

# **NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE**



## **STATE FIRE PREVENTION AND BUILDING CODE COUNCIL**

### **NEW YORK STATE DIVISION OF HOUSING AND COMMUNITY RENEWAL**

**MARIO M. CUOMO, GOVERNOR  
YVONNE SCRUGGS-LEFTWICH, COMMISSIONER**

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## **FOREWORD**

Chapter 707 of the Laws of 1981 created the State Fire Prevention and Building Code Council within the Division of Housing and Community Renewal and charged this body with the responsibility of preparing a new State Uniform Fire Prevention and Building Code, with the approval of the Secretary of State, to be used by all municipalities within the State effective January 1, 1984.

The official version of the Code is designated as Title 9, Subtitle S, Chapter I and 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 9NYCRR for citation.

The Code contains provisions for the construction and maintenance of buildings such as structural elements, space and fire safety requirements and plumbing, heating, electrical, ventilating and fire protection equipment, and facilities for the physically handicapped.

The purpose of the Code is to encourage uniform practices, eliminate conflicting regulations and to formulate standards in terms of performance objections so as to make adequate performance for the use intended the test of acceptability.

Effective January 1, 1984, the former State Building Construction Code, the State Fire Prevention Code and the State Model Housing Code will no longer be applicable.

Rules and regulations prescribing minimum standards for the administration and enforcement of this Code will be promulgated by the Secretary of State and will address the nature and qualities of enforcement.

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B 503	757	1001
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B 505	759	1005
B 506	760	1065
B 507	761	1030, 1, 2, 3

**QUICK REFERENCE GUIDE**

Superseded

State Building Construction Code

Applicable to Multiple Dwellings

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
B 508	762	1004
B 509	763	1002
B 510	764	1060
B 511	765	1062
B 512	766.1	735.9, 765.1

**QUICK REFERENCE GUIDE**

Superseded

State Building Construction Code

Applicable to General Building Construction

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
C 101	800.1	600
C 102	800.2	601
C 103	800.3	602
C 104	800.4	603
C 105	801	604, 651, 700.1
C 106	802.1	652
C 107	802.2	610
C 108	803	606
C 109	804.1	607
C 110	804.2	608
C 111	805	611
C 201	810	760
C 202	811	701, 702, 704
C 203	812	705, 1232, 1233
C 204	813	761
C 205	814	762
C 206	815	762.2
C 207	816	762.3
C 208	817	762.4
C 209	818	762.5, 766
C 210	819	763
C 211	820	764, 1062
C 212	821	765
C 213	822	767

**QUICK REFERENCE GUIDE**

Superseded

State Building Construction Code

Applicable to General Building Construction

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
C 214	823	707
C 215	824	1100, 1102
C 216	825	768
C 217	826	769
C 301	830	800
C 302	831	801
C 303	832	802
C 304	833	803
C 305	834	804
C 306	835	805
C 307	836	806
C 308	837	800.6
C 309	838	800.8
C 401	845	706, 760
C 402	846	771
C 403	847	772
C 404	848	773
C 405	849	1006
C 406	850	774
C 501	855	850
C 502	856	Article 9
C 503	857	1001, 1003, 1066
C 504	858	1000

**QUICK REFERENCE GUIDE**

Superseded

State Building Construction Code

Applicable to General Building Construction

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
C 505	859	1005
C 506	860	1065
C 507	861	1030, 1031, 1032, 1033
C 508	862	1004
C 509	863	1064
C 510	864	1002
C 511	865	1060
C 512	866	1062
C 513	867	1063
C 514	868	1067

**QUICK REFERENCE GUIDE**

Superseded  
 State Building Construction Code  
 Applicable to Plumbing

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
Chapter 1	900-906	600
Chapter 2	910-911	900
Chapter 3	915-934	901
Chapter 4	945-955	902
Chapter 5	965-974	903
Chapter 6	1010-1014	904
	1015-1016	905, 906
P 110	905	907

**QUICK REFERENCE GUIDE**

Superseded  
State Fire Prevention Code

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
F 101	1150.1	600
F 102	1150.2	1150
F 103	1150.3	602
F 104	1150.4	1151
F 105	1150.5	1152
F 106	1150.6	1153
F 107	1150.7	1154
F 108	1150.8	1250
F 109	1150.9	603
F 110	1150.10	606
F 111		603
F 201	1151.1	1160
F 202	1151.2	1161
F 203	1151.3	1162
F 204	1151.4	1163
F 205	1151.5	1164
F 301	1152.1	1170
F 302	1152.2	1171
F 303	1152.3	1172
F 304	1152.4	1173
F 305	1152.5	1174
F 306	1152.6	1175
F 307	1152.7	1176
F 308	1152.8	1177

**QUICK REFERENCE GUIDE**

Superseded

State Fire Prevention

New Uniform Code

<b>Old Section No.</b>	<b>Old NYCRR No.</b>	<b>New No.</b>
F 309	1152.9	1178
F 310	1152.10	1179
F 311	1152.11	1180
F 312	1152.12	1181
F 313	1152.13	1182
F 314	1152.14	1183
F 315	1152.15	1184
F 316	1152.16	1185
F 317	1152.17	1186
F 318	1152.18	1187
F 319	1152.19	1188
F 401	1153.1	1190
F 402	1153.2	1191
F 403	1153.3	1193
F 404	1153.4	1194
F 405	1153.5	1195
F 406	1153.6	1196

## GUIDE FOR METRICATION

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 <sup>2</sup>
square foot	divide by 10.8	square meter	m <sup>2</sup>
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 <sup>2</sup>
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 <sup>2</sup>
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 <sup>3</sup> /s
gallon per minute	divide by 16	liter per second	l/s
Btu per hour	divide by 3.4	watt	w

**CHAPTER A**

**GENERAL PROVISIONS**

**GENERAL PROVISIONS****3****PART 600 TITLE**

**600.1 Title.** These regulations promulgated pursuant to Article 18 of the Executive Law of the State of New York, as enacted by Chapter 707 of the Laws of 1981 shall be known as the State Uniform Fire Prevention and Building Code. They are hereinafter referred to as this Code.

**PART 601 PURPOSE**

**601.1 Purpose.** The purpose of this Code is to provide a minimum level of protection from the hazards of fire, inadequate building construction and improper maintenance in residential and nonresidential buildings, both public and private, so as to establish uniform standards to reduce the threat to public health and safety for occupants and users of buildings.

**PART 602 EFFECTIVE DATE**

**602.1 Effective Date.** The effective date of this Code is January 1, 1984.

**PART 603 SEVERABILITY**

**603.1 Severability.** If a 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.

**PART 604 SCOPE**

**604.1 Scope.** The State Uniform Fire Prevention and Building Code contains the following chapters:

- Chapter A General Provisions
- Chapter B Building Construction
- Chapter C Fire Prevention
- Chapter D Manufactured Housing
- Chapter E Conversions, Alterations and Additions to Existing Buildings
- Chapter F Housing Maintenance
- Chapter G Generally Accepted Standards

**GENERAL PROVISIONS****PART 605 ZONING**

**605.1 Zoning.** No provision of this Code shall be construed to repeal, modify or constitute an alternative to any lawful zoning regulation which is more restrictive than this Code.

**PART 606 ABBREVIATION AND DEFINITIONS****606.1 General**

**606.1a** Abbreviations, terms, phrases, words and their derivatives used in this Code shall have the meanings given in this section.

**606.1b** Words used in the singular include the plural, and the plural the singular. Words used in the masculine gender include feminine and neuter genders.

**606.2 Abbreviations**

Btu	British thermal unit
C	Celsius
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

**606.3 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. (In a multiple dwelling, such accessory uses may include, among others, the following: a-offices for the building management; b-dining rooms, banquet rooms, public kitchens and ballrooms; c-recreation and play rooms; d-laundries for the use of tenants and occupants, and in connection with the management and operation of the multiple dwelling; e-maintenance and work shops, storage rooms for linen, bedding, furniture, supplies and tenants' equipment and effects; f-rooms or space for the incidental sale or display of merchandise to occupants and tenants, such as newspaper, candy and cigar stands; g-garages within the multiple dwelling or on the premises thereof used primarily for the storage of passenger-type motor vehicles.)

**addition.** Extension or increase in area, height or equipment 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.

**apartment.** A dwelling unit.

**apartment, garden.** A multiple dwelling or group of multiple dwellings containing dwelling units, occupying not more than 35 per cent of the area of the site or plot on which such dwelling or dwellings are situated.

**apartment hotel.** A multiple dwelling in which dwelling units are leased to permanent and, or transient tenants.

**apartment house.** A multiple dwelling in which dwelling units are leased to permanent tenants.

**approved.** Approved by the enforcement officer under the regulations of this Code, or approved by an authority designated by law of this Code, or acceptable in accordance with the condition set forth in Part 653.

**appropriate.** Especially suitable or compatible under conditions of use.

**area of public assembly.** An area of public assembly includes a building or portion of a building used for gathering together fifty or more persons for amusement, athletic, civic, dining, educational, entertainment, patriotic, political, recreational, religious, social or similar purposes, the entire fire area of which it is a part, and the means of egress therefrom.

**assembly space.** A room or space classified as Group C5 occupancy regardless of the number of persons.

**atrium.** A vertical opening penetrating through one or more floors to create an open effect within a building.

**GENERAL PROVISIONS**

**attic.** Space between the top of uppermost floor construction and underside of roof.

**basement.** That space of a building which 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.

**branch.** A part of the piping system other than a main, riser or stack.

**branch vent.** A vent pipe connecting one or more individual vent pipes with a vent stack or stack vent.

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

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

**building (house) drain.** That part of the lowest piping of a drainage system which receives the discharge of soil, waste and other drainage pipes inside the walls of the building and conveys such discharges to the building sewer.

**building combined drain.** A building drain which conveys both sewage and storm water.

**building sanitary drain.** A building drain which conveys sewage but does not convey storm water.

**building storm drain.** A building drain which conveys storm water but does not convey sewage.

**building (house) sewer.** That part of the drainage system which extends from the end of the building drain and conveys its discharges to a public sewer, private sewer, individual sewage disposal system or other approved point of disposal:

**building combined sewer.** A building sewer which conveys both sewage and storm water.

**building sanitary sewer.** A building sewer which conveys sewage but does not convey storm water.

**building storm sewer.** A building sewer which conveys storm water but does not convey sewage.

**building (house) trap.** A device, fitting or assembly of fittings installed in the building drain to prevent sewer gases from entering and circulating through the building drainage system inside the building.

**bulk plant or terminal.** That portion of a property where liquids are received by tank vessel, pipe lines, tank car or tank vehicle, and are stored or blended in bulk for the purpose of distributing such liquids by tank vessel, pipe line, tank car, tank vehicle, portable tank or container.

**cellar.** That space of a building which 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.

**code enforcement official.** The officer charged with enforcement of building or fire codes.

**combustible.** Material or combination of materials which will burn, ignite, support combustion or liberate flammable vapor or gas. See definition of noncombustible.

**community residence.** A facility for mentally disabled as defined by the Mental Hygiene Law and the rules and regulations issued under this law.

**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 705.lg.

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

**dead end (plumbing).** A branch leading from a soil, waste, or vent pipe, building drain, or building sewer, and terminating at a developed length of 2 feet or more by means of a plug, cap, or other closed fitting.

**dead end (structure).** A portion of a corridor in which the travel to an exit is in one direction only.

**diameter.** The nominal diameter as designated commercially, unless otherwise specially stated.

**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.

**drainage system.** That part of a plumbing system which conveys sewage, rain water, or other liquid wastes, and which includes soil pipes, waste pipes, storm water drains, and subsoil drains. See definition of plumbing system.

**building gravity drainage system.** A building drainage system which drains by gravity into the building sewer.

**subbuilding (subhouse) drainage system.** A building drainage system which cannot drain by gravity into the sewer.

**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.

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

**dwelling, one-family.** Building arranged for one dwelling unit.

**dwelling, two-family.** Building arranged for two dwelling units.

**dwelling, multiple.** See multiple dwelling.

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

**equipment.** Equipment means plumbing, heating, electrical, ventilating, air conditioning, refrigerating, elevators, dumb waiters, escalators, and other mechanical additions or installations.

**existing plumbing system.** A plumbing system installed prior to the effective date of these rules and regulations.

**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, assembly 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.

**exterior facing.** Material, assembly or trim applied to an exterior wall for decorative treatment, protection or surface insulation and which is not intended to add to the structural stability of the wall.

**factory manufactured homes.** Manufactured housing bearing the insignia of approval issued by the State of New York.

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

**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.

**fire proof.** Fire resistive.

**fire protection equipment and systems.** Fire protection equipment and systems includes apparatus, assemblies, or systems, either portable or fixed, used to prevent, detect, control, or extinguish fire.

**GENERAL PROVISIONS**

**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 ratings.** Time in hours or parts thereof that 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 fireretardant 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 Part 771 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.

**fire terrace.** A level space or area at a setback of an exterior wall of a building and at approximately the same elevation as that of the curb or grade of the higher street, to provide a safe termination from upper stories of the building.

**fire wall.** 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.

**fixture drain.** The drain pipe extending from the fixture trap to the connection of that pipe with any other drain pipe.

**fixture supply.** The water supply pipe connecting a fixture to a branch water supply pipe or directly to a main water supply pipe.

**flame-resistance 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 and fire prevention, 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.

**hanger.** 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 curtains.

**heat-detecting alarm system.** A system comprised of a heat detector, a remote alarm, and a remote light indicator, which upon detection of abnormally high temperature, activates the alarm and the light indicator.

**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,

**GENERAL PROVISIONS**

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 705.lf and 705.lg.

**hereafter.** After the effective date of the Code.

**historic buildings.** Historic buildings are buildings which have been specifically designated as historically significant by the State or local governing body, or listed in "The National Register of Historic Places" or which have been determined to be eligible for listing on the National Register by the Secretary of the Interior.

**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 each of which required exits lead to legal open spaces.

**hotel.** A multiple dwelling used primarily for the purpose of furnishing lodging with or without meals for more than 15 transient guests for compensation.

**house drain.** See building drain.

**house sewer.** See building sewer.

**indirect waste pipe.** A drain pipe which does not connect directly with the drainage system, but conveys and discharges liquid wastes through an air break into an approved plumbing fixture or receptacle which is directly connected to the drainage system.

**industrial waste.** The liquid waste resulting from processes employed in industrial establishments and which is free of fecal matter.

**interior finish.** Interior finish means the exposed interior surface of buildings, including, but not limited to, fixed or movable walls and partitions, columns, ceilings, draperies, hangings, and decorative material, but does not include trim such as picture molds, chair rails, hand rails, baseboards, and door and window frames, or subsequently applied paint or paper wall covering less than 1/28 inch in thickness.

**interior floor finish.** Interior floor finish means the exposed floor surfaces of buildings, including carpeting.

**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.

**labeled.** Equipment or materials to which has been attached a label, symbol or other identifying mark of a nationally recognized testing agency concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

**leader.** A vertical drainage pipe for conveying storm water from roof or gutter drains.

**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.

**liquefied natural gas.** A fluid in the liquid state composed predominantly of methane and which may contain minor quantities of ethane, propane, nitrogen, or other components normally found in natural gas. LNG. An abbreviation for "liquefied natural gas."

**liquefied petroleum gas (LP Gas or LPG).** Any material having a vapor pressure not exceeding that allowed for commercial propane composed predominantly of the following hydrocarbons, either by themselves or as mixtures: Propane, Butane (normal butane or iso-butane) and Butylenes.

**listed.** Equipment or materials included in a list published by a nationally recognized testing agency concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

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

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

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

**GENERAL PROVISIONS**

**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.

**lodger.** A transient, temporary, or permanent paying guest.

**lodging house.** A multiple dwelling used primarily for the purpose of furnishing lodging, with or without meals to 15 or less transient occupants, for compensation.

**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.

**means of egress.** A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts: (a) the way of exit access, (b) the exit, and (c) the way of exit discharge. A means of egress comprises the vertical and horizontal ways of travel and shall include intervening room spaces, doorways, hallways, corridors, passageways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts, and yards.

**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 thereto.

**mobile homes.** Manufactured housing bearing a seal issued by the Federal Department of Housing and Urban Development.

**motel.** A multiple dwelling, intended primarily for motorists, not over two stories in height, in which the exit from each dwelling unit or sleeping room is directly to the exterior. (Includes but is not limited to the terms motor court, motor hotel, tourist court.)

**multiple dwelling.** a-building containing three or more dwelling units. b-building containing living, sanitary and sleeping facilities occupied by one or two families and more than four lodgers residing with either one of such families. c-building with one or more sleeping rooms, other than a one-or

two-family dwelling, used or occupied by permanent or transient paying guests or tenants. d-building with sleeping accommodations for more than five persons used or occupied as a club, dormitory, fraternity or sorority house, or for similar uses. e-building used or occupied as an old-age home. f-community residence.

**municipality.** A city, town or village.

**net floor area.** Net floor area is the actual square footage of an area used for gathering people together, not including accessory or other areas used for different purposes nor the thickness of walls. Such area is normally enclosed by walls or other dividers.

**noncombustible.** Materials 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 definitions of habitable space, public space, and exit.

**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.

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

**occupancy classification.** A classification of buildings into occupancy groups based on the kind or nature of occupancy or use. See section 701.4

**occupant.** The person in occupancy, in possession or in control of premises, or using premises.

**occupied space.** Space within a building wherein persons normally work or remain for a period of time, including assembly space for less than fifty persons. See definitions of assembly space, habitable space, nonhabitable space and public space.

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

**one- and two-family dwelling.** See dwelling.

**open parking structure.** A structure for the parking of motor vehicles having at least 50 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 equiped 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.

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

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

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

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

**plumbing.** The practice, materials, and fixtures used in the installation, maintenance, extension, and alteration of piping, fixtures, appliances, and appurtenances in connection with any of the following: sanitary drainage or storm drainage systems, the attendant vent systems, and the water supply systems, within or adjacent to any building or structure, to their connections with public systems or other approved terminals.

**plumbing system.** The water supply system, the drainage system, the vent system, fixtures and traps, including their respective connections, devices and appurtenances within the property lines of the premises.

**potable water.** Water which is approved for drinking, culinary, and domestic purposes as set forth in the State Sanitary Code.

**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 and flag poles.

**property line.** Line establishing the boundaries of premises.

**public way.** Any street, alley or other similar parcel of land essentially open to the outside air, deeded, dedicated, or otherwise permanently appropriated to the public for public use and having a clear width and height of not less than 10 ft (304.8cm).

**relief vent.** A vent pipe installed at a special location where necessary to permit additional circulation of air between drainage and vent systems.

**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, preservation or restoration 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.

**riser.** A water supply pipe which extends vertically at least one story height to convey water to branches or fixtures.

**roof.** A horizontal or inclined structural element of a building which serves as the top closure.

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

**self-closing.** See definition under opening protective.

**sewage.** Any liquid waste containing animal or vegetable matter in suspension or solution, and which may include industrial wastes and liquids containing chemicals.

**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 alarm device, single-station.** An assembly comprised of a photo-electric or ionization type of smoke detector, control equipment and audible alarm in one unit, which upon detection of smoke, activates the alarm.

**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.

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

**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.

**soil pipe.** A pipe which conveys sewage containing fecal matter.

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

**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.

**stack.** A principal vertical soil, waste, or vent pipe.

**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.

**street.** Throughfare 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.

**subsoil drain.** A drain installed underground for the purpose of draining and conveying subsurface or seepage water to an approved point of disposal.

**thermal barrier.** A noncombustible protective shield which when applied on the interior of a building to cover foam plastic insulation shall remain in place and provide fire protection for at least 15 minutes.

**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.

**trap, fixture.** A fitting or device designed and constructed so as to provide, when properly vented, a liquid seal which will prevent the back passage of air from the drainage system without materially affecting the flow of sewage or waste water through it.

**trap seal.** The vertical distance between the crown weir and the dip of a trap.

**vent system.** That part of a plumbing system, consisting of piping installed to permit adequate circulation of air in all parts of the sanitary drainage system and to prevent trap siphonage and back pressure. See definition of plumbing system.

**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.

**volatile.** Capable of emitting flammable vapor at a temperature below 75° Fahrenheit (23.9° Celsius).

**waste pipe.** A pipe which conveys only liquid wastes free of fecal matter.

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

**water distributing pipe.** A pipe, in a building or premises, which conveys water from the water service pipe to plumbing fixtures or other water outlets.

**water main (street main).** A water supply pipe provided for public use.

**water outlet.** A discharge opening through which water is supplied to a fixture, into the atmosphere (except into an open tank which is part of the water supply system), to a building heating system, or to devices or equipment requiring water to operate but which are not part of the plumbing system.

**water service pipe.** The pipe from the water main or other source of water supply to the water distributing system of the building served.

**water supply system.** That part of a plumbing system, consisting of the water service pipe, water service control valve, water meter, required meter valves and testing provisions, domestic water supply pumps, domestic water supply tanks, devices for protection of the potable water supply, water treating apparatus for corrosion control, and water distributing pipes up to the water outlets for supplying potable water to building heating systems, boiler plant apparatus, engine room machines, industrial process equipment, air conditioning and refrigeration systems, and fire protection standpipe and automatic sprinkler systems. See definition of plumbing system.

**yard.** An open unoccupied space on the 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.

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**PART 607 SAFETY DURING CONSTRUCTION**

**607.1 Safety.** 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.

**607.2 Accessibility.** 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.

**607.3 Equipment.** Fuel-burning equipment furnishing temporary heat during construction, except portable equipment, shall be provided with a smoke pipe or chimney 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.

**PART 608 SAFETY DURING DEMOLITION**

**608.1 Safety.** 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.

**608.2 Accessibility.** 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.

**608.3 Utilities.** 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 609 WORKMANSHIP**

**609.1 General Requirements.** Workmanship shall conform to generally accepted good practice in the applicable trade.

## GENERAL PROVISIONS

### PART 610 ACCEPTABILITY

#### 610.1 Acceptability

**610.1a** Compliance with applicable provisions of generally accepted standards, except as otherwise prescribed in this Code, shall constitute compliance with this Code.

**610.1b** 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.

### PART 611 ENERGY CONSERVATION

**611.1** Buildings shall be designed and constructed so that the thermal resistance and air leakage at the building envelope and the design and selection of equipment and systems for the purpose of energy conservation shall comply with the applicable provisions set forth in the State Energy Conservation Construction Code.



**CHAPTER B**

**BUILDING CONSTRUCTION**



## ARTICLE 1 GENERAL PROVISIONS

## PART 650 PURPOSE

**650.1 Purpose.** The purpose of this Chapter is to provide basic and uniform regulations for building construction, to establish reasonable safeguards for the safety and health of occupants and users of buildings in terms of performance objectives, and to make adequacy of performance the test of acceptability.

## PART 651 SCOPE

**651.1 Scope.** This Chapter shall be applicable to residential and non-residential buildings, public and private including their accessory structures and parts thereof.

**651.2 Construction.** This chapter shall apply to new construction of buildings and to conversions, additions, alterations and repairs to buildings where set forth in Chapter E of this Code.

**651.3 Nonresidential Farm Buildings.** The requirements of this Chapter shall not apply to nonresidential farm buildings including barns, sheds, poultry houses and other buildings used directly and solely for agriculture purposes.

## PART 652 QUALITY OF MATERIALS

**652.1 Quality of Materials.** All materials, assemblies, construction, and equipment shall conform to the regulations of this Chapter 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.

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### PART 653 PROHIBITED USES

**653.1 Prohibited Uses.** Offensive, obnoxious, or hazardous occupancy shall not be permitted on the premises of multiple dwellings or buildings herein classified in Chapter B, Article 2 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.

**BUILDING CONSTRUCTION****27****ARTICLE 2 OCCUPANCY AND CONSTRUCTION  
CLASSIFICATION AND BUILDING LIMITS****PART 700 GENERAL REQUIREMENTS**

**700.1 Scope.** Buildings occupied or used in whole or in part for purposes within the scope of the Code shall be designed and constructed so as to comply with all the requirements set forth in this article concerning occupancy and construction.

**700.2 Mixed and Accessory Use.** The terms mixed use and accessory use shall apply in the same manner and under the same conditions or restrictions to all buildings.

**PART 701 OCCUPANCY CLASSIFICATION BY  
OCCUPANCY OR USE GROUP****701.1 General Classification By Occupancy Or Use**

- A1 One-Family Dwelling
- A2 Two-Family Dwelling
- B1 Multiple Dwelling - Permanent Occupancy
- B2 Multiple Dwelling - Transient Occupancy
- B3 Multiple Dwelling - Senior Citizens Housing
- B4 Multiple Dwelling - Adult Residential Care Facility
- C1 Business
- C2 Mercantile
- C3 Industrial
- C4 Storage
- C5 Assembly
- C6 Institutional
- C7 Miscellaneous

**701.2 One- and Two-Family Dwellings.** One- and two-family dwellings for purposes of this Code shall be classified with respect to the number of dwelling units for families each having not more than four lodgers. Such dwellings shall also be classified as a community residence where applicable. The classification shall be in accordance with the following groups:

- 701.2a Group A1**  
Buildings containing one dwelling unit.

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- 701.2b** Group A2  
Buildings containing two dwelling units.

**701.3 Multiple Dwellings.** Multiple dwellings for the purpose of this Code shall be classified in respect to the permanent or transient character of their occupancy groups, and to the number and physical condition of the occupants. The classification shall be in accordance with the following groups:

- 701.3a** Group B1 Permanent Occupancy:  
Buildings containing one or two dwelling units with more than four lodgers residing with a family in either one of such dwelling units  
Buildings containing three or more dwelling units  
Apartment houses and apartment hotels  
Garden apartments Community residences

- 701.3b** Group B2 Transient Occupancy:  
Hotels  
Lodging houses  
Buildings with sleeping accommodations for more than five persons used or occupied as a club, dormitory, fraternity or sorority house, or for similar uses  
Motels

- 701.3c** Group B3 Senior Citizens  
Buildings for Senior Citizens, intended primarily for person 62 years old or more, who are in good physical condition and do not require physical assistance

- 701.3d** Group B4 Adult Residential Care Facility:  
Buildings for infirm adults who require personal care, supervision and services

- 701.3e** A building containing not more than two dwelling units within walls conforming to the requirements of section 738.8 shall be regulated as a one-or two-family dwelling.

**701.4 General Building Construction.** General Building Construction for the purpose of the Code shall be classified in groups in respect to the occupancy or use. The classification shall be in accordance with the following groups:

- 701.4a** 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. Newstands, lunch counters, barber shops, beauty parlors, and similar service facilities are considered as incidental occupancies or uses.

- 701.4b** 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.
- 701.4c** 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.
- 701.4d** 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.
- 701.4e** 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 three hundred persons.
  - Group C5.2 for more than three hundred, but not more than one thousand persons.
  - Group C5.3 for more than one thousand persons.
  - Group C5.4 churches, synagogues, mosques and similar places of worship.
  - Group C5.5 schools, colleges and similar places of education.
- 701.4f** Group C6 Institutional:  
Buildings in which the primary or intended occupancy or use is for persons domiciled or detained under super-vision, 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, including community residence as defined in section 606.3.

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

- 701.4g** Group C7 Miscellaneous:  
Nonresidential buildings or structures in which the primary or intended occupancy or use is not included in groups C1 to C6 inclusive.

**PART 702 CLASSIFICATION BY FIRE HAZARD****702.1 General Requirements**

**702.1a** Buildings classified as one- two-family dwellings or multiple dwellings are not classified on the basis of fire hazard.

**702.1b** Buildings classified as general building construction shall be classified on the basis of fire hazard.

**702.2 Classification by Fire Hazard.**

**702.2a** Buildings of group C1 occupancy shall be classified as low hazard.

**702.2b** Building of group C2 occupancy shall be classified as moderate hazard.

**702.2c** 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:

**702.2c-1** 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.

**702.2c-2** 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.

**702.2c-3** High hazard (groups C.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.

**702.2d** Buildings of group C5 and C6 occupancies shall be considered as low hazard for determining distance separation as set forth in table I-770.

## PART 703 TYPICAL OCCUPANCIES FOR BUILDINGS OF GENERAL BUILDING CONSTRUCTION

**703.1 Scope.** Typical occupancies as determined by use group and fire hazards are incorporated in this part.

**703.2 C1 Business.** This group includes, but is not limited to, the following:

Administration buildings

Banks

Barber shops

Beauty parlors

Buildings for broadcasting and telecasting having a capacity of not more than 50 persons

Computer and data processing buildings

Indoor tennis courts designed for or intended to be used by not more than 50 person, without seating for spectators

Laboratories, other than chemical

Library buildings having a capacity of not more than 50 persons

Office buildings

Outpatient clinics, ambulatory, without domiciliary facilities

Professional offices

School administration buildings without classrooms

Telephone exchanges

**703.3 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

**703.4 C3 Industrial.** This group includes, but is not limited to the following:

**703.4a** C3.1 Low Hazard

Breweries and wineries

Car wash facilities

Ceramic product manufacture

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

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Masonry product manufacturer  
 Metal Fabrication buildings  
 Metal processing buildings  
 Power generating plants  
 Waterpumping stations

- 703.4b** C.3.2 Moderate Hazard  
 Aircraft maintenance and repair facilities  
 Bakeries  
 Chemical laboratories and manufacturers other than high hazard  
 Commercial laundries  
 Dry cleaning plants using flammable solvents  
 Metalworking shops requiring volatile or flammable liquids  
 Motor vehicle maintenance and repair shops  
 Papermills and sawmills  
 Woodworking plants excluding furniture manufacture

- 703.4c** 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

**703.5 C4 Storage.** This group includes, but is not limited to, the following:

- 703.5a 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

- 703.5b C4.2 Moderate Hazard**  
 Aircraft hangers  
 Airports and heliports  
 Amusement parks  
 Firehouse with assembly space  
 Fur storage  
 Furniture warehouse  
 Garage with maintenance or repair facilities  
 Grain elevators

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Lumber storage 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

**703.5c 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

**703.6 C5 Assembly.** This classification is subdivided into groups, according to the number of persons or the use of the building, as follows:

**703.6a** Group C5.1 for not more than three hundred persons.

**703.6b** Group C5.2 for more than three hundred, but not more than one thousand persons.

**703.6c** Group C5.3 for more than one thousand persons.

The above groups, based on number of persons, include but are not limited to the following:

- Armories
- Art galleries
- Assembly halls
- Auditoriums
- Bath houses
- Bowling alleys
- Club rooms
- Coliseums and stadiums
- Court rooms
- Dance halls and discotheques
- Grandstands
- Gymnasiums
- Indoor tennis courts with seating for spectators
- Lecture halls
- Libraries and broadcasting and telecasting stations having a capacity of more than 50 persons
- Lodge halls or rooms
- Mortuary chapels
- Motion picture theaters
- Museums
- Nightclubs

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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:

**703.6d** Group C5.4 churches, synagogues, mosques, and similar places of worship.

**703.6e** Group C5.5 schools, colleges and similar places of education.

**703.7 C6 Institutional.** This classification is subdivided into groups, according to the movement of the occupants, and includes, but is not limited to, the following:

**703.7a** C6.1 for persons whose movements are not limited and have a normal sense of perception, such as:

Day-care centers for children 3 years of age or over

**703.7b** C6.2 for persons whose movements are limited because of illness, physical or mental handicap, such as:

Child caring institutions with over-night sleeping facilities

Clinics with sleeping rooms

Community residences as defined in section 606.3

Day care centers for children under 3 years of age

Health related facilities

Hospitals

Infirmaries

Medical facilities

Nursing homes

Sanitariums

**703.7c** C6.3 For persons detained or confined such as:

Detention homes

Houses of correction

Jails

Mental hospitals

Penitentiaries

Police lockups

Prisons

Reformatories

**703.8 C7 Miscellaneous.** This group includes, but is not limited to the following:

- Boathouses
- Chimneys, free standing
- Cooling towers
- Contractors' temporary buildings
- Dockside vessels serving as buildings
- Free-standing chimneys
- Junk yards
- Marinas and boatyards
- Outdoor general storage
- Piers and wharves
- Roofed marine terminals
- Tanks
- Temporary buildings
- Wrecking yards

## PART 704 CONSTRUCTION CLASSIFICATION

**704.1 Classification Types.** Buildings shall be classified by types of construction based on the fire-resistance of the walls, floors, roof and other structural members. The fire-resistance of each structural element for each type shall be that set forth in tables I-704, II-704, III-704.

