of at least 48 inches.

b——Gradients of walks shall not exceed 1 in 20. Where the gradient exceeds 1 in 20, the path shall be classified as a ramp.

C 215-2.3 Ramps (824.2c)

a——Ramps shall have a width of at least 36 inches provided the minimum clearance between handrails is 36 inches. For buildings of group C6.2 occupancy, ramps shall have a width of at least 48 inches, except that 36 inches is permitted where ramps and adjoining steps connect the same levels.

b——Ramps shall have a non-skid surface and a gradient not exceeding 1 in 12.

c——At each end of a ramp and at a door opening upon a ramp, there shall be a level landing at least 4 feet long.

d——Intermediate level landings at least 4 feet long shall be provided so that the sloping portion of the ramp between landings shall have a length not exceeding 2½ times the inverse of the gradient expressed in feet.

e——A level landing, with a minimum linear dimension of 4 feet, shall be provided wherever a sharp change in direction occurs in a ramp.

f——Where a door opens upon a landing, there shall be a level area having a minimum dimension of 4 feet and extending at least one foot beyond the jamb on the latch side. The door shall not decrease the required dimension of a landing for any arc of its swing.

g——Ramps shall have handrails 32 inches high on both sides. Handrails shall extend at least one foot beyond the top and bottom of the ramp. Handrail extensions shall be designed so that they do not become a hazard.

C 215-2.4 Elevators (824.2d)

a——Where the path of travel includes an elevator, at least one elevator shall conform to the requirements of this section.

b——Elevator cars shall have a clear depth of not less than 46 inches. An unobstructed area at least 4 feet by 5 feet shall be provided in front of the elevator door on the entrance story.

c——Hoistway doors and car doors shall provide a clear opening at least 32 inches in width.

d——In automatic elevators, the emergency controls and controls for stories that are within the path of travel shall be located no higher than 60 inches above the elevator platform. Controls shall have raised buttons or other means that are identifiable by persons with visual handicaps.

e——Horizontal handrails shall be secured to at least two walls of the car, and located no higher than 36 inches above the car platform.

C 215-3 (824.3) Parking Spaces

a——Where parking facilities are provided, at least two parking spaces or two per cent of the total number of parking spaces, whichever is greater, shall be reserved for the physically handicapped, except that no facilities for the physically handicapped are required where the cumulative parking area is less than 2000 square feet.

b——Parking spaces shall be at least 10 feet wide, except that a parking space adjoining a walkway shall be at least 9 feet wide.

c——Parking spaces shall be related to the path of travel so that the physically handicapped need not wheel or walk behind other parked cars, and so that the path of travel within the parking area is a minimum.

C 215-4 (824.4) Doors within the Path of Travel and Doors in Spaces Required to be Accessible to the Physically Handicapped

a——Doors shall be of the single-swing or sliding type. Self-closing devices on doors, and power-operated and power-assisted doors under conditions of power failure, shall have a maximum closing tension of 8 pounds.

b——Single doors shall provide a clear opening at least 32 inches in width. Double doors shall provide a clear opening at least 32 inches in width with one leaf open.

c——In vestibules, the clearance between the arcs of door swings shall be at least 4 feet.

d——Door handles shall be not more than 42 inches above the floor and shall be of a type having a horizontal lever, a square or knurled knob, or otherwise arranged to permit easy operation.

e——Thresholds shall be beveled and shall not exceed three-quarters of an inch in height, except that for C6.2 occupancies, thresholds if any, shall be flush.

f——Doors opening into hazardous areas from the path of travel, shall be equipped with door handles that are identifiable to visually handicapped persons as opening into hazardous areas.

C 215-5 (824.5) Toilet and Bath Facilities

Plumbing fixtures of a type as set forth in section C 215-7 shall be provided as in table C 215-5.

TABLE C 215-5. (II-824)
REQUIRED NUMBER OF TOILET AND BATH FACILITIES

Occupancy group	Plumbing fixtures
C1, C2, C3.1, C5.1, C5.2 and C5.3	A water closet and a lavatory in at least one public toilet room for each sex.[1]
C5.5	A water closet and a lavatory in at least one public toilet room for pupils on each story or floor level, and a water closet and a lavatory in at least one toilet room for staff.
C6.1 and C6.2—private facilities	A water closet, a lavatory and a shower stall or bath tub for each sleeping room required as per sections C 215-1g and C 215-1h.
C6.1 and C6.2—semi-private or central toilet and bath facilities	A water closet and a lavatory for each multiple of two sleeping rooms, and a shower stall or bath tub for each multiple of six sleeping rooms, or fraction thereof, required as per sections C 215-1g and C 215-1h.

1 Public toilet rooms equipped with facilities for the physically handicapped shall be located so that persons need not travel more than two stories thereto.

Space Requirements

C 215-6 (824.6) **Drinking Fountains**

Where public drinking fountains are provided and the path of travel extends thereto, at least one drinking fountain shall be of a type as set forth in section C 215-7.

C 215-7 (824.7) **Usability of Plumbing Fixtures**

a——Adequate clear floor space shall be provided for access to, and safe use of, plumbing fixtures for the physically handicapped. A clear floor space of at least 5 feet by 5 feet shall be available for turning a wheelchair in general toilet rooms, general bathrooms, and general laundry rooms equipped with fixtures for the physically handicapped.

b——Faucet and operating levers at plumbing fixtures for the physically handicapped shall be of wristblade or other suitable type not requiring the use of the hand for operation. Self-closing lavatory faucets shall be prohibited.

c——Where water closets for the physically handicapped are installed in general toilet rooms, they shall be located in stalls at least 36 inches wide and 56 inches deep. Stall doors, where provided, shall swing out and shall afford a clear opening at least 32 inches in width. Where stall doors are provided, the stalls shall be at least 66 inches deep. Where water closets for the physically handicapped in group C6.1 occupancy are provided in dwelling units or in general toilet rooms, a horizontal handrail or grab bar of adequate length and 1¼ inches in diameter shall be securely mounted 32 inches above the floor and conveniently located at one side of the water closet with at least 1½ inches of clearance from walls. Where water closets for the physically handicapped in group C6.2 occupancy are provided, they shall be equipped with seats located 19 to 20 inches above the floor, and horizontal handrails of adequate length and at least 1¼ inches in diameter shall be securely mounted approximately 32 inches above the floor, on each side of the water closet, with at least 1½ inches of clearance between handrails and adjacent walls.

d——Where provided for the physically handicapped, wall mounted and pedestal urinals shall be installed so that rim levels are no more than 21 inches above floor level; floor set stall urinals shall be installed so that rim level is no higher than the toilet room floor level.

e——Lavatories and kitchen sinks for the physically handicapped shall have at least 26 inches clearance between fixture bottom and floor for a depth of 10 inches so as to provide sufficient leg room, and the piping beneath the fixture shall be located or insulated so as to prevent injury to persons in wheelchairs.

f——Where bath tubs are provided for the physically handicapped, grab bars 1¼ inches in diameter shall be securely mounted on two adjacent walls of the tub or its enclosure, one bar installed horizontally 32 inches above the floor and the second bar installed vertically with its lower end at such height.

g——Shower stalls for the physically handicapped shall have non-slip type floors, adjustable type shower heads, and single-lever type mixing valves designed to maintain constant water temperature under variable water pressure and temperature conditions. Mixing valves shall be installed approximately 40 inches above the stall floor and shall be operable from inside and outside the stall by a user at the threshold. Where such shower stalls are provided in dwelling units of group C6.1 occupancy, grab bars 1¼ inches in diameter shall be securely mounted on two adjacent walls of the stall, one bar installed horizontally 32 inches above the floor and the second bar installed vertically with its lower end 32 inches above the floor. Where central bath facilities are provided for group C6.1 occupancy, a shower stall for the physically handicapped shall have at least 9 square feet of floor area, with minimum horizontal dimension of 3 feet, and a curb not exceeding 2 inches in height at the stall entrance. Where central bath facilities are provided for group C6.2 occupancy, a shower stall for the physically handicapped shall have at least 16 square feet of floor area, with minimum horizontal dimension of 4 feet, and a threshold not exceeding one half inch in height at the stall entrance. Where such shower

stalls are provided in central bath facilities for group C6.1 and C6.2 occupancy, they shall be equipped with a folding seat securely attached to a sidewall of the stall, opposite the mixing valve, and installed so that the top of the seat when in the lowered position shall be 19 to 20 inches above the stall floor. Horizontal handrails 1¼ inches in diameter shall be securely mounted 32 inches above the floor on the rear wall and on the wall opposite the seat. Handrails and grab bars shall provide at least 1½ inches of clearance from walls.

h——Drinking fountains for the physically handicapped shall have jets located 31 to 33 inches above the floor and shall have basins projecting 8 inches to 12 inches from the wall or cabinet on which they are mounted. Such drinking fountains shall have up-front jets and controls and shall be designed for hand operation or hand-and-foot operation.

C 215-8 (824.8) Telephones

Where a telephone for private use is not available within the building, at least one public telephone, suitable for the physically handicapped, shall be provided within the path of travel.

C 216 (825) ENCLOSED PASSAGEWAYS AND MALLS BETWEEN BUILDINGS

C 216-1 (825.1) General Requirements for Enclosed Passageways

Buildings connnected by one or more passageways are considered to be a single structure, except that they shall be considered to be separate buildings under the following conditions:

1) Passageways are constructed of noncombustible construction not exceeding one story in height, and are used only for passage.

2) Passageway does not exceed 10 feet in width and 10 feet in height.

3) Entrance from a building to the passageway is through a self-closing 1½ hour opening protec-

tive in an exterior wall having at least a 2-hour fire-resistance rating. Other openings in such exterior wall are protected in accordance with section C 401-4.1.

4) Distance between exterior walls of the buildings connected by such passageway is at least 20 feet.

C 216-2 (825.2) General Requirements for Enclosed Malls

Structures connected by enclosed malls are not required to have fire separation between such structures and malls under the following conditions:

1) The structures are of low or moderate hazard occupancy.

2) The combined structure meets the requirements for accessibility on all sides, as set forth in section C 203-1.1a.

3) Structures more than one story in height are equipped with an automatic sprinkler system, where required exits from structures are through a mall.

4) Malls shall be at least of the following types of construction:

a) Below-grade . . . . . Type 1a
b) One story in height . . . . . Type 2b
c) Two stories in height . . . . . Type 2a
d) More than 2 stories in height . . . . . Type 1b

5) Malls are provided with sprinkler system for moderate hazard use in accordance with generally accepted standards.

6) Tenant spaces requiring two or more exits have at least half such exits opening directly to the exterior or to enclosed exit passageways.

7) A tenant space required to have only one exit, may have such exit opening into the mall, provided such tenant space does not have access to other levels of the building.

8) Vents from spaces in the buildings do not terminate in the mall.

9) The mall is provided with smoke vents, having an open-vent area of at least one per cent of the floor area of the mall. Such vents shall be permanently open or of the automatic type as set forth in section C 406-8a.

10) Malls are at least 25 feet wide and do not contain combustible material.

11) Standpipe system is provided in accordance with section C 511-5.

12) Exit doors from the mall have fire exit bolts, lead directly to the exterior, are spaced at intervals so that distance of travel does not exceed 200 feet, are of a width as set forth in table C 212-5.1, and have sufficient capacity for at least ½ the occupancy load of spaces that are connected to mall at main mall level. Fire exit bolts are not required for doors without latches and which are unlocked when the space is occupied.

13) Fire alarm system is provided so that there is an audible signal in all portions of the structure as per section C 511-2.1a and connected to the local fire department.

14) Emergency lighting conforms to table C 507.

15) Non-swing doors between tenant spaces and enclosed mall are locked in an open position when such space is occupied.

16) Fuel gas piping and equipment is not located in mall.

17) Exit from below grade is not through the grade-level mall.

Part 3

Structural Requirements

C 301 (830)

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, as set forth in this part of this Code.

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——Crawl spaces and unheated concealed spaces below roofs shall be ventilated by openings so located and of such areas as to minimize deterioration of the structural members from condensation or other causes, in conformity with generally accepted standards.

e——Buildings shall be constructed so that ground and surface water will not penetrate into habitable spaces, basements and cellars. Surface adjoining buildings shall be arranged so as to divert surface water away from the building.

f——Materials, assemblies, connections, fastenings and structural members to which they are attached, shall be structurally stable, with allowances made for differences in the expansion and contraction coefficients of connected materials in conformity with generally accepted standards for the material involved.

C 302 (831)

SOIL BEARING VALUE

C 302-1 (831.1)

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. When it can be conclusively proved that the presumptive soil bearing value is adequate for the proposed load, the enforcement officer may accept such proof in lieu of the determination prescribed in section C 302-2b.

C 302-2 (831.2) Determination

a——For buildings in which the sum of the snow load and those live loads of all the floors which are transferred by columns or walls to the soil, divided by grade-floor area, is 200 psf or less, 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 in which the sum of the snow load and those live loads of all the floors which are transferred by columns or walls to the soil, divided by grade-floor area, exceeds 200 psf, there shall be a minimum of one test pit or boring for every 2500 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 for every 10,000 square feet or part thereof of building area shall be carried to a minimum depth below grade equal to the height of building but need not be carried more than 100 feet below grade, or to that minimum depth which shows 25 continuous feet of fine sand or better bearing material than fine sand, or 5 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. Borings samples taken at each significant change of soil strata and at 5-foot intervals thereafter shall be retained and made available to the enforcement officer. When in his opinion additional sub-surface information is required because of the variable geology of the site, additional test pits or borings shall be made.

c——For buildings referred to in section C 302-2b, 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 referred to in section C 302-2b, 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, one such pile test for each 15,000 square feet or part thereof of grade-floor building area, with a minimum of two test piles, or

A generally accepted pile-driving formula.

C 302-3 (831.3) 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 ¾ inch. The additional settlement caused by a 50 per cent increase in the proposed load, measured after a period during which no settlement has occurred for 24 hours, shall not exceed 60 per cent of the total settlement as previously measured under the proposed load.

C 302-4 (831.4) 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 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 1 inch. At each step the load shall remain unchanged until there is no settlement in a 2-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 1 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 1 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.

C 303 (832) ALLOWABLE STRESSES OF MATERIALS

C 303-1 (832.1) 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 C 304-10.

C 303-2 (832.2) Controlled Materials

Where controlled materials are identified and certified for quality and strength by a recognized authoritative inspection service, grading organization, or testing laboratory acceptable to make such tests,

such materials shall conform to the specifications and stresses for controlled materials as set forth in generally accepted 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 or by the architect or engineer responsible for the design.

C 303-3 (832.3) 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 section C 305. 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 C 303-2, or by the architect or engineer responsible for the design.

C 304 (833) DESIGN LOADS

C 304-1 (833.1) 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 C 305. Such loads shall include the dead load and the following imposed loads where applicable: live, snow, wind, soil pressure including surcharge, hydrostatic head, and impact loads.

C 304-2 (833.2) Live Loads

C 304-2.1 (833.2a) General

a——Loads set forth in table C 304-2.2 do not include unusual concentrations, such as but not lim-

ited to heavy machinery, equipment, water tanks, 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 designed to support the uniformly distributed loads or the concentrated loads set forth in table C 304-2.2, whichever produce the greater stress.

c——Uniformly distributed live loads on beams or girders supporting other than storage areas and motor vehicle parking areas, when such structural member supports 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 per cent;

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 per cent,

0.08 per cent for each square foot of area supported,

100 per cent 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 other than storage areas and motor vehicle parking areas, 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 per cent on the roof;

80 per cent on the floor immediately below the roof;

80 per cent on the second floor below the roof;

75 per cent on the third floor below the roof;

70 per cent on the fourth floor below the roof;

65 per cent on the fifth floor below the roof;

60 per cent on the sixth floor below the roof;

55 per cent on the seventh floor below the roof;
50 per cent on the eighth, ninth, tenth, and subsequent floors below the roof.

TABLE C 304-2.2. (I-833)—UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
C1 Business		
Business machine equipment	100	
Office space: (not including storage areas)	50[1]	
Record storage	120	
C2 Mercantile		
Stores, shops for display and sale		
Retail		
On ground floor	100	
On upper floors	75	
Wholesale	120	
C3 Industrial		
Bakeries	150	
Laundries	100	
Manufacturing or processing	125	
Light manufacturing, assembly, etc.	75	
C4 Storage		
Cold Storage		
No overhead system	400	12,000
Overhead system		
Floor	150	2,000
Roof	250	2,000
Light storage	120	
Heavy storage	250	
Paper	(2)	

1 Dead load is to be increased by 20 psf for possible shifting of masonry partitions.
2 50 psf per foot of clear story height.

C 304-2.2 (833.2b) Uniformly Distributed and Concentrated Live Loads

Uniformly distributed and concentrated live loads shall be the greatest loads produced by the intended occupancy and use, but in no case less than the minimum live load in conformity with table C 304-2.2. Minimum loads for occupancies and uses not included in the table shall be in conformity with generally accepted standards. Where a concentrated load is not given, load shall be at least 250 pounds on an area 1 inch in diameter. Other concentrated loads shall be applied as follows: 100 pounds on upper and lower skylight screens, on an area 12 inches square; 200 pounds on an area 1 inch in di-

TABLE C 304-2.2. (I-833)—UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS—Continued

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
C5 Assembly		
Assembly halls, auditoriums, balconies, club rooms, dance halls, exhibition halls, grandstands, gymnasiums, lodge rooms, museums, restaurants, fallout shelters, stadiums, theaters		
Aisles, crossovers, lobbies, vomitories	100	
Main floors, balconies		
Fixed seats	60[3]	
Movable seats	100	
Dressing rooms	40	
Projection rooms	100	
Stage floors	150	
C5 Assembly		
Colleges, schools (exclusive of dormitories)		
Classroom	40	
Laboratories	60	
Lecture halls		
Fixed seats	60	
Movable seats	100	
Places of worship		
Fixed seats	60	
Movable seats	100	
C6 Institutional		
Hospitals		
Clinics	60	
Corridors, above first floor	40	
Examination rooms	60	
Laboratories, dark rooms	100	
Operating rooms	60	
Private rooms	40	
Public space	75	
Solariums	60	
Wards	40	
X-ray rooms, transfer rooms, control spaces	100	
Nurseries	40	
Orphanages, infirmaries	40	
Penal institutions, police lockups, reformatories		
Cell blocks	40	
Shops	80	

3 Grandstands, 100 psf; section C 304-9e for horizontal impact loads.

ameter; 250 pounds on ladder rung, at center of rung for moment, and at end of rung for shear; 300 pounds on elevator machine room floor grating, on an area of 2 inches square; 2000 pounds, on an area of 30 inches square; 12,000 pounds, on an area 30 inches square.

TABLE C 304-2.2. (I-833)—UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS—Continued

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
Spaces common to above occupancies		
Air conditioning space	200	2,000
Corridors		
First floor	100	2,000
Other floors	(4)	2,000
Elevator machine rooms	(5)	300
Exitways	100	
Fan rooms	100	
Garages and ramps, open deck parking structures:		
Cars, passenger	50[6]	2,000[10]
Buses, trucks, mixed usage	175	12,000[10]
Incinerator charging floor	100	
Kitchens (other than domestic)	100	
Ladders		250[11]
Laboratories	100	
Libraries		
Reading rooms	60	
Stacks	(7)	
Lobbies	100	2,000[12]
Locker rooms	75	
Marquees	60	
Promenades	60	
Rest rooms	60	
Roofs used as promenades	60	
Other roofs	(8)	200
Sidewalks over vaults	300	12,000[10]
Skylight screens		100[13]
Stairways	100[9]	
Terraces, yards, for pedestrians	60	
Toilet rooms	60	
Vaults, in office space	250	2,000
Workshops	80	

4 Unless noted elsewhere in this table, 100 psf; corridors within a tenancy not less than occupancy served.
5 For loads, see section C 304-11.
6 Where clear height of garage entrance exceeds 7 feet, load for busses, trucks and mixed usage shall be used.
7 20 psf per foot of height, with a minimum of 150 psf.
8 See section C 304-10c for minimum imposed loads for roofs.
9 Stringers of stairs need be designed only for uniform load.
10 Or actual wheel load increased 50 per cent for impact, whichever is larger.
11 Side rails or ladders need be designed only for 80 pounds at center of every rung, applied simultaneously.
12 For any building where a floor safe may be brought into building.
13 Skylight screens to have ¾-inch to 1-inch mesh; upper screen to be 4 to 10 inches above glass and to overhang an identical amount. No uniform load need be figured.

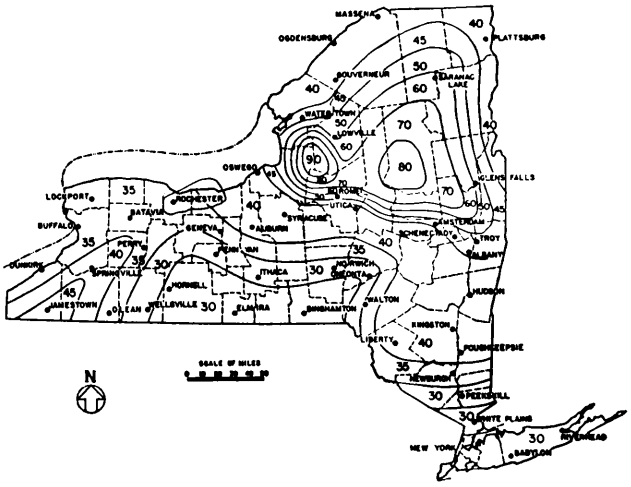
C 304-3 (833.3) Snow Loads

Minimum snow loads shall be in conformity with table C 304-3 and the snow map below, and shall be applied normal to the roof surface.

TABLE C 304-3. (II-833)—SNOW LOADS[1]
In pounds per square foot

Zone numbers on snow map	Roof slope from horizontal[2]					
	0°	20°	30°	40°	50°	60° or more
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 C 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.



C 304-4 (833.4) Wind Loads

Minimum wind loads shall be in conformity with tables C 304-4a and C 304-4b, and shall be applied normal to the surface. These loads are based on a design wind velocity of 75 miles per hour at a height of 30 feet above grade level. Minimum wind loads on signs shall be in conformity with generally accepted standards.

TABLE C 304-4a. (III-833)—WIND LOADS: WALLS, EAVES, CORNICES, TOWERS, MASTS AND CHIMNEYS
In pounds per square foot

At height above grade in feet	Walls[1,4]	Eaves and cornices[2]	Towers, masts and chimneys[4]
501 to 600[3]	34	68	60
401 to 500	33	66	58
301 to 400	32	64	56
201 to 300	30	60	53
101 to 200	28	56	49
61 to 100	24	48	42
41 to 60	21	42	37
26 to 40	18	36	32
0 to 25	15	30	26

1 Exterior walls shall be capable of withstanding wind load on both the interior and exterior surfaces, acting non-simultaneously.
2 Load acting upward.
3 For heights above grade greater than 600 feet, add 1 psf to load for walls for each interval or part of interval of 200 feet above 600 feet; for eaves and cornices, and towers, masts and chimneys, corresponding loads are in proportion to those for walls.
4 Tabular values are for square and rectangular structures. For structures hexagonal or octagonal in plan, use projected area and multiply tabular values by 0.8; for structures round or elliptical in plan, use projected area and multiply values by 0.6.

C 304-5 (833.5) 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 C 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.

TABLE C 304-4b. (IV-833)—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°
501 to 600[3]	Downward	8	8	8 to 24	24
	Upward	29	29 to 24	24	24
401 to 500	Downward	8	8	8 to 23	23
	Upward	28	28 to 23	23	23
301 to 400	Downward	7	7	7 to 22	22
	Upward	27	27 to 22	22	22
201 to 300	Downward	7	7	7 to 21	21
	Upward	25	25 to 21	21	21
101 to 200	Downward	6	6	6 to 20	20
	Upward	24	24 to 20	20	20
61 to 100	Downward	5	5	5 to 17	17
	Upward	20	20 to 17	17	17
36 to 60	Downward	5	5	5 to 15	15
	Upward	19	19 to 15	15	15
21 to 35	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 downward, compute loads by straight-line interpolation.
3 For heights above grade greater than 600 feet, add 1 psf to upward load for 0° to 20° slope for each interval or part of interval of 200 feet above 600 feet; for upward loads on other slopes, and downward loads on all slopes, corresponding loads are in proportion to those for upward load for 0° to 20° slope.

c——The moment of stability of the structure above the horizontal plane under consideration shall be not less than 1½ times the overturning moment due to wind.

C 304-6 (833.6) Sliding Force Due to Wind

The sliding force due to wind load, equal to the overturning force, determined in conformity with section C 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 1½ times the sliding force. Anchors used to resist overturning may also provide resistance to sliding.

C 304-7 (833.7) 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 1¼ times the uplift force.

C 304-8 (833.8) Soil Pressures and Hydrostatic Head Loads

C 304-8.1 (833.8a) 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.

C 304-8.2 (833.8b) Freestanding 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 1½ times the overturning moment.

b——The resistance force due to soil friction shall be not less than 1½ times the sliding force.

C 304-9 (833.9) Horizontal Impact Loads

a——Nonbearing partitions enclosing separate tenancies 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, other than those for parking decks, including hand-railings, 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.

c——Where motor vehicles are parked by a driver, as differentiated from mechanical parking, enclosure walls, parapet walls or barriers, at perimeter of area and around floor openings, shall be designed to re-

sist a minimum linear load of 150 pounds per foot for level floors and 500 pounds per foot for ramps, applied 21 inches above the floor or ramp. Parapet or dwarf guard walls which are less than 42 inches high, shall be surmounted by a railing to a minimum height of 42 inches above the roof or deck, and the horizontal impact loads shall be as required in paragraph b above. A continuous wheel bumper block at least 8 inches high shall be fastened to the floor, 4 feet or more from the walls, and shall be designed to resist a minimum linear load of 300 pounds per foot.

d——Where motor vehicles are parked mechanically, as differentiated from parking by a driver, barriers at the outer edge of deck shall be designed to resist a minimum linear load of 150 pounds per foot applied 21 inches above the deck. Wheel bumper blocks at least 4 inches high, designed to resist a minimum load of 300 pounds per tire, shall be fastened to decks in front of the front wheels and in the rear of the rear wheels, not more than 124 inches clear distance apart.

e——Grandstands shall be designed to resist a horizontal load of 24 pounds per foot, applied to each row of seat platforms in a direction parallel to the length of row, and 10 pounds per foot in a direction perpendicular to the length of row.

f——Craneways shall be designed to resist a horizontal load of 12.5 per cent of the sum of the crane capacity and the weight of the trolley, applied against and perpendicular to the top of each runway rail, or 25 per cent applied similarly to one runway rail, and also to resist a horizontal load equal to 12.5 per cent of the maximum wheel loads applied against and parallel to the top of each runway rail.

C 304-10 (833.10) 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 ex-

cluding wind load, the allowable stress of the material may be increased by one third.

c——On roofs where the slope is such that the snow load plus the wind load total less than 20 psf, the minimum imposed load shall be 20 psf perpendicular to the roof surface.

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.

C 304-11 (833.11) Elevator Machine Loads

The loads on, and the safe working stresses and permissible deflections of, the supports of elevator machines and guiderail brackets, shall be in conformity with generally accepted standards.

C 304-12 (833.12) Loads Imposed During Construction or Demolition

Loads imposed during construction or demolition on 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 structure shall not subject the structure or elements thereof, to loads beyond the design capacity.

C 305 (834) ANALYSIS AND TEST OF STRUCTURAL ASSEMBLIES

The capacity of an assembly to sustain dead and imposed loads without exceeding the allowable stresses shall be determined by any one of the procedures described in this section, or by an approved combination thereof.

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 C 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 C 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.

C 306 (835) PERFORMANCE CRITERIA UNDER TEST

C 306-1 (835.1) 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.

C 306-2 (835.2) 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.

C 306-3 (835.3) Under 1½ Times Imposed Load

a——Under its dead load and 1½ 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.

C 306-4 (835.4) 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.

C 306-5 (835.5) Impact Loads

Under an impact load of 60 pounds falling 4 feet for floors, 1½ feet for walls, roofs and nonbearing partitions enclosing separate tenancies, on an area 10 inches in diameter, applied perpendicular to the assembly at its center, the assembly shall sustain no structural damage.

C 306-6 (835.6) 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 1½ times the load there shall be no structural damage, and under two times the load there shall be no structural failure.

C 306-7 (835.7) Transmitted Loads

Fastenings and connections shall be capable of

transmitting, without failure, twice the loads for which they are designed.

C 307 (836) EXTERIOR PROTECTION

C 307-1 (836.1) 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.

C 307-2 (836.2) Exterior Materials

The exterior facing or covering of walls and roofs shall be resistant to the causes of deterioration as set forth in section C 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.

C 307-3 (836.3) Flashing

Whenever water can penerate 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.

C 307-4 (836.4) Waterproofing

a——Foundation walls of cellars or 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.

C 307-5 (836.5) Grade Protection

Materials and assemblies subject to deterioration when in continued contact with surface water or

melting snow, shall be so treated as to withstand such deterioration, or be placed so that they will not be in contact with such elements.

C 308 (837) **PROTECTION FROM DESTRUCTIVE INSECTS**

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.

C 309 (838) **MATERIALS 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.

Part 4

Fire-Safety Requirements

C 401 (845) PREVENTION OF EXTERIOR FIRE SPREAD

C 401-1 (845.1) General Requirements

a——In order to retard the spread of fire, buildings 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.

b——The minimum fire-resistance ratings of the exterior walls of buildings and accessory structures shall be those set forth in table C 202-2.

C 401-2 (845.2) Determination of Fire Hazard

C 401-2.1 (845.2a) Within Fire Limits

Where 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.

C 401-2.2 (845.2b) Outside the Fire Limits

Those areas not included in fire limits A or B are designated herein as outside the fire limits.

C 401-2.3 (845.2c) Municipalities Having Fire Limits

In municipalities which establish fire limits, buildings and accessory structures within such fire limits shall be constructed in conformity with the requirements set forth in section C 401-3.3 applicable

to buildings within such fire limits. In such municipalities, buildings and accessory structures outside such fire limits shall be constructed in conformity with the requirements set forth in section C 401-3.4 applicable to buildings outside the fire limits.

C 401-2.4 (845.2d) Municipalities Having No Fire Limits

Buildings and accessory structures located in municipalities which do not designate any area or areas as a fire limit shall be constructed in conformity with the requirements set forth in section C 401-3.4 applicable to buildings outside the fire limits.

C 401-3 (845.3) Distance Separations

C 401-3.1 (845.3a) How Measured

Distance separations shall be the clear distance measured between the exterior walls of two buildings on the same premises, or from an exterior wall of a building to an interior lot line.

C 401-3.2 (845.3b) When Required

a——Distance separations set forth in table C 401-3.2 shall be required, except as provided in paragraphs d, e, f, g, h and i of this section.

b——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.

c——Where the height, or construction of the exterior walls, or the hazard classification, of the proposed and existing buildings on the same premises are 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, or for the building of the higher hazard classification, whichever is the greatest distance.

d——The minimum distance separation for an open side of an open parking structure shall be 10 feet.

e——The minimum distance separation for buildings used for the processing or storage of explosive materials shall be based on the nature and quantity of the material in accordance with generally accepted standards, but shall be not less than 30 feet.

f——The minimum distance separation for buildings or structures without enclosing walls, for high hazard occupancy or use, shall be 100 feet; except that when such buildings or structures are provided with fire control or extinguishing systems, the distance may be reduced to 50 feet. If the walls of an exposed structure have a fire-resistance rating of at least 4 hours, no distance separation shall be required but such structure shall not adjoin the open structure on more than two sides.

g——Distance separation for one-story buildings of type 2b construction, not exceeding 3000 square feet, for group C3.1 and C4.1 occupancies, shall not be required outside fire limits.

h——The minimum distance separation from an interior lot line for one-story buildings of type 5 construction, not exceeding 100 square feet in area, permitted for low hazard occupancy, shall be 3 feet.

i——Where zoning regulations and this Code contain distance separation requirements applicable to the same structure, the greater distance separation shall control.

C 401-3.3 (845.3c) Construction Limitations Within Fire Limits

a——Buildings and accessory structures may be of any type of construction other than type 5 providing they conform to the height and fire-area limitations set forth in tables C 203-1a, C 203-1b, C 203-1c, and C 203-1d, and the distance separations conform to the requirements set forth in section C 401-3.2.

b——Nonbearing exterior walls of noncombustible construction shall not be required to have a fire-resistance rating where distance separations conform to the requirements of table C 401-3.2, and pro-

vided a continuous vertical separation or spandrel at least 3 feet in height, or a horizontal extension of at least 2 feet, with a fire-resistance rating of at least 1 hour, is constructed at the floor level of each story. Such walls shall be required to have a fire-resistance rating where they form a part of an exit or other space required to be enclosed. A separation or spandrel shall not be required on open parking structures, or on buildings not more than two stories in height.

c——Open and enclosed balconies and porches shall be constructed of noncombustible materials.

TABLE C 401-3.2. (I-845)—MINIMUM DISTANCE SEPARATIONS[1]
in feet

Hazard classification	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 4 hours	Less than 4 hours but at least 2 hours	Less than 2 hours but at least ¾ hour	Less than ¾ hour	At least ¾ hour	Less than ¾ hour	
WITHIN FIRE LIMITS								
Low	1	0	0	5	5	np	np	np
	2	0	0	5	10	np	np	np
	3 or more	0	0	5	10	np	np	np
Moderate	1	0	5	5	10	np	np	np
	2	0	5	10	15	np	np	np
	3 or more	0	5	10	np	np	np	np
High	1	0	5	15	15	np	np	np
	2	0	10	np	np	np	np	np
	3 or more	0	10	np	np	np	np	np
OUTSIDE THE FIRE LIMITS								
Low	1	0	0	5	5	5	10	15
	2	0	0	5	5	5	15	20
	3 or more	0	0	5	10	np	np	np
Moderate	1	0	0	5	10	10	15	50
	2	0	0	5	10	10	20	50
	3 or more	0	0	10	np	np	np	np
High	1	0	5	15	20	30	50	100
	2	0	10	20	30	np	np	np
	3 or more	0	10	np	np	np	np	np

1 Buildings of group C5 and C6 occupancies shall be considered as low hazard for determining distance separation.

C 401-3.4 (845.3d) Construction Limitations Outside the Fire Limits

a——Buildings and accessory structures may be of any type of construction providing they conform to the height and area limitations set forth in tables C 203-1a, C 203-1b, C 203-1c, and C 203-1d, and the distance separations conform to the requirements set forth in section C 401-3.2.

b——Nonbearing exterior walls of noncombustible construction shall not be required to have a fire-resistance rating where distance separations conform to the requirements of table C 401-3.2, and provided a continuous vertical separation or spandrel at least 3 feet in height, or a horizontal extension of at least 2 feet, with a fire-resistance rating of at least 1 hour, is constructed at the floor level of each story. Such walls shall be required to have a fire-resistance rating where they form a part of an exit or other space required to be enclosed. A separation or spandrel shall not be required on open parking structures, or on buildings not more than two stories in height.

c——Open porches, verandas, and balconies or enclosed porches with at least 60 per cent of glazed area on three sides on buildings of group C6 occupancy may be constructed of combustible materials provided they do not extend upward more than 20 feet above the grade level, and do not encroach upon the minimum distance separation for buildings with walls having combustible exterior facing as set forth in table C 401-3.2; if they exceed said limitations or serve as horizontal exits, they shall be constructed of noncombustible material.

C 401-4 (845.4) Protection of Openings in Exterior Walls

C 401-4.1 (845.4a) General Requirements

a——Windows in exterior walls of buildings may be glazed with plastic materials provided that on each story such glazing does not exceed 25 per cent of the area of the wall having the glazing, and each piece is not more than 4 feet in vertical dimension and 12 square feet in area, and is in conformity with the provisions of this section, and section C 404.

b——Exterior wall openings in buildings for low, moderate and high hazard occupancies located less than 3, 6 and 9 feet, respectively, from an interior lot line, shall be equipped with opening protectives.

c——Exterior wall openings in buildings for low, moderate and high hazard occupancies, less than 10, 20 and 30 feet, respectively, from an opening in a facing wall or from a building of type 5b construction, shall be equipped with opening protectives.

d——An exterior wall opening which is directly above another opening in the next lower story shall be equipped with an opening protective, except where one of the following conditions prevail:

1) Between openings there is at least 3 feet vertical separation or 2 feet horizontal extension, that has the required fire-resistance rating.

2) One of the openings contains air-conditioning equipment and there is at least 2 feet vertical separation or 2 feet horizontal extension, that has the required fire-resistance rating.

Such opening protectives are not required for open parking structures, or for buildings not more than two stories in height.

e——Exterior wall openings, less than 30, 40 and 50 feet above and 10, 20 and 30 feet horizontally from an extension or an adjacent building for low, moderate and high hazard occupancies, respectively, shall be equipped with opening protectives, unless the roof construction of such extension or adjacent building has a fire-resistance rating of 1 hour or more.

f——Exterior wall openings, less than 10 feet from an exterior stairway or a bridge or balcony serving as an exit, shall be equipped with opening protectives, except as set forth in section C 212-8e.

g——Openings in exterior walls of enclosed exits shall be equipped with opening protectives, except that such protectives shall not be required for openings in the first story of exterior walls facing a street or open space at least 30 feet wide.

h——Exterior wall openings in buildings of group C3.3 and C4.3 occupancy shall be equipped with

opening protectives, except in buildings of type 5 construction.

i——The area of openings in exterior walls required to have a distance separation, shall be limited as indicated in table C 401-4.1. Where a spandrel is required, such area shall be based upon the wall area less the spandrel area.

TABLE C 401-4.1. (II-845)—OPENINGS IN EXTERIOR WALLS

Distance separation or legal open space in feet	Area of openings in percent of exterior wall area		
	Low or moderate hazard building height		High hazard
	One-story	More than one-story	
Less than 20	50	40	20
At least 20 but less than 30	100	60	30
At least 30	100	100	50

C 401-4.2 (845.4b) Fire Resistance of Exterior Wall Opening Protectives

Fire-resistance ratings of required exterior wall opening protectives shall be at least ¾ hour. Vision panels in opening protectives shall be of materials and size that will maintain the integrity of the required fire-resistance rating.

C 401-5 (845.5) 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.

C 401-5.1 (845.5a) Classification

Roof coverings shall be classified on the basis of their resistance to exterior fire exposures 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.

C 401-5.2 (845.5b) Limitations of Use

a——Within the fire limits, roof coverings, with or without insulation, shall be class 1 or 2, except that where the distance separation between buildings is more than 20 feet and the horizontal projected area of the roof does not exceed 2500 square feet, class 3 roof coverings may be used.

b——Outside the fire limits, roof coverings, with or without insulation, shall be class 1, 2 or 3; except that where the distance separation between buildings is more than 20 feet and the horizontal projected area of the roof does not exceed 2500 square feet, and the building does not exceed two stories in height, class 4 roof coverings or wood shingles may be used.

C 401-5.3 (845.5c) Skylights

a——Skylights and roof panels shall conform to the requirements for roof coverings as set forth in section C 401-5, except as provided in section C 401-5.3.

b——Skylights and roof panels in roofs not required to have a fire-resistance rating are permitted to be glazed with plastic as set forth in section C 404, provided that each skylight or panel does not exceed 200 square feet in area, and that the distance between them is at least 5 feet.

c——Skylights and roof panels in roofs required to have a fire-resistance rating, are permitted to be glazed with plastic as set forth in section C 404, provided that the aggregate area of such material does not exceed 20 per cent of the space below the skylight or panel, that the area of each skylight or panel does not exceed 100 square feet, and that the distance between them is at least 10 feet.

d——Skylights shall be mounted above the plane of the roof.

e——Glass in skylights and roof panels on a roof having a slope of less than 30 degrees shall be protected with screens above and below the glass, conforming to the requirements set forth in section C 402-4.7k.

f——Glazing in skylights and roof panels shall be readily breakable or removable in an emergency.

C 401-6 (845.6) Parapet Walls

a——Parapet wall shall be provided on exterior walls of buildings of type 2b, 3 and 4 construction more than one story high, where such exterior walls are required to have a fire-resistance rating. Parapet walls shall be provided on fire and party walls which are required to extend through the roof.

b——The height and fire-resistance ratings of parapet walls shall be in accordance with table C 401-6.

TABLE C 401-6. (III-845)—PARAPET WALLS

Required fire-resistance rating of building wall in hours	Minimum fire-resistance rating of parapet wall in hours	Minimum height of parapet wall in feet
¾	¾	¾
1	1	1
2	2	2
3 or 4	3	3

C 401-7 (845.7) Party Walls

a——Where buildings are joined at a common lot line, such buildings shall be separated by party walls in conformity with the requirements set forth in this section.

b——Openings shall not be permitted in party walls.

C 401-7.1 (845.7b) Construction

a——Party walls shall form a continuous fire and smoke barrier between adjoining buildings and foun-

dations 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.

b——Party walls shall be constructed of noncombustible materials and shall extend above the roof to form a parapet wall, in conformity with the requirements of table C 401-6, when either building is of type 2b, 3, 4, or 5 construction. When a roof is of noncombustible construction having a fire-resistance rating of at least ¾ hour, a party wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

c——Party walls shall be made smoketight at their junction with exterior walls. In type 5 construction, the exterior walls shall be protected with noncombustible construction of the same fire-resistance rating at the party walls for a distance of at least 24 inches on each side of the party wall, or the party wall shall project through the exterior wall at least 12 inches.

d——Where 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 4 inches of solid noncombustible material below and at the sides and ends of such members in buildings of low or moderate hazard occupancy; at least 6 inches when either building is of high hazard occupancy.

C 401-7.2 (845.7c) Fire Resistance

a——The fire-resistance ratings of party walls shall be as set forth in table C 202-2, except as otherwise set forth in this section.

b——The fire-resistance ratings of party walls, where either building is of group C2, C3.2, C4.2 or C5.2 occupancy, shall be at least 3 hours.

c——The fire-resistance ratings of party walls, where either building is of group C3.3, C4.3, C5.3 or C6.3 occupancy, shall be at least 4 hours.

Fire-Safety Requirements

C 401-8 (845.8) Eaves, Cornices and Exterior Trim

a——Eaves and cornices of combustible construction shall not encroach upon required distance separation, shall not extend vertically more than 5 feet, and shall be prohibited on buildings more than two stories in height, except as provided in paragraph b of this section.

b——Eaves and cornices of combustible construction are permitted on buildings more than two stories in height provided they do not extend horizontally nor vertically more than 2 feet, and the soffit is of noncombustible construction.

c——Where eaves and cornices of combustible construction as set forth in section C 401-8a are at least 10 feet from an interior lot line or a similar building appurtenance on the premises, such eaves and cornices are permitted to extend horizontally not more than 5 feet.

d——Where exterior trim of combustible construction, (other than eaves and cornices) exceeds 50 square feet in area and is located more than one story above adjoining finished grade on a building of other than type 5 construction; such trim shall be at least 5 feet from exterior wall openings at the same or higher elevation, or opening protectives shall be provided.

C 401-9 (845.9) Combustible Facings on Noncombustible Exterior Walls

Combustible materials may be used as the exterior facing on walls of masonry construction without affecting the construction classification of the building, provided the installation is as follows:

1) Combustible material is mounted directly to the wall.

2) The distance separation is not less than 15 feet.

3) Such combustible material is located not more than 35 feet above grade.

4) Distance from exterior wall openings is at least 10 feet.

5) Plastic material, where used, is in conformity with the requirements of section C 404-1.

6) Parapet walls having a fire-resistance rating of at least 2 hours are provided where combustible facing is less than 15 feet to a roof of combustible construction.

C 402 (846) PREVENTION OF INTERIOR FIRE SPREAD

C 402-1 (846.1) General Requirements

a——Structural elements or members, including walls, partitions, columns, beams and trusses, shall have fire-resistance ratings of not less than those set forth in table C 202-2, except as required by sections C 402-2, C 402-3 and C 402-4. The fire-resistance ratings of the structural elements or members shall be determined in conformity with generally accepted standard fire test procedure.

b——Spaces having a higher hazard classification than the building in which they are located shall be enclosed by fire-resistive construction, or protected in conformity with sections C 402-4.1 and C 402-4.2.

c——Exits, including passageways, hallways and stairways, and elevator and dumbwaiter hoistways, escalators, shafts and other openings in floors, shall be enclosed or protected as set forth in section C 402-4.7.

d——In buildings of type 1 and 2 construction, nonbearing partitions subdividing a tenant space are permitted as follows:

Maximum height of buildings		Maximum area of space to be subdivided, sq. ft.	Construction of partition
in stories	in feet		
—	150	10,000	fire-retardant wood
—	150	2,000	wood
2	40	20,000	fire-retardant wood

e——Construction not required to have a fire-resistance rating may have combustible doors having no fire-resistance rating.

f——Flammable materials shall not be permitted as insulation or fill.

C 402-2 (846.2) Fire Walls

The floor area of buildings shall be divided by fire walls into fire areas in accordance with section C 203, including tables C 203-1a, C 203-1b, C 203-1c, and C 203-1d.

C 402-2.1 (846.2a) Construction

a——Fire walls shall form a continuous fire and smoke barrier between fire areas from foundations to or through the roof, except that a fire wall may be offset at floor levels if the floor construction and its supports have the same fire-resistance rating as the wall; and the removal or collapse of construction on one side shall not endanger the support of construction on the opposite side.

b——Fire walls shall be constructed of noncombustible material and shall extend above the roof to form a parapet wall in conformity with the requirements of table C 401-6. Where a roof is of noncombustible construction having a fire-resistance rating of at least ¾ hour, a fire wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

c——Fire walls in type 2, 3 or 4 construction shall not be required to extend downward through a cellar, basement, or lowest story, provided the floor over such cellar, basement, or lowest story is type 1 construction, and the structural supports for the fire walls have fire-resistance ratings at least equal to those required for the fire wall.

d——Fire walls shall be made smoketight at their junction with exterior walls. In type 5 construction, the exterior walls shall be protected with noncombustible construction of the same fire-resistance rating as the fire walls for a distance of at least 24 inches on each side of the fire wall, or the fire wall shall project through the exterior wall at least 12 inches.

e——Where combustible members, such as joists and beams, are framed into fire walls, such combustible members shall not extend through the wall

but shall have at least 4 inches of solid noncombustible material below and at the sides and ends of such members in buildings of low or moderate hazard occupancy; at least 6 inches when either building is of high hazard occupancy.

C 402-2.2 (846.2b) Fire Resistance

The fire-resistance ratings of fire walls shall be the same as for party walls as set forth in section C 401-7.2.

C 402-3 (846.3) Protection of Columns, Beams, Girders and Trusses in Buildings of Type 1 and 2a Construction

a——Columns and vertical suspension members shall be individually encased throughout their length by fire-protective materials having fire-resistance ratings prescribed in table C 202-2, except as provided in paragraphs d and e of this section.

b——Beams, girders and trusses supporting more than one floor or a roof and at least one floor, shall be individually encased throughout their length by fire-protective material having fire-resistance ratings prescribed in table C 202-2, except as provided in paragraphs d and e of this section.

c——Beams, girders and trusses supporting only one floor or a roof shall be individually encased by fire-protective material or be fire protected by a continuous ceiling to provide a fire-resistance rating equivalent to that required for the floor or roof construction which they support or of which they form a part, as prescribed in table C 202-2; except as provided in paragraphs d and e of this section, and except that protection of such members is not required for roof construction where the lowest portion of such members is 20 feet or more above the floor next below, provided the building is equipped with a sprinkler system or a fire- and smoke-detecting system.

d——That portion of structural steel exposed on the exterior of a building, is not required to be encased or enclosed by fire-protective materials provided that the distance separation is not less than that set forth

in section C 401-3.2 for noncombustible walls with a fire-resistance rating of less than ¾ hour, and provisions are made to limit the average rise in the temperature of the steel under fire conditions to 1000° F.

e——In one-story buildings of group C1, C3.1, C4.1, C5 and C6 occupancy, roof construction and columns supporting roof construction are not required to be encased or enclosed by fire-protective materials, except that basic fire areas for such buildings shall be limited to 30,000 square feet or as set forth in tables C 203-1a, C 203-1b, and C 203-1c, whichever is less; and except that unlimited fire area is permitted for such buildings, provided they are equipped with sprinkler systems.

f——Where ceilings that are required to provide a fire-resistance rating to a ceiling assembly, are pierced or recessed for fixtures, devices or duct outlets, adequate provision shall be made to maintain the integrity of such ceiling assembly.

g——Lintels more than 8 feet long that are located in bearing walls shall conform to the fire-resistance rating requirements for such walls as set forth in table C 202-2 except as provided in section C 402-3d.