**704.1a Type 1, Fire Resistive Construction.** That type of construction in which the walls, partitions, columns, floors and roof are noncombustible, with sufficient fire resistance to withstand the effects of a fire and to prevent it spread from story to story.

**704.1b 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.

**704.1c 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 member 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.

**704.1d 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 or smaller dimensions than those required for heavy timber construction.

**704.1e 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.

**704.2 Classification Sub-Types.** Buildings shall be classified by sub-types, based on the relative fire-resistive ratings of the materials and assemblies of which they are constructed. The fire-resistance of each structural element for each sub-type shall be that set forth in tables I-704, II-704 and III-704.

**704.2a** Sub-types 1a and 1b are both fire-resistive construction, but vary as to the degree of fire resistance of their structural elements.

**704.2b** Sub-types 2a, 4a, and 5a are those in which all structural elements are required to be protected with fire-resistive materials of the rating designated for those sub-types.

**704.2c** Sub-types 2b, 4b, and 5b are those in which the structural elements generally are not required to be protected nor to have any specific fire-resistive rating, except where a specific requirement for the protection of exit enclosures and first floor by fire-resistive materials is established.

### **704.3 Special Requirements.**

**704.3a** 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.

**704.3b** 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 CI-704, VII-705, VIII-705 and IX-705 under the following conditions:

**704.3b-1** Such fire wall shall be of noncombustible material and shall conform to the requirements of section 739.2.

**704.3b-2** The fire-resistance rating of such fire wall shall be required for the higher type of construction.

**704.3b-3** Where the lower of the types of construction has a combustible roof, the fire wall shall extend above the combustible roof.

**704.3b-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 738.4a-5.

**704.3c** Where portions of a building are of different heights, the height of the building shall be the greater height, 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 704.1.

## **PART 705 HEIGHT AND FIRE AREA AND BUILDING LIMITATIONS**

### **705.1 General Requirements.**

**705.1a** 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.

**705.1b** Buildings other than one- and two-family dwellings shall be 100 feet or less from a street, road or driveway so as to be accessible to the fire department and emergency service apparatus.

**705.1d** The maximum fire area permitted for the highest story of a building determines the maximum fire area for each story of the building.

**705.1e** 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 705.1f. 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 705.1g.

**705.1f** 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.

**705.1g** The following locations shall not be deemed to be a story:

**705.1g-1** 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.

**705.1g-2** A cellar.

**705.1g-3** An attic not meeting the requirements for habitable space.

**705.1g-4** Roof construction enclosing stairs or equipment other than for elevators, provided they are less than 18 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.

**705.1g-5** For multiple dwellings, a mezzanine with a floor area less than 5000 square feet and less than 1/3 of floor area of the space wherein the mezzanine is contained.

**705.1g-6** For general building construction, 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.

## **705.2 Height and Fire Areas — One- and Two- Family Dwelling**

**705.2a** The height, number of stories, and fire areas between exterior walls or between exterior walls and fire walls, indicated for each type or subtype of construction, shall not exceed those set forth in table I-705.

**705.2b** Buildings of type 5 construction shall not exceed a height of two stories above a basement or cellar, or above finished grade where there is no basement or cellar.

## **705.3 Height and Fire Area — Multiple Dwellings**

**705.3a** The height, number of stories, and fire areas between exterior walls or between exterior walls and fire walls, indicated for each occupancy group and use for each type or subtype of construction, shall not exceed those set forth in tables II-705, III-705, IV-705, and V-705.

**705.3b** 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.

#### **705.4 Height and Fire Area — General Building Construction**

**705.4a** The height, number of stories, and fire areas between exterior walls or between exterior walls and fire walls, indicated for each occupancy group and use for each type or subtype of construction shall not exceed those set forth in tables VI-705, VII-705, VIII-705, and IX-705.

**705.4b** 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.

**705.4c** 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.

**705.4d** 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:

**705.4d-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.

**705.4d-2** The two-story portion is separated from the one-story portion as set forth in table I-771.

**705.4d-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.

**705.4d-4** The two-story portion is used for low hazard occupancy accessory to the occupancy of the one-story portion.

**705.4d-5** Exits from the second story are enclosed to the exterior in construction having a fire-resistance rating conforming to the requirements of table II-704.

**705.4d-6** The building is not increased in height on the basis of sprinkler installation as provided in 705.4f-3.

**705.4e Increase in Fire Area on Basis of Accessibility and Special Occupancy**

**705.4e-1** The fire areas set forth in table VI-705, VII-705, VIII-705 and IX-705 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.

**705.4e-2** 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:

- (i) The building is located outside fire limits.
- (ii) There is legal open space at least 40 feet wide on all sides.
- (iii) Interior stairways are separately enclosed.
- (iv) On the second story the maximum distance of travel from an exit door of a room or space to a stairway is 120 feet.
- (v) 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.

**705.4f Increase in Fire Area and Height on Basis of Sprinkler Installation**

**705.4f-1** 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 705.4f-2, and 705.4f-3.

**705.4f-2** A fire area in buildings of group C1, C2, C3.1, C3.2, C4.1, C4.2 and C5 occupancy, and open parking structures of types 1 and 2 construction may be increased 200 percent, and of types 3, 4 and 5 construction may be increased 100 percent over the basic areas shown in tables VI-705, VII-705, and IX-705 or the increased areas permitted on the basis of accessibility in accordance with 705.4e, providing the building is equipped with an automatic sprinkler system.

**705.4f-3** 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 VI-705, or the increased areas permitted on the basis of accessibility in accordance

with 705.4e, except that buildings of type 3 or 4a construction shall not exceed four stories in height.

**705.4g Indoor Tennis Courts.** 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:

**705.4g-1** 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.

**705.4g-2** 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.

**705.4g-3** 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.

**705.4g-4** Durable signs worded OCCUPANCY OF THIS BUILDING BY MORE THAN 50 PERSONS IS PROHIBITED shall be posted so as to be visible throughout the building.

**TABLE I-704 MINIMUM FIRE RESISTANCE REQUIREMENTS OF STRUCTURAL ELEMENTS**  
 (By types of construction; fire-resistance ratings in hours)  
**ONE- AND TWO-FAMILY DWELLINGS**

Structural element	Construction classification <sup>1</sup>							
	Type 1 (Fire-Resistive)	Type 2 (Non-combustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)	
		2a	2b		4a	4b	5a	5b
Floor	2 hr	3/4 hr	nc	3/4 hr	3/4 hr	c	3/4 hr	c
Other structural elements except exterior and fire walls <sup>1</sup>	3/4 hr or more	3/4 hr	nc	3/4 hr <sup>2</sup>	3/4 hr <sup>2</sup>	c	3/4 hr <sup>2</sup>	c

<sup>1</sup> For fire-resistance rating of exterior walls, see definition of construction classification, section 606.3 and of fire walls, see 717.2b.

<sup>2</sup> No fire-resistance rating is required for roof construction.

**TABLE II-704 MINIMUM FIRE RESISTANCE REQUIREMENTS OF STRUCTURAL ELEMENTS**  
 (By types of construction; fire-resistance ratings in hours)

**MULTIPLE DWELLINGS**

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

<sup>1</sup> For classification of buildings by type of construction, see 704.2a.b.c.

<sup>2</sup> For exceptions, see 738.3a-2 and 738.3b-2.

<sup>3</sup> Party walls shall comply with section 738.8.

<sup>4</sup> Fire walls shall comply with section 738.2.

<sup>5</sup> In buildings not more than three stories in height, and with not more than eight dwelling units within a fire area, 1 hour in type 1 construction; ¾ hour in type 2.3, and 4 construction. See 739.4d-7.

<sup>6</sup> If every part of noncombustible roof truss is more than 15 feet above floor next below, protection of the roof truss is not required. Roof construction shall be of non-combustible material, but is not required to have any rating.

<sup>7</sup> 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

<sup>8</sup> ¾ hour when separating tenant spaces, and for floor construction over a cellar or basement.

<sup>9</sup> For atrium exceptions see Article 743.

(By types of construction; fire-resistance ratings in hours)

**GENERAL BUILDING CONSTRUCTION**

Structural element	Construction classification <sup>1</sup>								
	Type 1 (Fire-Resistive)		Type 2 (Non-combustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 <sup>6</sup> (Wood frame)	
	1a	1b	2a	2b		4a	4b	5a	5b
<b>Exterior:</b>									
Bearing walls .....	4	3	2	nc	2	2	2	¾	c
Nonbearing walls <sup>1, 2</sup> .....	2	2	2	nc	2	2	2	¾	c
Panel and curtain walls <sup>1, 2</sup> .....	¾	¾	¾	nc					
Party walls <sup>3</sup> .....	4	3	2	2	3	2	2	2	2
<b>Interior:</b>									
Fire walls <sup>4</sup> .....	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 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	2 <sup>6</sup>	¾	¾
Construction separating tenant spaces <sup>5</sup> .....	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 <sup>7</sup>	1 <sup>7</sup>	¾ <sup>7</sup>	nc	c	¾	c <sup>9</sup>	¾	c <sup>9</sup>

<sup>1</sup> Rating may be required due to distance separation in conformity with section 770.2.

<sup>2</sup> For exceptions, see 770.2c-2 and 770.2d-2.

<sup>3</sup> Party walls shall comply with section 770.6.

<sup>4</sup> Fire walls shall comply with section 771.2.

<sup>5</sup> For other requirements, see table 771.4.

<sup>6</sup> 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 771.4h.

<sup>7</sup> For exceptions, see 771.3d and 771.3e.

<sup>8</sup> Not permitted within fire limits

<sup>9</sup> ¾ hour rating in group C3.2, C3.3, C4.2 and C4.3 occupancy with flat roofs.

**TABLE I-705 MAXIMUM HEIGHT AND FIRE AREA FOR GROUP A1 AND A2 OCCUPANCY**

Maximum height	Maximum fire area by construction classification in square feet							
	Type 1 (Fire-Resistive)	Type 2 (Non-combustible)		Type 3 (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame)	
		2a	2b		4a	4b	5a	5b
ALL HEIGHTS	Unlimited	10,000	8,000	8,000	8,000	7,000	7,000	6,000

TABLE II-705 MAXIMUM HEIGHT AND FIRE AREA FOR GROUP B1, B2 and B3 OCCUPANCY<sup>4</sup>

Maximum height		Maximum fire area by construction classification in square feet							
In stories	In feet	Type 1 (Fire resistive)	Type 2 (Noncombustible)		Type 3 <sup>1</sup> (Heavy timber)	Type 4 <sup>1,2</sup> (Ordinary)		Type 5 <sup>2,3,5</sup> (Wood frame)	
			2a	2b		4a	4b	5a	5b
1	15	Unlimited	16,000	8,500	10,000	10,000	7,500	6,000	4,000
2	30	Unlimited	14,000	6,500	8,000	8,000	5,500	4,000	3,000
3	40	Unlimited	12,000	np	6,000	6,000	np	np	np
4	50	Unlimited	11,000	np	5,000	5,000	np	np	np
5	60	Unlimited	10,000	np	4,000	4,000	np	np	np
6	70	Unlimited	9,000	np	3,000	3,000	np	np	np
7	80	Unlimited	8,000	np	np	np	np	np	np
8	90	Unlimited	7,000	np	np	np	np	np	np
9	100	Unlimited	6,000	np	np	np	np	np	np
10 or more	more than 100	Unlimited	np	np	np	np	np	np	np

<sup>1</sup> In hotels of type 3 and 4 construction, the height shall not exceed two stories, except that if a sprinkler system is installed throughout the buildings, the height may be increased to four stories provided there is no increase in fire area because of such sprinkler system.

<sup>2</sup> Areas indicated may be increased 25 percent for garden apartments less than three stories in height, and for motels.

<sup>3</sup> Not permitted within fire limits.

<sup>4</sup> For group B1, B2 and B3 occupancy, areas may be increased 100 percent if a non-required sprinkler system is installed throughout such building.

<sup>5</sup> For maximum number of dwelling units within fire walls see 738.3b-3.

**TABLE III-705 MAXIMUM HEIGHT AND FIRE AREA FOR GROUP B4 OCCUPANCY**

Maximum height		Maximum 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)	
			2a	2b		4a	4b	5a	5b
1	15	Unlimited	16,000	10,000	10,000	10,000	7,000	6,000	3,000
2	30	Unlimited	15,000	7,000	7,000	7,000	6,000	5,000	2,500
3	40	Unlimited	13,000	np	np	np	np	np	np
4	50	Unlimited	10,000	np	np	np	np	np	np
5 or more	more than 50	Unlimited	np	np	np	np	np	np	np

<sup>1</sup> Not permitted within fire limits.

**TABLE IV-705 MAXIMUM HEIGHT AND FIRE AREA FOR OPEN PARKING STRUCTURES  
UPON THE PREMISES OF MULTIPLE DWELLINGS**

Number of parking levels <sup>1</sup>	Basic fire area by construction classification in square feet <sup>2,3</sup>								
	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	un	np	np	np	np	np
3	un	un	un	30,000 <sup>4</sup>	np	np	np	np	np
4	un	un	un	30,000 <sup>4</sup>	np	np	np	np	np
5	un	un	50,000	30,000 <sup>4</sup>	np	np	np	np	np
6	un	un	50,000	30,000 <sup>4</sup>	np	np	np	np	np
More than 6	un	un	50,000 <sup>5</sup>	30,000 <sup>6</sup>	np	np	np	np	np

<sup>1</sup> Parking permitted on roof in addition to the parking level indicated.

<sup>2</sup> Fire areas are based on frontage on one street or legal open space at least 50 feet wide.

<sup>3</sup> If a fire area faces or abuts such streets or spaces on two sides, it may be 50 per cent larger than the basic areas shown; on three sides, 75 per cent larger; on four sides, 100 per cent larger — providing that 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. These fire areas may be increased 100 per cent providing the building is equipped with an automatic sprinkler system.

<sup>4</sup> The maximum allowable fire area may be 75,000 square feet provided;

a) at least two open slides are accessible to fire-fighting equipment and

b) on each level at least 50 percent of two exterior sides shall be permanently open and such openings shall total not less than 40 percent of the perimeter of the structure and

c) the horizontal distance on any parking level to an open exterior wall does not exceed 200 feet.

<sup>5</sup> Not more than 10 stories.

<sup>6</sup> Not more than 8 stories.

**TABLE V-705 MAXIMUM HEIGHT AND FIRE AREA FOR SEPARATE GARAGE BUILDINGS<sup>1</sup>  
UPON THE PREMISES OF MULTIPLE DWELLINGS**

Maximum height <sup>2</sup>		Basic fire area by construction classification in square feet <sup>3</sup>								
In stories	In feet	Type 1 (Fire resistive)		Type 2 (Noncombustible)		Type 3 <sup>1</sup> (Heavy timber)	Type 4 (Ordinary)		Type 5 (Wood frame) <sup>4</sup>	
		1a	1b	2a	2b		4a	4b	5a	5b
1	un	un	un	un	18,000	21,000	18,000	12,000	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

<sup>1</sup> Where used for parking or storage only, classification shall be low hazard. Where repairs are made therein, classification shall be moderate hazard; see group C 4.2 in table VI-705.

<sup>2</sup> If sprinkler system is installed throughout the building, the height may be increased by one story or 12 feet.

<sup>3</sup> Fire areas are based on frontage on one street or legal open space at least 50 feet wide. If a fire area faces or abuts such streets or spaces on two sides, it may be 50 per cent larger than the basic areas shown; on three sides, 75 per cent larger; on four sides, 100 per cent larger— providing that 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. These fire areas may be increased 100 per cent providing the building is equipped with an automatic sprinkler system.

<sup>4</sup> Not permitted within fire limits.

**TABLE VI-705 HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C1, C2, C3, and C4 OCCUPANCY**  
 See 705.4e and 705.4f for increased height or fire area; see section 775.4 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) <sup>1</sup>	
		1a	1b	2a	2b		4a	4b	5a	5b
<b>LOW HAZARD — C1, C3.1, C4.1</b>										
1	un	un	un	un	18,000 <sup>3</sup>	21,000 <sup>3</sup>	18,000 <sup>3</sup>	12,000 <sup>3</sup>	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
<b>MODERATE HAZARD — C2, C3.2, C4.2</b>										
1 <sup>2</sup>	un	un	un	18,000 <sup>3</sup>	15,000 <sup>3</sup>	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
<b>HIGH HAZARD — C3.3, C4.3<sup>4</sup></b>										
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

<sup>1</sup> Not permitted within fire limits.

<sup>2</sup> For aircraft hangers, basic fire areas may be increased 25 percent.

<sup>3</sup> 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 705.4e-1, and such space shall be at least 50 feet wide. Heat banking areas and an automatic sprinkler system as set forth in sections 771.4e and 1060.4 respectively, shall be provided except that is a building of group C3.1 occupancy of type 2b construction used for the manufacture or processing of noncombustible products, where the distance from the floor to the lowest point of the roof structure is 20 feet or more, heat banking areas and an automatic sprinkler system are not required.

<sup>4</sup> See Part 775 for fire protection equipment requirements.

**TABLE VII-705 HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C5 OCCUPANCY**  
 See 705.4e and 705.4f for increased height or fire area; see section 775.4 for sprinkler requirements.<sup>2</sup>

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) <sup>1</sup>	
		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

<sup>1</sup> Not permitted within fire limits.

<sup>2</sup> Exhibit spaces of exhibition buildings, where any such space exceeds 15,000 square feet, shall be provided with heat banking areas and an automatic sprinkler system as set forth in sections 771.4-e and 1060.4 respectively.

**TABLE VIII-705 HEIGHT AND FIRE AREA FOR BUILDINGS OF GROUP C6 OCCUPANCY**  
 See 705.1 and 705.4a for increased fire area; see section 775.4 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) <sup>1</sup>		
		1a	1b	2a	2b		4a	4b	5a	5b	
<b>BUILDINGS OF GROUP C6.1 OCCUPANCY</b>											
1	un	un	un	un	18,000	18,000	15,000	9,000 <sup>2</sup>	6,000 <sup>2</sup>	6,000 <sup>2</sup>	
2	40	un	un	21,000	15,000	15,000	12,000	6,000 <sup>2</sup>	3,000 <sup>3</sup>	np <sup>3</sup>	
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	
<b>BUILDINGS OF GROUP C6.2 OCCUPANCY</b>											
1	un	un	un	14,000	6,000	6,000	6,000	4,000 <sup>2</sup>	3,000 <sup>2</sup>	3,000 <sup>2</sup>	
2	40	un	un	12,000	4,000	4,000	4,000	np <sup>3</sup>	np <sup>3</sup>	np <sup>3</sup>	
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	
<b>BUILDINGS OF GROUP C6.3 OCCUPANCY</b>											
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 85	np	np	np	np	np	np	np	np	np	

<sup>1</sup> Not permitted within fire limits.

<sup>2</sup> Not permitted unless the building is equipped with an automatic sprinkler system. In lieu of the automatic sprinkler system, a building used as a day-care center in which each level for day-care use has at least two exits leading directly to the exterior, shall be permitted to have a fire-and smoke-detecting system installed in conformity with section 1060.4. See 771 4-a-6.

<sup>3</sup> A day-care center shall be permitted in a two story building with fire area not exceeding 3,000 square feet provided that such building complies with the requirements of footnote 2, and the day-care use is prohibited on the second story.

**TABLE IX-705 HEIGHT AND FIRE AREA FOR OPEN PARKING STRUCTURES**

See 705.4-e and 705.4-f for increased fire area; and section 606.3 (Open Parking Structure enclosing wall requirements).

Number of parking levels <sup>1</sup>	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	un	np	np	np	np	np
3	un	un	un	30,000 <sup>4</sup>	np	np	np	np	np
4	un	un	un	30,000 <sup>4</sup>	np	np	np	np	np
5	un	un	50,000	30,000 <sup>4</sup>	np	np	np	np	np
6	un	un	50,000	30,000 <sup>4</sup>	np	np	np	np	np
More than 6	un	un	50,000 <sup>2</sup>	30,000 <sup>3</sup>	np	np	np	np	np

<sup>1</sup> Parking permitted on roof in addition to the parking level indicated.

<sup>2</sup> Not more than 10 stories.

<sup>3</sup> Not more than 8 stories.

<sup>4</sup> The maximum allowable fire area may be 75,000 square feet provided:

- a) at least two open sides are accessible to fire-fighting equipment and
- b) on each level at least 50 percent of two exterior sides shall be permanently open and such openings shall total not less than 40 percent of the perimeter of the structure and
- c) the horizontal distance on any parking level to an open exterior wall does not exceed 200 feet.

**BUILDING CONSTRUCTION****PART 706 FIRE LIMITS**

**706.1 Municipalities Having Fire Limits.** In municipalities which designate fire limits, building and accessory structures within such fire limits shall be constructed in conformity with the requirements set forth in 706.1a 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 706.1b applicable to buildings outside the fire limits.

**706.1a Within Fire Limits.** When fire limits are established by municipalities, such fire limits shall, for the purpose of this Code, be designated as follows:

**706.1a-1** Fire limits A comprising the areas containing highly congested business, commercial and/or industrial occupancies, wherein the fire hazard is severe

**706.1a-2** 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

**706.1b Outside the Fire Limits.** All those areas not included in fire limits A or B are designated herein as outside the fire limits.

**706.2 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 706.1b applicable to buildings outside the fire limits.

**PART 707 PROJECTION BEYOND THE STREET LINE****707.1 General Requirements**

**707.1a** 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.

**707.1b** 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.

**707.2 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.

## BUILDING CONSTRUCTION

### ARTICLE 3 ONE-AND TWO-FAMILY DWELLINGS

#### SPACE AND FIRE SAFETY

#### PART 710 GENERAL REQUIREMENTS

**710.1 General Requirements.** Buildings occupied or used as a one-and two-family dwelling or a community residence, in whole or in part for purposes within the scope of this section, shall be designed and constructed so as to comply with the requirements hereinafter set forth in order to provide safe and healthful environment, and to retard the exterior and interior spread of fire.

#### PART 711 SPACE

##### 711.1 Habitable Space

##### 711.1a Size

**711.1a-1** A dwelling unit shall contain at least one habitable space which shall have a minimum floor area of 150 square feet with a minimum horizontal dimension of 10 feet. Other habitable spaces, except kitchens, shall have a minimum floor area of 80 square feet with a minimum horizontal dimension of 7 feet.

**711.1a-2** Habitable space shall have a minimum height of 7 feet 6 inches, except that for habitable space under a sloping roof the minimum height in at least 50 per cent of the floor area shall be 7 feet 6 inches and the area where the height is less than 5 feet shall not be considered in computing required floor area.

**711.1a-3** Where exposed beams project below the ceiling of habitable 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 beams. Where the ratio is less than 5 percent, the height to the underside of beam shall be not less than 7 feet.

##### 711.1b Location in Respect to Grade Level

**711.1b-1** Floor level of habitable space shall not be more than 4 feet below the average adjoining finished grade. No habitable space shall be located in cellars, except that below-grade space is permitted as habitable space where in conformity with the following conditions:

- (i) The grade adjoining one exterior wall for the entire width of the habitable space is at or lower than the floor level of the habitable space.
- (ii) The depth is not more than four times the height.
- (iii) Such space conforms to all other requirements for habitable spaces.

## **711.2 Nonhabitable Space**

### **711.2a General Requirements**

**711.2a-1** Nonhabitable space shall be provided with light and ventilation adequate for the intended use of each space. Bathrooms and toilet rooms shall have provisions for privacy.

**711.2a-2** Bathrooms, toilet rooms, kitchenettes, corridors and recreation rooms shall have a minimum height of 7 feet.

## **PART 712 LIGHT AND VENTILATION**

### **712.1 Habitable Space**

#### **712.1a Light**

**712.1a-1** Habitable space except kitchens, shall be provided with natural light through one or more windows, skylights, transparent or translucent panels, or any combination thereof, that face directly on legal open spaces at least 5 feet wide above the adjoining finished grade, or above a roof. The amount of light shall be equivalent to that transmitted through clear glass equal in area to not less than 8 per cent of the floor area of the habitable space.

**712.1a-2** Kitchens shall be provided with artificial lighting equipment and may also be provided with natural light.

**712.1b Ventilation.** Habitable space shall be provided with ventilation in accordance with either of the following:

**712.1b-1** Natural ventilation through openable parts of windows or other openings in exterior walls that face legal open spaces at least 5 feet wide above the adjoining finished grade or above a roof, or through openable parts of skylights, providing total clear ventilation area equal to not less than 4 per cent of the total floor area of each habitable space; or

**712.1b-2** Mechanical ventilation providing outdoor air, or a mixture of outdoor and recirculated air, in accordance with the quantities set forth in the applicable requirements of the State Energy Conservation Construction Code.

## **712.2 Nonhabitable Space**

### **712.2a Light**

**712.2a-1** Kitchenettes, bathrooms and toilet rooms shall be provided with light of sufficient intensity and so distributed as to permit the maintenance of sanitary conditions and the safe use of the space and the appliances, equipment and fixtures.

**712.2b Ventilation.** Kitchenettes, bathrooms, and toilet rooms shall be provided with ventilation in accordance with either of the following:

**712.2b-1** Natural ventilation as set forth in 712.1b, except that such openable areas shall be not less than 1½ square feet for bathrooms or toilet rooms and not less than 3 square feet for kitchenettes; or

**712.2b-2** Mechanical exhaust ventilation in accordance with the quantities set forth in the applicable requirements of the State Energy Conservation Construction Code.

## **PART 713 STAIRS, DOORS AND EXITS**

### **713.1 Stairs**

**713.1a General Requirements.** Stairs, both interior and exterior, shall be arranged and constructed to provide safe ascent and descent. A fixed stair shall be provided where travel is required between two stories, each of which contains a habitable space or a recreation room, and between the first story and basement or cellar. Disappearing or folding stairs may be used between an above-grade story and an attic without a habitable space or recreation room.

### **713.1b Treads**

**713.1b-1** Minimum widths of treads shall be 9 inches, plus 1 ½-inch nosing for closed riser type, or 9 inches for open riser type, except that treads of folding or disappearing stairs intended for occasional use only shall have a minimum width of 6 inches.

**713.1b-2** Winder treads at converging ends of winders, exclusive of minimum 1-inch nosings, shall be not less than 4 inches wide unless the winders are guarded at the converging ends by continuous handrails which prevent walking where the tread widths are less than 6 inches. If the winder treads are without a minimum 1-inch nosing, the tread widths in these locations shall not be less than 5 inches and 7 inches, respectively.

**713.1b-3** Winder tread widths at a distance of 18 inches from the converging ends shall be not less than the tread widths as set forth in 713.1b-1.

**713.1b-4** Treads shall be level and all other than winder treads shall be uniform in width, with no variation exceeding  $\frac{1}{8}$  inch in any one run of stairs.

### **713.1c Risers**

**713.1c-1** Maximum heights of risers shall be  $8\frac{1}{4}$  inches except that the maximum height of risers of folding or disappearing stairs, exterior stairs to basements or cellars, and of other stairs intended for occasional use only, shall be 9 inches.

**713.1c-2** There shall be no variation exceeding  $\frac{1}{8}$  inch in the height of risers in any one run of stairs.

**713.1d Width.** Widths of stairs shall be not less than 2 feet 8 inches clear between handrails or between handrail and opposite wall surface; except that stairs to a cellar or attic shall not be less than 2 feet 6 inches clear between handrails or between handrail and opposite wall surface.

**713.1e Headroom.** The minimum clear headroom over any portion of any fixed stair tread shall be not less than 6 feet 6 inches measured vertically from the surface of the tread, except that the minimum shall be not less than 6 feet 4 inches over stairs from a second story to a third story and over stairs to a basement or to a cellar.

### **713.1f Handrails and Railings**

**713.1f-1** Stairs or steps of more than three risers shall have a handrail or railing parallel to the stair slope on at least one side. Where one or both sides of such stairs or steps are open, railings shall be provided on open sides.

**713.1f-2** Window openings on stairs or landings, and well openings, shall be guarded by railings or other equivalent protection.

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**713.1f-3** Landings, platforms and porches more than 18 inches above the adjacent floor or grade level shall be provided with railings on the open sides, except where openings are required for access.

**713.1f-4** Top surfaces of handrails and railings shall be not less than 30 inches nor more than 36 inches in height above the floor or tread level. On stair runs, the height shall be measured directly above the riser face.

**713.1f-5** Clearance between handrail and supporting wall shall be not less than 1½ inches.

**713.1g Landings.** The swing of a door opening on a stairway shall not overlap the top step. Where landings are provided, their width shall be not less than the width of the stair of which they are part.

**713.1h Light.** Treads of stairs shall be lighted by either natural or artificial light of sufficient intensity to allow safe ascent and descent.

**713.2 Doors**

**713.2a Width.** Main entrance door shall be at least 36 inches in width.

**713.2b** Doors intended for passage shall be not less than 6 feet 8 inches in height.

**713.3 Exits**

**713.3a** Exit stairways may serve in common two dwelling units as set forth in 717.3d.

**713.3b Exits for One-Family Dwellings More than Three Stories in Height.** One-family dwellings exceeding three stories in height shall have exits from every story which provide safe continuous passage to a legal open space, and shall have at least one interior stairway enclosed in construction having a fire-resistance rating of at least ¾ hour. All openings in such enclosures shall be provided with a self-closing opening protective as set forth in 717.3g.

**713.3c Width of Interior Exit Stairs.** Interior exit stairs in dwellings more than two stories in height shall be at least 3 feet wide, and in all other respects shall comply with Part 717.3d.

**713.3d Exits for Dwelling Units in Buildings with Mixed Occupancy and for Two-Family Dwellings.** Exits for dwelling units in buildings containing

mixed occupancy and for two-family dwellings shall conform with the provisions set forth in 717.3d.

## **PART 714 OPENINGS FOR EMERGENCY USE**

### **714.1 General Requirements**

**714.1a** In addition to the primary exit from a recreation room, or a habitable space except kitchens, there shall be provided in each such space at least one opening for emergency use.

**714.1b** Openings for emergency use shall include doors or openable parts of windows, located so as to provide unobstructed egress to legal open spaces.

**714.1c** Such openings shall not impede egress in an emergency, shall have a minimum area of 4 square feet, with a minimum dimension of 18 inches, with bottom of openings no higher than 3 feet 6 inches above finished floor in all above-grade stories, and no higher than 4 feet 6 inches where required in basement and cellar.

## **PART 715 SAFETY GLAZING**

### **715.1 Glazing in Doors, Shower Stalls, Fixed Panels and Bathtub Enclosures.**

**715.1a** 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.

**715.1b** Glazing in doors, fixed side panels adjoining doors, and in interior partitions where glazing extends to within 18 inches or less of floor level, shall conform to the requirements of 715.1a or in lieu thereof in fixed panels, permanent construction shall be provided to guard against accidental human impact.

**715.1c** 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 Part 718.

**715.2 Identification.** 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.

**PART 716 PREVENTION OF EXTERIOR FIRE SPREAD**

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

**716.2 Distance Separations**

**716.2a How Measured.** Distance separation 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.

**716.2b When Required**

**716.2b-1** Distance separations set forth in table I-716 shall be required except as provided in 716.2b-2 and 716.2b-5.