C 402-4 (846.4) Division by Fire Separations

a——Where a building has two or more occupancies or uses, or two or more tenancies of the same occupancy group, none being accessory to another, such occupancies or tenancies shall be separated vertically and horizontally by fire separations having fire-resistance ratings in conformity with the requirements of table C 402-4, except as provided in paragraph f of this section.

b——Separations between lobbies or corridors other than required exits, and spaces adjacent thereto, may have openings not exceeding 35 square feet in area, equipped with self-closing opening protectives. Such openings shall be protected by sprinklers on each side of the separation.

c——Display windows in lobbies and exit corridors

TABLE C 402-4. (I-846)—MINIMUM FIRE SEPARATION REQUIRED BETWEEN OCCUPANCIES
(Fire-resistance ratings in hours)

Occupancy	C1	C2	C3.1	C3.2	C3.3	C4.1	C4.2	C4.3	C5.1	C5.2	C5.3	C5.4	C5.5	C6.1	C6.2	C6.3
A1	See Code applicable to One- and Two-Family Dwellings, Table A 402-3.															
B1	See Code applicable to Multiple Dwellings, Table B 402-4.															
B2	See Code applicable to Multiple Dwellings, Table B 402-4.															
B3	See Code applicable to Multiple Dwellings, Table B 402-4.															
C1	1	3[1]	2[1]	3[1]	np	2[1]	3[1]	np	2[1]	3[1]	4	2	2	2[1]	np	np
C2		1	2[1]	3	np	2	3	np	2[1]	3[1]	4[3]	3	3	3	3[3]	np
C3.1			1	2[1]	4[2]	2[1]	3[1]	4[2]	2[1]	3[3]	4[3]	2[1]	2[1]	np	np	np
C3.2				2	4[2]	2	3	4	np	np	np	np	np	np	np	np
C3.3					4	4[2]	4[2]	4	np	np	np	np	np	np	np	np
C4.1						2[1]	3[1]	4	2	3[3]	4[3]	np	np	np	np	np
C4.2							3	4	np	np	np	np	np	np	np	np
C4.3								4	np	np	np	np	np	np	np	np
C5.1									2[4]	3[4]	4[4]	2[1]	2[1]	2	2	2
C5.2										3[4]	4[4]	3[1]	3[1]	3	2	3
C5.3											4[4]	4	4	4	4	4
C5.4												2	2	2	2	2
C5.5													2	2	2	2
C6.1														2	2	2
C6.2															2	2
C6.3																2

1 One hour in type 2b, 3, and 4 construction and ¾ hour in type 5 construction.
2 For restrictions on a high hazard use area, see section C 402-4.1; for restrictions on a moderate hazard use area, see section C 402-4.2.
3 Openings in separation not permitted.
4 Vertical fire separations shall not be required between two spaces for groups C5.1, C5.2, or C5.3 occupancies or any combination thereof where such spaces are occupied by one tenant.

shall be separated from other parts of the building by a fire separation having a fire-resistance rating of at least 1 hour. Access openings to display windows shall be equipped with self-closing opening protectives.

d——Where the lobbies or corridors other than required exits, and the adjacent spaces, are both protected with a sprinkler system, there shall be no restriction on the size of openings in the fire separation, and no requirement for opening protectives.

e——Vending or service equipment or stands such as those used for the sale or distribution of tobacco, candy, or periodicals, may be located in lobbies, corridors, and passageways, provided that they involve no greater fire hazard than that incidental to the ordinary equipment of the lobby, corridor, or passageway, and do not obstruct nor interfere with any part of a required exit.

f——Not more than one occupancy shall be permitted in buildings of type 5 construction, except that a one- and two-family dwelling may be in a building of group C1, C2, C3.1 or C4.1 occupancy, providing the fire separation between the occupancies or uses has a fire-resistance rating of at least 1 hour and is finished on the nonresidential side with noncombustible material.

g——Motion picture projection rooms and their accessory spaces shall be enclosed by noncombustible construction having a fire-resistance rating of at least 1 hour.

C 402-4.1 (846.4b) Accessory High Hazard Occupancies

a——Where a building has two or more occupancies, the larger occupancy being low hazard or moderate hazard and the other occupancy, accessory high hazard, such high hazard occupancy shall be separated from other occupancies in accordance with the following:

Where space for the high hazard occupancy amounts to more than 10 per cent of the fire area or more than 5000 square feet, such high hazard

space shall be separated from the other occupancies in conformity with the requirements of table C 402-4.

Where space for the high hazard occupancy amounts to 10 per cent or less of the fire area, or 5000 square feet or less, whichever is smaller, such high hazard space shall be separated by noncombustible construction having a fire-resistance rating of at least 2 hours, with heat vents directly through the roof or an exterior wall without passing through intervening space, in lieu of the requirements of table C 402-4.

Where space for the high hazard occupancy amounts to 5 per cent or less of the fire area, or 2500 square feet or less, whichever is smaller, such high hazard space shall be separated by noncombustible partial enclosures with heat vents directly through the roof or an exterior wall without passing through intervening space, and provided with sprinklers in the high hazard space in lieu of the requirements of table C 402-4. Such sprinklers shall conform to the requirements of section C 511-4.

b——Group C3 and C4 occupancies involving the processing, use or storage of explosive materials shall not be permitted in the same building with any other occupancy, except where the occupancy is accessory to the primary occupancy of the building. Explosion vents shall be provided in buildings of such occupancies in conformity with generally accepted standards.

C 402-4.2 (846.4c) Accessory Moderate Hazard Occupancies

Where a building has two or more occupancies, the larger occupancy being low hazard and the other occupancy, accessory moderate hazard, such moderate hazard occupancy shall be separated from other occupancies in accordance with the following:

Where space for the moderate hazard occupancy amounts to more than 10 per cent of the fire area, or more than 10,000 square feet, such moderate hazard space shall be separated from the other

occupancies in conformity with the requirements of table C 402-4.

Where space for the moderate hazard occupancy amounts to 10 per cent or less of the fire area or 10,000 square feet or less, whichever is smaller, such moderate hazard space shall be separated by noncombustible construction having a fire-resistance rating of at least 1 hour, in lieu of the requirements of table C 402-4.

Where space for the moderate hazard occupancy amounts to 5 per cent or less of the fire area, or 5,000 square feet or less, whichever is smaller, such moderate hazard space shall be separated by noncombustible partial enclosures with heat vents directly through the roof or an exterior wall without passing through intervening space, and with sprinklers in the moderate hazard space in lieu of the requirements of table C 402-4. Such sprinklers shall conform to the requirements of section C 511-4.

C 402-4.3 (846.4d) Accessory Group C1 Occupancy

Where a building of high hazard or moderate hazard occupancy, has an accessory group C1 occupancy exceeding 1000 square feet in area, such group C1 occupancy shall be separated from the other occupancy by construction having a fire-resistance rating of at least 1 hour. For exception see C 402-4.10a.

C 402-4.4 (846.4e) Heat Banking Areas

a——In buildings or spaces where sprinkler systems are required, heat banking areas shall be provided. The maximum distances between draft curtains or between a draft curtain and a wall shall be 400 feet in a building of C3.1 and C4.1 occupancy, 300 feet in a building of C3.2 and C4.2 occupancy, and 100 feet in a building of C3.3 and C4.3 occupancy.

b——The material, depth, and arrangement of draft curtains shall conform to generally accepted standards.

C 402-4.5 (846.4f) Stages and Auxiliary Areas

a——The stage of an assembly space shall be separated from the auditorium by a proscenium wall having a fire-resistance rating of at least 2 hours.

b——One opening at each side of the stage and not more than three openings below the level of the stage, each not more than 3 feet wide, shall be permitted in the proscenium wall. Such openings shall be equipped with self-closing opening protectives in accordance with table C 402-4.11. Openings, other than the proscenium opening, shall not exceed 21 square feet in area.

c——The proscenium opening shall be protected by a fire curtain designed and installed so that it can be closed without the use of power in case of an emergency.

d——Stages of assembly spaces shall be equipped with automatic smoke and heat vents in conformity with generally accepted standards, and as set forth in section C 511-9b.

e——Workshops and storage rooms for scenery shall be separated from the stage by fire separations having a fire-resistance rating of at least 2 hours.

f——Dressing rooms shall be separated from the stage by fire separations having a fire-resistance rating of at least 2 hours.

g——Scenery, curtains or decorations and interior trim and finish on or about the stage or platform shall be noncombustible or flame-resistant materials.

h——The requirements of this section applicable to a stage shall not apply to a platform less than 25 feet in depth with a height from platform to ceiling of less than 25 feet and without provision for the theatrical type scenery. A motion picture screen and sound equipment may be installed on such a platform.

C 402-4.6 (846.4g) Enclosure of Storage and Service Rooms

a——Paint shops, and other storage and service rooms or spaces where flammable materials are

stored or used, shall be enclosed by construction having a fire-resistance rating of at least 2 hours. In buildings of group C5.2, C5.3, C5.4, C5.5, C6.2 and C6.3 occupancies in which flammable materials are stored or used in such shops, rooms or spaces, or the fire load exceeds 80,000 Btu per square foot, access shall be from the exterior of the building or from the interior through a vestibule having at least a 2-hour fire-resistance rating.

b——Carpenter and repair shops, and stock rooms shall be enclosed by construction having a fire-resistance rating of at least 1 hour.

c——Packing, receiving and shipping rooms shall be enclosed by construction having a fire-resistance rating of at least 2 hours, except that such enclosure shall not be required in buildings of group C3.1 and C4.1 occupancies. Space for the loading and unloading of motor vehicles shall be protected in conformity with the requirements of section C 402-4.10.

d——Refrigeration machinery rooms shall be enclosed with construction having a fire-resistance rating of at least 1 hour when flammable or toxic refrigerant is used.

C 402-4.7 (846.4h) Enclosure of Exits, Stairways, Hoistways, and Shafts

a——Exits shall be enclosed with fire-resistive construction as set forth in section C 212-6, except as otherwise set forth in this section.

b——Elevator and dumbwaiter hoistways, escalators, shafts and other opening in floors, shall be enclosed with construction having minimum fire-resistance ratings as set forth in table C 202-2, except as set forth in paragraphs c, d and e of this section.

c——Stairways and escalators, other than required enclosed exits, for travel between not more than two successive stories of one tenancy or occupancy, may be permitted without enclosure provided such openings are protected with automatic opening protectives, or by some combination of sprinklers, draft curtains, fire- and smoke-detecting and ventilating devices, in conformity with generally accepted standards.

d——In buildings of group C2 occupancy of one tenancy, escalators and stairways, other than required exits, which extend through more than two stories, may be permitted without enclosure provided the floor openings are protected with automatic opening protectives or by a combination of sprinklers, draft curtains, fire-detecting and ventilating devices, in conformity with generally accepted standards.

e——Enclosures for intercommunicating stairs or escalators shall not be required where such stairs or escalators pass through only one floor to a room in each of the stories which they connect. Such rooms shall be enclosed with construction having a fire-resistance rating of at least 1 hour, and area of each room shall not exceed 1000 square feet.

f——Basement or cellar stairs shall be enclosed and separated from stairs leading to or from the upper stories, at the grade-level story, and shall have the openings at the top and bottom of such enclosure protected with self-closing opening protectives. Openings to an exit tunnel or passageway, leading directly to the exterior, shall be protected with self-closing opening protectives at the top or bottom of entry to such tunnel or passageway.

g——Openings in enclosures for exits, stairways, hoistways, and shafts shall be protected with opening protectives conforming to the requirements set forth in sections C 401-4.1, C 401-4.2 and C 402-4.11.

h——Corridors or hallways which are separated from enclosed exit stairs by fire separations with opening protectives meeting the requirements set forth in section C 402-4.11, shall be enclosed as set forth in paragraph a of this section, except that fire-resistance ratings of more than one hour shall not be required for the enclosure of the corridors or hallways.

i——Shafts and hoistways which do not extend to the lowest floor, basement, or cellar of a building, shall be closed at the bottom. All shafts and hoistways which do not extend through the roof construction shall be closed at the top. Such closures shall have a fire-resistance rating at least equal to that of the nearest floor of the building but not less

than that required for the enclosing walls of the shaft or hoistway.

j——A shaft exceeding 150 feet in height, and an enclosed stairway, shaft or hoistway having an area exceeding 4 square feet, penetrating two floors or more, other than mezzanine floors, and not extending through the roof, shall be provided with smoke vents having an area of at least 3½ per cent of the stairway, shaft or hoistway area. Such vents shall have the same fire-resistance rating as required for the shaft enclosure. In no event shall the area of the smoke vent be less than 3 square feet for each elevator car or less than 72 square inches for other shafts. Single smoke vents shall be permitted only when such vents extend through the roof; when it is impractical to continue the smoke vent vertically through the roof, two smoke vents shall be provided, each having the same area as required for a single smoke vent, and terminating at different sides of the building, except that the area of each smoke vent may be decreased 50 per cent when mechanical ventilation is provided. When one or more sides of the stairway, shaft or hoistway is an exterior wall of the building other than on an interior lot line, the vents may be windows and louvered panels as set forth in paragraph k of this section. Windows in hoistways shall be marked in conformity with section C 512-2.1m. Hoistways in buildings of group C1, C2, C3 and C4 occupancies may be equipped with an automatic sprinkler system in lieu of smoke vents. In buildings of low and moderate hazard occupancy, in lieu of the open type vent, automatic louvers or vents shall be furnished provided they are equipped with means for both manual and automatic operation. For automatic operation, a smoke detector shall be provided at each 50 feet of shaft height with the top-most detector within 3 feet of the vent, and release shall be activated as set forth in section C 511-9a.

k——Stairways, shafts or hoistways serving the top-most story of a building, which extend through the roof, shall be vented as required for such stairways or shafts terminating at lower stories. Of the total required vent area for stairways, hoistways or other

shafts, not less than one third shall be of the open type. Such open vent may be a louvered panel. The closed portion of the required vent area may be windows or skylights glazed with materials which are shatterable or which will be dislodged by heat under fire conditions. Such skylights shall be protected with screens above and below the glazing. Such screens shall have a ¾-inch to 1-inch mesh, located 4 inches to 10 inches above the glazing, and shall overhang the glazing an identical amount. When the fixed portion of the required vent is a window, it shall be not closer than 3 feet to an interior lot line. Such window shall be located near the ceiling of such shaft and have the sill at least 2 feet above the main roof.

l——Elevator and power dumbwaiter machine rooms directly connected with hoistways shall be enclosed in walls of noncombustible material having a fire-resistance rating of not less than that required for the hoistway enclosure. The separation between the machine room and hoistway shall be of noncombustible material with no openings other than those essential for ventilation and elevator operating equipment.

m——Access to machine rooms shall be through self-closing and self-locking doors, openable from the inside, meeting the applicable fire-resistance requirements set forth in sections C 401-4.2 and C 402-4.11.

C 402-4.8 (846.4i) Enclosure of Kitchens, Cooking Spaces, and Public Dining Rooms

1977 a——Kitchens and pantries serving public dining rooms, including but not limited to restaurants, cafeterias, coffee shops, and lunch rooms, shall be enclosed by construction having a fire-resistance rating of at least 2 hours; except that the enclosure may have a fire-resistance rating of 1 hour where a special sprinkler installation conforming to section C 511-4.8, is provided in such kitchens and pantries.

Openings between a kitchen or pantry and a public dining room shall be provided with opening protectives as follows:

Automatic or self-closing 1½-hour opening pro-

tectives where the kitchen or pantry is not sprinklered, or

Automatic or self-closing ¾-hour opening protectives where the kitchen and pantry are sprinklered.

Openings between a kitchen or pantry and a public dining room shall be permitted without opening protectives as follows:

The kitchen and pantry shall be equipped with a special sprinkler installation;

A hood exhaust system for cooking equipment shall be provided and protected with a fixed-pipe fire extinguishing system;

A noncombustible draft curtain shall extend down a minimum of 24 inches from the ceiling above the opening; and

The opening shall be protected by sprinkler heads located on the kitchen side within 24 inches of the draft curtain and spaced not more than 48 inches apart, except that such sprinkler protection of the opening need not be provided where exits required from the public dining room open directly to the exterior at grade.

b——Kitchens serving cafeterias or dining areas which are accessory to the primary occupancy in buildings of group C5.4, C5.5 and C6 occupancies, are not required to be separately enclosed as provided in paragraph a of this section, if the cooking equipment is only of the domestic type and is vented to the exterior.

c——Cooking spaces other than kitchens which are combined with, or located adjacent to or within the dining areas, such as in coffee shops, shall be separated from the dining area by a smoke and a draft baffle.

d——Public dining rooms, coffee shops and other spaces used for similar purposes, which have no permanently installed equipment for cooking within such space, other than incidental counter service equipment provided with exhaust hoods, shall not be required to be enclosed or separated from other public space.

C 402-4.9 (846.4j) Enclosure of Heat Producing Equipment and Refuse Rooms

a——High capacity heater rooms, and incinerator and refuse rooms, shall be located in a separate building or be enclosed by noncombustible construction having a fire-resistance rating of not less than 2 hours, except as set forth in paragraph f of this section.

b——Moderate capacity heater rooms shall be located in a separate room enclosed by construction having a fire-resistance rating of not less than 1 hour, except as set forth in paragraph f of this section.

c——Fuel-burning suspended unit heaters in buildings of group C2, C3.1, C3.2, C4.1 and C4.2 occupancy, and floor-mounted unit heaters in buildings of group C3.1, C3.2, C4.1 and C4.2 occupancy, having a capacity of less than 1,000,000 Btu per hour, are not required to be enclosed except as set forth in sections C 504-2.14 and C 504-2.16.

d——Low capacity heater rooms shall not be required to be enclosed except in buildings of group C5 and C6 occupancies, and except as set forth in paragraph e of this section.

e——Fuel-burning heat producing equipment for aircraft hangars, garages, gasoline service stations, and for occupancies in which flammable materials are processed, used or stored, shall be located in separate buildings or in rooms enclosed by vaportight noncombustible construction having a fire-resistance rating of not less than 2 hours, except as set forth in sections C 504-2.14a. Entrance to enclosed heater rooms shall be from the outside of the building, or through a vestibule ventilated in conformity with the requirements of section C 508-3.1b. Interior wall openings into such enclosing construction shall be limited to those necessary for entrance and for the passage of heating pipes and ducts. The space around such pipes and ducts shall be sealed with noncombustible material.

f——Boilers having a rated gross capacity of less than 40,000 Btu per hour for generating steam for

cleaning and pressing, shall not be required to be enclosed, and are excluded from the provisions of this section.

g——Heat producing equipment for industrial processes in buildings of group C3 occupancy, designed and installed in conformity with generally accepted standards, is excluded from the provisions of this section.

C 402-4.10 Garages and Open Parking Structures (846.4k)

a——Space in which motor vehicles are serviced or repaired, shall be deemed to be group C3.2 occupancy and shall be separated from accessory C1 or accessory C2 occupancy by construction having a fire-resistance rating of at least one hour. Dispensing of gasoline shall not be permitted in garage or open parking structures.

b——Space for parking motor vehicles shall be deemed to be group C4.1 occupancy and shall be separated from other occupancies in the same building by fire separations in accordance with table C 402-4, except that where the parking area does not exceed 1000 square feet, the fire-resistance rating of the separation may be ¾ hour, but not less than required for the corresponding components of the type of building as set forth in table C 202-2.

c——Openings equipped with self-closing opening protectives shall be permitted for direct passage between garages or open parking structures and other buildings, except those of group C3.3, C4.3, C5.2, C5.3 and C6.3 occupancies, and except as required by paragraph d of this section.

d——Where the area of a garage exceeds 5000 square feet in buildings of group C1, C2, C3.1, C3.2, C4.1 and C5.1 occupancies, or 1000 square feet in buildings of group C5.4, C5.5, C6.1 and C6.2 occupancies, direct passage from the garage to the other occupancy shall be through a vestibule of 2-hour fire-resistive construction, ventilated directly to the outer air. The distance between the openings into and from the vestibule shall not be less than 6 feet,

and such openings shall be protected with self-closing opening protectives having a fire-resistance rating of at least 1½ hours.

e——Where space is provided within buildings of group C3.1, C3.2, C4.1 or C4.2 occupancies for loading or unloading or overnight standing of motor trucks or tractors, such space shall be separated with noncombustible construction having a fire-resistance rating of at least 2 hours, with interior wall openings protected with automatic or self-closing 1½-hour fire doors, except that such space in buildings of group C3.1 or C4.1 occupancies shall not be required to be enclosed when the number of motor trucks or tractors within a fire area at any one time is limited to two.

TABLE C 402-4.11. (II-846)—OPENING PROTECTIVES FOR INTERIOR WALL OPENINGS

Fire-resistance rating of wall in which opening occurs, in hours	Fire-resistance rating of opening protective, in hours
3 or 4	3
2	1½
1 or ¾	¾

C 402-4.11 Openings in Fire Walls and Fire Separations (846.4l)

a——Openings in fire walls, fire separations, and openings in walls, floors and ceilings that are required to have a fire-resistance rating, shall be protected by opening protectives having fire-resistance ratings as set forth in table C 402-4.11, except as otherwise permitted in section C 402-4.7 and paragraphs b, c and e of this section. Opening protectives shall be equipped with devices conforming to the requirements of section C 212-5.1c.

b——Doors in openings between exit passageways and classrooms in group C5.5 occupancy and between such passageways and patients' rooms in group C6 occupancy shall not be required to have a fire-resistance rating, provided such rooms are under continuous supervision whenever occupied.

Louvers, vision panels and transoms shall be permitted in conformity with section C 212-5.1b.

c——Vision panels conforming to the requirements of generally accepted standards shall be permitted in ¾-hour and 1½-hour opening protectives. Enclosed spaces required to have a fire-resistance rating of not more than 1 hour, are permitted such a vision panel in a wall in lieu of a vision panel in the door.

d——Openings in fire walls for ventilating or air conditioning ducts shall be equipped with fire dampers or shutters constructed in conformity with generally accepted standards. Such dampers or shutters in fire walls shall be arranged so that one is on each face of the fire wall and so that both operate automatically when either is exposed to fire in the duct. Openings for ducts in fire separations required to have a fire-resistance rating of not more than 2 hours, shall be protected with fire dampers or shutters, except that such dampers shall not be required in ducts having an area of 20 square inches or less.

e——In buildings of group C2, C3.1, C3.2, C4.1 and C4.2 occupancy equipped with an automatic sprinkler system, an opening in a fire wall or separation other than a shaft or stairway enclosure, not exceeding 35 square feet in area, is permitted without an opening protective provided such opening is protected by a sprinkler head on each side of the wall in lieu of an opening protective.

f——Openings in fire walls and fire separations shall not exceed an area of 120 square feet or an aggregate width of 25 per cent of the length of the wall, except that one opening in each story may have an area of 240 square feet, providing the building is equipped with an automatic sprinkler system.

g——Service openings for incinerators shall be equipped with self-closing ¾-hour opening protectives arranged so that there is no opening into the flue when the hopper is being filled. In buildings of group C2, C3.3, C4.3, C5.4, C5.5, C6.2 and C6.3 occupancies, such service openings shall be located in separate rooms enclosed by construction having a fire-resistance rating of at least ¾ hour.

C 402-5 (846.5) Firestopping

C 402-5.1 (846.5a) General Requirements

Concealed spaces within wall, ceiling, partition, floor, stair, attic or cornice construction and around chimney, pipe and duct openings in such construction, and between tenancies, shall be firestopped or filled with noncombustible material to prevent the passage of flame, smoke, fumes, and hot gases.

C 402-5.2 (846.5b) Materials

a——Fire stopping or fill shall be of nonflammable material which can be shaped, fitted and permanently secured in position.

b——Noncombustible firestopping materials shall be used in buildings of type 1 and 2 construction, and also around fireplaces, flues and chimneys in buildings of any type of construction.

c——Combustible firestopping materials shall be permitted in buildings of type 3, 4 and 5 construction, except as provided in paragraph b of this section.

C 402-5.3 (846.5c) Location

a——Concealed vertical spaces in walls and partitions shall be filled with noncombustible material or 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——Where combustible furring or nailing strips are used between interior finish and a noncombustible base, the concealed space shall be filled with noncombustible material or firestopped so that no dimension exceeds 8 feet vertically or 20 feet horizontally.

c——Space between floor joists, where ceilings are 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 permanent partitions.

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——Exterior cornices and eaves shall be firestopped at the ends of fire and party 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 ceiling, shall be firestopped between occupancies or tenancies except that no area of such concealed space shall be greater than 3000 square feet.

g——In buildings of type 1 and 2 construction, concealed spaces above a ceiling shall be firestopped or divided with noncombustible material into areas not exceeding 5000 square feet, with no dimension greater than 100 feet. Solid web steel beams or girders may serve as part of such firestopping. Where access is provided to the concealed space, such access shall be through a single opening having dimensions not exceeding 3 feet in either direction.

C 403 (847) INTERIOR FINISHES, TRIM AND DECORATIVE MATERIALS

C 403-1 (847.1) General Requirements

a——Interior finish materials used for acoustical correction, surface insulation and decorative treatment on the surfaces of walls and ceilings, and interior trim materials, shall conform to all requirements set forth in this section.

b——Interior finish and trim shall be of materials that will not, in burning, give off excessive amounts of smoke or objectionable gases.

C 403-2 (847.2) 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 25
B	26 to 75
C	76 to 200
D	201 to 500

C 403-3 (847.3) Use of Interior Finishes

a——In buildings of group C3.3, C4.3, C5.3 and C6.3 occupancy interior finish shall be Class A.

b——In exit stairways and passageways in buildings of group C1, C2, C3.1, C3.2, C4.1, C4.2, C5.1, C5.2, C5.4, C5.5, C6.1 and C6.2 occupancy, interior finish shall be Class A. In corridors and passageways which are not part of an enclosed exit in such buildings, interior finish shall be Class A or B.

c——In kitchens, pantries, repair and storage rooms interior finish shall be Class A or B.

d——In assembly spaces interior finish shall be Class A or B, except that Class C finish may be used as wainscoting not over 8 feet high in such spaces in buildings of groups C5.1, C5.4 and C5.5 occupancy.

e——Class C interior finish may be used in all locations except as set forth in paragraphs a, b, c and d of this section.

f——Class D interior finish shall not be permitted.

g——When a sprinkler system is provided, class B interior finish may be used in locations where class A is required, and class C may be used in locations where class B is required.

h——Luminous ceilings which have a heat distortion point of 200° F. or less shall not be permitted

in buildings of group C6 occupancy or in exits and assembly spaces of buildings of any occupancy classification. Such luminous ceilings shall be permitted in buildings of group C2, C3.2, C3.3, C4.2 and C4.3 occupancy which are equipped with a sprinkler system and in buildings of group C1, C3.1, C4.1 and C5.5 occupancy. The material of such ceilings shall be self-extinguishing on the basis of tests in conformity with generally accepted standards. No individual sheet or panel shall exceed 75 square feet in area.

i——A luminous ceiling located below or above sprinkler heads shall be so installed that it will not interfere with the operation of the sprinkler system. Where installed below sprinkler heads, it shall be of material that will fall from its mounting at a temperature of at least 15 degrees lower than the temperature at which the sprinkler heads operate.

C 403-4 (847.4) **Use of Interior Trim**

a——In buildings of type 1 and 2 construction, interior trim in exits, stairways and passageways, shall be noncombustible or fire-retardant lumber, except that handrails may be combustible.

b——Interior wood trim is permitted wherever class B or C interior finish is required, except as set forth in paragraph a above.

c——Finish flooring of wood or other combustible materials may be used in any location except in high hazard spaces and in exits of buildings more than three stories in height.

C 403-5 (847.5) **Attachment of Interior Finish and Trim**

a——Interior finish and trim shall be cemented or otherwise fastened in place with materials that will not, in burning, give off smoke or gases, denser or more toxic than given off by untreated wood or paper, and that will not readily loosen when subjected

to a room temperature of 400° F. for a period of 30 minutes.

b——Interior wall and ceiling finishes which are less than ⅛-inch thick shall be mounted directly on noncombustible material.

c——Interior finish materials shall be applied directly to a noncombustible base, or to furring or nailing strips which do not exceed 1¾ inches in nominal thickness, except as set forth in paragraph e of this section. Concealed space between finish materials and noncombustible base shall be fire-stopped in conformity with the requirements set forth in section C 402-5.3b.

d——When class C finishes are set out more than 1¾ inches from walls or ceilings of noncombustible construction, they shall be attached directly to noncombustible backing or to furring or nailing strips not exceeding 1¾ inches in thickness applied over noncombustible material and fire-stopped in conformity with the requirements set forth in section C 402-5.3b.

e——Interior finishes in building of types 3, 4 and 5 construction, not exceeding two stories in height, may be applied directly to combustible structural members or to a combustible base, except as set forth in paragraph b of this section.

f——Finish flooring of wood and wearing surface materials including cork, rubber, linoleum, asphalt and composition tile, and other materials of similar combustible characteristics, where permitted by section C 403-4c, shall be attached directly to the base, and concealed spaces, if any, shall be filled with noncombustible material.

C 403-6 (847.6) Use of Draperies and Other Decorative Materials

Draperies, hangings and decorative materials in public spaces of more than 500 square feet in area, and in exits of buildings, shall be noncombustible or flame resistant as determined by their behavior when exposed to flame in tests made in conformity with generally accepted standards.

C 404 (848) PLASTIC MATERIAL

C 404-1 (848.1) General Requirements

a——Plastic materials shall be classified in accordance with their burning characteristics as determined by tests conducted in conformity with generally accepted standards.

b——Plastic materials in exits shall be legibly marked to identify the burning characteristics.

c——The requirements of this section are limited to construction regulated by this Code, and shall not regulate plastic materials as permitted in Part 5 of this Code.

d——Plastic materials which give off smoke or gas denser or more toxic than given off by untreated wood or paper under comparable exposure to heat or flame, or which burn faster than 2½ inches per minute determined by tests conducted in conformity with generally accepted standards, shall not be permitted.

e——Plastic materials used for light transmission in artificial lighting equipment are not required to conform to flame-spread ratings for interior finish, provided they conform to the following:

1. Fall from their frames at a temperature at least 200° F. below their ignition temperature; for exception see section C 403-3i.
2. Remain in place for at least 15 minutes at 175° F.
3. Smoke density rating as tested in conformity with generally accepted standards for plastic material, is not over 75.

f——Plastic materials for construction of structural elements shall not be permitted in buildings of group C3.3, C4.3, C6.2 and C6.3 occupancy nor in exits of buildings more than one story in height, except that plastics may be used for light transmission in artificial lighting equipment, provided they occupy an area not exceeding 20 per cent of the ceiling area of the space in which they are located.

g——Plastic materials may be used as a roof over

an unenclosed structure located at grade level, provided such roof does not exceed 10 feet in height and 1000 square feet in area.

h——One-story accessory structures, located at grade level, of low hazard occupancy, not exceeding 1200 square feet in area and 16 feet in height, may be constructed of plastic materials provided that the distance separation is not less than 20 feet.

C 405 (849) FIREPLACES

C 405-1 (849.1) 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 C 505, 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.

C 405-2 (849.2) 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.

C 405-3 (849.3) Mantels and Trim

Wood mantels and trim on fireplaces shall be placed and attached so that they cannot be heated to temperatures in excess of 175° F. or ignited by sparks or embers from the fire.

C 406 (850) FIRE PROTECTION EQUIPMENT

C 406-1 (850.1) General Requirements

1975 a——A fire- and smoke-detecting system, installed in conformity with section C 511-3, shall be per-

mitted in lieu of a required fire alarm system. Manually operated fire alarm boxes for such detecting system shall conform to the requirements set forth in section C 511-3.3.

1975 b——In buildings 70 feet or less in height, a sprinkler system installed in conformity with section C 511-4, shall be permitted in lieu of a required fire alarm system, or a required fire- and smoke-detecting system, or in lieu of both.

c——Where fire protection equipment is required by this section for buildings of group C3.3, C4.3, C5.2, C5.3, C6.2 or C6.3 occupancy, and for structures connected to enclosed malls where the combined area exceeds 100,000 square feet, the activation of the equipment shall be transmitted to the local fire department.

1975
C 406-2 (850.2) Fire Alarm System

A fire alarm system, installed in conformity with section C 511-2, shall be provided as follows:

Group C1	In buildings more than six stories or more than 70 feet in height
Group C2	In buildings more than two stories in height In enclosed malls as set forth in section C 216-2(13)
Group C3	In buildings more than two stories in height, or where the distance of travel to an exit is more than 100 feet
Groups C5.1, C5.2, C5.3	In buildings where there are two or more spaces each accommodating one hundred persons or more
Group C5.4	Not required
Group C5.5	In buildings more than one story in height
Group C6	In buildings more than two stories in height, or where there are more than thirty sleeping rooms

1975
C 406-3 (850.3) Fire- and Smoke-Detecting Systems

A fire- and smoke-detecting system, installed in conformity with section C 511-3 shall be provided as follows:

Groups C6.2, C6.3 . . . In patient's rooms, lounges, lobbies, recreation spaces, kitchens, boiler rooms, mechanical equipment rooms, incinerator rooms, storage rooms, laundry rooms and maintenance shops

C 406-4 (850.4) Sprinkler System

1976 a——A sprinkler system, installed in conformity with section C 511-4, shall be provided as follows:

Groups C1 through C6.3, except open parking structures and spaces for cold storage and refrigeration . . .

In multi-story buildings more than 70 feet in height;

In buildings more than three stories in height where floors are not reachable from grade by fire-fighting equipment of the local fire department that would respond to an alarm;

In buildings more than two stories in height or which have fire area of more than 2500 square feet above the first story, and which do not have access openings in at least one wall for entry from the exterior in the event of fire;

In buildings more than two stories in height which have depth of 100 feet or more, and which do not have access openings in at least two walls for entry from the exterior in the event of fire.

Access openings as referred to above shall be located in walls that are accessible for fire-fighting equipment, shall be reachable on each floor above the first story by the local fire department that would respond to an alarm, shall be of a type deemed suitable by the local authority having

jurisdiction, and shall have a maximum spacing of 50 feet on floors above the first story.

Groups C1, C2, C3.1, C3.2, C4.1, C4.2, C5 . . . Where fire areas or heights are increased as set forth in section C 203-1.2.

Group C2 . . . In enclosed malls as set forth in section C216-2(5).

Groups C3.3, C4.3 . . . Where fire area is more than 1000 square feet, or building is more than one-story in height.

Groups C5.1, C5.2, C5.3, C5.5 . . . Under and over stage areas and auxiliary spaces such as dressing rooms, store rooms and workshops, and in exhibition buildings with a fire area of more than 23,000 square feet.

Group C6.2 . . In maintenance shops exceeding 100 square feet, incinerator rooms, and refuse rooms and in buildings of type 2b, 3 and 4a construction more than one story in height and in buildings of type 4b, 5a and 5b construction.

Groups C1 through C6.3 . . . In cellar areas of 5000 square feet or more used for garages or for storage of combustible materials.

Groups C1 through C6.3 . . . In cellar areas of 1000 square feet or more used for places of assembly.

b——Sprinklers shall not be installed in spaces where the discharge of water would be hazardous. In such spaces, other approved fire-extinguishing equipment shall be provided.

C 406-5 (850.5) Standpipe Systems

a——A standpipe system, installed in conformity with the requirements of section C 511-5, with outlets on each story for first-aid hose and for municipal fire department use, shall be provided as follows:

Groups C1, C2, C3.1, C3.2, C4.1, C4.2, C5, C6.1 . . In buildings exceeding three stories in height but not exceeding five stories, and having a

floor area on any level exceeding 5000 square feet.

In buildings six stories or more or 60 feet or more in height.

Groups C3.3, C4.3, C6.2, C6.3 . . . In buildings more than one story in height, except that it is not required in sprinklered buildings not more than two stories in height.

b——A standpipe system shall be installed in buildings of group C5 occupancy with a stage, except as set forth in paragraph c of this section. Such standpipe system shall be provided with hose outlets on each side of each tier of the auditorium and on each side of each level of the stage so that every portion of the auditorium, stage, and appurtenant space, including dressing, property, storage rooms and workrooms, is within 120 feet of a hose station.

c——A standpipe system shall not be required for auditoriums located on the first story of buildings of group C5.4 occupancy.

C 406-6 (850.6) **Yard Hydrant System**

Where streets or legal open spaces are not served by public fire hydrants in conformity with the requirements of section C 203-1.1, a yard hydrant system shall be installed in conformity with the requirements of section C 511-6.

C 406-7 (850.7) **Watchman's System**

A watchman's system shall be installed in buildings of group C6 occupancy with seventy-five or more occupants, in conformity with section C 511-8, except when such buildings are equipped throughout with a fire- and smoke-detecting system.

C 406-8 (850.8) **Automatic Vents**

a——Smoke-operated vents installed in conformity with section C 511-9a shall be provided as follows:

Group C1 through C6.3 . . . In stairways, hoist-

ways and shafts where open type vents are not provided, as set forth in section C 402-4.7j

Group C2 ... In enclosed malls as set forth in section C 216-2 (9)

b——Smoke- or heat-operated vents, installed in conformity with section C 511-9b and generally accepted standards, shall be provided as follows:

Group C3.2, C3.3, C4.2, C4.3 ... Spaces having no shatterable window, skylight or mechanical ventilation.

Group C5 ... Above stages as set forth in section C 402-4.5d.

1975

C 406-9 Coordinated Fire Safety System

A coordinated fire safety system, installed in conformity with section C 511-10, shall be provided as follows:

Groups C1 through C6.3, except open parking structures ... In multistory buildings more than 70 feet in height.

Part 5

Equipment Requirements

C 501 (855) **GENERAL REQUIREMENTS FOR EQUIPMENT**

a——Plumbing, heating, electrical, ventilating, air conditioning, refrigerating, fire protection, radiation production equipment, elevators, dumbwaiters, escalators, and other mechanical additions, installations, or systems for the use of the building 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, a danger because of structural defects, or a source of ignition, or a radiation hazard, and will not create excessive noise, or otherwise become a nuisance. Equipment and systems include, but are not limited to, apparatus, devices, fixtures, piping, pipe hangers, pipe covering, wiring, fittings and materials used as part of, or in connection with, such installations.

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——The design and installation of equipment and systems shall conform to the requirements of section C 107.

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

e——Equipment and systems shall be subjected to such applicable tests as 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 be-

ing forced to operate beyond the safe design capacity.

g——Equipment and systems subject to damage from freezing, shall be adequately protected against freezing.

h——Equipment shall be protected from mechanical damage.

i——Each building shall be provided with equipment to serve its own requirements, except that buildings designed to remain permanently under a single ownership may have common service facilities.

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

k——Piping, conduits, or ducts which may be a potential hazard shall not be permitted in exits, stairways, or hoistways.

C 502 (856) PLUMBING

C 502-1 (856.1) General Requirements

a——Plumbing systems shall conform with the requirements of section C501, 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.

d——Plumbing systems in buildings or portions of buildings of group C6.3 occupancy, where occupants are subject to detention, restriction or restraint, shall be designed, installed and located in such manner that the systems will be effectively protected from damage, disassembly and abuse.

e——For implementation of the performance requirements for plumbing in this Part, see State Building Construction Code applicable to Plumbing.

C 502-2 (856.2) **Public Water Supply or Public Sewer: When Deemed Available**

a——The source of potable water supply for a building shall be a public water supply system when such system is within 500 feet of the premises of the building, measured along a street, and a connection may be made lawfully thereto.

b——The means of sewage disposal for a building in which plumbing fixtures are installed, shall be a public sanitary or combined sewer system when it is within 500 feet of the premises of the building, measured along a street, 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 500 feet of the premises of the building, measured along a street, and a connection may be made lawfully thereto.

C 502-3 (856.3) **Water Supply**

a——Pure and wholesome water from an approved source shall be available at all times on the premises of every building in which plumbing fixtures are installed. The potable water supply system of the building shall be connected to such approved source and shall not be subject to contamination. When supplied from a public source, the potable water supply system shall not be connected to private or unsafe water supplies.

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, heating, or processing will not be reintroduced into the potable water supply system nor be distributed through such equipment to plumbing fixtures.

d——Hot water supply systems shall be provided with safety devices arranged to relieve hazardous pressures and excessive temperatures.

e——Water service for standpipe or automatic sprinkler systems shall be designed and installed so as to provide at all times a supply of water in sufficient volume to enable them to function satisfactorily.

f——The source of water supply for any standpipe system or automatic sprinkler system shall be of adequate capacity and reliability.

C 502-4 (856.4) 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 building in which plumbing fixtures are installed 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 accordance with generally accepted standards.

e——Where a drainage system may be subject to backwater, suitable provision 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——Acid or liquid wastes which are more damaging to the system than usual wastes from the human body, shall be chemically neutralized before

being discharged into the system, or shall be conveyed to a means of disposal approved for such use by an independent drainage system constructed of materials resistant to the corrosive action of such acid or liquid wastes and their resultant fumes.

h——Industrial wastes which are detrimental to the public health, public sewer system, or functioning of the sewage treatment plant, shall be conveyed by an independent drainage system; such wastes shall be treated and rendered unobjectionable before being discharged into the sewer, or shall be conveyed to a means of disposal approved for such use.

i——Liquid wastes from fixtures or drains provided in locations where wastes at times would contain volatile, flammable oil, shall be conveyed by an independent drainage system equipped with an approved device for intercepting such substances from liquid wastes; the liquid wastes, after passing through the intercepting device, may be discharged into the building drain or sewer.

j——Liquid waste from a fixture or drain provided in a location where grease or other substances at times would be introduced into the system in quantities that could produce pipe stoppage or hinder sewage disposal, shall be conveyed by a fixture drain equipped with an approved device for intercepting and separating such substances from the liquid waste before it is discharged into a branch or main drainage pipe in the system.

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

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

m—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.

n——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.

o——Whenever a structure is to be built higher than the vent terminal of an adjacent building and thereby adversely affect 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.

p——Whenever a new vent terminal is to be installed adjacent to an existing higher building, the proposed vent terminal shall be installed by, and at the expense of the owner of the lower building, in conformity with section C 502-4n, including any necessary extension of the vent terminal to a location sufficiently remote so as to prevent the creation of a foul air nuisance to occupants of the existing higher building.

q——Drains provided for fixtures, devices, appliances, or apparatus containing food, water, sterile goods or similar materials, shall be equipped with air breaks, adequate to prevent contamination of such contents from any possible backup of sewage through the direct or indirect drainage piping.

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

s——Horizontal drainage piping shall not be located directly above nonpressure water-supply tanks, manholes of pressure water-supply tanks, or floor areas used for the manufacture, preparation, packaging, storage or display of food unless a watertight barrier is provided to intervene between the piping and such tanks or space immediately below.

C 502-5 (856.5) Storm Drainage System

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 drains shall be discharged in such manner that water will not flow onto sidewalks.

b——Where a drainage system may be subject to backwater, suitable provisions 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.

d——Drainage from area drains provided in locations where such drainage at times would contain volatile, flammable oil, shall be conveyed by an independent drainage system equipped with an approved device for intercepting and separating such substances from the drainage; the drainage, after passing through the intercepting device, may be discharged into the building drain or sewer.

e——Where provision is made for draining rain water from dyked or enclosed areas around storage tanks containing flammable liquids, located above ground and outside of buildings, such area drains shall be provided with suitable and accessible shutoff valves capable of normally being kept closed.

C 502-6 (856.6) **Required Plumbing Systems and Fixtures**

a——Buildings and portions thereof shall be provided with plumbing systems designed to dispose of the sewage from all fixtures and to furnish cold water to every water closet and urinal, and hot and cold water to every sink, laundry tray, automatic laundry washing machine, lavatory, bathtub, and shower required therein, except as otherwise provided in this chapter.

b——Fixtures shall be provided for the occupancies and under the conditions as set forth in this section. The fixtures required for the stated number of dwelling units, rooms or persons shall also be required for any fraction thereof.

Equipment Requirements

Groups C1—Business; C2—Mercantile; C3—Industrial, other than foundries; and C4—Storage

Water closets and lavatories for employees as shown in the following table:

WATER CLOSETS AND LAVATORIES FOR EMPLOYEES IN GROUPS C1, C2, C3 (OTHER THAN FOUNDRIES), and C4

Number of water closets	Number of employees	Number of lavatories	Number of employees
1	1- 15	1	1- 20
2	16- 35	2	21- 40
3	36- 55	3	41- 60
4	56- 80	4	61- 80
5	81-110	5	81-100
6	111-150	6	101-125
7	151-190	7	126-150
		8	151-175
One additional water closet for each 40 in excess of 190		One additional lavatory for each 30 in excess of 175	

One drinking fountain or equivalent fixture for each 75 employees. Urinals may be substituted in men's toilet rooms for not more than one-third of the required number of water closets when more than 35 males are employed.

Toilet facilities shall be in separate rooms for each sex, where there are five or more employees, and shall be readily accessible and convenient to their regular working places.

Facilities required for employees in storage buildings may be in adjacent buildings, under the same ownership or control, where the maximum distance of travel from the employee's usual working place to the facilities does not exceed 500 feet horizontally.

Group C3—Industrial, foundries only

Water closets and lavatories for employees as shown in the following table:

WATER CLOSETS AND LAVATORIES FOR EMPLOYEES IN GROUP C3, FOUNDRIES ONLY

Number of water closets	Number of employees	Number of lavatories	Number of employees
1	1- 10	1	1- 8
2	11- 25	2	9-16
3	26- 50	3	17-30
4	51- 80	4	31-45
5	81-125	5	46-65
One additional water closet for each 45 in excess of 125		One additional lavatory for each 25 in excess of 65	

One drinking fountain or equivalent fixture for each 75 employees. Urinals shall be provided on the following basis where more than 10 males are employed: 1 for 11-29; 2 for 30-79; one additional urinal for each 80 in excess of 79.

Toilet facilities shall be in separate rooms for each sex, where there are five or more employees, and shall be readily accessible and convenient to their working places.

Group C5—Assembly, other than places of worship and schools

Water closets, urinals, and lavatories for occupants, based upon capacity, as shown in the following table:

WATER CLOSETS, URINALS, AND LAVATORIES FOR OCCUPANTS IN GROUP C5, ASSEMBLY, OTHER THAN PLACES OF WORSHIP AND SCHOOLS

Number of water closets	Number of occupants	Number of urinals	Number of male occupants	Number of lavatories	Number of occupants
1	1- 100	1	1- 100	1	1- 100
2	101- 200	2	101- 200	2	101- 200
3	201- 400	3	201- 400	3	201- 400
4	401- 700	4	401- 700	4	401- 700
5	701-1100	5	701-1100	5	701-1100
One additional water closet for each 600 in excess of 1100		One additional urinal for each 300 in excess of 1100		One additional lavatory for each 1500 in excess of 1100. Such lavatories need not be supplied with hot water.	

One drinking fountain or equivalent fixture for each 1000 occupants except that there shall be at least one such fixture at each assembly floor level and tier.

Where motion picture projection booths contain more than one projection machine, there shall be provided at least one water closet and one lavatory on the same level, within 20 feet of the booth. Facilities for occupants shall be available for the use of employees. However, such fixtures shall consist of at least the same number and type as required for employees in group C1 occupancy.

Toilet facilities shall be in separate rooms for each sex, and shall be readily accessible.

Group C5.4—Assembly, places of worship only

One water closet and one lavatory.

Such facilities may be in adjacent buildings under the same ownership or control, and shall be accessible during periods when the assembly space is occupied.

Group C5.5—Assembly, schools only

For pupils use:

Water closets for pupils on the following basis: in elementary schools, 1 for each 100 males and 1 for each 35 females; in secondary schools, 1 for each 100 males and 1 for each 45 females;

One lavatory for each 50 pupils;

One urinal for each 30 male pupils;

One drinking fountain or equivalent fixture for each 150 pupils; but at least one such fixture at each floor having classrooms.

Where more than 5 persons are employed, fixtures shall be provided for employees and shall consist of at least the same number and type as required for group C1 occupancy. Such fixtures shall be located in rooms separate from those in which fixtures are provided for pupils.

Toilet facilities shall be in separate rooms for each sex, and shall be readily accessible and convenient.

Group C6.1—Institutional

Within each dwelling unit:

One kitchen sink,

One water closet,

One bathtub or shower, and

One lavatory.

Where sleeping accommodations are arranged as individual rooms or suites, there shall be located adjacent thereto for each six sleeping rooms:

One water closet,

One bathtub or shower, and

One lavatory..

Where sleeping accommodations are arranged as a dormitory, for each 15 persons so accommodated there shall be located adjacent thereto:

One water closet,

One bathtub or shower, and

One lavatory.

Tollet facilities, except those within dwelling units, shall be in separate rooms for each sex.

Group C6.2—Institutional, other than hospitals

On each story so occupied:

Water closets for occupants on the following basis:

1 for each 25 males and 1 for each 20 females;

One urinal for each 50 male occupants;

One lavatory for each 10 occupants;

One shower for each 10 occupants; and

One drinking fountain or equivalent fixture for each 50 occupants.

Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy.

Toilet facilities shall be in separate rooms for each sex.

Group C6.2—Institutional, hospitals only

For patients' use:

One water closet and one lavatory for each 10 patients;

One shower or bathtub for each 20 patients; and

One drinking fountain or equivalent fixture for each 100 patients.

Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy.

Toilet fixtures for employes shall be located in separate rooms from those in which fixtures for the use of patients are located.

Toilet facilities shall be in separate rooms for each sex, and shall be readily accessible and convenient.

Group C6.3—Institutional, mental hospitals only

For patients' use:

One water closet, one lavatory, and one shower or bathtub, for each 8 patients; and

One drinking fountain or equivalent fixture for each 50 patients.

Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy.

Toilet fixtures for employees shall be located in separate rooms from those in which fixtures for the use of patients are located.

Group C6.3—Institutional, penal institutions only

For inmate use:

One water closet and one lavatory in each cell;

One shower at each floor on which cells are located; and

One water closet and one lavatory for inmate use available at such exercise area.

Lavatories for inmate use need not be supplied with hot water.

Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy.

Toilet fixtures for employees shall be located in separate rooms from those in which fixtures for the use of inmates are located.

Group C7—Miscellaneous

Temporary toilet facilities shall be provided for employees engaged in the construction, alteration, repair, or demolition of buildings on the basis of 1 unit for each 30 persons.

Such units shall consist of water closets, chemical toilets, or privies, readily accessible to employees, shall be located not more than four stories above or below the place of work, and shall be sheltered from view and protected from any hazard of falling objects.

Temporary toilet facilities shall be maintained in a sanitary and serviceable condition. Upon completion of building work, such facilities and the sewage remaining therefrom shall be removed, the area shall be cleaned and disinfected, and privy pits shall be filled with clean earth.

Public Bathing Occupancies

Facilities for bathers at swimming pools and other public bathing occupancies shall be in separate rooms for each sex, shall be accessible to bathers at all times, and shall be located so that bathers can use the facilities before entering the bathing area. The number and type of fixtures shall consist of at least the following:

One water closet for each 60 males, one water closet for each 40 females; one urinal for each 60 males; one lavatory for each 60 males; one lavatory for each 60 females; one shower for each 40 males and one shower for each 40 females, except that in schools such required showers shall be at least equal in number to one third the number of pupils in the largest class using the swimming pool at any one time.