**716.2b-2** Distance separations shall not be required between buildings on the same premises when either building is one story in height and has an area of not more than 100 square feet.

**716.2b-3** 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.

**716.2b-4** Where the heights or construction of the exterior walls of the proposed and existing buildings are not the same, the applicable distance separation shall be that set forth for the building having exterior walls with the lower fire-resisting rating, whichever is the greater distance.

**716.2b-5** An open breezeway with at least 5 feet between the dwelling and garage shall be acceptable as distance separation as set forth in 717.3f.

**716.2b-6** Where zoning regulations and this Code contain distance requirements applicable to the same structure, the greater distance shall control.

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**TABLE I-716 MINIMUM DISTANCE SEPARATIONS**  
In feet

Fire limits	Height in stories	Noncombustible walls with fire-resistance ratings of —		Combustible walls with noncombustible exterior facings giving protection of —		Combustible walls with combustible exterior facings
		At least ¾ hour	Less than ¾ hour	At least ¾ hour	Less than ¾ hour	
Within fire limits A	1	0	5'	np	np	np
	2	0	8	np	np	np
	3	0	np	np	np	np
	4 or more	0	np	np	np	np
Within fire limits B	1	0	3'	3'	np	np
	2	0	4	4	np	np
	3	0	5	np	np	np
	4 or more	0	np	np	np	np
Outside the fire limits	1	0	2'	0	3'	4'
	2	0	3	0	4	5
	3	0	4	0	5	6
	4 or more	0	np	np	np	np

<sup>1</sup> The minimum distance separation between adjacent one-story private garages of this type of construction not exceeding 750 square feet in area may be 1½ feet.

### 716.3 Construction Limitations Within Fire Limits

**716.3a** Buildings within fire limits A may be of any type of construction other than type 5 providing they conform to the fire-area limitations set forth in section 705.2 including table I-705.

**716.3b** Buildings within fire limits B may be of any type of construction other than that having combustible walls with a fire-resistance rating of less than ¾ hour providing they conform to the fire-area limitations set forth in section 705.2 including table I-705.

**716.3c** Open porches, verandas, and balconies, or enclosed porches with at least 60 per cent of glazed area on three sides, may be constructed of combustible materials provided they do not extend outward more than 10 feet from the building, or upward more than 4 feet above the ceiling of the second story, and are not less than 3 feet distant at any point from a lot line or

from similar appurtenances on another building; if they exceed said limitations, they shall be constructed of noncombustible materials.

#### **716.4 Construction Limitations Outside the Fire Limits**

**716.4a** Buildings may be of any type of construction providing they conform to the fire area limitations set forth in section 705.2 including table I-705.

**716.4b** Porches, verandas, and balconies of combustible construction shall be not less than 3 feet distant at any point from a lot line or from similar appurtenances on another building.

#### **716.5 Protection of Openings in Exterior Walls**

**716.5a** General Requirements. Exterior wall openings located less than 2 feet from an interior lot line shall be equipped with opening protectives.

**716.5b** Fire Resistance of Exterior Wall Opening Protectives. Fire-resistance ratings of required exterior wall opening protectives shall be at least  $\frac{3}{4}$  hour.

#### **716.6 Eaves, Cornices and Trim**

**716.6a** Eaves and main exterior cornices may project beyond the building face not more than one third of the required distance separation, but this regulation shall not be deemed to authorize any projection beyond the lot line.

**716.6b** Building trim may project beyond the building face not more than one sixth of the required distance separation, but this regulation shall not be deemed to authorize any projection beyond the lot line.

**716.6c** Eaves, cornices and exterior trim shall be of noncombustible materials when the distance between such eaves, cornices or trim of adjoining buildings is less than 3 feet.

**716.7 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.

**716.7a Classification.** Roof coverings shall be classified on the basis of their resistance to exterior fire exposure as determined by tests made in conformity with generally accepted standards, as follows:

**716.7a-1** Class A, B or C roof coverings are those which are capable of resisting severe, moderate or light fire exposure, respectively, and which do not give off flying brands.

**716.7a-2** Nonclassified 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.

### **716.7b Limitation of Use**

**716.7b-1** Within the fire limits, roof coverings shall be Class A, B or C; except that where the distance separation between buildings is more than 10 feet and the horizontal projected area of the roof does not exceed 500 square feet, nonclassified roof coverings may be used.

**716.7b-2** Outside the fire limits, roof coverings shall be Class A, B or C; except that where the distance separation between buildings is more than 10 feet, nonclassified roof covering or wood shingles may be used.

### **716.7c Skylights**

**716.7c-1** Skylights and roof panels shall conform to the requirements for roof coverings as set forth in section 716.7 except as provided in 716.7c.

**716.7c-2** Skylights and roof panels in roofs are permitted to be glazed with plastic as set forth in Part 719, provided each skylight or panel does not exceed 200 square feet in area and that the distance between them is at least 5 feet.

**716.7c-3** Skylights and roof panels shall be mounted above the plane of the roof.

**716.8 Parapet Walls.** Parapet walls at least 6 inches in height shall be provided on fire and party walls required to extend through the roof.

### **716.9 Party Walls**

**716.9a** 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.

**716.9b** Openings shall not be permitted in party walls.

### **716.9c Construction**

**716.9c-1** Party walls shall form a continuous fire and smoke barrier between adjoining buildings from foundation to or through the roof and shall be capable of serving as exterior walls. Removal or collapse of construction on one side shall not endanger the support of construction of the opposite side.

**716.9c-2** Party walls shall be constructed of noncombustible materials and shall extend not less than 6 inches above roofs of combustible construction. When a roof is of noncombustible construction for a distance of at least 18 inches on each side of the wall, a party wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

**716.9c-3** Party walls shall be made smoketight at their junction with exterior walls, and the exterior wall shall be protected with noncombustible construction for a distance of at least 18 inches on each side of the party wall. In lieu of such protection at the end of party walls in type 5 construction, the party wall shall project through the exterior wall at least 6 inches.

**716.9c-4** 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.

#### **716.9d Fire Resistance**

**716.9d-1** The fire-resistance rating of party walls between one-story one- and two-family dwellings without a basement shall be at least 1 hour.

**716.9d-2** The fire-resistance rating of party walls between one- and two-family dwellings shall be at least 2 hours, except as set forth in 716.9d-1.

**716.9d-3** The fire-resistance ratings of party walls between one- and two-family dwellings and buildings containing nonresidential occupancies of low, moderate or high hazard classification shall be at least 2, 3 or 4 hours respectively.

### **PART 717 PREVENTION OF INTERIOR FIRE SPREAD**

**717.1 General Requirements.** Buildings shall be construct, arranged and separated into fire areas so as to confine and restrict the spread of fire.

**717.2 Fire Walls.** The floor area of buildings shall be divided by fire walls into fire areas in accordance with Part 705 including table I-705.

**717.2a Construction**

**717.2a-1** Fire walls shall form a continuous fire and smoke barrier between fire areas from foundation to or through the roof, and the removal or collapse of construction on one side shall not endanger the support of construction on the opposite side.

**717.2a-2** Fire walls shall be constructed of noncombustible materials and shall extend not less than 6 inches above roofs of combustible construction. Where a roof is of noncombustible construction for a distance of at least 18 inches on each side of the wall, a fire wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

**717.2a-3** 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 18 inches on each side of the fire wall, or the fire wall shall project through the exterior wall at least 6 inches.

**717.2a-4** 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.

**717.2b Fire Resistance**

**717.2b-1** The fire-resistance rating of fire walls in one-story one-and two-family dwellings without a basement shall be at least 1 hour.

**717.2b-2** The fire-resistance rating of fire walls in one-and two-family dwellings more than one story in height shall be at least 2 hours, except that in buildings more than 2 stories in height the fire-resistance rating for that portion of the wall extending through a basement, cellar or the lowest story of such buildings which do not have a basement or cellar shall be at least 3 hours.

**717.3 Division by Fire Separations**

**717.3a Separation Between Dwelling Units.** Separation between dwelling units shall have a fire-resistance rating of at least  $\frac{3}{4}$  hour.

**717.3b Separation of Occupancies.** Nonresidential occupancies in or attached to a one- or two-family dwelling shall be separated from the dwelling occupancy by fire separations having fire-resistance ratings in conformity with the requirements of table I-717.

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**TABLE I-717 MINIMUM FIRE SEPARATION REQUIRED  
BETWEEN OCCUPANCIES  
(Fire-resistance ratings in hours)**

Occupancy	One- and Two-Family Dwellings
Business (C1)	1
Mercantile (C2)	1
Industrial (C3.1)	2
(C3.2)	np
(C3.3)	np
Storage (C4.1)	2 <sup>2</sup>
(C4.2)	np
(C4.3)	np
Assembly (C5.1)	2
(C5.2)	3
(C5.3)	4
(C5.4)	2
(C5.5)	2
Institutional (C6.1)	2 <sup>1</sup>
(C6.2)	2 <sup>1</sup>
(C6.3)	2

<sup>1</sup> 1-hour for day-care center in a building of Type 4b or Type 5 construction.

<sup>2</sup> For garages, see 717.3f.

### 717.3c Construction

**717.3c-1** Fire separations and their supporting construction shall form a continuous fire and smoke barrier.

**717.3c-2** Fire separations between dwelling units and occupancies not accessory there to, other than residential, shall be continuous, and any openings therein shall be protected with self-closing opening protectives.

**717.3d Enclosures of Exits and Stairways.** Exits, including stairways and passageways forming a part thereof, serving in common two dwelling units or passing through or adjoining another dwelling or any occupancy other than residential, shall be separated therefrom by a fire separation having a fire resistance rating of at least  $\frac{3}{4}$  hour.

### 717.3e Enclosure of Heat Producing Equipment

**717.3e-1** Heat producing equipment shall be mounted on noncombustible floor construction, or on protected combustible floor construction, shall be installed with sufficient clearance from adjacent wood and other

combustible material to prevent their ignition, and when the ceiling above can be heated to temperatures in excess of 175°F., it shall be protected for a distance of 3 feet on all sides of the heat producing equipment by noncombustible material providing 10 minutes more of fire protection, except when such ceiling is constructed of noncombustible material and has a fire-resistance rating of at least  $\frac{3}{4}$  hour.

**717.3e-2** Where fuel-burning heat producing equipment is located at a level containing habitable space, the walls, floor and ceiling 3 feet or less from such equipment shall have a fire-resistance rating of at least  $\frac{3}{4}$  hour and an interior finish providing at least 10 minutes of fire protection to the combustible members. Such protection shall not be required where tests made in conformity with generally accepted standard show that such heat producing equipment will not create a fire hazard or heat adjacent combustible material above 175°F. Where doors are provided for enclosed heater rooms they shall be self closing and finished or covered on the inside with noncombustible material.

**717.3e-3** Fuel burning heat producing equipment within a garage shall be protected from physical damage by vehicles.

**717.3e-4** Floor-mounted fuel burning heat producing equipment within a garage located below grade or within a below-grade space opening directly into a garage, shall be installed on a noncombustible platform not less than 18 inches above the floor.

### **717.3f Separations of Garages in, or Attached to, One- and Two-Family Dwellings**

**717.3f-1** Private garages in, or attached to, a dwelling shall be separated from other spaces in the building by construction having a fire-resistance rating of at least  $\frac{3}{4}$  hour. Each opening in the separation between the garage and other space in the building shall be equipped with a self-closing door having a fire resistance rating of at least  $\frac{3}{4}$  hour. Such door shall not open directly into a room used for sleeping purposes.

**717.3f-2** Floors in garages shall be of noncombustible material that will not absorb flammable liquids and shall be placed or arranged so as that heavier-than-air flammable vapors cannot spread to fixed sources of ignition.

**717.3f-3** Construction of garages and arrangement of equipment installations shall be such that toxic gases originating within garages shall not spread to the dwellings; nor shall air for heating or ventilation be circulated through garages to dwellings.

**717.3f-4** For purposes of this Code, a carport with no more than two enclosing walls shall not be deemed to be a garage.

**717.3f-5** An open breezeway with at least 5 feet between the dwelling and garage shall be acceptable as separation between a garage and a one- or two-family dwelling providing a firestop is provided between the roof and ceiling at the garage end of the breezeway.

**717.3f-6** Where a breezeway is less than 5 feet between the dwelling and garage, or is closed on the sides, the garage shall be fire protected as though in or attached to the dwelling.

**717.3g Openings in Fire Walls and Fire Separations.** Openings in fire walls and fire separations shall be protected by opening protectives having fire-resistance ratings as set forth in table II-717.

**TABLE II-717 OPENING PROTECTIVES FOR INTERIOR WALL OPENINGS**

Fire-resistance rating of wall or separation in which opening occurs, in hours	Fire-resistance rating of opening protective, in hours
2 or more .....	1½
1 or ¾ .....	¾

## 717.4 Firestopping

**717.4a General Requirements.** Concealed spaces within wall, partition, floor, stair, attic, or cornice construction, and around chimney, pipe and duct openings in such construction, shall be firestopped to prevent the passage of flame, smoke, fumes and hot gases.

### 717.4b Materials

**717.4b-1** Firestopping or fill shall be of nonflammable material which can be shaped, fitted and permanently secured in position.

**717.4b-2** Noncombustible fire stopping materials shall be used in buildings of type 1 and 2 construction, and also around fireplaces, flues and chimneys in buildings of all types of construction.

**717.4b-3** Combustible firestopping materials may be used in buildings of type 3, 4 and 5 construction.

**717.4b-4** Flammable materials shall not be permitted as insulation or fill in concealed or attic spaces.

#### **717.4c Location**

**717.4c-1** Concealed vertical spaces in walls and partitions shall be fire-stopped 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.

**717.4c-2** When combustible materials form a part of the concealed space between surface finish and the base to which they are applied, the concealed space shall be filled with noncombustible material, or be firestopped so that no dimension of such concealed space exceeds 8 feet vertically or 20 feet horizontally.

**717.4c-3** Space between floor joists with ceilings attached directly to the joists shall be firestopped for the full depth of the joists at all points of support, under supported walls and partitions having a required fire-resistance rating and under all partitions separating dwelling units.

**717.4c-4** 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.

**717.4c-5** Exterior cornices and eaves shall be firestopped at the ends of fire and party wall, and at intervals of not more than 20 feet.

**717.4c-6** In buildings of type 3, 4 and 5 construction, the space in attics or between combustible floor or roof construction and a suspended ceiling shall be firestopped so that no area of such concealed space shall be greater than 3000 square feet.

**717.5 Single Station Smoke Detecting Alarm Device.** At least one single station smoke detecting alarm device, installed in conformity with section 1060.10, shall be provided adjacent to sleeping spaces on each floor level and shall be located on or near the ceiling.

#### **717.6 Interior Protection for Wood Foundation**

**717.6a** The interior surface of the wood foundation in a cellar or basement shall be covered with a noncombustible thermal barrier which shall provide fire protection for the foundation for at least 15 minutes. A vapor barrier shall be provided between the thermal barrier and the wood foundation.

**717.6b** At least one single station smoke-detecting alarm device shall be installed in the cellar or basement and shall comply with the requirements set forth in section 1060.10.

**717.7 Safety Controls for Attic Fans.** Attic fans shall be provided with means for automatic shutoff in the event of fire.

## PART 718 INTERIOR FINISHES, TRIM AND DECORATIVE MATERIALS

### 718.1 General Requirements

**718.1a** Interior finish materials for acoustical correction, surface insulation and decorative treatment on the surfaces of walls and ceilings, and interior trim materials, shall conform with all requirements set forth in this section.

**718.1b** Interior finish and trim shall be of materials that will not, in burning, give off excessive smoke or objectionable gases.

**718.2 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:

**TABLE I-718 CLASSIFICATION OF INTERIOR FINISH MATERIALS**

Class	Surface flame-spread rating
A .....	0 to 25
B .....	26 to 75
C .....	76 to 200
D .....	201 to 500

### 718.3 Use of Interior Finishes

**718.3a** Interior wall and ceiling finish materials in required enclosed exits shall be Class A or B.

**718.3b** Interior wall and ceiling finish materials in any location other than in an enclosed exit shall be Class A, B or C.

**PART 719 PLASTIC MATERIALS****719.1 General Requirements**

**719.1a** Plastic materials shall be classified in accordance with their burning characteristics as determined by tests conducted in conformity with generally accepted standards.

**719.1b** Plastic materials shall be identified by permanent legible markings on each piece in conformity with generally accepted standards.

**719.1c** The requirements of this section are limited to construction regulated by this Code and shall not regulate plastic materials as permitted in Articles 9, 10 and 11 of this Code.

**719.1d** 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 as determined by tests conducted in conformity with generally accepted standards, shall not be permitted.

**719.1e** 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.

**719.1f** Plastics for light transmission from artificial lighting equipment are not required to conform to the flame-spread ratings for interior finish.

**719.1g** One-story accessory structures located at grade level not exceeding 500 square feet in area and 10 feet in height, located outside of fire limits, may be constructed of plastic materials provided the distance separation is at least 10 feet.

**719.2 Foam Plastic**

**719.2a** Foam plastic insulation, except as set forth in 719.2b and 719.2c, shall have a surface flame spread rating no greater than 75 and a smoke density rating no greater than 450 and shall be permitted as follows:

**719.2a-1** Within the cavity of a concrete or masonry wall

**719.2a-2** On the interior surface of concrete or masonry walls provided the foam plastic insulation is protected by a thermal barrier

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**719.2a-3** Within combustible wall, roof, floor or ceiling assemblies that are not required to have a fire resistance rating, provided the foam plastic insulation is protected on the interior side by a thermal barrier.

**719.2a-4** As nonstructural sheathing for combustible exterior walls, provided the wall cavity is insulated with noncombustible material covered by a thermal barrier on the interior side.

**719.2b** Foam plastic shall be permitted as a component of an approved built-up roof.

**719.2c** Foam plastic shall be permitted as an intergal component within a wall, roof, floor or ceiling assembly approved for the intended use.

## ARTICLE 4 SPACE AND FIRE SAFETY REQUIREMENTS MULTIPLE DWELLINGS

### PART 730 GENERAL REQUIREMENTS

**730.1 General Requirements.** Buildings occupied in whole or in part as multiple dwellings, as defined in the Code, shall be designed and constructed so as to comply with the requirements hereinafter set forth concerning provisions for a safe and healthful environment, and to retard the exterior and interior spread of fire.

### PART 731 YARDS AND COURTS

#### 731.1 General Requirements

**731.1a** 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 combinations thereof, which comply with the requirements of this section.

**731.1b** Yards and courts shall be measured from the building outward, shall not begin higher than the floor level of the first habitable story, and in no event begin higher than 23 feet above the curb level or finished grade.

**731.1c** Yards and courts shall be open and unobstructed for their required area and full height, except for window sills, belt courses and other architectural or ornamental projections which project not more than 4 inches from a wall.

**731.1d** 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.

**731.1e** 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.

#### 731.2 Yards

**731.2a** A rear yard shall be provided at the rear of the building and shall extend along the rear lot line of a lot that abuts other lots or portions of lots. A rear yard is not required where the building abuts legal open space which is off the premises and has a finished grade which is approximately level. For buildings not more than 40 feet in height, on the 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.

**731.2b** If a side yard is provided or required, it shall not be 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.

### **731.3 Courts**

**731.3a** 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.

**731.3b** 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.

## **PART 732 SPACE**

### **732.1 General Requirements**

**732.1a** Space shall be classified as habitable, occupied, assembly and nonhabitable.

**732.1b** Habitable, occupied and assembly spaces shall be so arranged, located, lighted and ventilated as to provide safe and healthful environment.

**732.1c** Nonhabitable space shall have such of those requirements set forth in 732.1b above, as may be necessary for the intended use.

**732.1d** Food storage spaces for public kitchens shall be constructed so as to be verminproof and rodentproof.

**732.1e** Public kitchens and public toilets shall have walls and floors constructed of nonabsorbent materials which are easily cleanable.

**732.1f** 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, mezzanines and fire terraces, shall be protected by parapet walls or guardrails at least 3 feet in height and meeting the requirements set forth in section 803.9, except where such guardrails will interfere with the intended use, as for example, lecture platforms, loading platforms and similar constructions.

**732.1g** 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.

## **732.2 Habitable Space**

### **732.2a Size**

**732.2a-1** Habitable space shall have a minimum height of 7 feet 6 inches measured from finished floor to finished ceiling.

**732.2a-2** Every dwelling unit shall contain at least one habitable room which shall contain a minimum of 150 square feet of floor area and shall have a minimum horizontal dimension of 10 feet.

**732.2a-3** Kitchens have a minimum of 60 square feet of floor area, and other habitable spaces shall contain not less than 80 square feet of floor area and shall have a minimum horizontal dimension of 7 feet.

**732.2a-4** Every alcove less than 60 square feet in area, except a cooking space or foyer, shall be deemed to be part of a habitable room. The area of the opening in the dividing partition between the alcove and the room shall be at least 80 per cent of the wall area of such partition, measured on the alcove side, but not less than 40 square feet. The depth of such alcove shall not exceed half its width. The floor area of the alcove shall be added to the floor area of the room for the purpose of complying with the requirements of Part 733. An alcove with an area of 60 square feet or more, but less than the required area of habitable room, shall be separately lighted and ventilated as required for habitable space.

### **732.2b Location in Respect to Grade Level**

**732.2b-1** 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 a 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.

**732.2b-2** Windows for light and ventilation shall open upon a required yard, court or legal open space having access to a public thoroughfare. The elevation of the finished grade shall be at least 6 inches below sills of such windows.

### **732.2c Miscellaneous Requirements**

**732.2c-1** Dwelling units shall be separated from each other and from other spaces outside the dwelling unit.

**732.2c-2** Separation between units shall have a sound transmission class (stc) of at least 45 and between dwelling units and corridors or public spaces of at least 45 stc.

**732.2c-3** Sleeping rooms within dwelling units shall be separated from each other and from other spaces outside the sleeping rooms to provide privacy.

### **732.3 Occupied Space and Assembly Space**

#### **732.3a Occupied Space**

**732.3a-1** Occupied space shall have a minimum height of 8 feet, measured from finished floor to finished ceiling.

**732.3a-2** Areas below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

#### **732.3b Assembly Space**

**732.3b-1** Assembly space shall be at least as high as is required for occupied space, except that assembly space for more than 100 persons shall have a minimum height of 9 feet measured from finished floor to finished ceiling, and except that assembly space below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

### **732.4 Nonhabitable Space**

#### **732.4a General Requirements**

**732.4a-1** Nonhabitable space shall be provided with light and ventilation adequate for the intended use of each space. Nonhabitable space wherein persons work or remain for a period of time shall have a minimum height of 7 feet.

**732.4a-2** Play or recreation rooms may be located in cellars, and shall conform to the requirements of Part 735.

#### **732.4b Location of Bathroom and Toilet Rooms**

**732.4b-1** Toilet rooms, and at least one bathroom within a dwelling unit, shall be accessible from any sleeping room without passing through any other sleeping room.

**732.4b-2** Unless located within dwelling units or directly connected with sleeping rooms, toilet rooms shall be provided in each story containing habitable space, and shall be accessible thereto.

**732.4b-3** Toilet rooms and bathrooms shall provide privacy.

#### **732.4c Location of Toilet Rooms for Employees**

**732.4c-1** Toilet rooms shall be in separate rooms for each sex, where there are employees of both sexes, readily accessible to their regular working places.

**732.4c-2** Toilet rooms shall not open directly into any public kitchen or other public space used for the cooking or preparation of food.

#### **732.4d Bathroom and Toilet Room Floors**

**732.4d-1** Bathrooms, shower rooms, toilet rooms and similar spaces shall be constructed with material such that floors can be flushed or washed without leaking. Such material shall extend at least 4 inches above the floor except at doors.

### **PART 733 LIGHT AND VENTILATION**

#### **733.1 General Requirements**

**733.1a** Habitable spaces shall be provided with both natural light and artificial light, except that kitchens less than 80 square feet in area be permitted with artificial light only where another dining area is provided.

**733.1b** All spaces, except closets or similar space, shall be provided with artificial light.

**733.1c** Habitable spaces shall be provided with natural ventilation, and may also be provided with mechanical ventilation, except that kitchens less than 80 square feet in area shall be permitted with ventilation conforming to the requirements for kitchenettes, where another dining area is provided.

**733.1d** Kitchens and kitchenettes having domestic ranges more than 15 feet from an opening for natural ventilation shall be provided with mechanical ventilation as set forth in 1004.2c.

**733.1e** 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.

**733.1f** Public spaces shall be provided with either natural ventilation or mechanical ventilation, or both.

**733.1g** Artificial light and mechanical ventilation shall comply with Part 1031 and section 1004.2.

**733.1h** Required lighting or ventilating openings shall not face on a street, or other space permanently dedicated to public use, of lesser width than required for side 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 side yards or courts.

### **733.2 Natural Light for Habitable Space**

**733.2a** 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.

**733.2b** 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 8 per cent of the floor area of the habitable space.

### **733.3 Natural Ventilation for Habitable Space**

**733.3a** 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, through openable parts of skylights.

**733.3b** Each habitable space shall be provided with natural ventilation through openable parts of the opening described in this section which are equal in area to not less than 4 per cent of the total floor area of each habitable space.

### 733.4 Ventilation for Occupied Space and Public Space

**733.4a** Occupied space and public space, if provided only with natural ventilation, shall comply with the requirements of section 733.3.

### 733.5 Ventilation for Nonhabitable Space

**733.5a** The following spaces shall be provided with natural ventilation by openings which comply with the requirements of section 733.3, or with mechanical ventilation as set forth in section 1004.2. The minimum openable area of the opening for natural ventilation shall be:

**TABLE I-733 MINIMUM OPENABLE AREAS FOR NATURAL VENTILATION**

Space	Minimum openable area
Kitchenettes <sup>1</sup>	3 square feet
Bathrooms	3 square feet
Toilet rooms connected to bedrooms or in dwelling units used by public or employees	3 square feet 1 square foot per water closet minimum 3 square feet
Cellars, basements	Openings of sufficient area to provide adequate ventilation

<sup>1</sup> Kitchenettes adjacent to a habitable space and having no means of separation, shall be deemed to be part of such space

**733.5b** Spaces which contain central heat producing, air conditioning and other equipment shall be ventilated as set forth in Article 10 of this Code, and air from these spaces shall not be recirculated to other parts of the building.

## PART 734 SPECIAL STAIRWAYS

### 734.1 General Requirements

**734.1a** Ornamental stairs, and interconnecting stairs within areas of the same occupancy, shall be permitted to be unenclosed when connecting not

more than two consecutive stories when in compliance with 739.4d-3 and 739.4d-4.

**734.1b** Stairs not exceeding two stories, that provide access within a dwelling unit, shall be permitted to be unenclosed.

**734.1c** Treads, risers, handrails and railings shall comply with the requirements of section 735.3 except that open risers are permitted when stairs are unenclosed.

**734.2 Ornamental Stairs** Ornamental stairs shall have a minimum tread length of 5 feet. If winders are used, tread width exclusive of nosing shall be not less than 7 inches at any point.

**734.3 Stairs Within Dwelling Units** Internal stairs in the same occupancy shall be of the fixed type, arranged and constructed for safe ascent and descent, and of sufficient width to serve the occupants but with a clear width of not less than 32 inches. Where winders are used, they shall comply with the requirements set forth in section 713.1.

## PART 735 EXITS

### 735.1 General Requirements

**735.1a** 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.

**735.1b** Safe continuous exits shall be provided from the interior of the building or structure to the exterior at street or grade level or to other legal open space 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.

**735.1c** 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 capacity heater room.

**735.1d** Corridors and required interior stairways in multiple dwellings more than two stories in height shall be enclosed as set forth in table II-704 and separated from each other. Not more than one opening to such stairway 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 2-story building, where two required interior stairs are open to and connected by an exit corridor, such stairs shall be separated from each other by at least one opening protective at each level.

**735.1e** 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 Part 1033, and shall be lighted at all times by natural or artificial light of intensity sufficient for safe travel.

**735.1f** Exit from any room may lead through other rooms of the same tenancy except exit shall not lead through bathrooms, toilet rooms and bedrooms. Each tenant's space shall be provided with means of egress to required exits.

**735.1g** Fire escapes shall not be permitted as a means of exit. Exterior stairs shall not be permitted as a means of exit from buildings of B3 and B4 occupancy.

**735.1h** Slide escapes shall not be permitted as exits.

**735.1i** The minimum width of passageways, ramps, corridors, hallways, horizontal exits and stairways shall be 36 inches, except for hotels and Groups B3 and B4 occupancies, in which the minimum width shall be 44 inches. The minimum required width of an exit shall be measured at the narrowest point in 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.

**735.1j** Exits shall be located so that they are readily accessible and visible, and arranged so that there are no dead ends extending more than 20 feet beyond an exit, except that in a group B1 occupancy, dead-ends extending not more than 40 feet beyond an exit are permitted. Exits shall not be concealed nor the direction to exits obscured by finish, paneling, draperies, furnishings, mirrors, or other objects.

**735.1k** 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.

**735.1l** Where there is more than one group occupancy within a building, exits from each occupancy shall conform to the requirements for such occupancy.

**735.1m** 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.

**735.1n** In buildings provided with elevators, instructional signs for use of exits shall be provided and conspicuously located at elevator landings and both inside and outside of stairways at every floor. Such signs shall be diagrammatic and identify exits to be used and advise occupants concerning floor evacuation procedures during a fire emergency.

**735.1o** High or moderate capacity heater rooms, refuse rooms, or rooms containing incinerators, 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 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 or lobby, the horizontal separation shall be of masonry construction having a fire-resistance rating of not less than 2 hours.

**735.1p.** Rooms more than 300 square feet in area containing equipment described in 735.1o 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.

## **735.2 Passageways, Ramps, Horizontal Exits and Fire Terraces**

**735.2a** Passageways, corridors, hallways and vestibules shall have a minimum floor-to-ceiling height of 7 feet 6 inches. They shall be designed to keep their length to a minimum, but in no event shall they exceed 100 feet in length without a smoke stop. Smoke stops 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 smokestop door, and release shall be actuated as set forth in section 1060.9.

**735.2b** If 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. The capacity of exit passageways, aisles, corridors and tunnels shall be based on the same unit exit widths as set forth in table V-735 for stairways.

**735.2c** Where passenger elevators discharge at the street floor into a corridor or passageway leading to the street, the corridor or passageway shall not be less than 5 feet in width for five elevators or fewer, 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.

**735.2d** Ramps which serve as an exit or part thereof shall have a gradient of more than 1 in 10, and their surfaces shall be non-slip. ramps shall conform to the requirements of section 733.5 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 36 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.

**735.2e** 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 of platform the full width of the ramp or stairs, but not less than 3 feet in length. Where a door enters upon a ramp there shall be a level area of platform extending at least one third the width of the door beyond the full 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.

**735.2f** 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 in walls shall be protected by opening protectives, and shall consist of adjacent opening having 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 IV-735. Bridges and open-air or enclosed balconies that form a part of a 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 735.3c-2.

**735.2g** The capacity of a horizontal exit shall be determined as for a doorway, in accordance with table V-735.

**735.2h** Fire terraces shall be provided on buildings of type 3 and 4 construction on sloping sites containing dwelling units if the building faces only one street or faces one street and another street on a lower level at the rear. Fire terraces are not required on buildings that front on three or more streets or are located on corner lots. Fire terraces shall extend the full length of the wall from which the setback is made and shall connect with an enclosed fire passageway which shall extend to the street at the front of the building. The minimum width of a fire terrace shall be 8 feet.

### **735.3 Stairways**

#### **735.3a General Requirements**

**735.3a-1** 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, and shall be provided with signs indicating said connection.

**735.3a-2** 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.

**735.3a-3** Roofs of buildings three or more stories high, with a slope of less than 15 degrees, which are accessible from stairways, fire escapes, or ramps, shall be protected with a parapet wall or railing not less than 3 feet in height.