Public or Employee Dining Places

Where food or drink is served, and the dishes, glasses, or cutlery for such service are to be reused, there shall be at least one machine or 3-compartment sink of suitable type for the effective washing and sanitizing of such articles before reuse. Cold water need not be supplied to such machines and sinks.

Kitchens Serving Public or Employee Dining Places

Every kitchen serving public or employee dining places shall have installed therein at least one lavatory for the personal use of kitchen employees.

Exposure to Harmful Materials or Excessive Heat

Where there is exposure to skin contamination from poisonous, infectious, or irritating materials, there shall be provided for each 5 employees so exposed at least one lavatory.

Where there is exposure to excessive heat or to skin contamination from poisonous, infectious, or irritating materials, there shall be provided for each 15 persons so exposed at least one shower accessibly located. Where severely irritating materials are used, showers for emergency use shall be located within 30 feet of the work positions of such exposed persons, shall not be supplied with hot water, and need not have drainage provisions.

Wet Method of Dust Control

Where the wet method of dust control is used, the floor of such space shall be provided with at least one floor drain.

c——Fixtures for employees whose usual working place is a building less than 100 square feet in gross floor area, may be located in other buildings on the same premises provided such fixtures are under the same ownership or control, are accessible at all times during the employee's normal working hours and the maximum distance of travel from the employee's usual working place to the fixtures does not exceed 500 feet horizontally.

C 502-7 (856.7) 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.

d——Water closets, urinals, showers, and bathtubs shall be located only in toilet rooms or bathrooms provided with waterproof floors and with waterproofing extending 6 inches or more above the floors except at doors.

e——Water closets, urinals, showers, and bathtubs shall not be located on the next floor directly above space used for manufacture, preparation, packaging, storage, or display of food, except they may be so located if an additional watertight barrier is provided to intervene between the toilet room or bathroom floor and such space immediately below.

f——In schools, nurseries, and other occupancies, where fixtures are provided for the use of children, such fixtures shall be of suitable types, shall be installed in such manner as to be fully and safely usable, and shall be located convenient to the space in which such children study, play, and sleep.

g——Drinking fountains and equivalent fixtures provided as sources of drinking water shall not be located in rooms containing more than one water closet or urinal.

C 502-8 (856.8) Swimming Pools

a——Water supply used for filling or for cleaning of the pool shall be clean. Water supply shall be protected against potential pollution from all sources, including cross-connection and backflow.

b——Pool inlets and outlets shall be located and spaced so as to secure satisfactory dispersion and complete circulation.

c——Water overflow drains shall be provided at the high water line.

d——Drains shall be provided so that the pool can be safely and completely drained in 4 hours or less. Drains shall be provided in floors surrounding the swimming pool, and arranged so that water from such areas will drain without entering the pool.

e——Filtering, sterilizing, and auxiliary equipment, where required, shall be adequate to maintain the sanitary quality of water during each period the pool is in use. Equipment containing gases or disinfectants capable of giving off irritating, toxic, or flammable fumes shall be located in ventilated rooms.

f——The installation shall be designed to prevent dirt, sand, or other foreign matter from entering the bathing area.

C 502-9 (856.9) Water Supply Tanks

a——Water supply tanks shall be designed and constructed so as to be watertight, verminproof, and

rodentproof, resistant to corrosion, and capable of withstanding the pressures under which they are to operate.

b——Tanks shall be provided with safe and easy means of access for inspection.

c——The capacity of any single tank in or on a building shall not exceed 30,000 gallons. Where tanks are located on flat roofs and the total capacity exceeds 30,000 gallons, drain pipes from the tanks shall discharge so as to distribute water over separate drainage areas of the roof.

d——Supports for tanks shall be of noncombustible construction.

e——Tanks and their supports shall not be used to support equipment or structures other than for tank use, except where specially designed for such other use.

f——Means shall be provided for emptying water supply tanks. The emptying pipe and valve shall be of a size to permit quick emptying, shall be located and arranged so as to prevent damage from water discharged, and shall be connected through an air break to the drainage system.

g——Gravity tanks shall be provided with overflow pipes at least one pipe size larger than the filling pipe.

h——Tanks shall not be located over openings in floor or roof construction. Openings in floor or roof for piping are permitted provided they are made watertight.

i——Potable water supply tanks for domestic supply and standpipe or automatic sprinkler systems shall be designed and installed to furnish water in sufficient quantity and pressure for such systems.

j——A tank used to supply water both to a domestic system and a standpipe or automatic sprinkler system, shall have the outlet for the domestic supply located a sufficient distance above the bottom of the tank to maintain the minimum reserve required for fire protection service.

k——Potable water supply tanks which supply wa-

ter for domestic supply and also for standpipe and automatic sprinkler systems, shall have the outlet for the standpipe system located a sufficient distance above the bottom of the tank to maintain the minimum reserve required for the sprinkler system.

C 503 (857) PIPING EQUIPMENT AND SYSTEMS

C 503-1 (857.1) Piping Equipment and Systems for Power and Industrial Use

a——Piping equipment and systems designed and installed for generation of power, processing, industrial, or high pressure use, shall be in conformity with the requirements of section C 501.

b——Systems conveying corrosive substances shall be designed and installed to resist corrosion.

c——Equipment and systems which are dangerous upon physical contact or exposure shall be designed and installed so as not to be a potential source of hazard.

C 503-2 (857.2) Fuel Gas Piping Equipment and Systems

C 503-2.1 (857.2a) General Requirements

a——Fuel gas piping systems shall be in conformity with the requirements of section C 501.

b——Fuel 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.

c——Gas piping shall not be installed in cinder fill or other corrosive material unless protected against corrosion.

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

e——Fuel gas piping and equipment shall not be lo-

cated in ducts, chutes, chimneys, flues, hoistways, stairways, or exits.

f——Fuel 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.

g——Buried openings from the exterior for service pipes entering the building shall be made gastight where the area contains utility gas pipe.

C 503-2.2 (857.2b) Shutoff Valves

a——Gas piping systems supplied from utility mains shall have at least two accessible means for shutting off all gas supply. One means of shutoff shall be located outside and at a safe distance from the building, and shall be suitably protected against unauthorized use, and the other shall be located as close as practicable to the point of service entrance and ahead of the meter if any is provided.

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 connection.

C 503-2.3 (857.2c) Service Equipment for Gas Supplied from Utility Mains

a——Gas meters shall be located in spaces that are dry, well ventilated, readily accessible, free from steam or chemical fumes and protected against extreme heat. Gas meters shall be located as near as practicable to the point of entry of the gas service. Gas meters shall not be installed in a stairway, nor in any public hall above the cellar, nor above the lowest story if there is no cellar. Gas meters shall not be installed in spaces designed for the storage of paints or flammable products.

b——Gas services, gas meters, and gas pressure regulators shall be located so that they are protected from damage. Such equipment shall be sufficiently removed or separated from the bottom termination of a stairway so as not to constitute a potential hazard.

Equipment Requirements

C 503-2.4 (857.2d) 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.

C 503-2.5 (857.2e) High Pressure Gas

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 ½ psi gage prior to entering the meter, except where such service supplies equipment using gas at high pressures.

C 503-2.6 (857.2f) Liquefied Petroleum Gas

a——Undiluted liquefied petroleum gas in liquid form shall not be conveyed through piping equipment and systems in buildings, except that in buildings of group C3 and C4 occupancies such installations shall be permitted when installed in conformity with generally accepted standards.

b——Liquefied petroleum gas shall not be vaporized by devices utilizing open flame or open electrical coil, except in buildings of group C3 occupancy used exclusively for the manufacture or distribution of gas.

c——When two or more containers are installed, connection shall be arranged so that containers can be replaced without shutting off the flow of gas to equipment.

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

e——Gas service entrance shall be above ground, and shall be protected from damage by settlement or corrosion. Exposed exterior wall openings located below and within 3 feet horizontal distance of gas service entrance shall be made gastight.

f——Liquefied petroleum gases shall be odorized so that the presence of gas will be recognizable by a distinctive odor when the concentration is equal to, or greater than, one fifth the lower limit of combustibility.

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

h——Systems supplied from containers exceeding 125 gallons of capacity shall have at least two accessible means for shutting off the gas at the main supply. Shutoff valve shall be located in conformity with the requirements of section C 503-2.2a.

i——Systems supplied from containers not exceeding 125 gallons of capacity shall have at least one accessible means for shutting off the gas. Such means shall be located outside the building.

C 503-3 (857.3) Systems and Equipment for Other Hazardous Gases

C 503-3.1 (857.3a) General Requirements

a——Systems and equipment for gases other than those supplied from utility mains and liquefied petroleum gas, that are flammable, toxic, irritant, or chemically highly reactive, shall conform to the requirements of section C 503-1.

b——Equipment for the storage of such gases shall be located in ventilated, noncombustible enclosures having a fire-resistance rating as required for high hazard occupancy as set forth in table C 402-4.

c——Distribution systems for such gases shall be limited to buildings of group C3 and C4 occupancies except that distribution of oxygen and nitrous oxide in buildings of group C6 occupancy is permitted.

d——Piping located outside of rooms containing the source of supply shall be conspicuously marked to identify the gas contained therein.

e——Systems for highly flammable gas, such as hydrogen and acetylene, shall be limited to buildings

of group C3 and C4 occupancies, and to laboratories and shops in group C5.5 occupancy. Where acetylene is generated in enclosed spaces, means for explosion venting shall be provided.

f——Storage and regulating equipment of systems containing oxygen shall be separated from those containing flammable gas by a distance of not less than 20 feet, or shall be in separate rooms conforming to the requirements for heater rooms in garages as set forth in section C 402-4.9e.

C 504 (858) HEATING

C 504-1 (858.1) General Requirements

a——Heating systems shall conform to the requirements of section C 501.

b——Buildings intended for occupancy between the fifteenth day of September and the thirty-first day of May of the following year shall be provided with heating equipment designed to maintain temperatures in occupied spaces for the comfort of the occupants relative to the physical activity in which they are usually engaged. 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.

c——Equipment for heating shall not be required for open deck structures, for spaces having no minimum temperature requirements, or for spaces where process equipment furnishes the necessary heat.

d——Swimming pools, shower and dressing rooms, shall have heating equipment designed and installed so as not to be a hazard owing to accidental contact.

e——Heating equipment shall be designed to maintain the temperatures listed in table C 504-1.

C 504-2 (858.2) Heat Producing Equipment

TABLE C 504-1. (I-858)—MINIMUM TEMPERATURE REQUIREMENTS

Space[1]	Temperature in degrees F.
All occupancy groups:	
Habitable space, recreation rooms, kitchens, kitchenettes, bathrooms, and toilet rooms	70
Building equipment and machinery rooms	50
Spaces requiring low temperature	None
Group C1:	
Offices, waiting rooms, studios, telephone exchanges, and spaces where persons are engaged in sedentary activities	70
Group C2:	
Shops, stores, display rooms, showrooms, salesrooms	65
Group C3:	
Laboratories, light machine work, product inspections, loft buildings, tenant factories, and spaces where persons are engaged in moderate activities	65
Heavy assembly workrooms or shops, and spaces where persons are engaged in vigorous activities	60
Motor vehicle repair shops	50
Locker rooms, dressing rooms	70
Group C4:	
Aircraft hangars, garages	None
Storage of ammunition and explosives	None
Group C5:	
Art galleries, courtrooms, museums, libraries, meeting rooms	70
Churches, class rooms, auditoriums, lecture halls, night clubs, theatres, restaurants	65
Gymnasiums, dance halls, skating rinks, bowling alleys	60
Swimming pools, bath houses, shower and dressing rooms	75
Group C6.2:	
Treatment, operating, recovery, delivery, nursery rooms and patients' bathrooms	80
Patients' rooms	75
Storage of anaesthetic or flammable gases	None
Group C6.3	70

1 Requirement for space not listed under an occupancy group, shall be equal to that required for the same type of space listed under another occupancy group.

Equipment Requirements

C 504-2.1 (858.2a) Combustion Space

Fuel burning equipment shall have combustion space designed and constructed to withstand the maximum temperature attained and to operate efficiently at the expected loads.

C 504-2.2 (858.2b) Smoke Control

Fuel burning equipment shall be designed and installed so that the emission or discharge into the atmosphere of smoke, dust, particles, fly ash, odors or other products of combustion will not create a nuisance or be detrimental to the health, comfort, safety or property of any person.

C 504-2.3 (858.2c) Warm Air Heating

Ducts and other air handling equipment used for heating shall conform to the requirements of such equipment used for ventilating purposes.

C 504-2.4 (858.2d) Prohibited Locations for Heat Producing Equipment

a——Fuel burning equipment or ash removal equipment shall not be installed in high hazard spaces, or in spaces intended for the storage or use of paints, paper or trash, except as permitted in generally accepted standards.

b——Heating equipment burning solid or liquid fuel shall not be located in assembly spaces or in spaces used as classrooms.

c——Fuel burning water heaters shall not be located in sleeping rooms, bathrooms or toilet rooms.

d——Fuel burning equipment which may be a potential hazard to occupants in the event of accidental contact shall not be installed in occupied spaces of buildings of group C6.2 or C6.3 occupancy.

C 504-2.5 (858.2e) Fuel Supply Connection

Fuel supply connection to heat producing equipment shall be made with pipe or tubing of solid metal or

with means conforming to the requirements of generally accepted standards.

C 504-2.6 (858.2f) Installation and Clearance

a——Heat producing equipment shall be of the fixed type.

b——Where the heat producing equipment is installed on, or adjacent to, combustible materials, 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.

C 504-2.7 (858.2g) Air Supply

a——Fuel burning 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. Where such enclosure contains ventilating equipment, the requirements for air supply shall conform to section C 508-3.2d.

b——Rooms containing fuel burning equipment having an individual or combined rated gross capacity of 250,000 Btu per hour or less, 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 which open to the exterior. Where the combined rated gross capacity exceeds 250,000 Btu per hour, the air supply shall be provided by means of fixed openings to the exterior.

c——Openings shall be adequate to provide air for combustion and ventilation for the simultaneous operation of all fuel burning equipment within rooms.

C 504-2.8 (858.2h) Removal of Products of Combustion

a——Equipment for burning solids or liquid fuel shall be connected to suitable chimneys or flues, or vented as set forth in paragraph d of this section, and shall not be connected to gasvents.

b——Gas-fired space heating equipment shall be connected to a suitable chimney, flue or gasvent or shall be vented as set forth in paragraph d of this section. Gas-fired equipment other than space heaters shall be vented to the exterior when the discharge of products of combustion into the space where the equipment is installed would be a hazard.

c——Smoke pipes and gasvent connections shall not be permitted in spaces of high hazard classification.

d——Equipment having an integral venting system in which the inlet for combustion air and the outlet for products of combustion are connected directly to the exterior shall be permitted without a chimney, flue or gasvent.

e——Equipment requiring mechanical draft shall have an interlock to shut off fuel supply when the venting system is inoperative.

f——Where a gasvent is permitted, a permanent sign stating the type of heating equipment which may be connected to the gasvent shall be provided and located where the gasvent passes through the wall or ceiling.

C 504-2.9 (858.2i) Safety Devices

a——Equipment capable of developing hazardous pressures or temperatures shall be provided with means to safely control such pressures and temperatures.

b——Controls for the safe operation of automatically operated heat producing equipment shall be provided and shall function as follows:

When failure or interruption of flame or ignition occurs, the fuel supply to the main burners 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 be-

low a predetermined level, the fuel supply to the main burners shall be cut off.

When failure or interruption of pilot light or main burner of liquefied petroleum gas equipment occurs, the fuel supply to such pilot light and main burner shall be cut off.

c——Heat producing equipment containing two or more automatically operated burners within a combustion space, shall be arranged so that the operation of the safety device for any burner will control the operation of all burners within such combustion space.

C 504-2.10 Insulation (858.2j)

a——Insulation provided to reduce the rate of heat flow through building construction shall conform to the requirements of section C501.

b——Insulation on surfaces of heat producing equipment shall be of noncombustible materials.

C 504-2.11 Expansion Tanks (858.2k)

Hot water heating systems shall be provided with expansion tanks or other means to allow for the expansion of water in the system.

C 504-2.12 Heating Equipment in Hazardous Spaces (858.2l)

a——Heating equipment in locations exposed to flammable dust, stock, vapors or explosives shall furnish heat by means of hot water, steam, or electrical coil approved for use in hazardous areas, except as otherwise permitted in sections C 504-2.14 and C 504-2.15. Controls shall be provided to limit the temperature of such water, steam, or electrical coil to 215° F.

b——Equipment in such locations having exposed surfaces at temperatures exceeding 120° F., shall be arranged so as to eliminate potential hazard owing to contact or mishandling.

Equipment Requirements

C 504-2.13 Warm Air Heating (858.2m)

a——Warm air heating systems shall conform to the requirements for ventilating systems as set forth in section C 508-3.

b——Registers or grilles shall not be permitted in the floors of required exits.

C 504-2.14 Heating of Aircraft Hangars, Garages and Gasoline Service Stations (858.2n)

a——Fuel-burning equipment for aircraft hangars, garages and gasoline service stations shall be located in heater rooms as set forth in section C 402-4.9e, except that suspended-type unit heaters shall be permitted in stories at or above grade where elevated in accordance with generally accepted standards. Floor-mounted heating equipment having a rated gross capacity of less than 250,000 Btu per hour shall be permitted in garages without repair facilities and in spaces opening directly into such garage, in stories at or above grade provided they are installed on a noncombustible platform not less than 18 inches above the floor.

b——Aircraft hangars, garages and gasoline service stations heated by recirculated air systems other than unit heaters shall be provided with a mechanical means of air handling designed to introduce a sufficient quantity of fresh air to prevent the accumulation of vapors or gases near the floor. Recirculated air shall not be taken from stories below grade level. For stories above grade level, openings for return air shall be at least 18 inches above floors.

C 504-2.15 Ovens (858.2o)

a——Ovens used for industrial purposes shall be designed and installed in conformity with generally accepted standards.

b——Ovens where toxic or flammable vapors are generated shall have mechanical ventilation to prevent the accumulation of vapors.

C 504-2.16 Unit Heaters (858.2p)

Suspended and floor mounted fuel-burning unit heaters shall not be located in concealed spaces, shall serve only the space in which they are located, and shall be protected against physical damage.

C 505 (859) CHIMNEYS, FLUES AND GASVENTS

C 505-1 (859.1) General Requirements

a——Chimneys, flues, gasvents and their supports shall be designed and constructed so as to be structurally safe, durable, smoketight, noncombustible, 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.

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

d——Flue linings shall be capable of withstanding the action of flue gas without softening, cracking, corroding, or spalling at the temperature to which they will be subjected. Flue linings are not required for chimneys capable of withstanding the action of flue gases at the design temperatures.

e——Chimneys without flue linings and metal smokestacks shall be sufficiently separated from building construction so as not to constitute a potential hazard.

f——Openings in flues for smoke pipes or gasvent connections shall be provided with means for easy connections without restriction of flue.

g——No flue shall have smoke pipe or gasvent connections in more than one story of a building.

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

i——Incinerator flues equipped with service open-

ings shall not be used as flues for other fuel burning equipment.

C 505-2 (859.2) Draft

a——Chimneys, flues, and gasvents or other draft producing devices installed on fuel burning equipment, shall provide sufficient draft to develop the rated output of the connected equipment.

b——Gas-fired equipment operating on natural draft and connected to a chimney, flue or gasvent, shall be provided with a draft hood, except that draft hoods are not permitted on incinerators.

C 505-3 (859.3) 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.

C 505-4 (859.4) Spark Arresters

Any chimney or flue connected to an incinerator, and any chimney or flue which may emit sparks, shall be provided with a spark arrester of noncombustible construction. Spark arrester shall have sufficient total clear area to permit unrestricted passage of flue gases. Openings in spark arrester shall be of such size as to prevent passage of embers and to minimize clogging by soot.

C 505-5 (859.5) Location of Outlets

The horizontal distance separation of outlets of chimneys, flues, and gasvents from windows, other exterior openings or obstructions and the vertical distance of such outlets from unprotected combustible material on the same or adjacent premises, and from the point where the flue passes through the roof, shall be in accordance with the following table:

TABLE C 505-5. (I-859)—LOCATION OF OUTLETS
Minimum distance in feet

Distance from other construction	Type of Outlet		
	Incinerator flues	Other flues	Gasvent
Horizontal distance to windows or other exterior opening where the openable portion is at a higher level and less than 30 feet above the flue outlet	1	20[1]	15
Minimum vertical distance above the highest point on the roof where the flue passes through	10	3[2]	2[3]
Vertical distance above construction where the horizontal distance to the construction is:			
Within 10 feet		2	2[3]
Within 20 feet	2		

1 Outlets of incinerator flues and flues from fuel burning equipment having a rated gross capacity exceeding 1,000,000 Btu per hour, shall be carried above the top of windows or other exterior openings in walls within a horizontal distance of 50 feet.

2 Where a roof can be reached by a stairway, minimum distance shall be 8 feet.

3 Reduced heights are permitted for gasvents not less than 8 feet from a vertical wall when tested for adequate performance in conformity with generally accepted standards.

C 505-6 (859.6) Extending Existing Chimneys, Flues, and Gasvents

a——Where a structure is built higher than an existing chimney, flue, or gasvent on the same or adjacent premises, the minimum distance of windows, other exterior openings and unprotected combustible material of such structure from the outlet of the chimney, flue, or gasvent shall be in accordance with the applicable requirements of section C 505-5.

b——Where a structure is built higher than an existing chimney, flue, or gasvent on the same or adjacent premises and causes a deficiency in the draft of heat producing equipment connected thereto, or where a chimney, flue, or gasvent is a potential nuisance to the occupants of such higher structure, then the owner of such higher structure shall, at his expense, and with the consent of the owner of the adjacent building, cause the existing chimney, flue, or gasvent to be extended or altered to correct the conditions.

c——Where a new chimney, flue, or gasvent is to be erected adjacent to an existing higher building,

the proposed chimney, flue, or gasvent shall be installed by the owner of the lower building in conformity with section C505 and may, at his expense, and with the consent of the owner of the higher building, be attached to such higher building.

C 506 (860) INCINERATORS AND REFUSE CHUTES

C 506-1 (860.1) General Requirements

a——Incinerators shall conform to the applicable requirements of sections C501, C504, and C505. They shall be of adequate capacity for the intended use.

b——Incinerators shall be equipped with means for burning auxiliary fuel in sufficient quantity to assure complete combustion of refuse.

c——Incinerator combustion space shall be designed and constructed so as to be durable and gastight.

d——Incinerators shall be equipped with means for regulating the draft and for minimizing the emission of fly ash, smoke, dust, particles, and odors.

e——Every flue serving an incinerator shall be provided with a substantially constructed spark arrester.

f——Every incinerator shall be connected to a suitable noncombustible chimney, smokestack, or flue. Flue-fed incinerators are not permitted.

g——Chutes for dropping refuse shall be vertical, of noncombustible construction, and shall have a smooth finish on the inside to provide free passage of refuse without clogging.

h——Incinerator rooms may contain boilers, furnaces, and heating equipment, but shall not be used for any other purpose.

C 506-2 (860.2) Service Openings

a——Service openings shall be readily accessible to the building occupants.

b——Service openings shall be equipped with metal, self-closing charging devices of fire-resistive con-

struction as set forth in section C 402-4.11g. No part of the charging devices shall project into a refuse chute.

c——Durable signs with plainly legible letters prohibiting disposal of highly flammable substances in incinerators, shall be provided near service openings.

C 507 (861) ELECTRICAL WIRING AND EQUIPMENT

C 507-1 (861.1) General Requirements

1977 a——Electrical wiring and equipment shall conform to the requirements of section C501, 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. Terminal connections and connections involving dissimilar metals shall be made in an approved manner.

b——Electrical wiring and equipment shall be firmly secured to the surface on which it is mounted.

c——Electrical wiring and equipment installed in damp or wet locations or where exposed to explosive or flammable gases, fumes, vapors, liquids, dust or fibers, or to agents having a deteriorating effect, or to excessive temperatures, shall be of a type approved for the purpose and location.

d——Exposed live parts of electrical equipment operating at 50 volts or more shall be guarded against accidental contact by enclosure, elevated position, or other suitable means.

e——Electrical wiring and equipment shall be grounded or otherwise protected by insulation, isolation, or guarding so as to minimize the danger of high voltages from lightning or other causes.

f——Electrical equipment which in ordinary operation produces arcs, sparks, flames or molten metal, shall be enclosed unless separated and isolated from all combustible material.

g——Where the conduit system extends from a hazardous location to other portions of the building,

seals shall be provided to prevent the passage of flammable gases or vapors.

h——In buildings of group C6.3 occupancy, electrical equipment shall be enclosed, elevated, or isolated so as to minimize the possibility of tampering.

i——Where explosives are manufactured, provision shall be made for remote control of the electrical circuits so that the light and power can be disconnected at a point outside the building.

j——Temporary wiring and equipment, during construction, shall be installed so as not to be a hazard, and shall be protected from damage. Separate circuits shall be provided for light and power, except that small portable power tools may be supplied from lighting circuits. Circuits supplying outlets in stairways and shafts shall not supply any other outlets. Conductors within 7 feet of the floor level, or in hoistways, shall be installed in raceway, or otherwise suitably protected. Overcurrent protective devices and switches not integral with motors shall be installed in cabinets or boxes. Frames of motors, portable tools, and metal cabinets and boxes shall be grounded.

k——Metal roofs, veneers, and sidings on buildings shall be made electrically continuous and shall be grounded as recommended in generally accepted standards.