**735.3a-4** Stairways which serve as a required exit from any story shall be so arranged, and of such size, construction, and materials that they provide safe ascent and descent. They shall terminate at street level and be connected to a street, a fire terrace or other legal open space, and they shall conform to all requirements of this section and table I-735. 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.

**735.3a-5** 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 opening shall be protected with adequate railings; handrails shall conform to the requirements of table I-735.

**735.3a-6** 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. Door saddles, if any, shall not be more than ¾-inch high, and their top edges shall be beveled or rounded.

**TABLE I-735 DIMENSION REQUIREMENTS FOR EXIT STAIRS,  
HANDRAILS, AND GUARDRAILS**

Component	Minimum <sup>1</sup>			Maximum		
	Height	Length	Width	Height	Length	Width
Vertical rise of any run or stairs .....				12 ft.		
Headroom over landing floors and tread nosing .....	7 ft					
Stairway .....			36 in. <sup>3</sup>			
Terminal and intermediate landing .....			36 in. <sup>2</sup>			
Tread exclusive of nosing <sup>2</sup> .....		36 in. <sup>3</sup>	9½ in.			
Riser <sup>2</sup> .....		36 in. <sup>3</sup>		7¾ 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.					
Openings in .....				48 in.		6 in.

<sup>1</sup> For required minimum width, see section 735.11

<sup>2</sup> The product obtained by multiplying height of riser by width of tread shall be not less than 70 nor more than 77½

<sup>3</sup> 44 inches in hotels and in group B4 occupancies. For landings see 735.3a-6.

**735.3a-7** 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 not 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 V-735, 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 percent and the door capacity by 50 percent where the entire building is equipped with a sprinkler system that is not otherwise required. No exit stairway shall exceed 132 inches in width.

**735.3a-8** Stair treads, risers, stringers and landings shall be solid. Treads shall be set level and true, and top surfaces shall not vary more than 1/8-inch in any run. Riser shall not vary more than 1/8-inch in height in any run.

**TABLE II-735 MINIMUM WIDTH OF EXIT DOORS<sup>1</sup>**

Location	Minimum width of doors in inches in spaces or buildings of below-listed occupancy	
	B1 and B3	B2 and B4
From a dwelling unit .....	36	36
From a corridor to an enclosed stairway .....	36	40 <sup>2</sup>
From a stairway to a door discharging to grade level or exterior .....	36	44 <sup>2</sup>
From a corridor through a fire wall crossing the corridor .....	36	44
From a dwelling unit or a sleeping room through a fire wall where 1 exit is permitted .....	36	36
From a dwelling unit or a sleeping room through a fire wall, where 2 exits are provided; each exit .....	28 <sup>4</sup>	28 <sup>4</sup>
From the main exit of a building to the exterior .....	36 <sup>2</sup>	44 <sup>2</sup>
From the emergency exit from a boiler room .....	22	22
From a boiler room having one exit .....	36	36
Through a doorway having double doors, except assembly space; each leaf .....	24 <sup>3</sup>	24 <sup>3</sup>
Doors, required for physically handicapped (clear opening) .....	32	32
Through an overhead garage door (wicket type) .....	28	28

<sup>1</sup> Where a space falls into more than one group occupancy, the larger door width shall be provided

<sup>2</sup> Minimum door width of 30 inches is permitted where there is more than one door in a doorway.

<sup>3</sup> 32 inches each leaf, where doorway is provided with center mullion.

<sup>4</sup> At least one door shall be 32".

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TABLE III-735 MAXIMUM DISTANCE OF TRAVEL TO EXITS<sup>1</sup>

Construction classification			Distance in feet	
			B1 B2	B3 B4
All types	From a door of a room within a dwelling unit	To entrance door of the dwelling unit <sup>1</sup>	50	50
All types	From any point in a garage	To a door opening into an exit stairway, legal open space or horizontal exit	75	75
Type 3, 4 and 5	From entrance door of an above-grade dwelling unit or sleeping room	To a door opening into an exit stairway <sup>2</sup>	50	40
Type 3, 4 and 5	From entrance door of a grade-level dwelling unit or sleeping room	To a door opening at grade level to a legal open space	50	40
Type 1 and 2	From entrance door of an above-grade dwelling unit or sleeping room	To a door opening into an exit stairway	100	75
Type 1 and 2	From entrance door of a grade-level dwelling unit or sleeping room	To a door opening at grade level to a legal open space	100	75

<sup>1</sup> Exits from dwelling units occupying part of not more than two stories may be from either story.

<sup>2</sup> In sprinklered buildings, where the sprinkler system is not required, the maximum distance shall be increased by 50 per cent, and where the sprinkler system is required, the maximum distance shall be increased by 25 per cent.

TABLE IV-735 FLOOR AREA PER PERSON  
In square feet

Occupancy	Below-grade floor areas	First-story floor areas	Floor areas above first floor
Habitable space			
Group B1, B2 and B3 .....	200	125	125
Group B4 .....	200	100	75
Nonhabitable space			
Storage .....	300	300	300
Motor vehicle garage on same premises with or in a multiple dwelling .....	300	300	300
Service .....	100	100	100

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**TABLE V-735 CAPACITY OF STAIRWAYS AND DOORS**  
**In number of persons per 22-inch unit of exit width**

Occupancy	Unsprinklered buildings		Sprinklered buildings	
	Stairs <sup>1</sup>	Doors	Stairs <sup>1</sup>	Doors
B1 and B2	50	80	100	120
B3	—	—	60	75
B4	40	60	80	90

<sup>1</sup> For increased capacity when story height exceeds 10 feet, see section 735.3a-7.

**735.3a-9** Stairs or steps shall have not less than three risers except as provided in 735.6a-6. Such stairs or steps shall have a guardrail on the open side, or a screened enclosure as set forth in 735.3c-2.

**735.3a-10** 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.

**735.3a-11** All landings shall be provided with guardrails on their open sides.

**735.3a-12** Handrails shall be started at the first tread both top and bottom, 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.

**735.3a-13** Not more than two required stairways shall discharge through a common passageway or lobby on the grade-level story to each street.

**735.3a-14** No winders shall be permitted in exit stairways.

**735.3a-15** Where the only exit from a dwelling unit is a door opening directly into a stairway which connects to a corridor, such stairway shall conform to the requirements of section 735.1 and of 735.3a-6, 735.3a-8, 735.3a-9, 735.3a-10, 735.3a-12 and 735.3a-14, and to the following:

- (i) Stairway shall have a minimum width of 36 inches.
- (ii) Stairway shall be enclosed in construction having the same fire-resistance rating as the corridor.
- (iii) Stairway shall have no openings to interior spaces other than those required for entrance to a dwelling unit and to the corridor, and these openings shall be equipped with self-closing opening protectives.

- (iv) The travel distance within such stairway shall be considered to be from a dead end as set forth in 735.1j.

### **735.3b Interior Stairways**

**735.3b-1** 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.

**735.3b-2** Stairs, treads, risers and landings shall be constructed of non-combustible material, except in buildings of type 4 or 5 construction, two stories or less in height.

### **735.3c Exterior Stairways**

**735.3c-1** 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.

**735.3c-2** 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 not be less than 4 inches nor more than 7¼ 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 tread, landings and platforms. In buildings three or more stories high, open sides or exterior stairways shall be protected with substantially constructed noncombustible screened enclosures at least 48 inches high. Adjacent wall openings shall be protected in conformity with 738.4a-1.

**735.3c-3** Exterior stairways constructed of wood are permitted on buildings of type 4 or 5 construction provided that such buildings do not exceed two stories in height. Bearing and supporting members for such stairways shall be not less than 4 inches, and all other members 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 constructed as set forth in table I-735.

**735.3c-4** The platforms and landings shall be guarded by railings, and the stairs by handrails, conforming to the requirements of table I-735.

**735.3c-5** Construction shall be in conformity with generally accepted standards.

**735.3c-6** Exterior stairways and landings on buildings more than two stories in height shall be protected with suitable overhead noncombustible construction.

## **735.4 Escalators**

**735.4a** 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 739.4d.

**735.4b** Escalators shall be installed in conformity with section 1062.8. 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 48 inches, which shall be considered as two units of exit width. The depth of the step tread in the direction of travel shall not be less than 15¾ inches, and the rise between treads shall not exceed 8½ inches. Landings shall be provided similar to those required for stairways.

**735.4c** No continuous rise shall be more than two stories or 40 feet.

**735.4d** The capacity of escalators used as exits shall be determined as for exit stairways.

## **735.5 Elevators**

**735.5a** Elevators shall not be in a common enclosing shaft with a stairway.

## **735.6 Doors and Doorways**

### **735.6a General Requirements**

**735.6a-1** Doors in required exits shall swing outward in the direction of exit travel, except that in buildings of Group B1 and B3 occupancy containing not more than 20 dwelling units, and having no mixed or accessory occupancy, the street entrance and vestibule doors may swing inward. Doors from dwelling units or sleeping rooms may swing inward. Doors on stairways shall not have openings therein. Doors on a corridor shall not have openings therein except that louvers are permitted in doors of toilet rooms.

**735.6a-2** 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 a normally closed position, or such doors 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 1060.9.

**735.6a-3** No swing-type exit door shall be more than 44 inches in width, nor less than that set forth in table II-735. Each unit of width for doorways shall be 22 inches, and credit for fractions of units shall not be allowed, except that a credit on one-half unit shall be allowed for 12 inches of clear width added to one or more 22-inch units in a 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.

**735.6a-4** 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 735.9. 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.

**735.6a-5** No doorway shall be less than 6 feet 8 inches in height.

**735.6a-6** 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 7¼ inches below the level of the door sill. A landing shall be provided at other than a main entrance, and shall be at least one riser above the adjoining grade.

**735.6a-7** Grade-level exit doors from required stairways and passageways shall be hung to swing without obstructing the required width of exit passage. In an area of public assembly, the main entrance doors shall not be considered as more than one half of the required exit width.

**735.6a-8** Exit doors from an area of public assembly shall be equipped with 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 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 or push side of the door. Where exit from such space leads to exits from dwelling units, main entrance doors of the building shall be provided with fire exit bolts. Fire exit bolts are not required on doors

without spring latches and which are unlocked when the space is occupied.

### **735.6b Revolving Doors**

**735.6b-1** Not more than 50 percent 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.

**735.6b-2** Wings of revolving doors shall be released by ordinary body pressure so that they shall readily fold back independently. The clear width of the resulting opening on each side shall be not less than 22 inches.

**735.6b-3** The capacity of revolving doors shall be computed from table V-735 on the basis of the minimum width of opening with the wings folded back.

**735.6b-4** Revolving doors shall not be permitted as a required exit from any building of group B4 occupancy.

### **735.7 Exit Enclosures**

**735.7a** Stairways from an open mezzanine, balcony, or other open tier above the main floor, or from buildings or structures without enclosing walls, are not required to be enclosed.

**735.7b** No openings shall be permitted in stairway enclosures except the required doors for entrance or exit as set forth in 735.1d, windows in exterior walls, and windows or skylights at roof.

**735.7c** Exits from upper stories shall be enclosed to the exterior of the building with construction which complies with the requirements set forth in table II-704. A lobby may be part of such enclosure provided it also meets such requirements and provided it is separated by fire separations and opening protectives from rooms or spaces in which there are combustible contents, in accordance with 739.1b and 739.4a.

**735.7d** 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 739.4d. 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.

**735.7e** 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.

**735.7f** A basement or cellar stairway from the first story of a multiple dwelling shall be enclosed, and the door openings at the top and bottom of such stairs shall be equipped with opening protectives.

### **735.8 Distance of Travel to, and Location of, Exits**

**735.8a** Exits shall be independent of and as remote from each other as is practicable, and shall be readily accessible to occupants of the building.

**735.8b** Exits shall be so located that the maximum distance of travel shall not exceed the distances shown in table III-735.

### **735.9 Determination of Required Widths, Number and Types of Exit**

**735.9a** Exits shall be provided in conformity with the requirements of Part 735. Every space and subdivision including a dwelling unit, fire area, story, mezzanine or roof, occupied or customarily used by persons, shall be provided with at least two exits except as set forth in 735.10 and except that where a story has no exit corridor an exit from that story is not required. The exit from a space on a story that has no exit corridor shall be an exit corridor on the next higher or lower story. The width, number and type of exits shall be determined in accordance with the following procedure:

First, using table IV-735, 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 person will be more than that computed by using table IV-735, 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 V-735, 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 table III-735 and section 735.10 determine the minimum number of exits required.

Fourth, establish the types of exits as set forth in 735.9b and 735.9c.

**735.9b** The number of exits required shall consist of enclosed stairways, with the following alternatives permitted where two or more enclosed stairways are required:

**735.9b-1** In buildings of Group B1 and B2 occupancy not exceeding six stories or 70 feet in height, one exterior stairway shall be permitted in lieu of one enclosed exit stairway

**735.9b-2** In buildings of Group B1 and B2 occupancy not exceeding two stories or 30 feet in height, required exit stairways may be exterior stairways as set forth in 735.3c

**735.9b-3** One horizontal exit in conformity with 735.2f shall be permitted in lieu of one enclosed stairway. Horizontal exits shall not be in excess of one half the total required number of exits from any one fire area

**735.9b-4** One ramp in conformity with 735.2d shall be permitted in lieu of one enclosed stairway

**735.9c** In Group B4 occupancy areas occupied by bedridden patients, which exceed 3000 square feet in buildings of type 2b, 3 or 4 construction, shall be provided with a horizontal exit, ramp, or other required exit directly to the exterior at grade level. There shall be no steps in such exits.

**735.9d** Where one exit is permitted for buildings not more than two stories in height, there shall be provided openings for emergency use in addition to the primary exit from a habitable space, except kitchens. Such openings shall include doors or windows, located so as to provide unobstructed egress to legal open space. Such window 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, with bottom of opening no higher than 3 feet 6 inches, not lower than 18 inches above finished floor in all above-grade stories, and no higher than 4 feet 6 inches where required in a basement.

**735.9e** In a two story building of Group B1 and B2 occupancy, an exterior balcony having at least two exterior stairways is permitted as the only exit under the following conditions:

**735.9e-1** Exterior balcony shall have no dead ends.

**735.9e-2** Balcony and stairway shall be constructed of heavy timber or noncombustible materials.

**735.9e-3** Exits from interior spaces shall open directly onto such balcony.

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**735.9e-4** Width of such balcony shall be at least 5 feet.

**735.10 Where One Exit is Permitted**

**735.10a** Not more than one exit is required in the following locations provided the maximum distance of travel to exits, as set forth in table III-735, is not exceeded:

**735.10a-1** Building of Groups B1 and B2 occupancy, one story in height, having direct exit to the exterior from each dwelling unit or from no more than four dwelling units or four sleeping rooms

**735.10a-2** Building of Groups B1 and B2 occupancy, two stories in height, having no more than four dwelling units or sleeping rooms on the second floor, where in each habitable space there is access to an opening (as set forth in 735.9d) having a sill not more than 14 feet above grade and directly below which sill there is level and unobstructed ground for at least 10 feet from the exterior wall, provided that:

- (i) the exit from the second story is an interior stairway leading directly to the exterior, having no more than one opening to a corridor on each story, and passage from a corridor on one level having habitable space to another level having habitable space shall be through at least two opening protectives; or
- (ii) there is an exterior stairway conforming to the requirement set forth in 735.3c; or
- (iii) the exit from the second story is an interior stairway with no openings to other parts of the building; or
- (iv) the interior exit is enclosed with construction having a fire resistance rating of at least 1 hour with openings to not more than 4 dwelling units on each of the two stories, a special sprinkler installation conforming to requirements of 1060.4h-4 is provided within each dwelling unit with at least one sprinkler head located on or near the ceiling adjacent to the exit door, and a single-station smoke detecting alarm device is installed at the top of the stair.

**735.10a-3** Dwelling unit, including a dwelling unit occupying not more than two stories

**735.10a-4** Sleeping room

**735.10a-5** Storage or service room less than 1000 square feet in floor area, except as set forth in 735.1p

- 735.10a-6** Fire area where subdivided into dwelling units, sleeping rooms or rooms for transient occupancy, where exit from fire area is the door from such dwelling unit, sleeping room or room
- 735.10a-7** Cellar or basement less than 2000 square feet in floor area and without habitable space or public space located therein; not applicable to areas in sub-cellars
- 735.10a-8** Public space less than 500 square feet in floor area
- 735.10a-9** Above-grade garages of 5000 square feet or less in floor area
- 735.10a-10** Mechanical equipment and boiler rooms not more than 300 square feet in area, housing low pressure boilers or housing high pressure boilers having a rated gross capacity of not more than 40,000 btu per hour
- 735.10a-11** A mezzanine not more than 2000 square feet in area and with no dimension greater than 50 feet; except that in assembly spaces, such area shall be not more than 500 square feet

## **PART 736 SAFETY GLAZING**

### **736.1 Glazing in Doors, Showers Stalls, Fixed Panels and Bathroom Enclosures**

**736.1a** 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.

**736.1b** 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 736.1a, or in lieu thereof in fixed panels, permanent construction shall be provided to guard against accidental human impact.

**736.1c** 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 740.1, 740.4 and 740.5.

**736.2 Identifications.** 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.

**PART 737 GARAGES AND OPEN PARKING STRUCTURES  
WITHIN OR ATTACHED TO MULTIPLE DWELLINGS****737.1 General Requirements**

**737.1a** 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.

**737.1b** A garage or open parking structure may be on the same premises with a multiple dwelling, provided it complies with the requirements of this code. Such garages or open parking structures shall be primarily for the storage or parking of passenger or motor vehicles. Washing and polishing of such motor vehicles shall be permitted.

**737.1c** Garages shall be arranged and constructed so that flammable vapors cannot spread to fixed sources of ignition or be transmitted through the heating or ventilating system to the multiple dwelling. Floors and decks shall be constructed of noncombustible materials that will not absorb flammable liquids, and each parking deck upon which vehicles are stored shall be pitched for drainage.

**737.1d** 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 735.6, with bottom of doors not more than 12 inches above floor level.

**737.1e** Where two or more exits are required, an automobile ramp connecting not more than 3 parking levels is permitted as one of the exits.

**737.1f** Ramps for vehicles shall not have a gradient of more than 1 in 7 and their surfaces shall be nonslip. Ramps leading to a street shall terminate not less than 20 feet from such street.

**737.1g** Roof decks used for parking or storage, and the open sides of parking decks, shall be protected with curbs, railing and bumper blocks as set forth in section 803.9.

**737.1h** Central heating equipment for a garage shall be separated as required in 739.4f, and all heating equipment installed in such garage shall comply with the requirements of 1000.2m.

**737.1i** Garage areas in excess of 100 square feet shall be provided with mechanical ventilation in conformity with section 1004.2.

**737.1j** Garages shall be provided with fire protection equipment in conformity with Part 1060.

**737.1k** Garage areas shall be provided with electric light in conformity with 1031.1b in addition to any natural light.

**737.1l** Enclosure walls shall not be required on open parking structures except on sides located within 10 feet of an interior lot line. No temporary enclosure of combustible material shall be used where enclosure walls are omitted.

**737.1m** Parking or storage shall not be permitted in a story more than 4 feet below the curb level unless that story or parking level is of type 1 construction.

### **737.2 Garages Within Multiple Dwellings**

**737.2a** Garages within a multiple dwelling shall be separated from the multiple dwelling by fire separations as set forth in 739.4g.

**737.2b** Access between a multiple dwelling and a garage within the multiple dwelling shall be permitted as set forth in 739.4g.

**737.2c** The sale, storage, or handling of gasoline or other flammable liquids and the repair and refinishing of motor vehicles shall be prohibited.

### **737.3 Garages and Open Parking Structures Attached to Multiple Dwellings**

**737.3a** Garages and open parking structures which are attached to, or structurally integrated with, a multiple dwelling shall be separated from the multiple dwelling by fire separations as set forth in 739.4g.

**737.3b** Access between a multiple dwelling and a garage or open parking structure attached to a multiple dwelling shall be permitted as set forth in 739.4g-1.

### **737.4 Garages and Open Parking Structures on Premises of Multiple Dwellings**

**737.4a** A garage or open parking structure on the same premises with a multiple dwelling, but not attached, shall be separated from the multiple dwelling by distance or construction as set forth in section 738.2.

**PART 738 PREVENTION OF EXTERIOR FIRE SPREAD****738.1 General Requirements**

**738.1a** In order to retard the spread of fire, multiple dwellings and accessory structures shall be located and constructed so that the distance between buildings and the fire resistance of exterior walls and of roof coverings are commensurate with the fire hazard involved.

**738.1b** The minimum fire-resistance ratings of the exterior walls of multiple dwellings and accessory structures, including those of air intakes and fire passages, shall be those set forth in table II-704.

**738.2 Distance Separations**

**738.2a 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 to an interior lot line.

**738.2b When Required**

**738.2b-1** Distance separations set forth in table I-738 shall be required except as provided in 738.2b-2.

**738.2b-2** Distance separations shall not be required between buildings on the same premises when either building is one story in height and has an area of not more than 100 square feet.

**738.2b-3** Exterior walls or portions thereof may encroach upon the distance separation required to 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.

**738.2b-4** When the height or construction of the exterior walls of the proposed and existing buildings is not the same, the applicable distance separation shall be that set forth for the higher building or for the building having exterior walls with the lower fire-resistance rating, whichever is the greatest distance.

**738.2b-5** The minimum distance separation for an open side of an open parking structure shall be 10 feet.

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TABLE I-738 MINIMUM DISTANCE SEPARATIONS IN FEET

Fire limits	Height in stories	Noncombustible walls with fire-resistance ratings of —			Combustible walls with noncombustible exterior facings giving protection of —		Combustible walls with combustible exterior facings
		At least 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	1	0	5	8	np	np	np
	2	0	10	12	np	np	np
	3 or more	0	15	15	np	np	np
Outside the fire limits	1	0	5	5	5	5	8
	2	0	5	8	8	10	10
	3 or more	0	8	10	np	np	np

**738.3 Construction Limitations****738.3a Construction Limitations Within Fire Limits**

**738.3a-1** Buildings may be of any type of construction other than type 5 providing they conform to the height and fire-area limitations set forth in Part 705 including tables II-705, III-705, IV-705 and V-705, and the distance separations conform to the requirements set forth in 738.2b including table I-738.

**738.3a-2** 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 I-738, 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.

**738.3a-3** Open and enclosed balconies and porches shall be constructed of noncombustible materials.

**738.3b Construction Limitations Outside the Fire Limits**

**738.3b-1** Buildings may be of any type of construction providing they conform to the height and fire-area limitations set forth in Part 705, including tables II-705, III-705, IV-705 and V-705, and the distance separations conform to the requirements set forth in 738.2b including table I-738.

**738.3b-2** 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 I-738 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.

**738.3b-3** Multiple dwellings of type 5 construction shall have not more than eight dwelling units in such building or each part of a building within fire walls.

**738.3b-4** Open porches, verandas and balconies or enclosed porches with at least 60 per cent of glass area on three sides and serving not more than three dwelling units, may be constructed of combustible materials provided they do not extend outward more than 10 feet from the building, or upward more than 4 feet above the ceiling of the story which they serve, and are not less than 5 feet distant at any point from a lot line or from similar appurtenances on another building; if they exceed said limitations or serve as horizontal exits, they shall be constructed of noncombustible materials.

**738.4 Protection of Openings in Exterior Walls****738.4a General Requirements**

**738.4a-1** Primary glazing in windows in exterior walls of buildings may be plastic materials provided that on each story such glazing does not exceed 25 percent of the area of the wall having the glazing, 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 Part 741.

**738.4a-2** Exterior wall openings located less than 3 feet from an interior lot line shall be equipped with opening protectives.

**738.4a-3** Exterior wall openings less than 10 feet from an opening in a facing wall shall be equipped with opening protectives.

**738.4a-4** 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:

- (i) Between openings there is at least 3 feet vertical separation, or 2 feet horizontal extension, having the required fire-resistance rating.
- (ii) One of the openings contains air-conditioning equipment and there is at least 2 feet vertical separation, or two feet horizontal extension, having 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.

**738.4a-5** Exterior wall openings less than 30 feet above the roof of an extension, or at an adjacent building located within a horizontal distance of 10 feet, shall be equipped with opening protectives, unless the roof construction of such extension or the adjacent building has a fire-resistance rating of 1 hour or more.

**738.4a-6** Exterior wall openings less than 10 feet from an exterior stairway, or an unenclosed bridge or balcony serving as an exit, shall be equipped with opening protectives, except as set forth in 735.9e.

**738.4a-7** 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.

#### **738.4b Fire Resistance of Exterior Wall Opening Protectives**

**738.4b-1** Fire-resistance ratings of required exterior wall opening protectives shall be at least  $\frac{3}{4}$  hour. The size of wired glass panels or other glazing materials in such opening protectives shall be in conformity with generally accepted standards.

#### **738.5 Eaves, Cornices and Exterior Trim**

**738.5a** 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 738.5b.

**738.5b** Eaves and cornices of combustible construction as set forth in section 738.5 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.

**738.5c** Where eaves and cornices of combustible construction, as set forth in 738.5a, 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.

### **738.6 Roof Coverings**

**738.6a** Roof coverings shall be capable of resisting fire commensurate with the severity of exposure and shall be installed in conformity with generally accepted standards.

**738.6b Classification.** Roof coverings shall be classified on the basis of their resistance to exterior fire exposure as determined by tests made in conformity with generally accepted standards, as follows:

**738.6b-1** Class A, B or C roof coverings are those which are capable of resisting severe, moderate or light fire exposure, respectively, and which do not give off flying brands

**738.6b-2** Nonclassified 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

### **738.6c Limitations of Use**

**738.6c-1** Within the fire limits, roof coverings, with or without insulation, shall be class A or B, 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 C roof coverings may be used

**738.6c-2** Outside the fire limits, roof coverings, with or without insulation, shall be class A, B or C, 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, nonclassified roof coverings or wood shingles may be used

### **738.6d Skylights**

**738.6d-1** Skylights and roof panels shall conform to the requirements for roof coverings as set forth in section 738.6 except as provided in 738.6d

**738.6d-2** 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 Part 741, 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

**738.6d-3** Skylights and roof panels, in roofs required to have a fire-resistance rating, are permitted to be glazed with plastic as set forth in Part 741 provided that the aggregate area of such material does not exceed 20 percent of the space below the skylight or panel, that the area of each such skylight or panel does not exceed 100 square feet, and that the distance between them is at least 10 feet

**738.6d-4** Skylights shall be mounted above the plane of the roof

**738.6d-5** 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 739.4d-9

**738.6d-6** Glazing in skylights and roof panels shall be readily breakable or removable in an emergency

### 738.7 Parapet Wall

**738.7a** Parapet walls shall be provided on exterior walls of buildings of type 3 and 4 construction more than one story high, when 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.

**738.7b** The height and fire-resistance ratings of parapet walls shall be in accordance with table II-738.

**TABLE II-738 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

### 738.8 Party Walls

#### 738.8a General Requirements

**738.8a-1** 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.

**738.8a-2** Openings shall not be permitted in party walls.

### **738.8b Construction**

**738.8b-1** Party walls shall form a continuous fire and smoke barrier between adjoining buildings from foundation to or through the roof. 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

**738.8b-2** 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 II-738, 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  $\frac{3}{4}$  hour, a party wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight

**738.8b-3** 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 as 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

**738.8b-4** 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

### **738.8c Fire Resistance**

**738.8c-1** The fire-resistance ratings of party walls shall be as set forth in table II-704 except as otherwise set forth in this section

**738.8c-2** The fire-resistance ratings of party walls between one-story multiple dwellings without a basement shall be at least 1 hour

**738.8c-3** The fire-resistance ratings of party walls between a multiple dwelling and an building containing a nonresidential occupancy of low, moderate or high hazard classification shall be at least 2, 3 or 4 hours respectively

**738.8d Combustible Facing on Noncombustible Exterior Walls**

**738.8d-1** A building classified as low or moderate hazard, located inside or outside fire limits, is permitted to have combustible exterior facing on a masonry exterior wall without affecting the construction classification of the building or reducing the fire-resistance rating of the wall, provided the installation is as follows:

**TABLE III-738 COMBUSTIBLE FACING  
ON NON COMBUSTIBLE EXTERIOR WALLS**

Surface flame spread rating of combustible building facing	Maximum allowable height of building	Maximum allowable area of combustible facing
0 to 10	Unlimited	Unlimited
11 to 25	2 Stories	Unlimited
Over 25	2 Stories	10 percent of the area of the wall on which the facing is mounted

**738.8d-2** Concealed spaces between the combustible exterior facing and the masonry wall shall be filled with noncombustible material or firestopped so that no dimension exceeds 8 feet vertically or 20 feet horizontally. Firestopping shall be of material having a flame-spread rating at least equivalent to the flame-spread of the facing.

**738.8d-3** Where combustible exterior facing has a total area exceeding 10 percent of the area of the wall on which it is mounted, the distance between such facing and another building or interior lot line shall be not less than 15 feet.

**PART 739 PREVENTION OF INTERIOR FIRE SPREAD****739.1 General Requirements**

**739.1a** 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 II-704, except as required by 739.2b. The fire-resistance ratings of the structural elements or members shall be determined in conformity with generally accepted standard fire test procedure.

**739.1b** Rooms and spaces used for purposes involving a fire hazard, including among others, rooms for storage of combustible materials, paint

and repair rooms, kitchens and pantries serving dining rooms, garages and rooms for incinerators and heating equipment, shall be enclosed by fire-resistive construction as set forth in section 739.4 or shall be provided with fire-protection equipment as set forth in Part 742.

**739.1c** Exits, including pasageways, hallways and stairways, and elevators and dumbwaiter hoistways, escalators, shafts and other openings in floors shall be enclosed or protected as set forth in 739.4d.

**739.1d** Space within multiple dwellings used for occupancies other than residential or accessory shall be separated from space used for residential purposes as set forth in 739.4a.

**739.1e** In buildings of type 1 and 2 construction not more than 150 feet in height, nonbearing partitions within a dwelling unit may be constructed of fire-retardant wood.

**739.1f** Construction not required to have a fire-resistance rating may have combustible doors having no fire-resistance rating.

**739.1g** Flammable materials shall not be permitted as insulation or fill.

## **739.2 Fire Walls**

**739.2a Fire Area.** The floor area per story of buildings shall be divided by fire walls into fire areas in accordance with Parts 704 and 705 including tables II-705, III-705, IV-705 and V-705.

### **739.2b Construction**

**739.2b-1** Fire walls shall form a continuous fire and smoke tween fire areas from foundation to or through the roof, except that a fire wall may be offset beat 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.

**739.2b-2** 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 II-738. Where a roof is of noncombustible construction having a fire-resistance rating of at least  $\frac{3}{4}$  hour, a fire wall may terminate at the underside of the roof providing the junction of the wall and the roof is made smoketight.

**739.2b-3** 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.

**739.2b-4** 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.

**739.2b-5** 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.

### **739.2c Fire Resistance**

**739.2c-1** The fire-resistance ratings of fire walls shall be as set forth in table II-704, except as otherwise set forth in this section.

**739.2c-2** The fire-resistance ratings of fire walls in one-story multiple dwellings without a basement shall be at least 1 hour.

### **739.3 Protection of Columns, Beams, Girders and Trusses in Buildings of Type 1 and 2a Construction**

**739.3a** Columns and vertical suspension members shall be individually encased throughout their length by fire-protective materials having fire-resistance ratings prescribed in table II-704, except as provided in 739.3d and 739.3e.

**739.3b** Beams, girders and trusses supporting more than one floor, or roof and at least one floor, shall be individually encased throughout their length by fire-protective material having fire-resistance ratings prescribed in table II-704, except as provided in 739.4d and 739.4e.

**739.3c** 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 II-704, except as provided in 739.3d and 739.3e.

**739.3d** Where beams, girders and other structural members are fire-protected by a continuous ceiling, the concealed space above such ceiling

shall be firestopped or divided with noncombustible material into areas not exceeding 3000 square feet, with no dimension greater than 100 feet. Solid-web steel beams or girders may serve as part of such firestopping. Access to such concealed space shall be through a single opening having dimensions not to exceed 3 feet in either direction and protected by an opening protective conforming to the requirements set forth in section 739.5.

**739.3e** That portion of the 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 table I-738 for non-combustible walls with a fire-resistance rating of less than  $\frac{3}{4}$  hour, and provisions are made to limit the average rise in temperature of the steel under fire conditions to 1000° F.

**739.3f** 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.

**739.3g** 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 II-704, except as provided in 739.3e.

#### **739.4 Division by Fire Separations**

##### **739.4a Separation of Occupancies**

**739.4a-1** Nonresidential occupancies in or attached to a multiple dwelling shall be separated from the multiple dwelling occupancy by fire separations having fire-resistance rating in conformity with the requirements of table I-739, except as otherwise provided in this section.

**739.4a-2** Openings in separations between nonresidential occupancies and lobbies or corridors shall be equipped with self-closing opening protectives. When opening protectives are not provided, the opening shall not exceed 35 square feet in area and shall be protected by sprinkler head on each side of the opening.

**739.4a-3** Where a 2 hour fire separation is required, such separation behind display windows in lobbies and exit corridors shall be permitted to be reduced to at least 1 hour, provided the space used for display is sprinklered. Access openings to such display space shall be equipped with self-closing opening protectives.

**739.4a-4** Vending 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 or interfere with any part of a required exit.

**739.4a-5** Mixed occupancies shall not be permitted in buildings of type 5 construction.

**TABLE I-739 MINIMUM FIRE SEPARATION REQUIRED BETWEEN OCCUPANCIES**  
(Fire-resistance ratings in hours)

<b>Occupancy</b>	<b>B1, B2, B3, B4</b>
Business .....C1 .....	1
Mercantile .....C2 .....	2 <sup>1</sup>
Industrial .....C3.1 .....	np
.....C3.2 .....	np
.....C3.3 .....	np
Storage .....C4.1 .....	2 <sup>2,3</sup>
.....C4.2 .....	np <sup>3</sup>
.....C4.3 .....	np
Assembly .....C5.1 .....	2 <sup>4</sup>
.....C5.2 .....	3
.....C5.3 .....	3
.....C5.4 .....	2
.....C5.5 .....	2
Institutional .....C6.1 .....	2
.....C6.2 .....	3
.....C6.3 .....	np

<sup>1</sup> 1 hour for accessory use. For C2 mixed occupancy and exits therefrom, an automatic sprinkler system conforming to section 1060.4 shall be provided.

<sup>2</sup> For garages, see 739.4g.

<sup>3</sup> Accessory storage rooms permitted. See 739.4c.

<sup>4</sup> See also Article 6. One hour for less than 50 persons. No separation is required for accessory coffee shops or similar occupancies.

### **739.4b Construction**

**739.4b-1** Fire separations and their supporting construction shall form a continuous fire and smoke barrier.

**739.4b-2** Fire separations between residential and other than residential occupancies shall be continuous, and any openings therein shall be protected with self-closing opening protectives.

**739.4b-3** Separation between tenancies shall extend through any concealed space of the floor, ceiling or roof construction above.

**739.4b-4** At the topmost story, vertical tenant separation shall be permitted to terminate at the underside of the ceiling, provided that the finished ceiling

as constructed in type 1 and 2a construction has a 1 hour fire-resistance rating, and in type 2b, 3, 4 and 5 construction has a  $\frac{3}{4}$  hour fire-resistance rating

#### **739.4c Enclosure of Storage and Service Rooms**

**739.4c-1** Carpenter, repair and paint shops, and other 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. When such shops or rooms are located within a multiple dwelling, the enclosing construction shall have no more than a single opening leading to space within a multiple dwelling. Such opening shall be protected by a self-closing  $1\frac{1}{2}$  hour opening protective. Such storage rooms may contain individual tenant storage spaces. If individual tenant storage rooms are provided, other than in general storage rooms, such individual tenant storage rooms may be enclosed with partitions of 1 hour fire-resistance rating

**739.4c-2** Packing, receiving and shipping rooms shall be enclosed by construction having a fire-resistance rating of at least 2 hours. Space for the loading and unloading of motor vehicles shall be protected in conformity with the requirements of 739.4g-5

#### **739.4d Enclosure of Exits, Stairways, Hoistways and Shafts**

**739.4d-1** Exits, including stairways and hallways forming a part thereof, shall be enclosed with construction having minimum fire-resistance ratings as set forth in table II-704. Lobbies may be a part of such enclosed exits provided they are within the enclosure and are separated from nonresidential space as set forth in 739.4a

**739.4d-2** Elevator and dumbwaiter hoistways, escalators and shafts shall be enclosed with construction having minimum fire-resistance ratings as set forth in table II-704 except when located as set forth in 739.4d-3 and 739.4d-4

**739.4d-3** Escalators and stairways 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

**739.4d-4** Enclosures for intercommunicating stairs or escalators shall not be required when such stairs or escalators pass through only one floor to a room in each of the two stories which they connect. Such rooms

shall be enclosed with construction having a fire-resistance rating of at least 1 hour, area of each room shall not exceed 1000 square feet.

- 739.4d-5** Basement or cellar stairs shall be enclosed and separated at the grade-level story from stairs leading to or from the upper stories, and shall have the openings at the top and bottom of such enclosures protected with self-closing opening protectives.
- 739.4d-6** Openings in enclosures for exits and stairways shall be protected with opening protectives conforming to the requirements set forth in section 739.5.
- 739.4d-7** Corridors and hallways which are separated from enclosed exit stairs by fire separations with opening protectives meeting the requirements set forth in section 739.5 shall be enclosed with construction having a fire-resistance rating of a least 1 hour.
- 739.4d-8** 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 percent 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, or 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 739.4d-9. In lieu of the open-type vent, automatic louvers or vents shall be furnished, provided they are equipped with automatic operation, a smoke detector shall be provided at each 50 feet of shaft height, with the topmost detector within 3 feet of the vent, and release shall be actuated as set forth in section 1060.9.
- 739.4d-9** Stairways, shafts or hoistways serving the topmost story of a building and extending 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.

**739.4d-10** Elevator and power dumbwaiter machine rooms directly connected with hoistways shall be enclosed in walls of non-combustible 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.

**739.4d-11** 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 738.4 and 739.5.

#### **739.4e Enclosure of Kitchens, Cooking Spaces and Dining Rooms**

**739.4e-1** Kitchens and pantries serving dining 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 1060.4h is provided in such kitchens and pantries.

**739.4e-2** Openings between a kitchen or pantry and a dining room shall be provided with opening protectives as follows:

- (i) Automatic or self-closing 1½-hour opening protectives where the kitchen or pantry is not sprinkled; or
- (ii) Automatic or self-closing ¾-hour opening protectives where the kitchen and pantry are sprinkled.

**739.4e-3** Openings between a kitchen or pantry and a dining room shall be permitted without opening protectives as follows:

- (i) The kitchen and pantry shall be equipped with a special sprinkler installation.
- (ii) A hood exhaust system for cooking equipment shall be provided and protected with a fixed-pipe fire extinguishing system.
- (iii) A noncombustible draft curtain shall extend down a minimum of 24 inches from the ceiling above the opening.

- (iv) 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 6 feet apart, except that such sprinkler protection of the opening need not be provided where exits required from the dining room open directly to the exterior at grade.

**739.4e-4** Kitchens in motels shall be separated from sleeping areas by fire separations having a fire-resistance rating of at least 1 hour.

**739.4e-5** Cooking spaces other than kitchens which are combined with or located adjacent to or within dining areas, shall be separated from the dining area by a smoke and draft baffle.

**739.4e-6** Dining rooms 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.

#### **739.4f Enclosure of Heat Producing Equipment and Refuse Rooms**

**739.4f-1** High capacity heater 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.

**739.4f-2** Moderate capacity heater rooms shall be located in a separate room enclosed by construction having a fire-resistance rating of at least 1 hour.

**739.4f-3** Low capacity heater rooms shall not be required to be enclosed. Where an enclosure is provided for such equipment, the enclosure shall be a fire-resistance rating of at least  $\frac{3}{4}$ -hour, and an interior finish providing at least 10 minutes of fire protection to the combustible members. Where such heat producing equipment within an enclosure serves one dwelling unit, openings in one interior wall shall be permitted without opening protectives.

**739.4f-4** Fuel-burning equipment for garages shall be located in separate buildings or in rooms enclosed by vaportight noncombustible construction having a fire-resistance rating of at least 2 hours except as set forth in 1000.2m-1. Entrance to enclosed heater rooms shall be from the outside of the building, or through a vestibule ventilated in conformity with the requirements of 1004.2a-3. Interior wall openings in such enclosing construction shall be limited to those necessary for the passage of heating pipes and ducts. The space around such pipes and ducts shall be sealed with noncombustible material.

**739.4f-5** Boilers having a rated gross capacity of less than 40,000 Btu per hour for generating steam for accessory cleaning and pressing shall not be required to be enclosed and are excluded from the provisions of this section.

**739.4f-6** Incinerator rooms and spaces for the temporary storage of refuse shall be enclosed by noncombustible construction having a fire-resistance rating of not less than 2 hours with a single opening protected by a self-closing 1½-hour opening protective.

**739.4f-7** Chimneys for incinerators shall be of noncombustible material and shall be constructed in conformity with the requirements for chimneys as set forth in Part 1005.

**739.4f-8** Openings in fire separations for the passage of refuse shall be provided with an opening protective or with sprinkler heads.

#### **739.4g Separation of Garages and Open Parking Structures from Multiple Dwellings**

**739.4g-1** Each garage area of 1000 square feet or less in, or attached to a multiple dwelling, shall be separated from the multiple dwelling by construction having a fire-resistance rating of at least ¾-hour but not less than that required for the members and structural elements of the multiple dwelling. Only one opening shall be permitted in the separation between the garage and multiple dwelling, and such opening shall be equipped with a self-closing opening protective having a fire-resistance rating of at least ¾-hour.

**739.4g-2** Each garage area of more than 1000 square feet in, or attached to, a multiple dwelling shall be separated from the multiple dwelling by noncombustible construction having a fire-resistance rating of at least 2 hours but not less than that required for the members and structural elements of the multiple dwelling. Access between such a garage and multiple dwelling shall be through a vestibule of 2 hour fire-resistive construction, ventilating directly to the outer air, as set forth in 1004.2a-3. The top of the sill in a door opening between such vestibule and garage, or the floor of such vestibule, shall be at least 8 inches above the level of the garage floor. The distance between the openings into and from the vestibule shall be not 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.

**739.4g-3** Open parking structures attached to a multiple dwelling shall be separated from the multiple dwelling by noncombustible construction having a fire-resistance rating of at least 1 hour but not less than that

required for the members and structural elements of the multiple dwelling. Access between the open parking structure and multiple dwelling shall be permitted at any level, and such openings shall be protected with self-closing opening protectives having a fire-resistance rating of at least  $\frac{3}{4}$ -hour.

**739.4g-4** Dispensing of gasoline and the greasing and repair of motor vehicles shall not be permitted in garages or open parking structures.

**739.4g-5** Where space is provided within multiple dwellings for loading or unloading of motor trucks, such space shall be enclosed with noncombustible construction having a fire-resistance rating of at least 2 hours, with interior wall openings protected with automatic or self-closing opening protectives having a fire-resistance rating of at least  $1\frac{1}{2}$  hours.

**739.4g-6** For purposes of this Code, a carport with no more than two enclosing walls shall not be deemed to be a garage.

### **739.5 Openings in Fire Walls and Fire Separations**

**739.5a** 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 II-739, except as otherwise permitted in 739.4d and 739.5b. Opening protectives shall be equipped with devices conforming to the requirements of 735.6a-2.

**739.5b** Vision panels conforming to the requirements of generally accepted standards shall be permitted in  $\frac{3}{4}$ -hour and  $1\frac{1}{2}$ -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.

**739.5c** In fire separations having a fire-resistance rating of at least three hours, an opening 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 separation and so that both operate automatically when either is exposed to fire in the duct. In fire separations required to have a fire-resistance rating of 2 hours, an opening shall be protected with a fire damper shutter, except that such protection shall not be required in ducts having an area of 20 square inches or less.

**739.5d** Service openings for incinerators shall be equipped with self-closing  $\frac{3}{4}$ -hour opening protectives, arranged so that there is no opening into the flue when the hopper is being filled.

**739.5e** Exit doors in fire-rated corridors, except in firewalls, stairway and hoistway shafts, shall be permitted to be of combustible construction provided that the door and frame bear the classification rating of a nationally recognized testing agency as required by table II-739.

**TABLE II-739 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 more	3
2	1½
1 or ¾	¾

### **739.6 Firestopping**

#### **739.6a General Requirements**

**739.6a-1** Concealed spaces within wall, ceiling, partition, floor, stair, attic or cornice construction, 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

#### **739.6b Materials.**

**739.6b-1** Firestopping or fill shall be of nonflammable material which can be shaped, fitted and permanently secured in position

**739.6b-2** 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

**739.6b-3** Combustible firestopping materials may be used in buildings of type 3, 4 and 5 construction, except as provided in 739.6b-2

#### **739.6c Location.**

**739.6c-1.** Concealed vertical spaces in walls and partitions shall be firestopped at each floor level and at the ceiling of the uppermost story so that such spaces will not be continuous for more than one story, nor communicate with concealed horizontal spaces in the floor or roof construction

**739.6c-2.** When combustible materials form a part of the concealed space between surface finish and the base to which they are applied, the concealed space shall be filled with noncombustible material or firestopped so that no dimension of such concealed space exceeds 8 feet vertically or 20 feet horizontally

- 739.6c-3.** Space between floor joists, where ceilings are attached or furred directly to the joists, shall be firestopped for the full depth of the joists at all points of support, under supported walls and partitions having a required fire resistance rating, and under all partitions separating dwelling units.
- 739.6c-4.** 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.
- 739.6c-5.** Exterior cornices and eaves shall be firestopped at the ends of fire and party walls, and at intervals of not more than 20 feet.
- 739.6c-6.** The space in attics or between floor or roof construction and a ceiling shall be firestopped so that no area of such concealed space shall be greater than 3000 square feet, with no dimension greater than 100 feet.

## **PART 740 INTERIOR FINISHES, INTERIOR FLOOR FINISH, TRIM AND DECORATIVE MATERIALS**

### **740.1 General Requirements**

**740.1a** Interior finish materials used for acoustical correction, surface insulation and decorative treatment on the surfaces of walls and ceilings, interior floor finish, interior trim materials, and decorative materials shall conform with all requirements set forth in this section.

**740.1b** Such items shall be of materials that will not, in burning, give off excessive amounts of smoke or objectionable gases.

### **740.2 Interior Finish**

**740.2a Classification of Interior Finish Materials.** Interior wall and ceiling finish materials shall be classified in accordance with their surface flame-spread ratings as determined by tests conducted in conformity with generally accepted standards, and as follows:

**TABLE I-740 CLASSIFICATION OF INTERIOR FINISH MATERIALS**

Class	Surface flamespread rating
A	0 to 25
B	26 to 75
C	76 to 200
D	201 to 500

**740.2b Use of Interior Finishes**

**740.2b-1** Interior wall and ceiling finishes in multiple dwellings shall be as set forth in table II-740 except as otherwise provided in this section.

**740.2b-2** Spaces in which class C finish is used shall be enclosed by construction having a fire-resistance rating of at least  $\frac{3}{4}$ -hour.

**740.2b-3** Class D finish shall not be used in multiple dwellings.

**740.2b-4** Where 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.

**740.2b-5** Luminous ceilings which have a heat distortion point of 200°F. or less shall not be permitted in exits and areas of public assembly. 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 between supports.

**740.2b-6** 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.

**TABLE II-740 INTERIOR FINISH IN MULTIPLE DWELLINGS**

Location	Class of Interior Finish
Enclosed stairways, passageways and exits .....	A
Passageways and corridors not a part of an enclosed exit .....	A or B
Kitchens and pantries, paint and repair rooms, storage rooms, and similar fire hazardous areas .....	A
Other locations in group B1 and B2 occupancy .....	A, B, or C
Other locations in group B3 and B4 occupancy .....	A or B

**740.3 Interior Floor Finish**

**740.3a Classification.** Class 1 carpeting shall have a minimum critical radiant flux of 0.45 watts per square centimeter. Class 2 carpeting shall have a minimum critical radiant flux of 0.22 watts per square centimeter.

**740.3b Use of Interior Floor Finish**

**740.3b-1** In exits, stairways and passageways carpeting shall be Class 1, except that in a sprinklered building Class 2 shall be permitted.

**740.3b-2** Finish flooring of wood or other combustible materials may be used in any location except in boiler rooms required to have at least a one hour fire-resistance rating, in high hazard spaces, and in exits of buildings more than three stories in height.

**740.4a** In buildings of type 1 and 2 construction, interior trim in exits, stairways and passageways shall be noncombustible of fire-retardant lumber, except that handrails may be combustible.

**740.4b** Interior wood trim is permitted wherever class B or C interior finish is required, except as set forth in 740.4a above.

**740.5 Attachment of Interior Finish and Trim**

**740.5a** 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 that 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.

**740.5b** Interior wall and ceiling finishes which are less than 1/8-inch thick may be used when mounted directly on non-combustible material.

**740.5c** Interior finish materials applied to walls and ceilings required to be of noncombustible construction, shall be applied directly to a noncombustible base or to furring or nailing strips which do not exceed 1 3/4 inches in nominal thickness. Concealed space between finish materials and noncombustible base shall be firestopped in conformity with the requirements set forth in 739.6c-2.

**740.5d** When class C finishes are set out from walls or ceilings more than 1 3/4 inches, they shall be attached directly to noncombustible backing.

**740.5e** In multiple dwellings not more than three stories in height or which contain fewer than thirty sleeping rooms for transient occupancy, interior finish materials may be applied directly to combustible structural members or to a combustible base.

**740.5f** 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 740.4c shall be attached directly to the base, and concealed spaces, if any, shall be filled with noncombustible material.

**740.6 Use of Draperies and Other Decorative Materials**

**740.6a** In assembly spaces and exits of multiple dwellings, draperies, hangings and decorative fabrics and plastics shall be noncombustible or flame-resistant, as determined by tests made in conformity with generally accepted standards.

**PART 741 PLASTIC MATERIALS****741.1 General Requirements**

**741.1a** Plastic materials shall be classified in accordance with their burning characteristics, as determined by tests conducted in conformity with generally accepted standards.

**741.1b** Plastic materials in exits shall be legibly marked to identify the burning characteristics.

**741.1c** The requirements of this section are limited to construction regulated by this Code, and shall not regulate plastic materials as permitted in Articles 7, 8, 9, 10, 11 and 12 of this Code.

**741.1d** 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, as determined by tests conducted in conformity with generally accepted standards, shall not be permitted.

**741.1e** Plastic materials used for light transmission in artificial lighting equipment are not required to conform to flamespread ratings for interior finish, provided they conform to the following:

**741.1e-1** Fall from their frames at a temperature at least 200°F. below their ignition temperature; for exception, see 740.3f

**741.1e-2** Remain in place for at least 15 minutes at 175°F

**741.1e-3** Smoke density rating as tested in conformity with generally accepted standards for plastic material is not over 75

**741.1f** Plastic materials for construction of structural elements shall not be permitted in buildings of group B3 and B4 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.

**741.1g** 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.

**741.1h** One-story accessory structures, located at grade level, 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.

## **741.2 Foam Plastic**

**741.2a** Foam plastic insulation, except as set forth in 741.2b and 741.2c, shall have a surface flame-spread rating no greater than 75 and a smoke density rating no greater than 450 and shall be permitted as follows:

**741.2a-1** Within the cavity of a concrete or masonry wall

**741.2a-2** On the interior surface of concrete or masonry walls provided the foam plastic insulation is protected by a thermal barrier

**741.2a-3** Within combustible wall, roof, floor or ceiling assemblies that are not required to have a fire-resistance rating, provided the foam plastic insulation is protected on the interior side by a thermal barrier

**741.2a-4** As nonstructural sheathing for combustible exterior walls, provided the wall cavity is insulated with noncombustible material covered by a thermal barrier on the interior side

**741.2b** Foam plastic shall be permitted as a component of an approved built-up roof.

**741.2c** Foam plastic shall be permitted as an integral component within a wall, roof, floor or ceiling assembly, approved for the intended use.

## **PART 742 FIRE PROTECTION EQUIPMENT**

### **742.1 Alternate Requirements**

**742.1a** A fire- and smoke-detecting system installed in conformity with section 1060.3 shall be permitted in lieu of a required fire alarm system, or the required special sprinkler installation as set forth in 742.2b, 742.4b or in lieu of both.

**742.1b** A special sprinkler installation provided in accordance with 742.4b and installed in conformity with 1060.4h-4 shall be permitted in lieu of a required corridor sprinkler system.

**742.1c** Except in hotels, motels, lodging houses and dormitories, a sprinkler system installed in conformity with section 1060.4 shall be permitted in lieu of all or any of the following: a required fire alarm system; fire and smoke detecting system; single station smoke detecting alarm devices; heat detecting alarm system; and special sprinkler installation.

## **742.2 Fire Alarm System**

**742.2a** A fire alarm system installed in conformity with section 1060.2 shall be provided as follows:

**742.2a-1** Group B1, in buildings 4 or more stories in height, or having 12 or more dwelling units

**742.2a-2** Group B2, in buildings 3 stories or more in height, or where there are more than 30 sleeping rooms

**742.2a-3** Group B3, in buildings 2 or more stories in height, or having 12 or more dwelling units, except in one-story buildings where each dwelling unit has direct access to the exterior

**742.2a-4** Group B4, in all buildings

## **742.3 Fire and Smoke-Detecting Systems**

**742.3a** In addition to the requirements set forth in sections 742.2, 742.4 and 742.6 a partial fire- and smoke-detecting system, installed in conformity with section 1060.3 and having manual fire alarm boxes in conformity with 1060.2b shall be provided in stairways, corridors, lobbies, spaces for assembly occupancy or use, basements, cellars, boiler rooms, mechanical equipment rooms and service and storage rooms, as follows:

**742.3a-1** Group B2, in buildings 3 stories or more in height, or where there are more than 30 sleeping rooms

**742.3a-2** Group B3, in buildings one and two stories in height, except one-story buildings where each dwelling unit has direct access to the exterior

**742.3a-3** Group B4, in all buildings

**742.3b** A fire- and smoke-detecting system, installed in conformity with section 1060.3, shall be provided in all group B1 occupancies classified as community residences.

#### **742.4 Sprinklers**

**742.4a Sprinkler Systems** A sprinkler system installed in conformity with section 1060.4 shall be provided as follows:

**742.4a-1** Group B1, in corridors of buildings, 4 stories or more in height

**742.4a-2** Group B2, in buildings 2 stories or less in height — in assembly spaces and exits therefrom

**742.4a-3** Group B2, in buildings 3 stories or more in height — entire building including accessory and mixed occupancies

**742.4a-4** Group B3, in buildings more than two stories in height

**742.4a-5** Group B4, all buildings

**742.4a-6** Groups B1 through B4, in cellars exceeding 4000 square feet in fire area except in habitable spaces

**742.4a-7** Groups B1 through B4, in cellar space used for storage of flammable materials where such space exceeds 25000 square feet in area

**742.4a-8** Groups B1 through B4, in above-grade garages within a multiple dwelling where the fire area of the garage exceeds 5000 square feet

**742.4a-9** Groups B1 through B4, in below-grade garages within a multiple dwelling where the fire area of the garage exceeds 2500 square feet

**742.4b Special Sprinkler Installations** A special sprinkler installation conforming to the requirements of 1060.4h shall be provided as follows:

**742.4b-1** Group B1, in lieu of a sprinkler system required in corridors as set forth in 742.4a, such special sprinkler installation shall have at least one sprinkler head located within each dwelling unit on or near the ceiling adjacent to each doorway from a corridor

#### **742.5 Standpipe Systems**

A standpipe system, installed in conformity with the requirements of section 1060.5, shall be provided in all occupancies, including accessory garage, in buildings 4 or more stories in height.

**742.6 Single-Station Smoke-Detecting Alarm Device**

At least one single-station smoke-detecting alarm device installed in conformity with section 1060.10 shall be located on or near the ceiling and shall be provided in sleeping rooms for transient occupancy or within dwelling units adjacent to sleeping spaces as follows:

Group B1, all buildings

Group B2, all buildings

Group B3, all buildings

Group B4, all buildings

**742.7 Heat Detecting Alarm System**

A heat-detecting alarm system installed in conformity with section 1060-11 shall be provided for kitchens and kitchenettes in group B3 dwelling units in buildings 2 stories or less in height.

**PART 743 ATRIUMS**

**743.1 General Requirements.** A building having an atrium which penetrates one or more floors shall be of type 1 or 2 construction.

**743.2 Enclosure**

**743.2a** The atrium shall be separated from adjacent spaces by an enclosure having a fire-resistance rating of at least 2 hours.

**743.2b** Openings in the separation shall be provided with opening protectives having a fire-resistance rating of at least 1½ hours or shall be protected by sprinkler heads spaced not more than 6 feet apart.

**743.2c** Windows and glazed panels in the separation shall be protected on the occupied side by sprinkler heads spaced not more than 6 feet apart.

**743.2d** Glass walls shall be permitted in lieu of the 2-hour fire-rated separation provided that sprinkler heads spaced not more than 6 feet are installed on the occupied side.

**743.2e** The structural elements of the roof construction over the atrium shall be of noncombustible material and shall be permitted to have no fire-resistance rating provided the lowest portion of such construction is at least 20 feet above the atrium floor.

### **743.3 Exits**

**743.3a** An unenclosed path of travel within the atrium to a required exit shall be permitted provided that, except at the lowest level, such path of travel shall be sprinklered.

**743.3b** Direct egress from the atrium to a required exit stairway shall not be permitted. Access to such stairways shall be through an enclosed corridor or vestibule conforming to the requirements for exits.

### **743.4 Smoke Venting**

**743.4a** The atrium shall be provided with smoke vents which exhaust directly to the exterior. Such smoke vents shall be automatically activated by smoke detectors installed within the atrium, by the operation of other automatic fire protection equipment, and by the interruption of electrical power.

**743.4b** In lieu of smoke vents mechanical means shall be permitted for venting smoke from the atrium. Such mechanical means shall be the building recirculated air system designed and installed to operate without recirculation so as to exhaust smoke to the exterior, or in lieu thereof, shall be an independent automatic mechanical smoke removal system.

**ARTICLE 5 — SPACE AND FIRE SAFETY REQUIREMENTS  
GENERAL BUILDING CONSTRUCTION**

**PART 760 GENERAL REQUIREMENTS**

**760.1 General Requirements.** 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 provisions for a safe and healthful environment and to retard the exterior and interior spread of fire.

**PART 761 YARDS AND COURTS**

**761.1 General Requirements**

**761.1a** 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 Part.

**761.1b** 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.

**761.1c** 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.

**761.1d** A rear yard 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.

**761.1e** 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.

**761.2 Yards**

**761.2a** 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, maybe reduced to one half of the depth of the rear yard required on an interior lot.

**761.2b** 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.

### **761.3 Courts**

**761.3a** 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.

**761.3b** 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.

## **PART 762 SPACE**

### **762.1 General Requirements**

**762.1a** Space shall be classified as habitable, occupied, assembly and nonhabitable.

**762.1b** Habitable, occupied and assembly spaces shall be so arranged, located, lighted and ventilated as to provide safe and healthful environment.

**762.1c** Nonhabitable space shall have such of those requirements set forth in 762.1b above as may be necessary for the intended use.

**762.1d** Food storage spaces shall be constructed so as to be verminproof and rodentproof.

**762.1e** Public kitchen, medical laboratory, treatment and similar space shall have walls and floors constructed of nonabsorbent materials which are easily cleanable.

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**762.1f** 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 803.9, except where such guardrails will interfere with the intended use, as for example, lecture platforms, loading platforms and similar construction.

**762.1g** Where exposed beams project below the ceiling of habitable or occupied space, and such beams occupy an area of 5 percent 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 percent, the height shall be measured to the ceiling, and the height to the underside of such beams shall be not less than 7 feet.

**762.2 HABITABLE SPACE****762.2a Size**

**762.2a-1** Habitable space shall have a minimum height of 7 feet 6 inches, measured from finished floor to finished ceiling.

**762.2a-2** Habitable spaces shall contain not less than 80 square feet of floor area and shall have a minimum horizontal dimension of 7 feet.

**762.2b 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.

**762.3 OCCUPIED SPACE**

**762.3a** Occupied space shall have a minimum height of 8 feet, measured from finished floor to finished ceiling.

**762.3b** Areas below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

**762.3c** Occupied space in buildings less than 100 square feet in gross area shall have a minimum clear height of 6 feet 8 inches.

## **762.4 ASSEMBLY SPACE**

**762.4a Height.** Assembly space shall be at least as high as is required for occupied space, except that assembly space for more than 100 persons shall have a minimum height of 9 feet, measured from finished floor to finished ceiling, and such assembly space below and above a balcony or mezzanine shall have a minimum clear height of 7 feet 6 inches.

## **762.5 NONHABITABLE SPACE**

**762.5a Height.** Nonhabitable space, except crawl spaces and attics, shall have a minimum height of 7 feet, measured from floor to ceiling.

### **762.5b Location of Toilet Rooms**

**762.5b-1** Toilet rooms shall be accessible from any sleeping space without passing through any other sleeping space.

**762.5b-2** 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.

**762.5b-3** 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.

**762.5b-4** 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.

**762.5b-5** Toilet rooms shall not open directly into any public kitchen or other space used for the cooking or preparation of food.

**762.5b-6** Bathrooms, shower rooms, toilet rooms and similar spaces shall be constructed with material such that floors can be flushed or washed without leaking. Such material shall extend at least 4 inches above the floor except at doors.

**762.5b-7** Toilet rooms and bathrooms shall provide privacy.

## PART 763 LIGHT AND VENTILATION

**763.1 General Requirements**

**763.1a** All spaces, except closets or similar spaces, shall be provided with artificial light.

**763.1b** Habitable spaces shall be provided with both natural light and artificial light.

**763.1c** Habitable spaces shall be provided with natural ventilation, and may also be provided with mechanical ventilation.

**763.1d** The tops of windows or equivalent sources of natural light and ventilation in habitable space shall not be more than 18 inches below that finished ceilings, unless the top of at least one such source in each room is at least 7 feet above the finished floor.

**763.1e** Occupied spaces shall be provided with either natural ventilation or mechanical ventilation.

**763.1f** Public spaces shall be provided with either natural ventilation or mechanical ventilation.

**763.1g** Artificial light and mechanical ventilation shall comply with sections 1031 and 1004.

**763.1h** 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.

**763.2 Natural Light for Habitable Space**

**763.2a** 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.

**763.2b** 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 not less than 8 per cent of the floor area of the habitable space.

### 763.3 Natural Ventilation for Habitable Space

**763.3a** 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.

**763.3b** Each habitable space shall be provided with natural ventilation through openable parts of the openings described in this Part which are equal in area to not less than 4 per cent of the total floor area of each habitable space.

**763.4 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 763.3.

### 763.5 Ventilation for Nonhabitable Space

**763.5a** The following spaces shall be provided with natural ventilation by openings which comply with the requirements of section 763.3 or with mechanical ventilation as set forth in section 1004.2. The minimum openable area of the opening for natural ventilation shall be as set forth in table I-763.