C 507-2 (861.2) Artificial Lighting

C 507-2.1 (861.2a) General Requirements

a——Buildings and structures to be occupied by persons shall be wired for electricity, and lighting equipment shall be installed throughout to provide adequate illumination for the intended use of each space. Electricity shall be obtained from public utility or private sources, except as otherwise set forth in sections C 507-2.2 and C 511-2.4.

b——During periods of occupancy, whenever natural light is lacking or insufficient for safe travel, electric light of intensity sufficient for safe travel

shall be provided throughout exits, and for spaces to which the public has access or in which persons work, including elevators, escalators, and manlifts.

c——Artificial lighting equipment in occupied space shall be designed and installed so as to avoid glare and objectionable shadow.

d——Luminous ceilings used as artificial light diffusers shall be installed in conformity with section C 403-3.

e——Fixed artificial lighting equipment shall not be installed in magazines used for the storage of explosives. Artificial lighting of the area surrounding such magazines shall be provided.

f——Switches controlling required artificial lighting in spaces to which the public has access, shall be provided in a central location, and if accessible to other than authorized persons, shall be designed so as to be protected against unauthorized use.

C 507-2.2 (861.2b) Emergency Lighting and Power

a——Emergency lighting as set forth in paragraph b of this section shall be provided in buildings and spaces as indicated in table C 507.

b——Emergency lighting shall be adequate to illuminate, under emergency conditions, assembly space, occupied space, public space, exits, elevators, escalators, and spaces containing equipment required to be furnished with emergency power as set forth in paragraph d of this section.

c——Emergency lighting shall be designed and installed so as to permit occupants to make their way safely out of the building in the event of failure of the normal lighting.

1975 d——Emergency power shall be provided for fire pumps supplying sprinkler systems, fire control panel as set forth in section C 511-10.2, industrial processes where current interruption would cause hazards, hospital operating room, mechanical breathing equipment, fire protection signal systems, voice

communication systems used as a means of warning or direction in emergencies, and heating equipment in group C6.2 and C6.3 occupancies which require emergency lighting.

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TABLE C 507. (I-861)—LOCATIONS WHERE EMERGENCY LIGHTING IS REQUIRED

Occupancy	Location
C1	Buildings more than 70 feet in height
C2	Buildings three stories or more in height, having more than 5000 square feet of floor area on any story
	Enclosed malls and passageways
C3, C4	In unsprinklered buildings where distance of travel is more than 100 feet
	In sprinklered buildings where distance of travel is more than 200 feet
C5.1, C5.2, C5.3, C5.5	In spaces intended for occupancy by two hundred persons or more in one room or enclosure
C5.4	In spaces used for other than religious purposes by 200 persons or more in one room or enclosure
C6	Where there are operating or delivery rooms, or one hundred sleeping rooms or more, or bedridden patients above the first story
C1 to C6.3	Windowless buildings or below-grade spaces exceeding 2500 square feet
	Passenger elevators

e——Emergency lighting and power shall be furnished through an independent electrical wiring system supplied from a main source, and from an auxiliary source.

f——Means shall be provided for automatically transferring the emergency lighting and power supply from the main source to the auxiliary source within 15 seconds in the event of failure of the main source.

g——The auxiliary source shall have a capacity sufficient to supply and maintain the total emergency lighting and power load for a period of at least 30

minutes, with not more than a 9 per cent reduction from rated system voltage, except that for group C6.2 and C6.3 occupancies, such period shall be at least 24 hours for lighting and power to supply services essential to safety and health.

C 507-2.3 (861.2c) Exit and Directional Signs

a——Exits and directional signs, visible from the approach to the exits, shall be provided in accordance with the following:

Occupancy group	Required when fire area on any story exceeds—
C1	2500 square feet
C2	2500 square feet
C3	5000 square feet
C5	Required in all cases except in group C5.4, used only for religious purposes
C6	Required in all cases

b——Exit signs shall be provided over each exit doorway and opening forming part of an exit, except main entrance doorways in buildings of group C1 and C5.4 occupancy.

c——Directional signs shall be provided at locations in the public hall, passageway, or corridor from which the exit doorway is not readily discernible.

d——Such signs shall be worded in plainly legible block letters with the word **EXIT** for exit signs and the words **TO EXIT** with a suitable pointer or arrow indicating the direction of exit, for directional signs. Letters for signs shall be conspicuous, readily discernible, and at least 6 inches high except that for internally illuminated signs the height of such letters shall be at least 4½ inches.

e——Exit and directional signs shall be illuminated either externally or internally by electric lights, and shall be kept illuminated at all times when the building is occupied. Where a system of emergency lighting is provided, electric lights illuminating exit and directional signs shall be supplied with current from the emergency lighting system. When such system is not provided, current shall be supplied from a

separate circuit or circuits controlled from a central location. Circuits supplying exit and directional sign outlets shall supply no other outlets.

C 508 (862) REFRIGERATION, AIR CONDITIONING AND MECHANICAL VENTILATION

C 508-1 (862.1) Refrigeration

C 508-1.1 (862.1a) General Requirements

Mechanical refrigeration equipment shall conform to the requirements of section C 501, and shall be designed and installed so as not to be a potential source of hazard from excessive pressure or refrigerant leakage.

C 508-1.2 (862.1b) Location

Refrigeration equipment shall not be permitted in exits, except that self-contained refrigerating units shall be permitted in lobbies provided that they do not obstruct or diminish the width of exits, and the refrigerant contained in any such unit is limited so as not to constitute a potential hazard.

C 508-1.3 (862.1c) Materials

Refrigerating equipment shall be of materials resistant to the corrosive effects of refrigerant conveyed by them, so as to remain gastight and safe. All parts of such equipment shall be designed, constructed, and installed so as not to exceed the allowable working stresses of the material used.

C 508-1.4 (862.1d) Refrigerants

a——Refrigerants shall be classified as to their flammable or toxic qualities.

b——Refrigerants that are highly flammable or toxic shall not be used in buildings of group C1, C2, C5, or C6 occupancies.

c——In direct refrigerating systems using nonflammable and nontoxic refrigerants, the amount of refrigerant contained in each system shall not exceed the amount that in case of leakage may be contained safely in the space in which the equipment is located, or in the spaces in which the refrigerant would be dissipated.

d——Direct systems using refrigerants that are flammable or toxic shall not be used for air conditioning purposes.

e——Systems containing refrigerants exceeding the limits stated in paragraph c of this section shall be of the indirect type using chilled water or nontoxic, nonflammable brine as the cooling medium, and equipment containing the refrigerant shall be located in a machinery room conforming to the requirements set forth in sections C 508-1.6a, b, and c.

f——Systems containing refrigerants that are flammable or toxic shall be located in a machinery room conforming to the requirements set forth in section C 508-1.6b, c, and d.

C 508-1.5 (862.1e) Refrigerant Piping

a——Refrigerant piping shall not be located in ducts, chutes, exits, stairways, or hoistways, or where it may be subject to mechanical damage.

b——Direct systems containing nonflammable and nontoxic refrigerants may have refrigerant piping carried through floors, provided that where passing through spaces not served by the systems, such piping shall be enclosed in rigid, noncombustible material and shall be arranged so that leakage of gas will not enter such spaces.

C 508-1.6 (862.1f) Machinery Room

a——Machinery room for refrigeration equipment using refrigerants that are nonflammable and nontoxic shall contain no fuel burning equipment unless such equipment is provided with a suitable hood and flue capable of effectively removing the products of combustion to the outer air.

b——Refrigeration machinery rooms shall be used for no purpose other than for mechanical equipment.

c——Refrigeration machinery rooms shall have no openings that will permit the passage of escaping refrigerant to other parts of the building. Machinery rooms shall be provided with ventilation in accordance with generally accepted standards.

d——Machinery rooms for refrigeration equipment using refrigerants that are flammable and toxic shall contain no fuel burning equipment, and shall conform to the requirements set forth in sections C 212-1n and C 402-4.6d. Motor control for refrigeration and ventilating equipment in such a machinery room shall be located outside the room.

C 508-1.7 (862.1g) Safety Controls

Refrigerating equipment shall be provided with means to relieve excessive pressures safely.

C 508-1.8 (862.1h) Plumbing Connections

Plumbing connections for refrigerating equipment shall be in conformity with the requirements set forth in section C 502.

C 508-2 (862.2) Cooling Towers

a——Cooling towers in exterior locations inside fire limits shall be constructed of noncombustible materials, including the exterior finish, with the exception that the drip bars and drift eliminators may be of wood.

b——Cooling towers located outside fire limits shall be in conformity with paragraph a of this section, with the following exceptions permitted for buildings of group C1, C2, C3 and C4 occupancies:

Where located on the ground and not exceeding 40 feet in height or 1500 square feet in area, tower may be of wood, and where such height or area is exceeded, the exterior shall be of noncombustible material and the interior shall be protected with a sprinkler system.

Where located on buildings not more than 40 feet in height, the cooling tower may be of wood provided it is not more than 15 feet in height and does not exceed 750 square feet in area; where the building is more than 40 feet in height or where the tower has a greater height or area, the tower may be of wood provided the exterior is of noncombustible material and the interior is protected with a sprinkler system.

c——Cooling towers shall be designed, installed, and located so that when in operation noise, fog, or water spray will not cause a nuisance.

d——Outdoor cooling towers located on buildings shall permit access for fire fighting, and shall not constitute a fire hazard.

C 508-3 (862.3) Ventilating Systems

C 508-3.1 (862.3a) General Requirements

a——Ventilating systems shall be designed and installed so that the rapid spread of heat, flame, or smoke through the system will be prevented, and so that under conditions of use the temperature of any combustible material adjacent thereto, or in contact therewith, will not exceed 175° F.

b——Systems designed for exhaust ventilation of kitchens, kitchenettes, toilets, garages, ventilated vestibules for garages and heater rooms, and spaces where the exhaust may be toxic or irritating in nature, shall each discharge independently to the exterior.

c——Stairways, exits, hoistways, attics and shafts other than those used exclusively for ventilating purposes, shall not be used as a plenum chamber, except that corridors may be used to supply air to toilet rooms and sink closets in any occupancy. In buildings of C1, C3.1 and C4.1 occupancy not more than two stories in height, corridors may serve as a plenum chamber for adjoining occupied spaces provided air openings are equipped with fire dampers, and safety controls are provided as set forth in section C 508-3.5b.

d——Ducts shall be securely fastened in place, and shall be firestopped as set forth in section C 402-5.

e——Material used on the inside or outside surface of ducts shall have Class A finish, except that Class B finish may be used on the outside surface when the inside is subject to temperatures not exceeding 175° F.

f——Ducts and other air handling equipment shall be of noncombustible material. Material having a flame-spread rating of not over 25 without evidence of continued progressive combustion and a smoke developed rating of not over 50, may be used in accordance with the requirements of generally accepted standards except as set forth in sections C 509e and j.

g——Filters shall be designed and installed so as not to constitute a fire or smoke hazard.

h——Ducts passing through or located within combustible construction shall be separated from such construction by a clearance of at least ½ inch or by a noncombustible insulating material at least ¼-inch thick.

i——Ducts passing through fire walls shall be equipped with fire dampers as set forth in section C 402-4.11d. Ducts passing through other fire separations shall be protected as set forth in section C 402-4.11d, or be provided with other means to prevent the spread of heat, smoke or flame.

j——Plenum chambers or enclosures for ventilating purposes shall conform to the requirements for ducts.

k——Exhaust ducts operated by gravity or wind shall have no connection to other ducts, except that when they are of the same length and serve the same story, such ducts may be combined. The capacity of wind-operated devices to exhaust the required air quantities shall be based on their performance when subjected to wind velocities of 4 miles per hour.

l——Ducts shall not be located between fire-protective material and structural members which are indi-

vidually encased by such material, except that ducts are permitted in the concealed space between a continuous ceiling and beams or joists protected by such ceiling, provided that where they pass through fire separations, fire dampers are installed.

m——Air required for ventilation shall be taken from the exterior or shall be quality controlled but shall include an amount of exterior air equal to not less than one air change per hour.

C 508-3.2 (862.3b) Air Intake and Exhaust Openings

a——Air intake and exhaust openings shall be designed, located, and installed so as not to constitute a hazard or nuisance, and so as to prevent the possibility of fire, smoke, fumes, or foreign matter being drawn into the system.

b——Exhaust ducts from high hazard spaces shall terminate not less than 10 feet from combustible construction or building openings, and not less than 20 feet from chimney outlets.

c——Ventilating systems shall be provided with adequate openings for incoming and outgoing air to obtain the required circulation. Intake openings shall provide air from an uncontaminated source.

d——Where openings for mechanical exhaust are located in spaces that also contain fuel burning equipment, there shall be provided fixed intake openings from the exterior to supply sufficient air so that the fuel burning equipment is not adversely affected.

e——Exhaust openings shall be located so that the exhaust air will not create a nuisance.

C 508-3.3 (862.3c) Ventilation Requirements

a——Enclosures or spaces where heat, gases, vapors, or odors may accumulate and become a potential source of hazard or nuisance, shall be provided with adequate means of ventilation to remove such excess.

Equipment Requirements

TABLE C 508-3.3h. (I-862)—MEANS FOR OBTAINING REQUIRED VENTILATION
(See table C 508-3.3i for quantity requirements)

Classification of space[1]	Required ventilation obtained by means of—		
	Openings to the outer air	Ducts connected to wind- and gravity-operated ventilators	Mechanical ventilating equipment
All occupancy groups:			
Spaces other than those listed below	Permitted	Permitted	Permitted
Habitable spaces	Required	(2)	(2)
Exits, passageways and stairways.	Permitted	Permitted	(3)
Group C3.2:			
Motor vehicle repair shops	(2)	(2)	Required
Group C3.3:			
Where toxic or flammable gases are generated	(2)	(2)	Required
Where flammable liquids having flash point less than 200° F. are exposed	(2)	(2)	Required
Pyroxylin plastic	Permitted	Permitted	(2)
Paint spray rooms	(2)	(2)	Required
Group C4:			
Above-grade garage areas exceeding 5000 square feet, below-grade garage areas exceeding 1000 square feet, and aircraft hangars.	(2)	(2)	Required
Group C5:			
Film projection room	(2)	(2)	Required
Cooking equipment in kitchens serving public dining rooms	(2)	(2)	Required
Group C6:			
Laundries, chemical laboratories	(2)	(2)	Required
Group C6.2:			
Operating rooms or rooms where anesthetic gases are used	(2)	(2)	Required

1 Requirement for space not listed under an occupancy group shall be equal to that required for the same type of space listed under another occupancy group.
2 Not permitted as a means for obtaining required ventilation, but permitted as an additional means.
3 Not permitted for stairways in buildings of group C3.2, C3.3, C4.2, C4.3, C5 and C6 occupancies.

TABLE C 508-3.3i. (II-862)—MINIMUM VENTILATION REQUIREMENTS

Space[1]	Amount of Ventilation[4]
All occupancy groups:	
Habitable spaces	See section C 210-3
Cellar or basement spaces	One-half air change per hour
Exits, passageways, and stairways:	
above-grade	One-half air change per hour
below-grade	1 air change per hour
Cooking space with domestic type range for:	
private use	150 cfm
public use	250 cfm per range
Water closet compartments and bathrooms:	
private use	25 cfm
public use	40 cfm per water closet or urinal
Recreation rooms	2 air changes per hour
Refrigerator machinery rooms	In accordance with generally accepted standards
Boiler rooms	To limit the temperature to a maximum of 120°F.
Elevator machinery rooms	To limit the temperature to a maximum of 10°F. above the outdoor temperature
Small workshops, service rooms, paint storage rooms, utility service rooms	1 air change per hour
Dark rooms, film developing rooms	3 air changes per hour
Garbage storage rooms, nonrefrigerated	6 air changes per hour
Occupied spaces having volume of:	
not more than 1000 cubic feet per person	1½ air changes per hour
more than 1000 cubic feet per person	One-half air change per hour
Interior passageway or vestibule separating garage from other occupancies	Not less than 4, nor more than 10, air changes per hour
Group C1:	
Offices, waiting rooms, studios, telephone exchanges	1 air change per hour
Group C2:	
Shops, stores, display rooms, showrooms, salesrooms and enclosed malls	1 air change per hour
Group C3:	
Locker rooms, washrooms, dressing rooms, rooms used for manufacture or processing of food[2]	6 air changes per hour
Group C3.2:	
Motor vehicle repair shops	4 air changes per hour or approved local exhaust system

Equipment Requirements

TABLE C 508-3.3l. (II-862)—MINIMUM VENTILATION REQUIREMENTS—Continued

Space[1]	Amount of Ventilation[4]
Group C3.3:	
All spaces	([3])
Battery charging rooms	6 air changes per hour
Where flammable liquids are exposed and have flash point of:	
less than 70°F.	2 cfm per square foot
from 70°F. to 200°F.	1 cfm per square foot
For pyroxylin plastic	Proportional to volume of flammable material
Paint spray rooms	Velocity of air at breathing zone of 100 feet per minute
Group C4:	
Above-grade garage areas exceeding 5000 square feet, and aircraft hangars	4 air changes per hour
Below-grade garage areas exceeding 1000 square feet	6 air changes per hour
Group C4.3:	
All spaces	([3])
Group C5:	
Churches, libraries, museums, art galleries, skating rinks, theaters, courtrooms, assembly halls, lecture halls, classrooms	5 cfm per person
Fallout shelters, gymnasiums, meeting rooms, restaurants, dance halls, bowling alleys, night clubs, passenger stations	10 cfm per person
Film projection room	200 cfm plus not less than 15 cfm per machine
Film rewinding or accessory room	6 air changes per hour
Kitchens serving public dining rooms	6 air changes per hour
Hoods for cooking equipment in kitchens serving public dining rooms[3]	100 cfm per square foot
Group C6:	
Open hoods for commercial dishwashers, sterilizers, laundry and chemical equipment	100 cfm per square foot
Group C6.2:	
Morgues, bed pan rooms, sterilizer rooms, laundries, serving pantries, and utility rooms for patients	6 air changes per hour
Operating rooms or rooms where anaesthetic gases are used[2]	8 air changes per hour
Storage rooms for anaesthetic gases	8 air changes per hour
Group C6.3	2 air changes per hour

1 Requirement for space not listed under an occupancy group, shall be equal to that required for the same type of space listed under another occupancy group.
2 Where ducts are directly connected to lockers, the ventilation of rooms in which lockers are located may be reduced 50 per cent.
3 Ventilation of spaces shall be in conformity with section C 509.
4 For quality controlled air the amount of exterior air in the circulating air shall conform to the requirements of section C 508-3.1m.

b——Heat, smoke, or fumes which are a potential hazard shall be removed as close to their source as is practicable.

c——Occupied spaces shall be provided with means for obtaining air supply for the maximum number of persons for which such spaces are designed.

d——Ventilating systems shall be designed and installed so that the air coming into contact with occupants is directed and is at a temperature and velocity that does not constitute a health hazard.

e——Film projection rooms shall be provided with supply and exhaust ventilation.

f——Supply and exhaust ventilation shall be provided in spaces where anaesthetic gases are used, and such installation shall be designed and installed to maintain a relative humidity of at least 50 per cent.

g——Required ventilation shall be provided in accordance with section C210 and with tables C 508-3.3h and C 508-3.3i.

C 508-3.4 (862.3d) Air Flow

Exhaust air from a dwelling unit or a space whose contents may emit odors, fumes, or vapors shall not be circulated to other occupied spaces within the building.

C 508-3.5 (862.3e) Safety Controls

a——Manually operated controls shall be provided to stop the operation of central fan equipment. Such controls shall be conspicuously identified and in readily accessible locations outside the fan room.

1975 b——Every system using recirculated air and serving an assembly space or more than one fire area or more than one story of a building, shall be provided with safety controls arranged so that when the air in the system contains smoke of a predetermined intensity or has an abnormal rise in temperature, the fans causing normal circulation in such area shall stop and require manual reset. Such safety controls

in buildings more than 70 feet in height shall be smoke detectors located in the return air system on each story, shall stop the recirculating fans serving the smoke affected area, activate an alarm at the fire control panel, and require manual reset at the fire control panel.

c——Where a ventilating system is installed in a building that contains a fire alarm, fire- and smoke-detecting or sprinkler system, there shall be provided a control that will automatically stop the ventilating fans when any such fire protection equipment is activated.

d——Every system for ventilating an assembly space shall be provided with an emergency switch conveniently located and with a durable sign giving instructions for shutting down the system in case of fire or smoke.

e——Systems ventilating high hazard spaces shall be provided with automatic devices to function as follows:

When the accumulation of dust on air filters creates excessive resistance to air flow, an audible or visual signal shall be actuated.

When the air in the system contains smoke of a predetermined quantity or has an abnormal rise in temperature, the fans shall stop.

Controls shall require manual reset.

1975
C 508-4 (862.4) **Emergency Ventilation**

a——Buildings 70 feet or less in height, without fixed or openable windows or without ventilating openings in exterior walls, shall be provided with emergency ventilation designed and installed to exhaust smoke and heat to the exterior from exits in the event of fire, to operate without recirculation of air, and to transmit simultaneously an alarm signal audible to the occupants, or to an approved central station.

b——Telephone rooms, pump rooms, and emergency equipment rooms which require the attendance of an operator during a fire or other emer-

gency, shall be provided with natural ventilation, or in lieu thereof, with an independent mechanical system for obtaining fresh air from outside the building. The mechanical system shall be capable of introducing outside air in sufficient quantity to minimize the effect of smoke from other parts of the building.

c——Required emergency ventilation as set forth in paragraphs a and b of this section shall be provided with a manual control in a conspicuous location near the exit, and with a durable sign giving instructions for starting the system.

TABLE C 508-4d. (III-862)—REQUIRED EMERGENCY VENTILATION

Spaces served	Air changes per hour	Means for obtaining ventilation: Openings to the outer air	Means for obtaining ventilation: Ducts connected to wind- and gravity-operated ventilators	Means for obtaining ventilation: Mechanical ventilating equipment
Exits	20	(1)	(1)	Required
Equipment rooms	10	Permitted	Permitted	Permitted

1 Not permitted as the sole means for obtaining ventilation.

d——Required emergency ventilation as set forth in paragraphs a and b of this section shall be installed in accordance with table C 508-4d.

e——Buildings more than 70 feet in height, conforming to the requirements set forth in section C 406-9, shall be provided with natural or mechanical means for venting smoke from each story. Such mechanical means shall be the building recirculated air system designed and installed to operate without recirculation to exhaust smoke to the exterior, or in lieu thereof, shall be an independent automatic mechanical smoke removal system. Controls for restarting the building recirculated air system in venting mode shall be manual and shall be located at the fire control panel.

C 509 (863) CONVEYING AND REMOVAL SYSTEMS FOR STOCK, DUST, OR VAPORS

a——Conveying and removal systems for stock, in-

cluding feathers, grain or shavings, and dust or vapors, shall conform to the requirements set forth in sections C501 and C 508-3.

b——Such systems shall be of approved materials, resistant to the destructive effects of substances conveyed. Ducts carrying materials which may accumulate shall have means for easy inspection and cleaning.

c——Systems for conveying and removing flammable stock, dust, or vapors shall be designed and installed to protect against the creation of sparks. Systems shall not be connected directly to enclosures containing an open flame or open electrical coil, nor to spaces having openings to such enclosures. Electrical equipment installed in enclosures containing such systems shall conform to the requirements set forth in section C 507-1.

d——Automatically operated equipment capable of generating flammable mixtures that may be a potential hazard shall be provided with controls to prevent operation unless mechanical ventilation is functioning.

e——Equipment producing flammable stock, dust or vapors shall be provided with mechanical exhaust systems which are not connected with any other exhaust system. Such systems shall be provided with noncombustible ducts in accordance with generally accepted standards, and with devices to prevent the entry of flammable materials into ducts, and shall be designed and installed so that in the event of fire within the system the danger of spread to other parts of the building will be minimized. Systems carrying materials which may form explosive mixtures shall be designed and installed to withstand or relieve explosion pressures.

f——Occupied spaces in which flammable dust, stock or vapors circulate and may become a source of hazard or nuisance, shall be provided with mechanical ventilation designed and installed to remove such excess.

g——Flammable gases and vapors which are heavier than air and may descend into cellars, base-

ments or pits, shall be exhausted to the exterior through openings located so as to prevent accumulation. Flammable gases and vapors which are lighter than air shall be exhausted through openings located near ceiling or roof.

h——Equipment for collecting or storing of flammable stock, dust, or vapors shall be located outside buildings and at a safe distance from combustible construction and building openings, except that such equipment may be installed inside buildings in separate rooms conforming to the requirements for heater rooms in garages as set forth in section C 402-4.9e.

i——Exhaust ducts for corrosive or acid fumes shall be carried above the top of windows or other openings in exterior walls within a horizontal distance of 100 feet.

j——Cooking equipment in kitchens serving restaurants or public dining rooms shall be provided with mechanical exhaust systems which are not connected with any other exhaust system. Such systems shall conform to generally accepted standards, and shall be constructed with metal ducts, with openings of size to permit easy inspection and cleaning, with equipment or filters to prevent the entry of flammable materials into ducts, and designed and installed so that in the event of fire within the system the danger of spread to other parts of the building will be minimized. Where such exhaust systems have hoods with a total area exceeding 3 square feet, they shall also be provided with fixed-pipe fire extinguishing systems that are manually and automatically controlled.

C 510 (864) EQUIPMENT FOR FLAMMABLE LIQUIDS

C 510-1 (864.1) General Requirements

Flammable liquids shall be received, stored, and conveyed by means of fixed liquidtight equipment designed and installed in conformity with the requirements set forth in section C 501.

Equipment Requirements

C 510-2 (864.2) **Storage Tanks**

a——Storage tanks for flammable liquids shall rest on noncombustible supports.

b——Tanks shall be protected against settling, sliding, or displacement because of buoyancy. Where located in areas subject to traffic, they shall be protected against physical damage.

c——Tanks shall be located at a safe distance from the property line and from spaces which are at an elevation lower than the top of the tank so as to reduce the potential hazard in the event of discharge of liquid.

d——Underground tanks shall be located so as not to receive any foundation load.

e——Tanks shall be provided with means for venting.

f——Tanks arranged to discharge flammable liquids by gravity, or air or inert gas pressure, to locations within buildings shall be prohibited.

g——Tanks shall be designed and installed so as not to be a hazard to the premises served or the surrounding property.

C 510-3 (864.3) **Storage Tanks Inside of Buildings**

a——Storage tanks inside of buildings for flammable liquids having a flash point of less than 200° F., shall be provided with liquid-level indicating devices of fixed vaportight construction.

b——Storage tanks for flammable liquids having a flash point of 70° F. or less are permitted in gasoline service stations and buildings of group C3 or C4 occupancies. Such tanks shall have an individual capacity not exceeding 550 gallons for gasoline service stations, and 275 gallons for group C3 and C4 occupancies, and shall be enclosed with construction having at least a 4-hour fire-resistance rating, except that in buildings designed exclusively for processes involving the use of flammable liquids, larger tanks are permitted when installed in accordance with generally accepted standards.

TABLE C 510-3c. (I-864)—PERMISSIBLE MAXIMUM CAPACITY OF FUEL OIL STORAGE TANKS INSIDE OF BUILDINGS

Construction classification	Minimum fire-resistance rating of tank enclosure, in hours	Permissible maximum aggregate storage capacity, in gallons	Permissible maximum storage capacity of an individual tank, in gallons
Type 5	(1)	550	550
Type 1, 2, 3, 4	(1)	1,100[2]	550
Type 2, 3, 4	2	10,000	5,000
Type 1	2	15,000	10,000
Type 1, 2	4	50,000	25,000

1 No enclosure required where separated by a distance of at least 5 feet from an open flame or open electrical coil.
2 Valves shall be provided to limit capacity of tanks connected to an oil burner to 550 gallons at any one time.

c——Maximum capacity of fuel oil storage tanks shall be in accordance with table C 510-3c.

C 510-4 (864.4) Above-ground Storage Tanks Located Outside of Buildings

a——Above-ground storage tanks for flammable liquids located outside of buildings, shall be designed and installed with means to minimize possibility of tank rupture in the event of fire.

b——Minimum distance between such tanks shall be sufficient to gain access for fire fighting.

c——Above-ground tanks for flammable liquids having a flash point of less than 200° F., and having an aggregate capacity exceeding 10,000 gallons, shall be provided with means to prevent flammable liquids from spreading to waterways, adjoining property, or other areas containing combustible substances. Where diked or enclosed areas around such tanks are provided with drains for storm water, such drains shall conform to the requirements of section C 502-5.

C 510-5 (864.5) Piping

a——Pipes for flammable liquids entering buildings shall be protected from damage by settlement or corrosion.

b——Where such pipes enter a building below

grade, all exterior wall openings below grade and within 10 feet of such pipe entrance shall be vapor-tight.

c——Such pipes having discharge outlets located within buildings shall be provided with remote control to stop the flow during fire or other emergency.

d——Filling, emptying, and venting of tanks shall be by means of fixed piping. Pipe to underground tanks shall be pitched toward tanks. Terminals of fill and vent pipes shall be located outside buildings at a safe distance from building openings.

C 510-6 (864.6) Equipment Using Flammable Liquids Inside Buildings

a——Occupied spaces whererin flammable liquids create vapors in concentration greater than one fourth the lower limit of combustibility, shall be provided with fire protection equipment, and shall be ventilated in conformity with sections C 508 and C 509. Heating of such spaces shall conform to the requirements of section C 504-2.12; electrical equipment shall conform to the requirements of section C 507-1.

b——Equipment having open tanks of flammable liquid shall be provided with controls to function as follows:

In the event of failure of operation of ventilating equipment, means shall be provided to prevent normal operation of mechanical equipment connected to the tank.

When flammable liquid is subject to heating, the input of additional heat shall be prevented in the event a safe predetermined temperature is exceeded. When cooling is used to control the safe operation of such tanks, normal operation shall be prevented in the event of cooling failure.

c——Dip tanks for flammable liquids exceeding 150-gallon liquid capacity, or 10 square feet of liquid surface area, shall be provided with approved means to prevent or extinguish fires. Tanks exceeding 500-gallon capacity shall also be provided with means to permit quick emptying of tank contents to a safe location.

C 510-7 (864.7) Storage of Flammable Liquids in Drums

Spaces used for the storage of flammable liquids in drums shall be located so as to minimize the hazard in the event of drum rupture during a fire, and such spaces shall be provided with means to prevent the spread of fire.

C 511 (865) FIRE PROTECTION EQUIPMENT

C 511-1 (865.1) General Requirements

Fire protection equipment shall be provided as set forth in section C 406, and such required equipment shall be in conformity with the requirements set forth in this section.

C 511-2 (865.2) Fire Alarm Systems

C 511-2.1 (865.2a) General Requirements

a——Fire alarm systems shall conform to the requirements of section C501 and shall be designed and installed so as to warn all the occupants in the event of fire or other emergency.

b——The component parts of a fire alarm system shall be designed, made and assembled for fire alarm purposes, and so as not to require frequent major replacements.

c——Fire alarm systems shall be under constant electrical supervision so that failure of the main power supply, or an open or grounded circuit which prevents the normal operation of the system, will be instantly and audibly indicated. Where such electrical supervision is impracticable for certain types of sounding devices, such as vibrating bells, such sounding devices shall be connected alternately on separate circuits and shall be equally distributed throughout the building.

d——Fire alarm systems required in group C6.2 and C6.3 occupancies shall activate a visible signal on the premises and simultaneously transmit a signal to the local fire department or approved central station. The visible signal shall be installed in an ap-

proved location and shall be provided with a durable sign, conspicuously located, directing procedure in the event of fire. Activation of audible alarm signals in the building shall be by authorized persons only.

e——In buildings of group C2, C3, C6.2 and C6.3 occupancy, six stories or more in height, or having more than 2500 square feet of floor area on any story, fire alarm systems shall be of the coded type.

f——Installation of presignal systems shall be permitted only in buildings where an authorized person or a trained fire brigade is available at all times on the premises to receive the alarm and take proper action.

g——In schools for the deaf, required fire alarm systems shall be provided with red signal lights in rooms where students congregate, in addition to the sounding devices.

C 511-2.2 (865.2b) Manual Fire Alarm Boxes

a——Fire alarm systems shall have manually operated fire alarm signaling devices, mounted in durable boxes, and designed to transmit an alarm signal to the sounding devices on the premises.

b——There shall be at least one such box in each fire area.

c——Boxes shall be located in a public hall or passageway in the natural path of escape from fire and shall be accessible on every story without passing through a fire door.

d——Boxes shall be located so that the horizontal distance from any point on a story not divided into rooms or from any door opening out of a room or suite to the nearest box shall be in accordance with table C 511-2.2d.

TABLE C 511-2.2d. (I-865)—MAXIMUM DISTANCE OF TRAVEL TO MANUAL FIRE ALARM BOX
Distance in feet

Occupancy or fire hazard classification	With sprinkler system	Without sprinkler system
Group C6 or high hazard	150	100
Others	300	200

e——Boxes shall be in a position and ready at all times to operate when actuated.

1975 f——Boxes shall be identified and shall have a conspicuous exterior color. Durable signs, conspicuously located, shall be provided directing attention to the location of such boxes.

g——Boxes shall be designated to be used only for fire protection purposes or other emergency.

C 511-2.3 (865.2c) Sounding Devices

a——Fire alarm systems shall be provided with sounding devices designed to sound a clear audible alarm signal that is distinct from all signals of other sounding devices used in the vicinity.

b——All fire alarm sounding devices within a building shall be of the same type.

c——A sufficient number of sounding devices shall be provided and so located that the alarm is audible in all parts of the building.

C 511-2.4 (865.2d) Electrical Requirements

a——Fire alarm systems shall be supplied with electrical energy from a main source and, in case of failure of the main source, from an auxiliary source.

b——Circuits used for the transmission of alarms shall be used for fire protection or other emergency purposes only, and shall be arranged and installed so that there can be no interference with the operation of the sounding device.

c——Electrical wiring shall be protected against corrosion, moisture and mechanical damage. Wiring shall be protected by raceway, armor or non-metallic sheath, except that such protection shall not be required for limited-energy fire detector circuit wiring installed exposed at least 7 feet above the floor. Such limited-energy circuits shall have input limited to 100 volt-amperes, current not exceeding 2 amperes and voltage not exceeding 50 volts.

d——Raceway and boxes containing fire alarm conductors shall not contain conductors used for any purpose other than fire protection.

C 511-2.5 Tests
(865.2e)

The trouble signal of fire alarm systems shall be tested daily, and all fire alarm boxes and sounding devices shall be tested at least once a month during periods of occupancy.

C 511-3 Fire- and Smoke-Detecting Systems
(865.3)

C 511-3.1 General Requirements
(865.3a)

a——Fire- and smoke-detecting systems shall conform to the requirements of section C 501, and shall be designed and installed so as to detect fire and smoke in its initial stage, and automatically to actuate an alarm.

b——The component parts of a fire- and smoke-detecting system shall be designed, made and assembled for fire- and smoke-detecting purposes, and shall be reasonably free from false alarm possibilities. In spaces which may contain smoke, dust or products of combustion and cause false alarms, heat detectors are permitted in lieu of smoke detectors.

c——Fire- and smoke-detecting systems shall be provided with devices arranged to transmit an alarm signal to sounding devices located throughout the building.

C 511-3.2 Fire- and Smoke-Detecting Devices
(865.3b)

Fire- and smoke-detecting devices shall be located so that they are protected from damage and will operate without delay.

1975
C 511-3.3 Manually Operated Fire Alarm Box
(865.3c)

a——Fire- and smoke-detecting systems shall be equipped with at least one manual fire alarm box located in a natural path of escape from fire to provide an auxiliary means for actuating the alarm system. Where practicable, such box shall be located on the grade story near the main exit.

b——In buildings more than 70 feet in height additional manual fire alarm boxes shall be provided in locations as determined by the authority having jurisdiction.

c——In Group C5.5 and C6.2 occupancies, manually operated fire alarm boxes shall be located as set forth in section C 511-2.2.

C 511-3.4 (865.3d) Miscellaneous Requirements

In addition to the regulations set forth herein for fire- and smoke-detecting systems, such systems shall also conform to the applicable requirements of sections C 511-2.1, C 511-2.3, C 511-2.4, and C 511-2.5.

C 511-4 (865.4) Sprinkler Systems

C 511-4.1 (865.4a) General Requirements

a——Sprinkler systems shall conform to the requirements of section C501.

b——Sprinkler systems shall, upon actuation by heat produced by fire, automatically distribute water upon the fire in sufficient quantities either to extinguish it entirely or confine it without spread.

1975 c——The component parts of sprinkler systems shall be designed, constructed, and assembled so as to function as a unified sprinkler system, or as part of a combined standpipe and sprinkler system.

d——Connection to a sprinkler system for other than sprinkler or standpipe use is prohibited, except as otherwise provided in sections C 511-4.7, C 511-4.8 and C 511-4.9.

e——Open type sprinklers shall be provided with controls that will furnish water simultaneously to all the outlets protecting a given area. If manually operated, controls shall be in an approved location.

f——Sprinklers connected to a potable water supply system shall be designed and installed so that they will not cause pollution.

g——Sprinkler installations in high hazard occupancies, and in locations where the accumulation of

water from sprinklers may be a potential hazard, shall be provided with drains for the removal of discharged water.

h——Sprinkler system mains, valves, risers and branches, shall be protected from damage by fire. Such sprinkler piping which is not installed underground or is not enclosed in fire-resistive construction shall be protected by sprinkling the area in which it is located.

i——Piping shall be connected so that water from any designated source of supply can flow to any one or combination of risers to deliver its full rated capacity without excessive friction loss.

C 511-4.2 (865.4b) Water Supply

a——Sprinkler systems shall have at least one approved source of water supply of adequate pressure, capacity, and reliability.

1975 b——Water pressure at the highest sprinkler shall be at least 15 psi gage for a pipe-schedule designed system, or 7 psi gage for a hydraulically designed system, when an amount of water is discharged which is equivalent to the flow from the probable maximum number of sprinkler heads that may operate during a fire.

c——Water supply shall be sufficient to maintain an effective flow for a minimum period of 20 minutes for the probable maximum number of sprinkler heads that may operate in a fire.

d——When connection to a reliable public water supply can furnish at the highest sprinkler a pressure of at least 5 psi gage, the balance of the required pressure may be supplied by an automatic pump. Such pump shall be designed and installed for fire service, shall be protected against possible interruption of service by fire, and shall be under constant electrical supervision with connection to transmit signals to an approved central station or to a trained fire brigade available at all times to receive the signals and take proper action.

e——Sprinkler systems of adjacent buildings may be connected from a common source of water sup-

ply provided such buildings are designed to remain permanently under a single ownership and provided the source is of sufficient capacity for the largest sprinkler system within any one building.

C 511-4.3 (865.4c) Sprinkler Heads

a——Sprinkler heads shall be located and arranged to spray all parts of the area to be protected, including closets and alcoves.

b——In locations where ceiling temperatures up to 100° F. prevail, the temperature at which sprinkler heads operate to discharge water shall be from 135° F. to 165° F.

c——In locations such as furnace, boiler, and laundry rooms, where ceiling temperatures are over 100° F. but do not exceed 150° F., the temperature at which sprinkler heads operate to discharge water shall be from 175° F. to 212° F.

d——Sprinkler heads operating at temperatures exceeding 212° F. shall be used only for locations where unusually high temperatures prevail.

e——Sprinkler heads shall be located so that there is no interference with the effective distribution of water.

f——Luminous ceilings located above or below sprinkler heads shall be installed in conformity with sections C 403-3h and C 403-3i.

C 511-4.4 (865.4d) Fire Department Connections

a——Fire department connections shall be required for sprinkler systems where there is a total of thirty-six or more sprinkler heads connected in any one building.

b——Fire department connections shall be of approved Siamese type to fit the equipment of the nearest local fire department that would respond to an alarm; shall be of corrosion-resistive metal, and shall be conspicuously identified for sprinkler use.

c——Fire department connections shall be located on a street front of the building accessible for fire department use without being a potential hazard.

d——Buildings of group C3.3 and C4.3 occupancies, located within fire limits and facing one street only, shall be provided with at least one connection.

e——Buildings of group C3.3 and C4.3 occupancies, located within fire limits and facing more than one street, shall be provided with at least one connection located on each street frontage which is 50 feet or more in length, except that where the frontage is continuous only one connection shall be required.

C 511-4.5 (865.4e) Sprinkler Alarm

a——A required sprinkler system in a building of group C3.3 or C4.3 occupancy shall be equipped with automatic means for sounding an alarm audible throughout the building when there is a flow of water through any sprinkler head. In lieu of such an alarm, a signal shall be transmitted to the telephone switchboard or other approved central location in the building, provided a signal is also transmitted automatically to the local fire department or recognized central station.

1975 b——In buildings 70 feet or less in height, any valve controlling the water supply to a sprinkler head shall be provided with means for sealing in the open position, or in lieu thereof, there shall be provided a means to give warning of the closure of any valve controlling such water supply. The warning shall be an automatically operated alarm signal audible to the occupants, or transmitted to an approved central location in the building or to an approved central station. In buildings more than 70 feet in height, means shall be provided at the fire control panel to give warning of the closure of any valve controlling water supply to sprinkler heads and to identify such valve at the fire control panel.

1975 c——A required sprinkler system shall be equipped with a local alarm, except as otherwise provided in paragraph a of this section. Local alarm shall function so that the flow of water from the system equal to or greater than that from a single sprinkler head will result in the sounding of an audible alarm signal on the premises. In buildings more than 70 feet in height, a required sprinkler system shall be

equipped with an automatic device at each story to indicate water flow and its origin at the fire control panel.

d——Tanks supplying sprinkler systems shall be provided with means to transmit an alarm for signaling a high or low water level in gravity tanks, or a high or low pressure in pressure tanks. For gravity tanks, in lieu of such alarm, a water-level indicating device at an approved central location shall be provided. Alarms shall be electrically operated and shall transmit signals to an approved central station or approved central location in the building where trained personnel is available at all times to receive the signal and take proper action.

C 511-4.6 (865.4f) Sprinkler Protection for Escalators

Sprinklers for the protection of floor openings for escalators shall be designed and installed to prevent the passage of smoke or flame.

C 511-4.7 (865.4g) Domestic Water Service Supply from Sprinkler System Service

a——Sprinkler systems shall be maintained for sprinkler use only, except that a domestic water service connection may be made from the largest diameter of sprinkler water service connection to the water main, provided the domestic service connection is not more than 1¼ inches for a 4-inch sprinkler service connection to the water main, and not more than 2 inches for a 6-inch or larger sprinkler service connection to the water main. Where the size of the domestic water connection exceeds that set forth above, the water service shall be deemed inadequate for supplying a sprinkler system but may be used to supply a special sprinkler installation.

b——Domestic water supply connection shall be made so as to be free of the hazard of potential pollution from the sprinkler system.

C 511-4.8 (865.4h) Special Sprinkler Installation Supplied from the Domestic Water System

a——Sprinkler heads installed in conformity with this section do not constitute a sprinkler system.

b——Special sprinkler installations may be supplied from the domestic water service within the building, or from a branch, provided the size of the domestic water supply piping up to the point at which sprinkler connections are made is at least equal to the size required by generally accepted standards for the number of sprinkler heads to be served.

c——Where the sprinkler connection to the domestic water supply piping is made within the building at a point other than the water service connection, the sprinkler connection shall be made to a main or branch from the main with no intervening means of shutoff from the main or main riser.

d——Special sprinkler installation containing more than ten heads shall be equipped with an automatic local alarm to function as set forth in section C 511-4.5c.

C 511-4.9 (865.4i) Connections for First-Aid Hose

First-aid hose connections may be made from a 2½-inch or larger automatic wet sprinkler pipe, provided that the number of connections in a fire area is such that, when in use, the water supply and pressure required by the sprinklers are not reduced.

C 511-5 (865.5) Standpipe Systems

C 511-5.1 (865.5a) General Requirements

a——Standpipe systems shall conform to the requirements of section C501, and shall be designed and installed so that all parts of every floor area can be quickly reached by an effective stream of water.

b——Standpipe systems shall be designed for furnishing heavy hose streams for severe fires, and first-aid streams to control incipient fires.

c——Required standpipe systems shall be available during construction.

C 511-5.2 (865.5b) Piping

a——Standpipes shall be of ample size to convey water from any designated source in sufficient quan-

tity to supply the hose streams that are likely to be in simultaneous use.

b——Piping shall be connected so that water from any designated source of supply can flow to any one or combination of risers to deliver its full rated capacity without excessive friction loss.

C 511-5.3 (865.5c) Hose Stations

a——Hose stations shall be located in, or in close proximity to, enclosed stairways; they shall be conspicuously identified, and shall be arranged for easy accessibility.

b——Outlets for hose connections shall be provided for first-aid and heavy stream fire protection and shall be arranged so as to permit quick and easy use. Where required by authority having jurisdiction and in buildings of group C3, C4, C5.5, C6.2 and C6.3 occupancy, first-aid hose and connection for heavy stream protection shall be provided.

c——Hose shall be installed in locations that are dry, ventilated, and free of excessive heat, so as to prevent deterioration; and they shall be connected for immediate use.

d——Heavy hose connection shall be located in a stairway. First-aid fire hose connection or hose shall be located in a public corridor. A durable sign, conspicuously located, shall be provided directing attention to the location of such hose stations.

e——Cabinets used to enclose first-aid fire hose shall be conspicuously identified, of noncombustible construction, equipped with keyless doors, and arranged so as to provide for the quick and easy removal of equipment.

C 511-5.4 (865.5d) Water Supply

a——Standpipe systems shall have a reliable and adequate source of water to supply the hose streams that are likely to be needed simultaneously for protecting the building. Water supply shall be sufficient to provide continuous operation for a period of at least 30 minutes.

b——Where a single source of supply is used it shall be capable of automatically supplying water to maintain at least one heavy hose stream for buildings containing no more than two risers, and two heavy hose streams for buildings containing more than two risers.

c——Where more than one source of supply is used, at least one of the sources shall be capable of automatically supplying water to maintain one heavy hose stream until other sources can be brought into action.

d——Water supply for fire department use shall have sufficient pressure at the nozzle of the highest outlet to permit the discharge of an effective stream.

e——Water supply designed for use only as first-aid fire protection shall have sufficient pressure at the nozzle of the highest outlet to permit the discharge of an effective first-aid stream when another such stream in the system is being discharged simultaneously.

C 511-5.5 (865.5e) Fire Department Connection

a——At least one fire department connection shall be provided.

b——Fire department connections shall be conspicuously identified for standpipe use, and shall be in conformity with the requirements set forth in sections C 511-4.4b and C 511-4.4c.

C 511-5.6 (865.5f) Controls

a——Control of water flow shall be obtained by means of devices located at each hose station.

b——In buildings of group C3.3 and C4.3 occupancy, water tanks supplying standpipe systems shall be provided with alarms as required for sprinkler systems in section C 511-4.5d.

C 511-6 (865.6) Yard Hydrant Systems

a——Yard hydrant systems shall be in conformity with section C501, and shall be designed and in-

stalled so that an ample supply of water will be provided to hydrants and sprinkler and standpipe systems.

b——Connection to fire hydrants for other than fire protection purposes shall be prohibited.

c——Hydrants shall be provided so that buildings to be protected can be reached by an effective stream of water with hose not exceeding 500 feet in length.

d——Where hose is provided at fire hydrants it shall be located in ventilated enclosures, conspicuously identified, arranged for easy accessibility, and protected so as to prevent deterioration of equipment.

C 511-7 (865.7) Fire-Extinguishing Systems Using Extinguishing Agents other than Water

a——Fire-extinguishing systems using extinguishing agents other than water shall conform to the requirements set forth in section C501, and shall be designed and installed so as to provide protection against fire hazards where water supplies are limited or where protection by means of water is ineffective or undesirable.

b——Fire-extinguishing systems employing chemicals for flooding of enclosed spaces where persons may be present, shall be provided with automatic sounding devices designed to sound a clear audible warning signal preceding the application of the chemical, in order to permit complete evacuation of such spaces.

C 511-8 (865.8) Watchman's Systems

a——Watchman's systems shall conform to the requirements of section C501 and shall be designed and installed so that routes are established to cause the watchman, in his patrol, to pass sufficiently close to each space of the building to detect evidence of fire or other emergency.

b——Station shall be located so that a watchman can visit every space to be patrolled within a period of 40 minutes.

c——Equipment for watchman's systems shall be tamperproof and designed to record legibly and completely the movements of the watchman so that a check can be made of the patrol of his route.

C 511-9 (865.9) Automatic Operation of Doors and Vents

a——Doors and vents requiring smoke detectors for automatic operation shall have magnetic holds released by smoke or other products of combustion, by interruption of electrical power, and by activation of other automatic fire protection equipment. Smoke detectors for door and vent release shall be required to sound an alarm in buildings that are provided with sounding devices.

b——Smoke or heat vents conforming to the requirements of generally accepted standards shall be provided as set forth in section C 406-8b, shall be arranged for manual and automatic release, and shall be actuated by a smoke detector as set forth in paragraph a of this section, or by a fusible link.