**TABLE I-763 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

**763.5b** 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.

## PART 764 SPECIAL STAIRWAYS

### 764.1 General Requirements

**764.1a** Ornamental and interconnecting stairs within areas of the same tenancy shall be permitted to be unenclosed when connecting not more

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than two consecutive stories when in compliance with 771.4h-3 and 771.4h-5.

**764.1b** Stairways 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.

**764.1c** Ornamental stairs with winders shall have minimum tread length of 5 feet. If winders are used, tread width exclusive of nosing shall not be less than 7 inches at any point.

**764.1d** Treads, risers, handrails and railings shall comply with the requirements of section 765.4, except that open risers are permitted when stairs are unenclosed.

**PART 765 EXITS****765.1 General Requirements**

**765.1a** 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.

**765.1b** 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.

**765.1c** 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 occupancy.

**765.1d** Exits shall be enclosed as set forth in table III-704 except as set forth in sections 765.6 and 771.4g.

**765.1e** 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 Part 1033, and shall be lighted at all times by natural or artificial light of intensity sufficient for safe travel.

**765.1f** 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.

**765.1g** Fire escapes shall not be permitted as exits, but exterior stairways are permitted as exits in conformity with section 765.8.

**765.1h** Slide escapes shall not be permitted as exits.

**765.1i** The minimum width of exits shall be 44 inches, except for doors as set forth in table V-765; for stairways as set forth in 765.4a-4 and 765.4a-5 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.

**765.1j** 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.

**765.1k** 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.

**765.1l** Where there is more than one group occupancy within a building, exits from each occupancy shall conform to the requirements for such occupancy.

**765.1m** 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.

**765.1n** In buildings provided with elevators, instructional signs for use of

exits shall be provided and conspicuously located at elevator landings and both inside and outside of stairways at every floor. Such signs shall be diagrammatic and identify exits to be used and advise occupants concerning evacuation procedure during a fire emergency.

**765.1o** High or moderate capacity heater rooms, refuse rooms or rooms having incinerators, refrigerating machinery as set forth in 1004.1f-4, 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.

**765.1p** Rooms and elevated spaces more than 300 square feet in area containing equipment described in 765.1o 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.

**765.1q** 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 or noncombustible construction at least 18 inches wide, or spiral stair at least 22 inches wide.

## **765.2 Passageways, Ramps, Tunnels, and Horizontal Exits**

**765.2a** 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 I-765. 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 hazard 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 1060.9a.

**765.2b** 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:

**765.2b-1** Waiting space shall not exceed 100 square feet in area.

**765.2b-2** Construction of space shall conform to the requirements for corridors.

**765.2c** 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 765.1i. The capacity of exit passageways, aisles, corridors, and tunnels shall be based on the same unit exit widths as set forth in table VIII-765 for stairways.

**765.2d** 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.

**765.2e** 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 765.4 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.

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TABLE I-765 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 <sup>1</sup>
	Secondary corridors .....	In schools	72
	Side aisles .....	In churches	24
C6	Aisles and corridors .....	Used for bed traffic	96

<sup>1</sup> 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.

**765.2f** 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.

**765.2g** 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 door 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 VII-765. 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 765.4c-2.

**765.2h** The capacity of a horizontal exit shall be determined as for a doorway, in accordance with table VIII-765.

### **765.3 Seating, Aisles, Railings, and Exits in Buildings of Group C5 Occupancy**

#### **765.3a Theaters**

**765.3a-1** 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.

**765.3a-2** 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 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 II-765.

**765.3a-3** 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 IV-765. Where, because of the slope, level surfaces other than treads are required, such surfaces shall be not less than 24 inches in width.

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**TABLE II-765 MINIMUM DIMENSION REQUIREMENTS FOR SEATS, BENCHES, AND AISLES**

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

<sup>1</sup> 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.

**765.3a-4** Longitudinal aisles shall be increased in width toward the exit at the rate of  $\frac{1}{4}$  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.

**765.3a-5** An aisle which connects with or borders on an entrance shall be at least 4 feet wide at such point.

**765.3a-6** 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 803.9b.

**765.3a-7** 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.

**765.3a-8** The number of exits required in mezzanines, balconies, or other open tiers above the main floor shall be as set forth in table IX-765. 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.

**765.3a-9** 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.

**765.3a-10** 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, or 60 inches where there are more than five blocks of seats.

**765.3a-11** 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.

**765.3a-12** Aisles shall be used only for passage to and from seats, and shall be kept unobstructed.

**765.3a-13** 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.

**765.3a-14** 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.

**765.3a-15** 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.

**765.3a-16** 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.

**765.3a-17** No turnstiles or other devices to restrict the movement of a 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.

**765.3a-18** 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.

**765.3a-19** 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.

**765.3a-20** At least two exits from the stage shall be provided at the stage level. These exits shall be on opposite 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 fridiron.

### **765.3b. Indoor Assembly Seating Other Than in Theaters**

**765.3b-1** Fixed seating, aisles, and exits shall be in conformity with 765.3a, except as provided in 765.3a-6. 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 765.3a-2 and 765.3a-3.

**765.3b-2** 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.

**765.3b-3** 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.

**765.3b-4** 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.

**765.3b-5** Steps in aisles shall be grouped and shall be illuminated. Treads and risers in aisles shall comply with the requirements of section 765.4.

**765.3b-6** 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 765.3a with the following exceptions:

- (i) Exit doors spaced not more than 10 feet apart in side aisles are not required where exits are provided in accordance with table III-765.
- (ii) 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 1032.3.

**TABLE III-765 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

**765.3c Outdoor Assembly**

**765.3c-1** 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 II-765.

**765.3c-2** 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.

**765.3c-3** 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.

**765.3c-4** 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.

**765.3c-5** Aisles shall be increased in width  $\frac{1}{4}$  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.

**765.3c-6** 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.

**765.3c-7** 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.

**765.3c-8** 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 IV-765.

**765.3c-9** Aisles shall be used only for passage to and from seats, and shall be kept unobstructed.

**765.3c-10** The minimum width of corridors, passageways or ramps shall be

44 inches, which shall be increased  $\frac{1}{4}$  inch for each foot of length from the beginning toward an exit door or gate. No turnstiles shall be permitted in any required exit.

**765.3c-11** 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.

## **765.4 Stairways**

### **765.4a General Requirements**

**765.4a-1** 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.

**765.4a-2** 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.

**765.4a-3** 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.

**765.4a-4** 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 IV-765, except that minimum headrooms 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.

**765.4a-5** 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.

**765.4a-6** 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 IV-765.

**765.4a-7** 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  $\frac{3}{4}$  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.

**765.4a-8** 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 VIII-765, 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 the 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.

**765.4a-9** Treads shall be set level and true, and top surfaces shall not vary more than  $\frac{1}{8}$  inch in any run. Risers shall not vary more than  $\frac{1}{8}$  inch in height on any run. Stair treads and landings shall be provided with nonslip surfaces.

**765.4a-10** Stairs or steps shall have not less than three risers except as provided in 765.5a-8. Such stairs or steps shall have a guardrail in the open side, or a screened enclosure as set forth in 765.4c-2.

**765.4a-11** 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.

**765.4a-12** Landings shall be provided with guardrails on their open sides.

**765.4a-13** 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 IV-765 DIMENSION REQUIREMENTS FOR EXIT STAIRS, HANDRAILS, AND GUARDRAILS**

Component	Minimum <sup>1</sup>			Maximum		
	Height	Length	Width	Height	Length	Width
Vertical rise of any run of stairs:	7ft.					
Group C5 occupancy . . . . .				8 ft. <sup>4</sup>		
Other than group C5 . . . . .				12 ft.		
Headroom over landing floors and tread nosing . . . .						
Stairway . . . . .				44 in.		132 in.
Landing:						
Terminal . . . . .			50 in. <sup>3</sup>	44 in.		
Intermediate . . . . .			44 in.	44 in.		
Tread exclusive of nosing <sup>2</sup> . . .			44 in.	9½ in.		132 in.
Riser <sup>2</sup> . . . . .			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.					

<sup>1</sup> For exceptions, see 765.4i.

<sup>2</sup> 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

<sup>3</sup> 42 inches in 36-inch wide stairways

<sup>4</sup> 12½ feet in exterior stairways

**765.4a-14** 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.

**765.4a-15** No winders shall be permitted in required stairways.

#### **765.4b Interior Stairways**

**765.4b-1** 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  $\frac{1}{2}$  inch in lesser dimension.

**765.4b-2** Stairs, treads, risers and landings shall be constructed of non-combustible material, except in buildings of type 4 or 5 construction two stories or less in height.

#### **764.4c Exterior Stairways**

**765.4c-1** 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.

**765.4c-2** Access to exterior stairways from any floor area shall be through exit doors at floor level. The platform on which the door opens shall be not less than 4 inches nor more than  $7\frac{3}{4}$  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  $\frac{1}{2}$  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 770.3a.

**765.4c-3** Exterior stairways constructed of wood are permitted on buildings of type 4 or 5 construction provided that such buildings do not exceed two stories in height. Bearing and supporting members for such stairways shall be not less than 4 inches, and all other members 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 II-770. Exterior stairways of wood shall not be permitted on buildings of group C5, C6.2 or C6.3 occupancy.

**765.4c-4** The platforms and landings shall be guarded by railings, and the stairs by handrails, conforming to the requirements of table II-770.

**765.4c-5** Exterior stairways and landings on buildings more than 2 stories in height, of group C5 occupancy, shall be protected with suitable overhead noncombustible construction.

**765.4c-6** Construction shall be in conformity with generally accepted standards.

#### **765.4d Smokeproof Towers**

**765.4d-1** 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 771.4g.

**765.4d-2** No opening shall be permitted in the enclosure which separated 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.

**765.4d-3** 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.

#### **765.4 Escalators**

**765.4e-1** 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 771.4g.

**765.4e-2** Escalators shall be installed in conformity with section 1062.8. 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 48 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.

**765.4e-3** No continuous rise shall be more than two stories or 40 feet.

**765.4e-4** The capacity of escalators used as exits shall be determined as for exit stairways.

#### **765.5 Doors and Doorways**

##### **765.5a General Requirements**

**765.5a-1** 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 765.5a-2. 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 are permitted in doors of toilet rooms.

**765.5a-2** Doors in openings between exit passageway and classrooms in group C5.5 occupancy, and between such passageways and patients' rooms in group C6 occupancy, shall be permitted with vision panels providing such rooms are under continuous supervision whenever occupied.

**765.5a-3** 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, or such doors 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 1060.9a. Stairway doors in high hazard buildings shall not be permitted to be maintained in an open position.

**765.5a-4** The exit doors to the exterior of buildings of group C3.3, C4.3, and C5 occupancy, and exit doors from an area of public assembly 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.

**765.5a-5** No swing-type exit door shall be more than 44 inches in width nor less than that set forth in table V-765. 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.

**765.5a-6** 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 765.8. 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.

**765.5a-7** No doorway shall be less than 6 feet 8 inches in height.

**765.5a-8** 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 sill. A landing shall be provided at other than a main entrance, and shall be at least one riser above the adjoining grade.

**TABLE V-765 MINIMUM OF WIDTH OF EXIT DOORS<sup>1</sup>**

Location	Minimum width of door, in inches
From an assembly space having less than 50 persons and from occupied space having two exits . . . . .	28 <sup>4</sup>
From an assembly space having less than 50 persons and from occupied space where one exit is permitted . . . . .	36 <sup>2</sup>
From a corridor to an enclosed stairway . . . . .	40 <sup>2</sup>
From a stairway to a door discharging to grade level or exterior . . . . .	44 <sup>2</sup>
From an area of public assembly, capacity less than 300 persons . . . . .	44 <sup>2</sup>
From an area of public assembly requiring double doors, each leaf . . . . .	30 <sup>3</sup>
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

<sup>1</sup> Where a space falls into more than one group occupancy, the larger shall be provided.

<sup>2</sup> Minimum door width of 30 inches is permitted where there is more than one door in a doorway

<sup>3</sup> 32 inches each leaf, where doorway is provided with center mullion

<sup>4</sup> At least one shall be 32 inches.

**765.5a-9** 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 areas of public assembly the main entrance doors shall not be considered as more than one-half of the required exit width.

### **765.5b Revolving Doors**

**765.5b-1** Not more than 50 per cent of the required exit doors may consist of revolving doors, and three shall be at least one swinging door within 20 feet of each revolving door.

**765.5b-2** Wings of revolving doors shall be released by ordinary body pressure so that they shall readily fold back independently. The clear width of the resulting opening on each side shall be not less than 22 inches.

**765.5b-3** The capacity of revolving doors shall be computed from table VIII-765, on the basis of the minimum width of opening with the wings folded back.

**765.5b-4** 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.

### **765.6 Exit Enclosures**

**765.6a** Exits shall be enclosed as set forth in table III-704 except as set forth in 765.6b and 771.4g. 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 separated from each other by at least one opening protective at each level.

**765.6b** Stairways without enclosures are permitted from an open mezzanine, balcony or other open tier above the main floor.

**765.6c** Stairways from buildings or structures without enclosing walls are not required to be enclosed provided such buildings or structures conform to the requirements of 770.2b-4 and 770.2b-6.

**765.6d** No openings shall be permitted in stairway enclosure except the required doors for entrance or exit as set forth in 765.6a, windows in exterior walls, and window or skylight at roof.

**765.6e** Exits from upper stories shall be enclosed to the exterior of the building with construction which complies with the requirements set forth in table III-704 and 771.4g.

**765.6f** 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 771.4g. 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.

**765.6g** 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.

#### **765.7 Distance of Travel to, and Location of, Exits**

**765.7a** Exits shall be independent of, and as remote from each other as is practicable, and shall be readily accessible to occupants of the building.

**765.7b** 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 VI-765.

**TABLE VI-765 MAXIMUM TRAVEL DISTANCE TO EXITS**  
(In feet)

Occupancy	First or grade story		Above- and below-grade stories <sup>3</sup>	
	Un-sprinklered	Sprinklered	Un-sprinklered	Sprinklered
C1 .....	175	250	150	225
C3.1 .....	175 <sup>1</sup>	250 <sup>2</sup>	150	225
C4.1 .....	175 <sup>1</sup>	250 <sup>2</sup>	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

<sup>1</sup> 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

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

<sup>3</sup> The maximum travel distance on a floor located more than 15 feet below finished grade shall be 75 feet on unsprinklered stories and 100 feet on sprinklered stories

## 765.8 Determination of Required Width, Number and Types of Exit

**765.8a** Exits shall be provided in conformity with the requirements of section 765.1. 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 IX-765 and X-765. The width, number and type of exits shall be determined in accordance with the following procedure:

First, using table VII-765, 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 (for assembly space, use net floor area).

Second, where the proposed number of persons will be more than that computed by using table VII-765, exits shall be provided for the larger number.

Third, 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.

Fourth, using table VII-765, 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.

Fifth, using table VI-765, IX-765 and X-765, determine the minimum number of exits required.

Sixth, establish the types of exits as set forth in 765.8b, 765.8c, 765.8d and 765.8e.

**765.8b** 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 765.8c an enclosed escalator in buildings not exceeding five stories in height; a spiral stair as set forth in 765.4a-5; an open stairway as set forth in section 765.6.

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TABLE VII-765 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
Mall Areas .....	50	50
C3.2 .....	150	100
C4.2 .....	250	200
C3.3 .....	100	75
C4.3 .....	200	150
C5 <sup>1</sup>		
Spaces without fixed seats for concentrated use such as dance hall, night clubs and similar occupancies; and auditoriums, areas of worship and lodge rooms .....	7	7
Spaces without fixed seats for less concentrated use such as a conference room, dining room, drinking establishment, exhibit room, gymnasium, deck surrounding skating areas or pool areas or lounge .....	15	15
Designated waiting or standee space ...	3	3
Space with fixed seats .....	see footnote 2	see footnote 2
Court rooms — other than fixed seating areas .....	40	40
Library		
— reading rooms .....	50	50
— stack area .....	100	100
Billiard rooms, archery ranges swimming pools, locker rooms, educational laboratories and shops <sup>4</sup> .....	50	50
Skating rinks .....	25	25
Classrooms <sup>4</sup> .....	20	20
Bowling Alleys .....	7 <sup>3</sup>	7 <sup>3</sup>
C6.1 .....	150	100
C6.2 .....	150	100
C6.3 .....	100	75

<sup>1</sup> Based on net floor area which is the actual square footage of the assembly space not including accessory unoccupied spaces nor the thickness of walls.

<sup>2</sup> The number of persons shall be the designated number of fixed seats. For pews or similar bench-type seating, allocate one person to each 18 linear inches.

<sup>3</sup> Allocate 5 persons to each alley including 15 feet of runway; for the remaining net floor area use 7 square feet per person.

<sup>4</sup> For the purpose of Article 6 spaces used exclusively for instruction for pre-kindergarten to grade 12 in public and non-public schools shall not be deemed to be areas of public assembly.

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**TABLE VIII-765 CAPACITY OF STAIRWAYS AND DOORS TO STAIRWAYS**  
**In number of persons per 22-inch unit of exit width**

Occupancy	Stairway <sup>1</sup>	Doors <sup>3</sup>
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 <sup>2</sup>	90 <sup>2</sup>
C6.1 .....	50	80
C6.2 .....	50	80
C6.3 .....	30	50

<sup>1</sup> For increased capacity when story height exceeds 10 feet, or when the building is sprinklered, see 765.4a-8.

<sup>2</sup> 100 for tiers or floor areas not more than one story above the grade story.

<sup>3</sup> Where the building is sprinklered, capacity shall be increased 50 per cent.

**TABLE IX-765 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 <sup>1</sup>	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

<sup>1</sup> See 765.3b-6.

TABLE X-765 LOCATIONS WHERE ONE EXIT IS PERMITTED<sup>2,4</sup>

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 <sup>1</sup>	Where distance of travel to an exit in feet does not exceed	
		Sprinklered	Unsprinklered
C1 <sup>3</sup> C3.1 <sup>3</sup> C4.1 <sup>3</sup>	Below grade, less than 2000 .....	100	75
	Grade and above grade, less than 2500 .....	100	100
	Garages as provided in 767.1d .....	100	100
C2 <sup>3</sup> C3.2 <sup>3</sup> C4.2 <sup>3</sup> C6.1 <sup>3</sup>	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 <sup>2</sup>	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

<sup>1</sup> See also 765.1p.<sup>2</sup> 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.<sup>3</sup> A mezzanine not more than 2000 square feet in area and no dimension greater than 50 feet is permitted to have one exit.<sup>4</sup> 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 building 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 least 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.

**765.8c** 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 765.4c-3.

**765.8d** 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.

**765.8e** 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:

**765.8e-1** Exterior balcony shall have no dead ends.

**765.8e-2** Balcony and stairway shall be constructed of heavy timber or noncombustible materials.

**765.8e-3** Exits from interior spaces shall open directly onto such balcony.

**765.8e-4** Width of such balcony shall be at least 5 feet.

## **PART 766 SAFETY GLAZING**

### **766.1 Glazing in Doors, Shower Stalls, Fixed Panels and Bathtub Enclosures**

**766.1a** 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.

**766.1b** 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 766.1a or, in lieu thereof in fixed panels, permanent construction shall be provided to guard against accidental human impact.

**766.1c** 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 771, 771.4 and 771.5.

**766.1d** 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.

**PART 767 GARAGES AND OPEN PARKING STRUCTURES****767.1 General Requirements**

**767.1a** 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.

**767.1b** The storage or handling of gasoline or other flammable liquids, and the refinishing of motor vehicles, shall be in conformity with generally accepted standards.

**767.1c** 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.

**767.1d** 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. Passthrough doors shall conform to 765.5a with bottom of doors not more than 12 inches above floor level.

**767.1e** Where two or more exits are required, an automobile ramp connecting not more than three parking levels is permitted as one of the exits.

**767.1f** If ramps are used for vehicle travel from street to garage floor or from floor to floor, the slope shall not exceed 15 percent. Ramps leading to a street shall terminate not less than 20 feet from such street.

**767.1g** 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 803.9).

**767.1h** Central heating equipment for a garage shall be separated as required in 770.4i, and all heating equipment installed in such garage shall comply with the requirements of 1000.2n.

**767.1i** 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 1004.2.

**767.1j** Garages shall be provided with fire protection equipment in conformity with Part 406.

**767.1k** Garage areas in excess of 1000 square feet shall be provided with electric light in conformity with Part 1031.

### **767.2 Garages in, or Attached to, Buildings**

**767.2a** 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 770.4.

**767.2b** Access between a building of any occupancy or use and a garage shall be as set forth in 770.4j.

### **767.3 Open Parking Structures**

**767.3a** 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 771.4k.

**767.3b** 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.

**767.3c** Curbs, railings, and bumper blocks shall be provided in conformity with section 803.9.

**767.3d** 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.

## **PART 768 ENCLOSED PASSAGEWAYS AND MALLS BETWEEN BUILDINGS**

**768.1 General Requirements for Enclosed Passageways.** Buildings connected 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:

**768.1a** Passageways are constructed of noncombustible construction not exceeding one story in height, and are used only for passage.

**BUILDING CONSTRUCTION**

**768.1b** Passageway does not exceed 10 feet in width and 10 feet in height.

**768.1c** Entrance from a building to the passageway is through a self-closing 1½-hour opening protective in an exterior wall having at least a 2-hour fire-resistance rating. Other openings in such exterior wall are protected in accordance with 769.3a.

**768.1d** Distance between exterior walls of the buildings connected by such passageway is at least 20 feet.

**768.2 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:

**768.2a** The structures are of low or moderate hazard occupancy.

**768.2b** The combined structure meets the requirements for accessibility on all sides, as set forth in 705.4e-1.

**768.2c** Structures more than one story in height are equipped with an automatic sprinkler system, where required exits from structures are through a mall.

**768.2d** Malls shall be at least of the following types of construction:

**768.2d-1** Below-grade . . . Type 1a.

**768.2d-2** One story in height . . . Type 2b.

**768.2d-3** Two stories in height . . . Type 2a.

**768.2d-4** More than 2 stories in height . . . Type 1b.

**768.2e** Malls are provided with sprinkler system for moderate hazard use in accordance with generally accepted standards.

**768.2f** Tenant spaces requiring two or more exits have at least half such exits opening directly to the exterior or to enclosed exit passageways.

**768.2g** Vents from space in the buildings do not terminate in the mall.

**768.2h** 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.

**768.2i** The mall is provided with smoke vents having an open-vent area of at least one percent of the floor area of the mall. Such vents shall be permanently open or of the automatic type as set forth in 774.8a.

**768.2j** Malls are at least 25 feet wide and do not contain combustible material.

**768.2k** Standpipe system is provided in accordance with section 1060.5.

**768.2l** 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 V-765 and have sufficient capacity for at least  $\frac{1}{2}$  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.

**768.2m** Fire alarm system is provided so that there is an audible signal in all portions of the structure as per 1060.2a-1 and connected to the local fire department.

**768.2n** Emergency lighting conforms to Part 1032.

**768.2o** Non-swing doors between tenant spaces and enclosed mall are locked in an open position when such space is occupied.

**768.2p** Fuel gas piping and equipment is not located in mall.

**768.2q** Exit from below grade is not through the grade-level mall.

## PART 769 ATRIUMS

**769.1 General Requirements.** A building having an atrium which penetrates one or more floors shall be of type 1 or 2 construction.

### 769.2 Enclosure

**769.2a** The atrium shall be separated from adjacent spaces by an enclosure having a fire resistance rating of at least 2 hours.

**769.2b** Openings in the separation shall be provided with opening protectives having a fire resistance rating of at least  $1\frac{1}{2}$  hours or shall be protected by sprinkler heads spaced not more than 6 feet apart.

**769.2c** Windows and glazed panels in the separation shall be protected on the occupied side by sprinkler heads spaced not more than 6 feet apart.

**BUILDING CONSTRUCTION**

**769.2d** Glass walls shall be permitted in lieu of the 2-hour fire-rated separation provided that sprinkler heads spaced not more than 6 feet apart are installed on the occupied side.

**769.2e** The structural elements of the roof construction over the atrium shall be of noncombustible material and shall be permitted to have no fire resistance rating provided the lowest portion of such construction is at least 20 feet above the atrium floor.

**769.3 Exits**

**769.3a** An unenclosed path of travel within the atrium to a required exit shall be permitted provided that, except at the lowest level, such path of travel shall be sprinklered.

**769.3b** Direct egress from the atrium to a required exit stairway shall not be permitted. Access to such stairways shall be through an enclosed corridor or vestibule conforming to the requirements for exits.

**769.4 Smoke Venting**

**769.4a** The atrium shall be provided with smoke vents which exhaust directly to the exterior. Such smoke vents shall be automatically activated by smoke detectors installed within the atrium, by the operation of other automatic fire protection equipment, and by the interruption of electrical power.

**769.4b** In lieu of smoke vents mechanical means shall be permitted for venting smoke from the atrium. Such mechanical means shall be the building recirculated air system, designed and installed to operate without recirculation so as to exhaust smoke to the exterior, or, in lieu thereof, shall be an independent automatic mechanical smoke removal system.

**PART 770 PREVENTION OF EXTERIOR FIRE SPREAD****770.1 General Requirements**

**770.1a** 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.

**770.1b** The minimum fire-resistance ratings of the exterior walls of buildings and accessory structures shall be those set forth in table II-702.

## 770.2 Distance Separations

**770.2a 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.

### 770.2b When Required

**770.2b-1** Distance separations set forth in table I-770 shall be required, except as provided in 770.2b-4 through 770.2b-8.

**770.2b-2** 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.

**770.2b-3** 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.

**770.2b-4** The minimum distance separation for an open side of an open parking structure shall be 10 feet.

**770.2b-5** 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.

**770.2b-6** 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.

**770.2b-7** 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.

**770.2b-8** 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.

**770.2c Construction Limitations Within Fire Limits**

**770.2c-1** 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 Table VI-705, VII-705, VIII-705 and IX-705, and the distance separations conform to the requirements set forth in Section 769.2b.

**770.2c-2** 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 769.2b 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.

**770.2c-3** Open and enclosed balconies and porches shall be constructed of noncombustible materials.

**770.2d Construction Limitations Outside the Fire Limits**

**770.2d-1** Buildings and accessory structures may be of any type of construction providing they conform to the height and area limitations set forth in Tables VI-705, VII-705, VIII-705 and IX-705, and the distance separations conform to the requirements set forth in 769.2b.

**TABLE I-770 MINIMUM DISTANCE SEPARATION<sup>1</sup>**  
**In feet**

Hazard classification	Height in stories	Noncombustible walls with <sup>2</sup> 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	
<b>WITHIN FIRE LIMITS</b>								
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
<b>OUTSIDE THE FIRE LIMITS</b>								
Low .....	1	0	0	5	5	5	10	15
	2	0	0	5	5	5	15	20
	3 or more	0	0	5	np	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

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

<sup>2</sup> For noncombustible walls with combustible exterior facing see section 770.8.

**770.2d-2** 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 I-770, 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.

**770.2d-3** On buildings of Group C6 occupancy, balconies or enclosed porches with at least 60% of glazed area on three sides, and open porches and verandas, may be constructed of combustible materials provided they do not extend upward more than 20 feet above the grade level, do not encroach upon the minimum distance separation for buildings having combustible exterior facing as set forth in table I-770, and do not serve as horizontal exits. If they exceed said limitations they shall be constructed of noncombustible materials.

### **770.3 Protection of Openings in Exterior Walls**

#### **770.3a General Requirements**

**770.3a-1** Primary glazing in windows in exterior walls of buildings may be glazed with plastic materials provided that on each story such glazing does not exceed 25 percent of the area of the wall having the glazing, is in conformity with the provisions of this section and Part 773, and each piece is not more than 4 feet in vertical dimension and 12 square feet in area.

**770.3a-2** 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.

**770.3a-3** 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.

**770.3a-4** 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:

- (i) Between openings there is at least 3 feet vertical separation or 2 feet horizontal extension, having the required fire-resistance rating.

- (ii) One of the openings contains air-conditioning equipment and there is at least 2 feet vertical separation or 2 feet horizontal extension, having the required fire-resistance rating.
- (iii) Such opening protectives are not required for open parking structures, or for buildings not more than two stories in height.

**770.3a-5** 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.

**770.3a-6** 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 765.8e.

**770.3a-7** 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.

**770.3a-8** 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.

**770.3a-9** The area of openings in exterior walls required to have a distance separation shall be limited as indicated in table II-770. Where a spandrel is required, such area shall be based upon the wall area less the spandrel area.

**TABLE II-770 OPENINGS IN EXTERIOR WALLS**

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

**770.3b Fire Resistance of Exterior Wall Opening Protectives.** Fire-resistance ratings of required exterior wall opening protectives shall be at least  $\frac{3}{4}$  hour. Vision panels in opening protectives shall be of materials and size that will maintain the integrity of the required fire-resistance rating.

**770.4 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.

**770.4a 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:

**770.4a-1** 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.

**770.4a-2** 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.

#### **770.4b Limitations of Use**

**770.4b-1** 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.

**770.4b-2** 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.

#### **770.4c Skylights and Glazed Roof Panels**

**770.4c-1** Skylights and roof panels shall conform to the requirements for roof coverings as set forth in section 770.4, except as provided in 770.4c.

**770.4c-2** 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 Part 773, 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.

**770.4c-3** Skylights and roof panels in roofs required to have a fire-resistance rating are permitted to be glazed with plastic as set forth in Part 773, provided that the aggregate area of such material does not exceed 20 percent 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.

**770.4c-4** Skylights shall be mounted above the plane of the roof.

**770.4c-5** 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 771.4h-11.

**770.4c-6** Glazing in skylights and roof panels shall be readily breakable or removable in an emergency.

### 770.5 Parapet Walls

**770.5a** Parapet walls 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.

**770.5b** The height and fire-resistance ratings of parapet walls shall be in accordance with table III-770.

**TABLE III-770 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

### 770.6 Party Walls

#### 770.6a General Requirements

**770.6a-1** 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.

**770.6a-2** Openings shall not be permitted in party walls.

### **770.6b Construction**

**770.6b-1** Party walls shall form a continuous fire and smoke barrier between adjoining buildings and foundations to or through the roof, 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.

**770.6b-2** 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 770.5, 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  $\frac{3}{4}$  hour, a party wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

**770.6b-3** 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.

**770.6b-4** 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, and at least 6 inches when either building is of high hazard occupancy.

### **770.6c Fire Resistance**

**770.6c-1** The fire-resistance ratings of party walls shall be as set forth in table II-702, except as otherwise set forth in this section.

**770.6c-2** 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.

**770.6c-3** 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.

### **770.7 Eaves, Cornices and Exterior Trim**

**770.7a** 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 770.7b.

**770.7b** Eaves and cornices of combustible construction are permitted on buildings more than two stories in height provided they do not extend horizontally or vertically more than 2 feet, and the soffit is of noncombustible construction.

**770.7c** Where eaves and cornices of combustible construction as set forth in 770.7a 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.

### **770.8 Combustible Facing on Noncombustible Exterior Walls**

**770.8a** A building classified as low or moderate hazard, located inside or outside fire limits, is permitted to have combustible exterior facing on a masonry exterior wall without affecting the construction classification of the building or reducing the fire resistance rating of the wall, provided the installation is as follows:

**TABLE IV-770 COMBUSTIBLE FACING ON NONCOMBUSTIBLE EXTERIOR WALLS**

Surface flame spread rating of combustible facing	Maximum allowable height of building	Maximum allowable area of combustible facing
0 to 10	Unlimited	Unlimited
11 to 25	2 Stories	Unlimited
Over 25	2 Stories	10 per cent of the area of the wall on which the facing is mounted

**770.8b** Concealed spaces between the combustible exterior facing and the masonry wall shall be filled with noncombustible material or firestopped so that no dimension exceeds 8 feet vertically or 20 feet horizontally. Fire-stopping shall be of material having a flame-spread at least equivalent to the flame-spread rating of the facing.