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C 511-10 (865.10) Coordinated Fire Safety Systems

C 511-10.1 (865.10a) General Requirements

Fire safety systems shall conform to the requirements of section C 501 and shall be designed and installed so as to provide safety for occupants during a fire or other emergency, and shall be coordinated so as to include:

Fire alarm system as set forth in section C 511-2, or a fire- and smoke-detecting system as set forth in section C 511-3;

Full sprinkler system as set forth in section C 511-4;

Standpipe system as set forth in section C 511-5;

Elevator emergency controls as set forth in section C 512-2.5;

Recirculating fan controls as set forth in section C 508-3.5b and C 508-4e;

Emergency lighting and power as set forth in section C 507-2.2;

Fire control panel as set forth in section C 511-10.2;

Voice communication system as set forth in section C 511-10.3;

Exit stairway door unlocking system as set forth in section C 511-10.4; and

Instructional signs for use of exits as set forth in section C 511-10.5.

C 511-10.2 Fire Control Panel (865.10b)

a——Fire safety systems shall be provided with a fire control panel located in the building in proximity to the elevator emergency controls at the main street level or other approved location.

b——The fire control panel shall provide visible and audible indication so as to identify the origin of:

Alarm, trouble and supervisory signals from fire protection equipment;

Alarm signals from smoke detectors required for elevator emergency controls, automatic smoke vents in stairways and shafts, automatic release of doors, and automatic shutoff of recirculation fans; and

Voice communication system calls.

c——The fire control panel shall be provided with means to perform the following:

Transmit a fire alarm signal to the local fire department;

Activate alarms selectively in the building;

Open automatic smoke vents in stairways and shafts;

Release doors held open by magnetic holds;

Release locked doors for reentry from exit stairways;

Shut off and restart recirculating air system;

Respond to calls from the two-way voice communication system;

Communicate via the public address system; and

Test of panel operations and indications.

d——Where required by the authority having jurisdiction, provision shall be made for simultaneous automatic transmission of fire alarm signals to the local fire department upon activation of fire alarm signals at the fire control panel.

e——During normal working hours, alarm, trouble and supervisory signals and voice communication calls received at the fire control panel shall be monitored in the building by authorized persons. During all other hours, where such monitoring is not performed in the buildings, devices shall be provided to transmit alarm signals automatically to an approved remote station or local fire department.

C 511-10.3 Voice Communication Systems (865.10c)

a——Voice communication systems shall be designed and installed so as to provide for two-way voice communication and one-way public address communication. Two-way voice communication systems shall have capability for initiating calls to the fire control panel from floor communication stations, passenger elevators, and rooms as designated in section C 508-4b. One-way public address communication systems shall have capability for transmitting public announcements from the fire control panel to each passenger elevator car and to central locations on each occupied floor.

b——Floor communication stations shall be provided on every floor, shall be located as set forth in section C 511-2.2 for manual fire alarm boxes, and shall be provided with two-way voice communication equipment.

c——Floor communication stations and other stations requiring two-way voice communication equipment, shall be provided with durable signs, conspicuously located, directing attention to the locations of such stations and giving clear instruction for their use and operation.

d——Electrical wiring for voice communication systems shall conform to the requirements of section C 511-2.4c.

C 511-10.4 Exit Stairway Door Unlocking Systems (865.10d)

Exit stairway doors which are locked against entry to floors from stairways shall be provided with a door unlocking system which under emergency conditions shall release such locks automatically. Such doors shall be provided with lock releasing devices which shall be actuated automatically by interruption of electrical power, by a signal from the fire control panel, or by activation of fire protection equipment and smoke detectors. Such lock releasing systems shall be electrically supervised.

C 511-10.5 Instructional Signs for Use of Exits (865.10e)

Instructional signs shall be provided and conspicuously located at elevator landings and both inside and outside of stairways at every floor. Such signs shall identify the exits to be used and advise occupants concerning floor evacuation procedures during a fire emergency.

C 512 (866) ELEVATORS, DUMBWAITERS, AND ESCALATORS

C 512-1 (866.1) General Requirements

a——Elevators, dumbwaiters, and escalators shall conform to the requirements of section C501, and shall be designed and installed so as to be free from physical and fire hazards.

b——Elevators, dumbwaiters, and escalators shall be designed and installed to sustain safely the loads to which they are subject.

c——Elevator and dumbwaiter cars shall be provided with durable signs in conspicuous locations on which the rated capacity shall be indicated.

d——Elevators, dumbwaiters, and escalators shall be maintained in proper working order, and elevators and escalators shall be inspected and tested periodically.

e——One or more passenger elevators shall be provided in buildings of group C6.1 occupancy exceeding four stories in height, and in buildings of group C6.2 and C6.3 occupancies of any height occupied by patients above the second story, or by bedridden patients above the first story. In group C6.1 occupancy, sufficient landing openings shall be provided so that it will not be necessary to travel by stairs more than one story, up or down, to gain access to an elevator. In group C6.2 and C6.3 occupancies, at least one landing opening shall be provided at each story for access to an elevator.

f——Elevator landing openings shall not be required at basement or penthouse levels unless occupied by patients. From such levels, travel by stairs for one story in buildings of group C6.2 and C6.3 occupancies and for two stories in group C6.1 occupancy to gain access to a required elevator, shall be permitted.

g——In buildings of group C6.2 and C6.3 occupancies occupied by bedridden patients above the first story, at least one required elevator shall be not less than 43 square feet in floor area, with one dimension not less than 8 feet and with a minimum dimension of 5 feet 4 inches.

C 512-2 (866.2) Elevators and Dumbwaiters

C 512-2.1 (866.2a) Hoistway

a——Elevators and dumbwaiters shall be installed in enclosed hoistways constructed of noncombustible materials having fire-resistance ratings as set forth in table C 202-2, except for hoistway enclosures of elevators and dumbwaiters which are entirely within one story or which pierce no solid floors and serve two or more open galleries, or the sidewalk elevators having a travel of not more than one story below the grade level.

b——Hoistway and machinery space enclosures extending into the top story shall be carried to a point at least 3 feet above the roof or to the underside of a roof of fire-resistive construction.

c——Not more than four elevators shall be installed in a multiple hoistway.

d——A pit with a ready means of access shall be provided at the bottom of every power elevator hoistway. A manually operated stop switch which will prevent the operation of the elevator machinery by the operating device shall be provided in the pit.

e——Hoistways of elevators and dumbwaiters shall be provided with natural means for venting smoke and hot gases to the outer air in the event of fire. Such ventilating openings shall conform to the requirements set forth in section C 402-4.7.

f——Pipes, conduits, and cables, except traveling cables, shall be securely fastened to the hoistway construction. Sewage drainage piping and piping or ducts conveying gases, vapors, or liquids and not used in connection with the operation of the elevator or dumbwaiter, shall not be installed in the hoistway, except that pipes for heating or fire protection of the hoistway shall be permitted.

g——Clearances shall be maintained in the hoistway to prevent the car or counterweight from striking any part of the structure or equipment other than buffers.

h——Elevator hoistways shall have not more than two landing openings on a floor for each car.

i——Elevator and dumbwaiter hoistway landing openings shall be provided with opening protectives having fire-resistance ratings as set forth in section C 402-4.11.

j——In portions of single hoistways for elevators, where landing openings are more than 36 feet apart, there shall be provided at least one door assembly for emergency exit at every third floor, but in no event shall such doors be more than 36 feet apart.

k——Safe and convenient access shall be provided at the top of the elevator hoistway for inspection and servicing of elevator machinery, sheaves, and governors.

l——Window openings shall be permitted only in exterior building walls of hoistways. Such openings

shall be provided with opening protectives in conformity with section C 401-4.

m——Hoistway window openings ten stories or less above a thoroughfare, or three stories or less above a roof of the same or an adjacent building, shall be guarded on the outside by fixed construction of strength sufficient to prevent access. Such windows shall be provided with a corrosion-resistant metal sign located outside at sill level, worded HOISTWAY in letters not less than 12 inches high.

n——Hoistways of sidewalk elevators shall not be located either wholly or partially in front of any entrance or exit of a building.

o——Where the top terminal landing opening of a sidewalk elevator is in the sidewalk or other area outside the building, electrical wiring shall be in rigid metal conduit, and other electrical equipment shall be of weatherproof type.

C 512-2.2 (866.2b) Machine Rooms

a——Power dumbwaiter machinery installed outside the hoistway, and all elevator machinery, shall be enclosed in a room or roof structure. Machine rooms directly connected with the hoistway shall be of construction having fire-resistance ratings as set forth in section C 402-4.7l.

b——Machine rooms shall be provided with natural or mechanical ventilation to avoid overheating of electrical equipment, and to insure safe and normal operation of the hoisting equipment.

c——Machine rooms shall be maintained free of refuse and shall not be used for the storage of articles or materials unnecessary for the maintenance of the elevator or dumbwaiter. Flammable liquids shall not be kept in such rooms.

d——Moving parts of elevator machinery used in raising or lowering the elevator car shall be guarded to protect against accidental contact.

C 512-2.3 (866.2c) Machines and Machinery

a——Electric elevators shall be of the counter-

weighted traction type, except that non-counterweighted drumtype and screw machines may be used when designed in conformity with generally accepted standards.

b——Motors shall be direct-connected or gear-connected to the hoisting machine, and shall be used for no other purpose. No belt- or chain-driven machine shall be used to drive a power elevator.

c——Machines and machinery shall be supported and held in place so as to prevent effectively any part from becoming loose or displaced under the conditions imposed in service.

C 512-2.4 (866.2d) Car Construction

a——Passenger elevator cars shall be fully enclosed at sides, top, and bottom, except that openings shall be provided for entrance, escape, and ventilation.

b——Freight elevator cars shall be enclosed as required for passenger elevator cars, except that sides above 6 feet from platform floor and top may have metal screened enclosures with openings not exceeding 1½ inches in any dimension. Sidewalk elevators located outside the building are not required to be enclosed at the top.

c——Elevator cars shall be provided with ventilation by natural or mechanical means.

d——The interior of passenger elevator cars may be lined with class A or B interior finish material, as classified in section C 403-2, firmly bonded flat to the sides without intervening air spaces. Such material shall not be padded or tufted.

e——Glass used in elevator cars shall be of the non-shatterable type.

f——Dumbwaiter cars shall be of such strength and stiffness that they will not deform appreciably if the load leans or falls against the side of the car.

g——Freight elevator cars and operator-controlled passenger elevator cars shall be provided with a door or gate at each entrance. Automatic passenger elevator cars shall be provided with a door at each entrance.

h——No elevator car shall have more than one compartment.

i——No elevator car shall be arranged to counterbalance another elevator car.

j——Passenger elevator cars shall have not more than two entrances.

k——An emergency exit shall be provided in the top of elevator cars.

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C 512-2.5 (866.2e) Elevator Emergency Controls

Buildings more than 70 feet in height shall have manually- and automatically-operated emergency controls for passenger elevators which shall override normal operating controls and shall be suitable for use by fire department or other authorized personnel. Such manual controls shall be capable of operating the car and car doors and prevent their operation by other means. Such automatic controls shall be activated by fire- and smoke-detectors which shall cause all cars to return nonstop to the main or intermediate lobby floor levels. Such detectors shall be located at each interior elevator landing other than at main and intermediate lobby floor levels, and shall be designed and installed so as to actuate an alarm automatically.

C 512-3 (866.3) Escalators

C 512-3.1 (866.3a) Design and Construction

a——Escalators shall be constructed of noncombustible materials throughout, except for handrails and step wheels.

b——The angle of inclination, and the width and the speed of escalators, shall be designed so as to provide for the safety of the passengers.

c——Clear and unobstructed access and egress shall be provided for each escalator.

d——Step treads and landings shall be of a material and design affording a secure foothold.

e——Minimum clearance between all exposed moving parts shall be maintained and guards shall be provided so as to prevent injury to passengers.

f——Escalators shall be provided with solid balustrading on each side. Such balustrading shall have no sharp projections or edges nor any abrupt change in width.

g——Each balustrading shall be equipped with a handrail moving at substantially the same speed and in the same direction as the travel of the steps.

h——Escalators, including floor openings, shall be protected by enclosures or other means to retard the spread of fire from story to story. Enclosures shall be constructed in conformity with the requirements set forth in section C 402-4.7.

i——The sides and undersides of escalator trusses and machinery spaces shall be fully enclosed with noncombustible material having fire-resistance ratings as required for escalator enclosures.

C 512-4 (866.4) Controls

a——Elevators, dumbwaiters, and escalators shall be provided with operating, safety, and emergency controls to insure proper operation of the equipment and the safety of operators and passengers.

b——Power elevators shall not be controlled by direct hand-operated rope, rod, wheel or lever mechanism.

c——Hydraulic elevators shall be provided with full electric control.

d——Sidewalk elevators shall be operated by continuous-pressure or automatic operating devices. When the car is in contact with the sidewalk level doors, it shall be operable only by a manual continuous-pressure type control located at the sidewalk level nearby.

e——Sidewalk elevators shall be provided with an audible warning device at the sidewalk level arranged to sound when the elevator is ascending.

C 513 (867) CONVEYORS AND LIFTS

C 513-1 (867.1) General Requirements

Conveyors, manlifts, automotive lifts, industrial lifts and similar transporting and elevating equipment, shall conform to the requirements set forth in section C501 and shall be designed and installed so as to be free from physical and fire hazards.

C 513-2 (867.2) Conveyors

a——Conveyors for vertical transportation of material, operating through floor openings in buildings of moderate or high hazard classification, shall be enclosed in conformity with the requirements for elevators and dumbwaiters as set forth in section C 512-2.1. In lieu of this, floor openings shall be protected as set forth in sections C 402-4.7c and e.

b——Openings in fire walls or other separations required to have a fire-resistance rating, through which conveyors pass, shall be provided with fire dampers or other means to prevent the spread of fire.

c——Safety guards shall be provided at moving parts wherever such parts may constitute a physical hazard.

d——Controls to stop the motor in case of emergency shall be provided at intervals where potential hazards exist.

e——Where accumulation of static electricity might cause ignition of flammable gases or liquids or combustible dust, means shall be provided in conformity with generally accepted standards to prevent such accumulation.

C 513-3 (867.3) Manlifts

a——Manlifts shall be enclosed except in buildings of low hazard classification where such manlifts are not accessible to the public.

b——Enclosures required in buildings of moderate or high hazard classification shall conform to the

requirements for elevators and dumbwaiters set forth in section C 512-2.1.

c——Where the manlift is accessible to the public, enclosures shall be provided with self-closing and self-locking doors or gates, openable from the inside.

d——Floor openings shall be uniform in size and shall have guards and clearances designed and installed so as to prevent injury to passengers.

e——Entrances and exits shall be guarded by railings and self-closing gates.

f——Steps and handholds shall be designed to sustain safely the loads to which they are subject, and shall be attached securely to the belt.

g——Controls shall be provided to stop the belt in the event of an emergency, and automatic limit stops shall be provided to prevent override at top and bottom.

C 513-4 (867.4) **Automotive Lifts**

a——Automotive lifts shall be designed to support the load safely without exceeding the stresses permitted in generally accepted standards.

b——Automotive lifts shall be provided with means for limiting the speed of descent to 20 feet per minute.

c——The direct control device shall be of a type that will return automatically to its off position upon release.

d——Roll-on type lifts shall be provided with automatic chocks on the approach ends to prevent the vehicle from moving while the lift is in a raised position.

e——A mechanical lift shall be provided with a safety limit control that stops the motor before the lifting frame reaches its safe limit of travel.

f——A mechanical lift shall be provided with a brake to hold the load in the raised position independent of the lifting force. The brake shall be applied automatically whenever power is removed from the motor.

C 513-5 (867.5) Industrial Lifts

a——Industrial lifts mounted flush with the floor shall be provided with toe guards, skirts, or enclosures to furnish protection on the exposed sides while the lift is moving or in the raised position.

b——Surface mounted lifts shall be provided with toe clearance on each exposed side. Such clearance shall not be less than 3 inches vertical and 4 inches horizontal.

c——The lift platform and its support shall be designed to transport the rated load without such deformation as may cause movement of the load.

d——Control devices shall be located so that the operator has an unobstructed view of the lift area and shall be accessible without exposing him to danger.

C 513-6 (867.6) Automobile Parking Lifts

a——Automobile parking lifts shall be designed to support the rated load without exceeding the allowable stresses in foundation, suspension beams, or track.

b——The hoistway shall be enclosed to a height of at least 6 feet at all levels to which the public has access.

c——Hoistway gates, not less than 6 feet in height, shall be provided at each entrance and exit where the hoistway is required to be enclosed.

d——Where the operator travels on the lift, devices shall be provided to stop and hold the lift in case of overspeed or free fall. Such devices shall be provided also for lifts and counterweights, where there is a passageway or occupied space directly under the hoistway.

e——Where the operator does not travel on the lift, devices shall be provided to prevent the movement of the lift if the automobile is not properly positioned on the platform.

f——Machinery and controls shall be adequately protected from the elements and shall be accessible for inspection.

C 514 (868) MISCELLANEOUS EQUIPMENT

C 514-1 (868.1) X-Ray and Gamma-Ray Radiation

Where equipment or material producing X-ray or gamma-ray radiation is to be installed, used, or stored, adequate shielding or other means shall be provided in conformity with generally accepted standards so as not to create a health or physical hazard. Such equipment or material includes but is not limited to nuclear reactors, particle accelerators, equipment using atomic fuel, X-ray and fluoroscopy equipment, radium and radioactive isotopes.

C 514-2 (868.2) High Frequency Radiation

Where diathermy equipment, dielectric or induction heating equipment, or similar equipment capable of emitting radio frequency energy, is to be installed, shielding, power line filtering, or other means shall be provided in conformity with generally accepted standards to minimize objectionable radiation.

C 514-3 (868.3) Static Electricity

a——Spaces in which flammable anaesthetic agents are used, adjacent spaces where such agents are stored, spaces where explosives are handled or processed outside of sealed containers, and corridors immediately serving such spaces, shall be equipped with floors having moderate electrical conductivity to prevent the accumulation of static electricity on persons and equipment making contact with the floor.

b——Spaces where flammable liquids or gases are handled or stored, or where combustible dust is in suspension in the air in quantities sufficient to produce explosive or ignitible mixtures, shall be provided with approved means for preventing accumulation of static electricity in conformity with generally accepted standards.

C 514-4 (868.4) Lightning Protection

Spires, steeples, chimneys, water towers, silos, grain

elevators and similar structures 75 feet or more in height which might be a hazard to adjacent structures if damaged by lightning, and structures used for the storage of flammable liquids and gases, shall be provided with lightning protection in conformity with generally accepted standards.

C 514-5 (868.5) **Window Cleaning Equipment**

a——Buildings two stories or more in height, having windows with a sill more than 6 feet above ground level which cannot be cleaned with safety from the inside, shall be provided with means to permit safe access to the outside of each window, or such windows shall be provided with suitable anchors for securing a window cleaner's safety belt. Where special equipment, other than window anchors, is provided by which such windows may be cleaned safely from the outside, the window anchors may be omitted.

b——Such anchors, belt terminals, or other devices shall be constructed of corrosion-resistive materials securely attached to the window frames or supported from the roof or outside walls of the building.

Appendix A

Classification of Building by Occupancy or Use

C1—Business

This group includes, but is not limited to, the following:

Administration buildings

Banks

Buildings for broadcasting and telecasting having a capacity of not more than 99 persons

Computer and data processing buildings

Indoor tennis courts designed for or intended to be used by not more than 99 persons, without seating for spectators

Laboratories, other than chemical

Library buildings having a capacity of not more than 99 persons

Office buildings

Professional offices

School administration buildings without classrooms

Telephone exchanges

C2—Mercantile

This group includes, but is not limited to, the following:

Auto sales rooms

Display rooms

Gasoline service stations without maintenance or repair facilities

Markets and supermarkets

Stores, including paint stores without bulk handling facilities

C3—Industrial

This group includes, but is not limited to the following:

C3.1—Low Hazard

Car wash facilities

Dairy product processing

Dry cleaning plants using nonflammable solvents

Electric substations

Electrolytic processing excluding those that generate flammable or toxic gases

Electronic assembly plants

Foundries

Masonry product manufacturer

Waterpumping stations

Wineries

C3.2—Moderate Hazard

Aircraft maintenance and repair facilities

Bakeries

Chemical laboratories and manufacturers other than high hazard

Commercial laundries

Dry cleaning plants using flammable solvents

Metal-working shops requiring volatile or flammable liquids

Motor vehicle maintenance and repair shops

Papermills and sawmills

Power generating plants

Woodworking plants excluding furniture manufacture

C3.3—High Hazard

Celluloid, pyroxylin and nitrocellulose products

Explosives and fireworks manufacturing and distributing

Flammable dust

Gasoline plants and plants for flammable gas

Oil refineries and oil cracking facilities

Paint and varnish manufacture

Rooms with high oxygen atmosphere including hospital operating rooms

Upholstering facilities

Wood furniture manufacture

C4—Storage

This group includes, but is not limited to, the following:

Appendix A

C4.1—Low Hazard

Cold storage of food products
Firehouse without assembly space
Passenger car storage without maintenance or repair facilities
Storage of noncombustible materials

C4.2—Moderate Hazard

Aircraft hangars
Book storage
Firehouse with assembly space
Furniture storage, wood
Garage with maintenance or repair facilities
Grain elevators
Lumber storage without facilities for producing chips or dust
Paper or cardboard storage, tightly packed
Stables or barns within fire limits
Trucks or commercial garages
Warehouse and truck terminals

C4.3—High Hazard

Buildings wherein flammable chips or dust are produced
Gasoline bulk stations including handling facilities
Storage of flammable medical gas or hydrogen
Wholesale chemical storage

C5—Assembly

This classification is subdivided into groups, according to the number of persons or the use of the building, as follows:

Group C5.1 for not more than six hundred persons.

Group C5.2 for more than six hundred, but not more than fifteen hundred persons.

Group C5.3 for more than fifteen hundred persons.

The above groups, based on number of persons, include but are not limited to, the following:

Amusement park buildings to which the public has access
Armories
Art galleries
Assembly halls
Auditoriums
Bath houses
Bowling alleys
Club rooms
Coliseums and stadiums
Court rooms
Dance halls
Exhibition halls or buildings
Grandstands
Gymnasiums
Indoor tennis courts with seating for spectators
Lecture halls
Libraries and broadcasting and telecasting stations having a capacity of more than 99 persons
Lodge halls or rooms
Mortuary chapels
Motion picture theaters
Museums
Nightclubs
Passenger stations and terminals of air, surface, underground and marine public transportation facilities
Recreation centers, halls and piers
Restaurants
Skating rinks
Tents and similar shelters
Theaters

The following groups include, but are not limited to:

Group C5.4—churches, synagogues, mosques, and similar places of worship

Group C5.5—schools, colleges and similar places of education.

C6—Institutional

This classification is subdivided into groups, according to the movement of the occupants, and includes, but is not limited to, the following:

C6.1—for persons whose movements are not limited and have a normal sense of perception, as follows:

Outpatient clinics without domiciliary facilities

Day-care centers for children 3 years of age or over

C6.2—for persons whose movements are limited because of illness, physical or mental handicap, (except nursing and old-age homes regulated by the State Building Construction Code applicable to Multiple Dwellings).

Examples are as follows:

Child caring institutions with overnight sleeping facilities

Clinics with sleeping rooms

Day care centers for children under 3 years of age

Hospitals

Infirmaries

Sanitariums

C6.3—detained or confined

Detention homes

Houses of correction

Jails

Mental hospitals

Penitentiaries

Police lockups

Prisons

Reformatories

C7—Miscellaneous

This group includes, but is not limited to, the following:

Boathouses

Chimneys, free standing

Contractors' temporary buildings

Roofed marine terminals

Appendix B

Guide for Metrication

To prepare for the conversion to the metric system, the State Building Construction Code herewith lists typical conversion factors for units currently in use in the Code.

The conversion factors are approximate and derived from ANSI Z 210.1-1973, "Metric Practice Guide."

U. S. Unit	Factor	Metric Equivalent	Metric Abbreviation
Fahrenheit	Subtract 32 and divide result by 1.8	Celsius	°C
inch	multiply by 25.4	millimeter	mm
foot	divide by 3.3	meter	m
square inch	multiply by 645	square millimeter	mm^2
square foot	divide by 10.8	square meter	m^2
pound	divide by 2.2	kilogram	kg
ton	multiply by 907	kilogram	kg
gallon	multiply by 3.8	liter	l
pound per foot	multiply by 14.6	newton/meter	N/m
inch per ton	multiply by 28	millimeter/ton	mm/ton
pound per square inch (psi)	divide by 14	kilogram per square centimeter	kg/cm^2
pound per square inch (psi)	multiply by 6900	pascal	Pa
pound per square foot (psf)	multiply by 4.9	kilogram per square meter	kg/m^2
pound per square foot (psf)	multiply by 48	pascal	Pa
feet per minute	divide by 200	meter per second	m/s
cubic feet per minute	multiply by $\frac{470}{1{,}000{,}000}$	cubic meter per second	m^3/s
gallon per minute	divide by 16	liter per second	l/s
Btu per hour	divide by 3.4	watt	w

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