**770.8c** Where combustible exterior facing has a total area exceeding 10 percent of the area of the wall on which it is mounted, the distance between such facing and another building or interior lot line shall be not less than 15 feet.

## PART 771 PREVENTION OF INTERIOR FIRE SPREAD

## 771.1 General Requirements

**771.1a** 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 II-702 except as required by sections 771.2, 771.3, and 771.4. The fire-resistance ratings of the structural elements or members shall be determined in conformity with generally accepted standard fire test procedure.

**771.1b** Spaces having a higher hazard classification than the building in which they are located shall be enclosed by fire-resistance construction, or protected in conformity with 771.4a and 771.4b.

**771.1c** 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 771.4g.

**771.1d** In buildings of type 1 and 2 construction, nonbearing partitions subdividing a tenant space are permitted as follows:

**TABLE I-771 MAXIMUM AREAS FOR SUBDIVISION OF INTERIOR SPACE WITH UNRATED PARTITION**

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

**771.1e** Construction not required to have a fire-resistance rating may have combustible doors having no fire-resistance rating.

**771.1f** Flammable materials shall not be permitted as insulation or fill.

**771.2 Fire Walls.** The floor area of buildings shall be divided by fire walls into fire areas in accordance with Part 705, including table VI-705, VII-705, VIII-705 and IX-705.

### **771.2a Construction**

**771.2a-1** 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.

**771.2a-2** 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 III-770. Where a roof is of noncombustible construction having fire-resistance rating of at least  $\frac{3}{4}$  hour, a fire wall may terminate at the underside of the roof providing the junction of the wall and roof is made smoketight.

**771.2a-3** 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.

**771.2a-4** 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.

**771.2a-5** 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, and at least 6 inches when either building is of high hazard occupancy.

**771.2b Fire Resistance.** The fire-resistance ratings of fire walls shall be the same as for party walls as set forth in 770.6c.

### **771.3 Protection of Columns, Beams, Girders and Trusses in Buildings of Type 1 and 2a Construction**

**771.3a** Columns and vertical suspension members shall be individually encased throughout their length by fire-protective materials having fire-resistance ratings prescribed in table II-702, except as provided in 771.3d and 771.3e.

**771.3b** 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 II-702, except as provided in 771.3d and 771.3e.

**771.3c** 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 II-702, except as provided in 771.3d and 771.3e, 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.

**771.3d** 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 770.2b for noncombustible walls with a fire-resistance rating of less than  $\frac{3}{4}$  hour, and provisions are made to limit the average rise in the temperature of the steel under fire conditions to 1000°F.

**771.3e** 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 VI-705, VII-705 and VIII-705, whichever is less, and except that unlimited fire area is permitted for such buildings, provided they are equipped with sprinkler systems.

**771.3f** 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.

**771.3g** 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 II-702, except as provided in section 771.3d.

## **771.4 Division by Fire Separations**

### **771.4a General Requirements**

**771.4a-1** 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 II-771, except as provided in 771.4a-6.

**771.4a-2** Separations between lobbies or corridors and spaces adjacent thereto shall be equipped with self-closing opening protectives. When opening protectives are not provided, the opening shall not exceed 35 square feet in area and shall be protected by a sprinkler head on each side of the opening.

**771.4a-3** Display windows in lobbies and exit corridors shall be separated from other parts of the building by a fire separation having a fire-resistance rating of at least 1 hour. Access opening to display windows shall be equipped with self-closing opening protectives.

**771.4a-4** 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.

**771.4a-5** 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.

**771.4a-6** Not more than one occupancy shall be permitted in a building of type 5 construction, except that a one- and two-family dwelling may be in a building of group C1, C2, C3.1, C4.1 or Day-care center (group C6.1 and C6.2) occupancy.

**771.4a-7** Motion picture projection rooms and their accessory spaces shall be enclosed by noncombustible construction having a fire-resistance rating of at least 1 hour.

**TABLE II-771 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) <sup>5</sup>	C6.1	C6.2	C6.3
A1 .....	See table I-717															
B1, B2, B3, B4. .	See table I-739															
C1 .....	1	3 <sup>1</sup>	2 <sup>1</sup>	3 <sup>1</sup>	np	2 <sup>1</sup>	3 <sup>1</sup>	np	2 <sup>1</sup>	3 <sup>1</sup>	4	2	2	2 <sup>1</sup>	np	np
C2 .....	_____	1	2 <sup>1</sup>	3	np	2	3	np	2 <sup>1</sup>	3 <sup>1</sup>	4 <sup>3</sup>	3	3	3	3 <sup>3</sup>	np
C3.1 .....	_____	_____	1	2 <sup>1</sup>	4 <sup>2</sup>	2 <sup>1</sup>	3 <sup>1</sup>	4 <sup>2</sup>	2 <sup>1</sup>	3 <sup>3</sup>	4 <sup>3</sup>	2 <sup>1</sup>	2 <sup>1</sup>	np	np	np
C3.2 .....	_____	_____	_____	2	4 <sup>2</sup>	2	3	4	np	np	np	np	np	np	np	np
C3.3 .....	_____	_____	_____	_____	4	4 <sup>2</sup>	4 <sup>2</sup>	4	np	np	np	np	np	np	np	np
C4.1 .....	_____	_____	_____	_____	_____	2 <sup>1</sup>	3 <sup>1</sup>	4	2	3 <sup>3</sup>	4 <sup>3</sup>	np	np	np	np	np
C4.2 .....	_____	_____	_____	_____	_____	_____	(3 <sup>1</sup> )	4	np	np	np	np	np	np	np	np
C4.3 .....	_____	_____	_____	_____	_____	_____	_____	4	np	np	np	np	np	np	np	np
C5.1 .....	_____	_____	_____	_____	_____	_____	_____	_____	2 <sup>4</sup>	3 <sup>4</sup>	4 <sup>4</sup>	2 <sup>1</sup>	2 <sup>1</sup>	2	2	2
C5.2 .....	_____	_____	_____	_____	_____	_____	_____	_____	_____	3 <sup>4</sup>	4 <sup>4</sup>	3 <sup>1</sup>	3 <sup>1</sup>	3	2	3
C5.3 .....	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	4 <sup>4</sup>	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

<sup>1</sup> One hour in type 2b, 3, and 4 construction and ¾ hour in type 5 construction.

<sup>2</sup> For restrictions on a high hazard use area, see 770-4a; for restrictions on a moderate hazard use area, see 770-4b.

<sup>3</sup> Openings in separation not permitted.

<sup>4</sup> 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.

<sup>5</sup> For C5 occupancies see Article 6.

**771.4b Accessory High Hazard Occupancies**

**771.4b-1** Where a building has two or more occupancies, the larger occupancy being low hazard or moderate hazard and the other occupancy, being accessory high hazard, such high hazard occupancy shall be separated from other occupancies in accordance with the following:

- (i) Where space for the high hazard occupancy amounts to more than 10 percent 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 II-771.
- (ii) Where space for the high hazard occupancy amounts to 10 percent 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 I-771.
- (iii) Where space for the high hazard occupancy amounts to 5 percent 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 head 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 II-771. Such sprinklers shall conform to the requirements of section 1060.4.

**771.4b-2** 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.

**771.4c 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:

**771.4c-1** Where space for the moderate hazard occupancy amounts to more than 10 percent 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 II-771.

**771.4c-2** Where space for the moderate hazard occupancy amounts to 10 percent or less of the fire area or 10,000 square feet or less, whichever is smaller, such moderate hazard space shall be separated by non-combustible construction having a fire-resistance rating of at least 1 hour, in lieu of the requirements of table II-771.

**771.4c-3** Where space for the moderate hazard occupancy amounts to 5 percent or less of the fire area, or 5,000 square feet or less, whichever is smaller, such moderate hazard space shall be separated by non-combustible 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 II-771. Such sprinklers shall conform to the requirements of section 1060.4.

**771.4d 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 771.4j-1.

#### **771.4e Heat Banking Areas**

**771.4e-1** 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.

**771.4e-2** The material, depth and arrangement of draft curtains shall conform to generally accepted standards.

#### **771.4f Stages and Auxiliary Areas**

**771.4f-1** 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.

**771.4f-2** 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 II-771. Openings, other than the proscenium opening, shall not exceed 21 square feet in area.

**771.4f-3** 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.

**771.4f-4** 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 1060.9b.

**771.4f-5** 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.

**771.4f-6** Dressing rooms shall be separated from the stage by fire separations having a fire-resistance rating of at least 2 hours.

**771.4f-7** Scenery curtains or decorations and interior trim and finish on or about the stage or platform shall be noncombustible or flame-resistant materials.

**771.4f-8** 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 theatrical type scenery. A motion picture screen and sound equipment may be installed on such a platform.

#### **771.4g Enclosure of Storage and Service Rooms**

**771.4g-1** 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.

**771.4g-2** Carpenter and repair shops and stock rooms shall be enclosed by construction having a fire-resistance rating of at least 1 hour.

**771.4g-3** 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 C3.1 and C4.1 occupancies. Space for the loading and unloading of motor vehicles shall be protected in conformity with the requirements of 771.4j.

**771.4g-4** 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.

**771.4h Enclosure of Exits, Stairways, Hoistways and Shafts**

**771.4h-1** Exits shall be enclosed with fire-resistive construction as set forth in section 765.6 except as otherwise set forth in this section.

**771.4h-2** Elevator and dumbwaiter hoistways, escalators and shafts shall be enclosed with construction having minimum fire-resistance ratings as set forth in table III-704, except as set forth in 771.4h-3, 771.4h-4 and 771.4h-5.

**771.4h-3** Escalators and stairways, 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 a combination of sprinklers, draft curtains, fire- and smoke-detecting and ventilating devices, in conformity with generally accepted standards.

**771.4h-4** 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.

**771.4h-5** 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 the area of each room shall not exceed 1000 square feet.

**771.4h-6** 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.

**771.4h-7** Openings in enclosures for exits, stairways, hoistways, and shafts shall be protected with opening protectives conforming to the requirements set forth in 770.3a, 770.3b and 771.4k.

**771.4h-8** Corridors or hallways, which are separated from enclosed exit stairs by fire separations with opening protectives meeting the requirements set forth in 771.4k, shall be enclosed as set forth in 771.4h-1, except that fire-resistance ratings of more than one hour shall not be required for the enclosure of the corridors or hallways.

**771.4h-9** 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.

**771.4h-10** 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  $3\frac{1}{2}$  percent 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 percent when mechanical ventilation is provided. When one or more sides of the stairway or shaft 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 771.4h-11. 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 1060.9a.

**771.4h-11** Stairways, shafts or hoistways, serving the top-most story of a building, and extending 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  $\frac{3}{4}$ -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.

**771.4h-12** 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 opening other than those essential for ventilation and elevator operating equipment.

**771.4h-13** 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 770.3b and 771.4k.

#### **771.4i Enclosure of Kitchens, Cooking Spaces, and Dining Rooms**

**771.4i-1** Kitchens and pantries serving 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 1060.4h is provided in such kitchens and pantries.

- (i) Openings between a kitchen or pantry and dining room shall be provided with opening protectives as follows:
  - (a) automatic or self-closing 1½-hour opening protectives where the kitchen or pantry is not sprinklered, or
  - (b) automatic or self-closing ¾-hour opening protectives where the kitchen and pantry are sprinklered.
- (ii) Openings between a kitchen or pantry and a dining room shall be permitted without opening protectives as follows:
  - (a) the kitchen and pantry shall be equipped with a special sprinkler installation.
  - (b) a hood exhaust system for cooking equipment shall be provided and protected with a fixed-pipe fire extinguishing system.
  - (c) a noncombustible draft curtain shall extend down a minimum of 24 inches from the ceiling above the opening:
  - (d) 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 6 feet apart, except that such sprinkler protection of the opening need not be provided where exits required from the dining room open directly to the exterior at grade.

**771.4i-2** 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 771.4i-1, if the cooking equipment is only of the domestic type and is vented to the exterior.

**771.4i-3** 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.

**771.4i-4** 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.

**771.4j Enclosure of Heat Producing Equipment and Refuse Rooms.**

**771.4j-1** 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 771.4j-6.

**771.4j-2** 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 771.4j-6.

**771.4j-3** Fuel-burning suspended unit heaters in buildings of group C2, 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 1000.2m and 1000.2o.

**771.4j-4** 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 771.4j-5.

**771.4j-5** 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 1000.2m-1. Entrance to enclosed heater rooms shall be from the outside of the building, or through a vestibule ventilated in conformity with the requirements of 1004.2a-3. 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.

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**771.4j-6** 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.

**771.4j-7** 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.

**771.4j-8** Openings in fire separations for the passage of refuse shall be provided with an opening protective or with sprinkler heads.

**771.4k Garages and Open Parking Structures.**

**771.4k-1** 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.

**771.4k-2** 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 II-771, except that where the parking area does not exceed 1000 square feet, the fire-resistance rating of the separation may be  $\frac{3}{4}$  hour, but not less than required for the corresponding components of the type of building as set forth in table II-702.

**771.4k-3** 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 771.4k-4.

**771.4k-4** 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.

**771.4k-5** 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 III-771 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

#### **771.4I Openings in Fire Walls and Fire Separations.**

**771.4I-1** 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 III-771 except as otherwise permitted in 771.4h and 771.4I-2, 771.4I-3, and 771.4I-4. Opening protectives shall be equipped with devices conforming to the requirements of 765.5a-3.

**771.4I-2** 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 765.5a-2.

**771.4I-3** 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.

**771.4I-4** In fire separations having a fire resistance rating of at least 3 hours, an opening 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 shall be arranged so that one is on each face of the fire wall separation and so that both operate automatically when either is exposed to fire in the duct. In fire separations required to have a fire-resistance rating of 2 hours, an opening shall be protected with a fire damper or shutter, except that such protection shall not be required in ducts having an area of 20 square inches or less.

**771.4I-5** 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.

**771.4I-6** 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.

**771.4I-7** Service openings for incinerators shall be equipped with self-closing  $\frac{3}{4}$ -hour opening protectives arranged so that there is not 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  $\frac{3}{4}$  hour.

**771.4I-8** Exit doors in fire-rated corridors, except in firewalls, stairway and hoistway shafts, shall be permitted to be of combustible construction provided that the door and frame bear the rating classification of a nationally recognized testing agency as required by table III-771.

## **771.5 Firestopping**

**771.5a General Requirements.** Concealed spaces within wall, ceiling, partition, floor, stair, attic or cornice construction, 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.

### **771.5b Materials**

**771.5b-1** Fire stopping or fill shall be of nonflammable material which can be shaped, fitted and permanently secured in position.

**771.5b-2** 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.

**771.5b-3** Combustible firestopping materials shall be permitted in buildings of type 3, 4 and 5 construction, except as provided in 771.5b-2 of this section.

**771.5c Location**

**771.5c-1** 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 nor communicate with concealed horizontal spaces in the floor or roof construction.

**771.5c-2** 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.

**771.5c-3** 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.

**771.5c-4** 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.

**771.5c-5** Exterior cornices and eaves shall be firestopped at the ends of fire and party walls and at intervals of not more than 20 feet.

**771.5c-6** 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.

**771.5c-7** 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.

**PART 772 INTERIOR FINISHES, INTERIOR FLOOR FINISH,  
TRIM AND DECORATIVE MATERIALS****772.1 General Requirements**

**772.1a** Interior finish materials used for acoustical correction, surface

insulation and decorative treatment on the surfaces of walls, ceilings and interior floor finish, interior trim materials and decorative materials shall conform to all requirements set forth in this section.

**772.1b** Such items shall be of materials that will not, in burning, give off excessive amounts of smoke or objectionable gases.

## 772.2 Interior Finish

**772.2a 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 flamespread rating
A .....	0 to 25
B .....	26 to 75
C .....	76 to 200
D .....	201 to 500

## 772.2b Use of Interior Finishes

**772.2b-1** In buildings of group C3.3, C4.3, C5.3 and C6.3 occupancy, interior finish shall be Class A.

**772.2b-2** 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.

**772.2b-3** In kitchens, pantries, repair and storage rooms interior finish shall be Class A or B.

**772.2b-4** In assembly spaces interior finish shall be Class A, Class B or Type 3 construction (heavy timber), except that Class C finish may be used as wainscoting in such spaces in buildings of groups C5.1, C5.4 and C5.5 occupancy.

**772.2b-5** Class C interior finish may be used in all locations except as set forth in 772.2b-1 through -4.

**772.2b-6** Class D interior finish shall not be permitted.

**772.2b-7** 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.

**772.2b-8** 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.

**772.2b-9** 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.

### **772.3 Interior Floor Finish**

**772.3a Classification.** Class 1 carpeting shall have a minimum critical radiant flux of 0.45 watts per square centimeter. Class 2 carpeting shall have a minimum critical radiant flux of 0.22 watts per square centimeter.

### **772.3b Use of Interior Floor Finish**

**772.3b-1** In exits, stairways, passageways and in areas of public assembly, carpeting shall be Class 1, except that in a sprinklered building Class 2 shall be permitted.

**772.3b-2** 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.

### **772.4 Use of Interior Trim**

**772.4a** 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.

**772.4b** Interior wood trim is permitted wherever class B or C interior finish is required, except as set forth in 772.4a.

### **772.5 Attachment of Interior Finish and Trim**

**772.5a** 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.

**772.5b** Interior wall and ceiling finishes which are less than 1/8-inch thick shall be mounted directly on noncombustible material.

**772.5c** Interior finish materials shall be applied directly to a noncombustible base, or to furring or nailing strips which do not exceed 1 3/4 inches in nominal thickness, except as set forth in 772.5e of this section. Concealed space between finish materials and noncombustible base shall be firestopped in conformity with the requirements set forth in 771.5c-2.

**772.5d** When class C finishes are set out more than 1 3/4 inches from walls or ceilings of noncombustible construction, they shall be attached directly to noncombustible backing or to furring or nailing strips not exceeding 1 3/4 inches in thickness applied over noncombustible material, and fire-stopped in conformity with the requirements set forth in 771.5c-2.

**772.5e** 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 772.5b.

**772.5f** 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 772.4c, shall be attached directly to the base, and concealed spaces, if any, shall be filled with noncombustible material.

**772.6 Draperies and Other Decorative Materials.** Draperies, hangings and decorative materials in assembly spaces of more than 500 square feet in area, and in exits of buildings, shall be noncombustible or flame resistance as determined by their behavior when exposed to flame in tests made in conformity with generally accepted standards.

## PART 773 PLASTIC MATERIAL

### 773.1 General Requirements

**773.1a** Plastic materials shall be classified in accordance with their burning characteristics as determined by tests conducted in conformity with generally accepted standards.

**773.1b** Plastic materials in exits shall be legibly marked to identify the burning characteristics.

**773.1c** The requirements of this section are limited to construction regulated by this Code, and shall not regulate plastic materials as permitted in Article 9 of this Code.

**773.1d** Plastic materials which give off smoke or gas denser or more toxic than is 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.

**773.1e** 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:

**773.1e-1** Fall from their frames at a temperature at least 200° F. below their ignition temperature; for exception see 772.3i.

**773.1e-2** Remain in place for at least 15 minutes at 175° F.

**773.1e-3** Smoke density rating, as tested in conformity with generally accepted standards for plastic material, is not over 75.

**773.1f** 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.

**773.1g** 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 100 square feet in area.

**773.1h** 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.

## **773.2 Foam Plastic**

**773.2a** Foam plastic insulation, except as set forth in 773.2b and 773.2c of this section, shall have a surface flame spread rating no greater than 75 and a smoke density rating no greater than 450, and shall be permitted as follows:

**773.2a-1** Within the cavity of a concrete or masonry wall.

**773.2a-2** On the interior surface of concrete or masonry walls provided the foam plastic insulation is protected by a thermal barrier.

**773.2a-3** Within combustible wall, roof or floor/ceiling assemblies that are not required to have a fire resistance rating, provided the foam plastic insulation is protected on the interior side by a thermal barrier.

**773.2a-4** As nonstructural sheathing for combustible exterior walls, provided the wall cavity is insulated with noncombustible material covered by a thermal barrier on the interior side.

**773.2b** Foam plastic shall be permitted as a component of an approved built-up roof.

**773.2c** Foam plastic shall be permitted as an integral component within a wall, roof or floor/ceiling assembly, approved for the intended use.

## PART 774 FIRE PROTECTION EQUIPMENT

### 774.1 General Requirements

**774.1a** A fire and smoke detecting system installed in conformity with section 1060.3 shall be permitted 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 1060.3c.

**774.1b** 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.

**774.1c** For group C6.2 occupancy classification, the fire safety equivalency requirements, as set forth in NFPA Standard No. 101 "Life Safety Code," shall be permitted to be applicable in lieu of the fire protection required in Part 774.

**774.2 Fire Alarm System.** A fire alarm system, installed in conformity with section 1060.2 shall be provided as follows:

**774.2a** Group C1, in buildings more than two stories or more than 30 feet in height.

**774.2b** Group C2, in buildings more than two stories in height, and in enclosed malls as set forth in 768.2m.

**774.2c** Group C3, in buildings more than two stories in height, or where the distance of travel to an exit is more than 100 feet.

**774.2d** Groups C5.1, C5.2, C5.3 and C5.4, in buildings having more than one area of public assembly and where at least one such space accommodates 100 persons or more.

**774.2e** Group C5.5, all buildings.

**774.2f** Group C6, all buildings.

**774.3 Fire and Smoke Detecting Systems.** A fire and smoke detecting system installed in conformity with section 1060.3 shall be provided as follows:

**774.3a** Group C5, as required by Part 791.

**774.3b** Group C6 2, in patient rooms or in corridors in lieu thereof and in lounges, lobbies and recreation spaces.

#### **774.4 Sprinkler System.**

**774.4a** A sprinkler system, installed in conformity with section 1060.4, shall be provided as follows:

**774.4a-1** Groups C1 through C6.3, except open parking structures and spaces for cold storage and refrigeration:

- (i) In multi-story buildings more than 70 feet in height.
- (ii) 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.
- (iii) 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.
- (iv) 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.
- (v) 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

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the local authority having jurisdiction, and shall have a maximum spacing of 50 feet on floors above the first story.

- (vi) For group C6.2, sprinklers shall be provided in buildings of type 2a construction which exceed one story in height, and in all buildings of type 2b, 3, 4 and 5 construction.

**774.4a-2** Groups C1, C2, C3.1, C3.2, C4.1, C4.2, and C5, where fire areas or heights are increased as set forth in 705.4f.

**774.4a-3** Group C2, in enclosed malls as set forth in section 768.2e.

**774.4a-4** Groups C3.3, and C4.3, where fire area is more than 1000 square feet, or building is more than one-story in height.

**774.4a-5** Groups C5.1, C5.2, and C5.3, in dance halls, night clubs and similar occupancies including accessory spaces.

**774.4a-6** Groups C5.1, C5.2, C5.3, and C5.5, under and over stage areas and auxiliary spaces such as dressing rooms, store rooms and workshops.

**774.4a-7** Groups C5.1, C5.2, C5.3, and C5.5, in exhibit spaces of exhibition buildings where any such space exceeds 15,000 square feet.

**774.4a-8** Group C6.2, in hazardous areas including but not limited to maintenance shops exceeding 100 square feet, incinerator rooms, refuse rooms, boiler rooms, mechanical equipment rooms, laundry rooms and storage rooms.

**774.4a-9** Groups C1 through C6.3, in cellar areas of 5000 square feet or more used for garages or for storage of combustible materials.

**774.4a-10** Groups C1 through C6.3, in cellar areas of 1000 square feet or more used for places of assembly.

**774.4b** Sprinklers shall not be installed in spaces where the discharge of water would be hazardous. In such spaces, other approved automatic fire-extinguishing equipment shall be provided.

**774.5 Standpipe Systems.**

**774.5a** A standpipe system installed in conformity with the requirements of section 1060.5, with outlets on each story for first-aid hose and for municipal fire department use, shall be provided as follows:

**774.5a-1** Groups C1, C2, C3.1, C3.2, C4.1, C4.2, C5, and 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, and in building six stories or more or 60 feet or more in height.

**774.5a-2** Groups C3.3, C4.3, C6.2, and 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.

**774.5b** A standpipe system shall be installed in buildings of group C5 occupancy with a stage, except as set forth in 775.5c. 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 rooms, property rooms, storage rooms and workrooms, is within 120 feet of a hose station.

**774.5c** A standpipe system shall not be required for auditoriums located on the first story of buildings of group C5.4 occupancy.

**774.6 Yard Hydrant System.** Where streets or legal open spaces are not served by public fire hydrants in conformity with the requirements of section 705.4e, a yard hydrant system shall be installed in conformity with the requirements of section 1060.6.

**774.7 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 1060.8, except when such buildings are equipped throughout with a fire- and smoke-detecting system.

#### **774.8 Automatic Vents**

**774.8a** Smoke-operated vents installed in conformity with 1060.9a shall be provided as follows:

**774.8a-1** Group C1 through C6.3, in stairways, hoistways and shafts where open type vents are not provided, as set forth in 771.4h.

**774.8a-2** Group C2, in enclosed malls as set forth in 768.2i.

**774.8b** Smoke and heat operated vents, installed in conformity with 1060.9b and generally accepted standards, shall be provided as follows:

**774.8b-1** Group C3.2, C3.3, C4.2, and C4.3, spaces having no shatterable window, skylight or mechanical ventilation.

**774.8b-2** Group C5, above stages as set forth in 771.4f-4.

**774.9 Coordinated Fire Safety System.** A coordinated fire safety system installed in conformity with Part 1061 shall be provided in groups C1 through C6.3 in multi-story buildings more than 70 feet in height except in open parking structures.

**774.10 Automatic Fire Extinguishing System Using Extinguishing Agents Other Than Water.** An automatic fire extinguishing system using an extinguishing agent suitable for petroleum fires and installed in conformity with section 1060.7 shall be provided in the dispensing area for gasoline service stations.

**BUILDING CONSTRUCTION****201****ARTICLE 6 FIRE SAFETY IN AREAS OF PUBLIC ASSEMBLY****PART 790 APPLICABILITY**

**790.1 Provisions.** The provisions of this Article shall apply to an area of public assembly, which means buildings or portions of a building used for gathering together fifty or more persons for amusement, athletic, civic, dining, educational, entertainment, patriotic, political, recreational, religious, social, or similar purposes, and the entire fire area of which it is a part, and the means of egress therefrom.

**790.2 Occupancy.** For determining when a group C5 occupancy is to be classified as an area of public assembly, see table VII-765.

**790.3 Fire Area.** For the purposes of Part 790, the fire area of which the area of public assembly is a part shall be permitted to be the gathering space enclosed by a fire separation having a fire resistance of at least two hours.

**PART 791 FIRE AND SMOKE DETECTING SYSTEM**

**791.1 General Requirement.** All areas of public assembly, and the means of egress therefrom, shall be provided with a fire and smoke detecting system installed in conformity with section 1060.3 for the purpose of detecting fire, smoke and abnormal rise in temperature.

**791.2 Special Requirements.** In areas of public assembly occupied by more than 300 persons, excluding those in educational occupancies and excluding the sanctuary and nave areas of churches, synagogues, mosques, and similar religious structures, the fire and smoke detecting system shall also activate an alarm in a location which is manned by persons capable of effectively evacuating the facility. Such system shall be reasonably free from false alarm possibilities. Provisions shall be made for transmitting voice messages throughout the area of public assembly, and for determining that such messages are being received. Reliability of any public address system used for transmitting voice messages shall be assured by testing said system prior to allowing occupants into the assembly room. Any such system shall be provided with an emergency power supply.

**PART 792 AUTOMATIC SPRINKLER SYSTEM**

**792.1 General Requirement.** In addition to the required fire and smoke detection system, dance halls, night clubs and similar occupancies, and the

means of egress therefrom, shall also be provided with an automatic sprinkler system as set forth in 774.4a-5.

**792.2 Special Requirements.** For automatic sprinkler requirements in other locations in group C5 occupancy, see 774.4a-2, 774.4a-5, 774.4a-6, 774.4a-7 and 774.4a-10.

**792.3 Group B2 Occupancies.** For automatic sprinkler requirements in assembly spaces in hotels, motels, lodging houses and dormitories, see 742.4a-2 and 742.4a-3.

### **PART 793 INTERIOR FINISH, INTERIOR FLOOR FINISH, TRIM AND DECORATIVE MATERIAL**

**793.1 General Requirements.** Interior finish, interior floor finish, trim and decorative material shall comply with requirements set forth in Part 772.

### **PART 794 RETROACTIVE REQUIREMENTS**

**794.1 Effective Date.** This Part shall become effective on January 1, 1985, subject to the condition that the Legislature has by law expressly provided for financial incentives and assistance for the implementation of the provisions herein set forth.

**794.2 Applicability.** This Part shall be applicable to an area of public assembly constructed or under construction prior to January 1, 1984. For the purpose of Part 794, the fire area of which the area of public assembly is a part shall be the gathering space enclosed by a fire separation having a fire resistance rating of at least one hour or, in the case of schools, camps and other similar supervised occupancies, by a separation that was deemed acceptable at the time of construction.

**794.3 Provisions.** On or before the effective date of this Part, areas of public assembly and the means of egress therefrom shall be provided with a fire and smoke detecting system complying with the requirements set forth in Part 791. An automatic sprinkler system, either existing or new, shall be permitted in lieu thereof. Additionally, exits in dance halls, night clubs and similar occupancies shall be made to comply with the requirements of this Chapter, or in lieu thereof, the occupancy shall be limited to the capacity of the existing exits as determined by this Chapter.

**ARTICLE 7 STRUCTURAL REQUIREMENTS****PART 800 GENERAL REQUIREMENTS**

**800.1 Weights and Loads.** 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 Article.

**800.2 Transmitted Loads.** 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.

**800.3 Protection Against Deterioration.** Wherever structural material or assemblies are subject to deterioration and might become structurally unsound if unprotected, protection in conformity with general 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.

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

**800.5 Protection Against Water.** Buildings shall be constructed so that ground and surface water will not penetrate into habitable spaces, basements and cellars. Surfaces adjoining buildings shall be arranged so as to divert surface water away from the building.

**800.6 Protection Against 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.

**800.7 Stability.** 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.

**800.8 Materials Requirements.** All structural units of natural or manufactured materials shall comply with applicable specifications of authoritative agencies, or shall be subject to test in conformity with generally accepted standards in order to determine their characteristics.

## PART 801 SOIL BEARING VALUE

**801.1 General Requirements.** The bearing value of the soil shall be determined in order that foundations may be proportioned 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 801.2a-2 and 801.2b-2.

### 801.2 Determination

#### 801.2a One- and Two-Family Dwellings

**801.2a-1** For buildings 40 feet or less in height, the allowable bearing value of the soil upon which the building rests shall be the presumptive bearing value or shall be determined by field loading tests made in conformity with generally accepted standards.

**801.2a-2** For buildings more than 40 feet in height, where the footing load on the soil exceeds 1000 psf, there shall be a minimum of one test pit or boring for every 2500 square feet or part thereof of grade-floor building area, carried sufficiently into acceptable bearing material to establish its character thickness. At least one boring shall be carried to a minimum depth below grade equal to the height of building, or to that minimum depth which shows 25 continuous feet of fine sand or better bearing material than fine sand, or 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 acceptable standards. Wash borings shall be deemed unacceptable. Boring 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 subsurface information is required because of the variable geology of the site, additional test pits or borings shall be made.

**801.2a-3** For buildings more than 40 feet in height, when the building load is transferred to the soil by spread footings, the allowable bearing values of the successive layers of soil determined by test pits or borings shall be the presumptive bearing values and, if required by the enforcement officer, shall be substantiated by field loading soil tests made on undisturbed, natural soil at the level of the proposed foundation with fill, if any, removed.

**801.2a-4** For buildings more than 40 feet in height, when the building load is transferred to the soil through the medium of friction or bearing piles, the capacity of a pile group shall be the number of piles multiplied by the capacity of one pile and by a reduction factor for friction piles. The capacity of a pile shall be determined by either of the following methods or by an approved combination of them with a limit determined by the strength of the pile as a structural member: a field loading pile test, with a minimum of two test piles, or a generally accepted pile-driving formula.

#### **801.2b Multiple Dwellings and General Building Construction.**

**801.2b-1** 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.

**801.2b-2** 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 the 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. Boring 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 subsurface information is required because of the variable geology of the site, additional test pits or borings shall be made.

**801.2b-3** For buildings referred to in 801.2b-2, 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.

**801.2b-4** For buildings referred to in 801.2b-2, 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.

**801.3 Performance Criteria for Field Loading Soil Test.** Under field loading soil test, the total settlement caused by the proposed load on the soil, measured after a period during which no settlement has occurred for 24 hours, shall not exceed  $\frac{3}{4}$ -inch. The additional settlement caused by a 50 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.

#### **801.4 Performance Criteria for Pile Test.**

**801.4a** The test load shall be twice the proposed pile load applied in increments of one quarter of the proposed pile load, with readings of settlements taken to the nearest  $\frac{1}{32}$ -inch and plotted against load. The test load may be increased to more than twice the proposed pile load value until the gross settlement is approximately 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.

**801.4b** 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 the load which caused:

**801.4b-1** A gross settlement of 1 inch.

**801.4b-2** 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.

## **PART 802 ALLOWABLE STRESSES OF MATERIALS**

**802.1 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 803.10.

**802.2 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.

**802.3 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 Part 804. 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 802.2, or by the architect or engineer responsible for the design.

## **PART 803 DESIGN LOADS**

**803.1 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 Part 804. 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.

**803.2 Live Loads****803.2a General**

**803.2a-1** Loads set forth in tables I-803, II-803 and III-803 do not include unusual concentrations, such as but not limited to heavy machinery, equipment, water tanks, elevator machine loads, swimming pools, storage units, and floor-to-ceiling bookracks. Where such loads occur, suitable provisions shall be made for their support.

**803.2a-2** 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 tables I-803, II-803 and III-803, whichever produce the greater stress.

**803.2a-3** 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:

- (i) When the dead load is not more than 25 psf, the reduction shall be not more than 20 per cent.
- (ii) 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:
  - (a) 60 percent.
  - (b) 0.08 per cent for each square foot of area supported.
  - (c) 100 per cent times (dead load psf plus live load psf) divided by (4.33 times live load psf).

No reduction is permitted for snow loads.

**803.2a-4** 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:

- (i) 80 per cent on the roof.
- (ii) 80 per cent on the floor immediately below the roof.
- (iii) 80 per cent on the second floor below the roof.
- (iv) 75 per cent on the third floor below the roof.

- (v) 70 per cent on the fourth floor below the roof.
- (vi) 65 per cent on the fifth floor below the roof.
- (vii) 60 per cent on the sixth floor below the roof.
- (viii) 55 per cent on the seventh floor below the roof.
- (ix) 50 per cent on the eighth, ninth, tenth, and subsequent floors below the roof.

No reduction is permitted for snow loads.

### **803.2b Uniformly Distributed and Concentrated Live Loads**

**803.2b-1** Uniformly distributed and concentrated live loads shall be the loads produced by the intended occupancy and use, but in no case less than the minimum live load in conformity with tables I-803, II-803 and III-803.

**803.2b-2** Minimum loads for occupancies and uses not included in the table shall be in conformity with generally accepted standards.

**803.2b-3** 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; 150 pounds on an area 1 inch in diameter; 200 pounds on an area 1 inch in diameter; 250 pounds on ladder rung, at center of rung for moment, and at end of rung for shear; 300 pounds on elevator machine roof floor grating, on an area of 2 inches square; 2000 pounds on an area 30 inches square; 12,000 pounds on an area 30 inches square.

## BUILDING CONSTRUCTION

TABLE I-803 UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS FOR ONE- AND TWO-FAMILY DWELLINGS

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
First floor of each dwelling unit . . . . .	40	
Other floors . . . . .	30	
Stair treads . . . . .	75 <sup>1</sup>	
Attics:		
Accessible by stair or ladder in areas where the ceiling height is:		
4 feet 6 inches or more . . . . .	30	
less than 4 feet 6 inches . . . . .	20	150
Accessible by scuttle or means other than a stair, and of such height that household goods may be stored therein . . . . .	20	150
Roofs used as promenades . . . . .	30	
Other roofs . . . . .	( <sup>2</sup> )	200
Garages for passenger cars . . . . .	50	2,000 <sup>3</sup>

<sup>1</sup> Stringers of stairs need be designed only for uniform load.<sup>2</sup> For minimum imposed load, see 803.10c.<sup>3</sup> Or actual wheel load increased 50 per cent for impact, whichever is larger.

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TABLE II-803 UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS FOR MULTIPLE DWELLINGS

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
Dwelling units and public corridors on same floor .....	40	
Private interior stairs .....	75 <sup>1</sup>	
Business offices excluding storage areas	50	
Light storage .....	120	
Public rooms, public corridors, public lobbies, public entrance halls, stores .....	100	
Public stairs and exterior stairs: treads, balcony platforms .....	100 <sup>1</sup>	
Kitchens, other than domestic .....	100	
Attics:		
Accessible by stair or ladder in areas where the ceiling height is:		
4 feet 6 inches or more .....	30	
less than 4 feet 6 inches .....	20	150
Accessible by scuttle or means other than a stair, and of such height that household goods may be stored therein .....	20	150
Inaccessible (load for emergency access) .....	10	
Roofs used as promenades .....	40	
Other roofs .....	( <sup>2</sup> )	200
Skylight screens .....		100 <sup>5</sup>
Garages, ramps and driveways, for passenger cars .....	50	2,000 <sup>6</sup>
Garages, ramps and driveways, for buses, trucks and mixed usage .....	175	12,000 <sup>6</sup>
Sidewalks over vaults .....	300	12,000 <sup>6</sup>
Air conditioning space .....	200	2,000
Elevator machine rooms .....	( <sup>3</sup> )	300
Exitways .....	100	
Fan rooms .....	100	
Ladders, fixed:		
Rungs .....		250
Verticals .....		80 <sup>4</sup>
Locker rooms .....	75	
Marquees .....	60	
Terraces, yards, for pedestrians .....	60	
Toilet rooms, public .....	60	
Workshops .....	80	

<sup>1</sup> Stringers of stairs need be designed only for uniform load.<sup>2</sup> See 803.10c for minimum imposed loads for roofs.<sup>3</sup> For loads see 803.11.<sup>4</sup> Side rails of ladders need be designed only for 80 pounds at center of every rung, applied simultaneously<sup>5</sup> Skylight screen 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.<sup>6</sup> Or actual wheel load increased 50 per cent for impact, whichever is larger. Where clear height or garage entrance exceeds 7 feet, load for buses, trucks and mixed usage shall be used.

TABLE III-803 UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS FOR GENERAL BUILDING CONSTRUCTION

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
<b>C1 Business</b>		
Business machine equipment . . . . .	100	
Office space (not including storage areas) . . . . .	50 <sup>1</sup>	
Record storage . . . . .	120	
<b>C2 Mercantile</b>		
Stores, shops for display and sale		
Retail		
On ground floor . . . . .	100	
On upper floors . . . . .	75	
Wholesale . . . . .	120	
<b>C3 Industrial</b>		
Bakeries . . . . .	150	
Laundries . . . . .	100	
Manufacturing or processing . . . . .	125	
Light manufacturing, assembly, etc. . . . .	75	
<b>C4 Storage</b>		
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 . . . . .	( <sup>2</sup> )	
<b>C5 Assembly</b>		
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 <sup>3</sup>	
Movable seats . . . . .	100	
Dressing rooms . . . . .	40	
Projection rooms . . . . .	100	
Stage floors . . . . .	150	
<b>C5 Assembly</b>		
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	

<sup>1</sup> Dead load is to be increased by 20 psf for possible shifting of masonry partitions.<sup>2</sup> 50 psf per foot of clear story height.<sup>3</sup> Grandstands, 100 psf; 804.9e for horizontal impact loads.

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TABLE III-803 UNIFORMLY DISTRIBUTED AND CONCENTRATED LIVE LOADS FOR GENERAL BUILDING CONSTRUCTION (Continued)

Occupancy or use	Uniformly distributed loads, psf	Concentrated loads in pounds
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	
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 <sup>6</sup>	2,000 <sup>10</sup>
Buses, trucks, mixed usage .....	175	12,000 <sup>10</sup>
Incinerator charging floor .....	100	
Kitchens (other than domestic) .....	100	
Ladders .....		250 <sup>11</sup>
Laboratories .....	100	
Libraries		
Reading rooms .....	60	
Stacks .....	(7)	
Lobbies .....	100	2,000 <sup>12</sup>
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 <sup>10</sup>
Skylight screens .....		100 <sup>13</sup>
Stairways .....	100 <sup>9</sup>	
Terraces, yards, for pedestrians .....	60	
Toilet rooms .....	60	
Vaults, in office space .....	250	2,000
Workshops .....	80	

<sup>4</sup> Unless noted elsewhere in this table, 100 psf; corridors within a tenancy not less than occupancy served.

<sup>5</sup> For loads, see section 803.11.

<sup>6</sup> Where clear height of garage entrance exceeds 7 feet, load for busses, trucks and mixed usage shall be used.

<sup>7</sup> 20 psf per foot of height, with a minimum of 150 psf.

<sup>8</sup> See 803.10c for minimum imposed loads for roofs.

<sup>9</sup> Stringers of stairs need be designed only for uniform load.

<sup>10</sup> Or actual wheel load increased 50 per cent for impact, whichever is larger.

<sup>11</sup> Side rails or ladders need be designed only for 80 pounds at center of every rung, applied simultaneously.

<sup>12</sup> For any building where a floor safe may be brought into building.

<sup>13</sup> 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.

**803.3 Snow Loads**

**803.3a** Minimum snow loads shall be in conformity with table IV-803 and the snow map below, and shall be applied normal to the roof surface.

**803.3b** Minimum snow loads in table IV-803 and the snow map below shall be:

**803.3b-1** Increased due to nonuniform accumulation on pitched or curved roofs

**803.3b-2** Increased in the valleys formed by multiple series roofs

**803.3b-3** Increased due to snow sliding off sloping roof areas on to adjacent roof areas

**803.3b-4** Increased due to drifting snow on the lower levels of multilevel roofs and on roof areas adjacent to projections

**TABLE IV-803 SNOW LOADS**  
In pounds per square foot

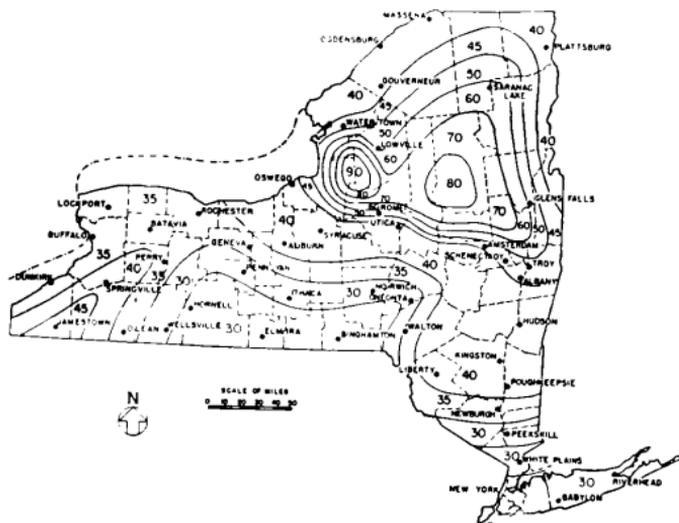
Zone numbers on snow map	Roof slope from horizontal <sup>2</sup>					
	0°	20°	30°	40°	50°	60° or more
30	30	27	17	9	3	0
35	35	31	20	10	4	0
40	40	35	23	12	4	0
45	45	40	25	13	5	0
50	50	44	28	15	5	0
60	60	53	34	18	6	0
70 <sup>3</sup>						
80 <sup>3</sup>						
90 <sup>3</sup>						

<sup>1</sup> For minimum imposed loads see 803.10c.

<sup>2</sup> For slopes between

<sup>3</sup> For snow zones 70, 80 and 90 or snow map, use same tabular values as for zone 60.

## SNOW MAP OF NEW YORK STATE



Numbers Indicate Zones Within Lines

**803.4 Wind Loads.** Minimum wind loads shall be in conformity with tables V-803 and VI-803, 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.

## BUILDING CONSTRUCTION

**TABLE V-803 WIND LOADS: WALLS, EAVES, CORNICES,  
TOWERS, MASTS AND CHIMNEYS**  
In pounds per square foot

At height above grade in feet	Walls <sup>1,4</sup>	Eaves and cornices <sup>2</sup>	Towers, masts and chimneys <sup>4</sup>
501 to 600 <sup>3</sup> .....	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

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

<sup>2</sup> Load acting upward.

<sup>3</sup> 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.

<sup>4</sup> 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.

### 803.5 Overturning Force and Moment Due to Wind

**803.5a** The overturning force shall be the wind load. The wind load shall be the load set forth in table V-803, 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.

**803.5b** The moments of stability and overturning shall be computed about the leeward edge of the horizontal plan under consideration.

**803.5c** The moment of stability of the structure above the horizontal plane under consideration shall be not less than 1 ½ times the overturning moment due to wind.

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**TABLE VI-803 WIND LOADS: ROOFS**  
In pounds per square foot

Mean elevation of roof above grade level in feet	Direction of load <sup>1</sup>	Slope from horizontal <sup>2</sup>			
		0° to 20°	20° to 30°	30° to 60°	Over 60°
501 to 500 <sup>3</sup>	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

<sup>1</sup> Downward and upward loads act non-simultaneously

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

<sup>3</sup> For heights above 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.

**803.6 Sliding Force Due to Wind.** The sliding force due to wind load, equal to the overturning force, determined in conformity with section 803.5, 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.

**803.7 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.

**803.8 Soil Pressures and Hydrostatic Head Loads.**

**803.8a 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 of fixed or moving loads; uplift from hydrostatic head.

**803.8b Freestanding Retaining Walls.**

**803.8b-1** 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.

**803.8b-2** The resisting force due to soil friction shall be not less than 1½ times the sliding force.

**803.9 Horizontal Impact Loads**

**803.9a** Nonbearing partitions enclosing dwelling units shall be designed to resist without displacement at top or bottom a minimum linear load of 10 pounds per foot, applied at mid-height.

**803.9b** Parapet walls and railings, other than those for parking decks, including handrailings, both interior and exterior, shall be designed to resist a lateral impact at the top equivalent of a minimum linear load of 50 pounds per foot.

**803.9c** 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 resist 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 803.9b 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.

**803.9d** 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.

**803.9e** 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.

**803.9f** 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.

### **803.10 Combined Loads.**

**803.10a** 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.

**803.10b** If the stress due to wind exceeds one third of the stress due to dead load plus imposed load excluding wind load, the allowable stress of the material may be increased by one third.

**803.10c** On roofs where the slope is such that the snow load plus the wind load totals less than 20 psf, the minimum imposed load shall be 20 psf perpendicular to the roof surface.

**803.10d** 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.

**803.11 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.

**803.12 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.

**PART 804 ANALYSIS AND TEST OF STRUCTURAL ASSEMBLIES**

**804.1 Determination.** 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.

**804.1a** 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 803.10. 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.

**804.1b** 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 as set forth in Part 805.

**804.1c** 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.

**PART 805 PERFORMANCE CRITERIA UNDER TEST**

**805.1 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.

**805.2 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.

**805.3 Under 1½ Times Imposed Load.**

**805.3a** 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.

**805.3b** 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.

**805.4 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.

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

**805.6 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.

**805.7 Transmitted Loads.** Fastenings and connections shall be capable of transmitting, without failure, twice the loads for which they are designed.

**PART 806 EXTERIOR PROTECTION**

**806.1 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.

**806.2 Exterior Materials.** The exterior facing or covering of walls and roofs shall be resistant to the causes of deterioration as set forth in section 800.3 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.

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

**806.4 Waterproofing.**

**806.4a** 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.

**806.4b** Metallic structural elements in exterior walls not inherently corrosion resistant shall be protected against the effects of rain and moisture.

**806.5 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.

## PART 807 WOOD FOUNDATION

**807.1 General Requirements.** The foundation of a one-family dwelling of type 5 construction is permitted to be constructed of preservative treated wood where the soil characteristics have been proven to be suitable for a wood foundation, subject to approval from the local authority having jurisdiction that the adequacy of the site and soil for a wood foundation has been determined. The material, design and construction of such foundation including the pressure treated wood, moisture and drainage control, and corrosion resistant fasteners, shall conform to the generally accepted standards applicable to wood foundations.

**807.2 Restrictions.** A concrete basement or cellar slab, concrete steps or landing, exterior masonry veneer or masonry fireplace are permitted but shall not be supported by the wood foundation.

**807.3 Grade Marking.** The preservative treated wood shall be permanently and legibly marked to identify that it conforms to the generally accepted standard applicable to pressure treated wood used for ground contact in residential foundations. Wood cut after treatment shall have preservative applied to the cut surfaces.

**807.4 Fire Safety Requirements.** An interior thermal barrier, vapor barrier and smoke detector shall be installed in the cellar or basement as set forth in 717.6a.

## ARTICLE 8 GENERAL PROVISIONS FOR SYSTEMS AND EQUIPMENT

## PART 850 — 903.24c-2

## PART 850 GENERAL REQUIREMENTS

**850.1 Design, Installation, and Location.** 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.

**850.2 Quality.** 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.

**850.3 Acceptability.** The design and installation of equipment and systems shall conform to the requirements of Chapter A.

**850.4 New Installation and Alteration.** New installation of equipment in existing buildings, and alterations and extensions to existing equipment and systems, shall conform to the requirements of this Code.

**850.5 Testing and Approval.** 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.

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

**850.7 Protection Against Freezing.** Equipment and systems subject to damage from freezing, shall be adequately protected against freezing.

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**850.8 Protection from Damage.** Equipment shall be protected from mechanical damage. Equipment within garages shall be protected from damage by motor vehicles.

**850.9 Service Facilities.** 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.

**850.10 Equipment Guards.** Moving parts of equipment which may be a potential hazard shall be guarded to protect against accidental contact.

**850.11 Piping, Conduits, and Ducts.** Piping, conduits, or ducts which may be a potential hazard shall not be permitted in exits, stairways, or hoistways.

**850.12 Structural Safety.** Floors, walls, ceilings, partitions, beams, studs, and any other parts of the building or premises which are cut, notched or altered in the installation of equipment and systems shall be left in a safe structural condition.

## ARTICLE 9 PLUMBING REQUIREMENTS

## PART 900 REQUIRED PLUMBING FACILITIES

**900.1 Plumbing Systems For Buildings**

**900.1a** Buildings and portions thereof shall be provided with potable water from an approved source.

**900.1b** 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 to furnish 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 Part.

**900.1c** Plumbing systems shall be designed, constructed and maintained so as to guard against fouling, clogging and depositing of solids.

**900.1d** 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.

**900.1e Conservation**

**900.1e-1 Water Conservation.** For the purpose of water conservation from sink or lavatory faucets, shower heads, urinals or toilets and associated flush valves, the flow shall not exceed the rates and quantity as set forth in section 15-0314 of the State Environmental Conservation Law.

**900.1e-2 Energy Conservation.** For the purpose of energy conservation for service water heating systems, the flow and temperature shall not exceed the criteria set forth in the State Energy Conservation Construction Code.

**900.2 Plumbing Fixtures**

**900.2a Location, Number and Type of Fixtures.** 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.

**900.2b One- and Two-Family Dwellings, Groups A1 and A2**

**900.2b-1** Within each dwelling unit, provide:

- (i) One kitchen sink.
- (ii) One water closet.
- (iii) One bathtub or shower.
- (iv) One lavatory.

Such fixtures need not be furnished in owner occupied one family dwellings subject to the approval of the authority having jurisdiction.

**900.2b-2** Hot water need not be furnished unless required by law.

**900.2c Multiple Dwellings, Groups B1, B2, B3 and B4**

**900.2c-1** Within each dwelling unit, provide:

- (i) One kitchen sink.
- (ii) One water closet.
- (iii) One bathtub or shower.
- (iv) One lavatory.

**900.2c-2** Within each dwelling unit, not designed for use primarily by transients, provide one laundry tray or automatic laundry washing machine, or, in a readily accessible location within a general laundry room at least one two-compartment laundry tray for each ten dwelling units or one automatic laundry washing machine for each twenty dwelling units. Such laundry room shall be located within the building, except that in multiple dwellings not more than two stories in height accessibility from within the building is not required where access is not more than 100 feet, along the path of paved walkways, from the exterior entrance serving one or more dwelling units.

**900.2c-3** Where multiple dwellings contain sleeping accommodations arranged as individual rooms or suites, without provisions for cooking, for each six sleeping rooms, provide:

- (i) One water closet.
- (ii) One bathtub or shower.
- (iii) One lavatory.

Motels may have such plumbing facilities provided in another building within 50 feet of, and on the same premises with, such motel.

**900.2c-4** Where multiple dwellings contain sleeping accommodations arranged as a dormitory, for each fifteen persons so accommodated and located adjacent thereto, provide:

- (i) One water closet.
- (ii) One bathtub or shower.
- (iii) One lavatory.

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**900.2c-5** Urinals may be substituted in men's toilet rooms for not more than one third of the required number of water closets.

**900.2d Groups C1 Business, C2 Mercantile and C3 Industrial, Other Than Foundries and C4 Storage.**

**900.2d-1** Provide water closets and lavatories for employees as shown in the following table:

**TABLE I-900 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	

**900.2d-2** Provide one drinking fountain or equivalent fixture for each 75 employees.

**900.2d-3** 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.

**900.2d-4** 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.

**900.2d-5** 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.

**900.2d-6** Facilities 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 facilities 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 facilities does not exceed 500 feet horizontally.

### 900.2e Group C3 Industrial, Foundries Only

**900.2e-1** Provide water closets and lavatories for employees as shown in the following table:

**TABLE II-900 WATER CLOSETS AND LAVATORIES FOR EMPLOYEES IN GROUPS 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	

**900.2e-2** Provide one drinking fountain or equivalent fixture for each 75 employees.

**900.2e-3** 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.

**900.2e-4** 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.

### 900.2f Group C5 Assembly, other than places of worship and schools.

**900.2f-1** Provide water closets, urinals and lavatories for occupants, based upon capacity, as shown in the following table:

**900.2f-2** One drinking fountain or equivalent fixture shall be provided for each 1000 occupants, except that there shall be at least one such fixture at each assembly floor level and tier.

**BUILDING CONSTRUCTION****229****TABLE III-900 WATER CLOSETS, URINALS AND LAVATORIES FOR OCCUPANTS IN GROUP C5, ASSEMBLY OTHER THAN PLACES OF WORSHIP AND SCHOOLS**

Number of water closets	Total number of occupants	Number of urinals	Number of male occupants	Number of lavatories	Total number of occupants
1	1-100	1	15-100	1	1-100
2	101-200	2	101-200	2	101-200
3	201-400	3	201-400	3	201-300
				4	401-700
				5	701-1100
Over 400 occupants: one additional water closet for each 300 women, and one for each 500 men.		One additional urinal for each 300 in excess of 400.		One additional lavatory for each 1500 in excess of 1100. Such lavatories need not be supplied with hot water.	

**900.2f-3** 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.

**900.2f-4** 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. Facilities 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 facilities 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 facilities does not exceed 500 feet.

**900.2f-5** Toilet facilities shall be readily accessible, and where they are designed for use by more than one person at a time, they shall be in separate rooms for each sex.

**900.2g Group C5.4 Assembly, Places of Worship Only**

**900.2g-1** One water closet and one lavatory shall be provided.

**900.2g-2** 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.

**900.2h Group C5.5 Assembly, Schools Only****900.2h-1** For pupils' use:

- (i) Water closets for pupils shall be provided on the following basis:
  - (a) In elementary schools, 1 for each 100 males and 1 for each 35 females.
  - (b) In secondary schools, 1 for each 100 males and 1 for each 45 females.
- (ii) One lavatory for each 50 pupils.
- (iii) One urinal for each 30 male pupils.
- (iv) One drinking fountain or equivalent fixture for each 150 pupils, but at least one such fixture at each floor having classrooms.

**900.2h-2** 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. 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.

**900.2h-3** Toilet facilities shall be in separate rooms for each sex, and shall be readily accessible and convenient.

**900.2i Group C6.1, Institutional****900.2i-1** Within each dwelling unit:

- (i) One kitchen sink.
- (ii) One water closet.
- (iii) One bathtub or shower.
- (iv) One lavatory.

**900.2i-2** Where sleeping accommodations are arranged as individual rooms or suites, there shall be located adjacent thereto for each six sleeping rooms:

- (i) One water closet.
- (ii) One bathtub or shower.
- (iii) One lavatory.

**900.2i-3** Where sleeping accommodations are arranged as a dormitory, for each 15 persons so accommodated there shall be located adjacent thereto:

- (i) One water closet.
- (ii) One bathtub or shower.
- (iii) One lavatory.

**900.2i-4** Toilet facilities, except those within dwelling units, shall be in separate rooms for each sex.

**900.2i-5** When the occupancy is regulated by a governmental agency, the plumbing fixture requirements **may** comply with the agency rules and regulations in lieu of the requirements of this section.

#### **900.2j Group C6.2, Institutional, Other Than Hospitals.**

**900.2j-1** On each story so occupied, provide water closets for occupants on the following basis:

- (i) 1 for each 25 males and 1 for each 20 females.
- (ii) One urinal for each 50 male occupants.
- (iii) One lavatory for each 10 occupants.
- (iv) One shower for each 10 occupants.
- (v) One drinking fountain or equivalent fixture for each 50 occupants.

**900.2j-2** Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy. 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.

**900.2j-3** Toilet facilities shall be in separate rooms for each sex.

**900.2j-4** When the occupancy is regulated by a governmental agency, the plumbing fixture requirements **may** comply with the agency rules and regulations in lieu of the requirements of this section.

**900.2k Group C6.2 Institutional, Hospitals Only.**

**900.2k-1** For patients' use provide:

- (i) One water closet and one lavatory for each 10 patients.
- (ii) One shower or bathtub for each 20 patients.
- (iii) One drinking fountain or equivalent fixture for each 100 patients.

**900.2k-2** Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy. 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.

**900.2k-3** Toilet fixtures for employees shall be located in separate rooms from those in which fixtures for the use of patients are located.

**900.2k-4** Toilet facilities shall be in separate rooms for each sex, and shall be readily accessible and convenient.

**900.2l Group C6.3 Institutional, Mental Hospitals Only.**

**900.2l-1** For patients' use provide:

- (i) One water closet, one lavatory and one shower or bathtub, for each 8 patients.
- (ii) One drinking fountain or equivalent fixture for each 50 patients.

**900.2l-2** Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy. 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.

**900.2l-3** Toilet fixtures for employees shall be located in separate rooms from those in which fixtures for the use of patients are located.

**900.2l-4** 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.

### **900.2m Group C6.3 Institutional, Penal Institutions Only**

**900.2m-1** For inmate use provide:

- (i) One water closet and one lavatory in each cell.
- (ii) One shower at each floor on which cells are located.
- (iii) One water closet and one lavatory for inmate use available at each exercise area.

Lavatories for inmate use need not be supplied with hot water.

**900.2m-2** Fixtures for employees shall consist of at least the same number and type as required for group C1 occupancy.

**900.2m-3** Toilet fixtures for employees shall be located in separate rooms from those in which fixtures for the use of inmates are located.

**900.2m-4** 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.

### **900.2n Group C7 Miscellaneous**

**900.2n-1** 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, and 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.

**900.2n-2** 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.

**900.2o Public Bathing Occupancies.** Facilities for bathers at swimming pools and other public bathing occupancies shall be in accordance with New York State Health Department regulations in Part 6 of the State Sanitary Code.

**900.2p 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.

**900.2q 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.

#### **900.2r Exposure to Harmful Materials or Excessive Heat**

**900.2r-1** 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.

**900.2r-2** 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.

**900.2s 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.

### **PART 901 FIXTURES, FIXTURE TRAPS AND INTERCEPTING DEVICES**

**901.1 Quality of Fixtures.** Plumbing fixtures shall have smooth impervious surfaces, shall be durable for the uses intended, and shall be free from defects and concealed fouling surfaces.

#### **901.2 Water Closets and Urinals**

**901.2a Prohibited Water Closets.** Pan, valve, plunger, offset, washout, latrine, frostproof and other water closets having an invisible seal or unventilated spaces or having walls which are not thoroughly washed at each flushing, shall be prohibited. Water closets which might permit the contents of the water closet to be siphoned back into the flush tank shall be prohibited.

**901.2b Prohibited Urinals.** Trough urinals shall be prohibited, except where specially approved by the local authority having jurisdiction.

**901.2c Water Closets for Public Use.** Water closets for public use shall be of the elongated bowl type.

**901.2d Water Closets for Children's Use.** In schools, nurseries, and other similar occupancies where fixtures are provided for the use of children under six years of age, water closets shall be of suitable type.

**901.2e Water Closet Seats.** Water closets shall be equipped with seats of smooth non-absorbent material. Integral water closet seats shall be of the same material as the fixture. Seats of water closets provided for public use shall be of the open-front type.

**901.2f Walls and Floors at Urinals.** Walls and floors adjacent to urinals shall be finished with noncorrosive, nonabsorbent material extending at least 1 foot in front of the urinal lip, 1 foot on each side of the urinal and 4 feet above the floor.

**901.2g Flushing.** Flushing devices shall be provided at each water closet and urinal, except as otherwise provided in 901.3b and shall be designed and installed so as to supply water at adequate volume and rate to flush satisfactorily the water closets or urinals with which they are connected.

### **901.3 Flushing Devices**

**901.3a Capacity of Flush Tanks.** Flush tanks shall have sufficient flow capacity to flush properly the water closets or urinals with which they are connected.

**901.3b Separate Flush Tanks.** No flush tank shall supply more than one water closet or urinal, except that, where approved, a single flush tank may be used to flush more than one urinal provided the tank is automatic in operation and of sufficient capacity to provide the amount of water required to flush and cleanse properly and simultaneously all of the urinals connected thereto.

**901.3c Flush Pipes and Fittings.** Flush pipes and fittings between flush tanks and water closets or urinals shall be of adequate size to provide sufficient rate of flow for proper flushing.

### **901.3d Ballcocks**

**901.3d-1** Where flush tanks are supplied through ballcocks which are connected directly to the potable water supply system, such ballcocks shall be installed in conformity with 902.3h to prevent contamination of the system.

**901.3d-2** Ballcocks in flush tanks shall be designed to operate automatically, refilling the tank after discharge and shutting off completely when the tank is filled to operational capacity. In lowdown flush tanks, ballcocks shall also be designed with means for bypassing an adequate amount of water to the water closet seal so as to refill the trap seal while refilling the tank after each flushing.

### **901.3e Flush Valves in Tanks**

**901.3e-1** Flush valves in tanks shall be designed for manual operation, except those in flush tanks which are required to be automatic in operation.

**901.3e-2** Seats of flush valves in tanks for flushing water closets shall be at least 1 inch above the rim level of the water closets connected thereto, except in approved water closet and flush tank combinations designed so that, when the water closet is clogged and the tank is flushed, the flush valve will close tightly and water will not spill continuously over the rim of the water closet.

**901.3f Overflows in Tanks.** Flush tanks shall be provided with overflows of adequate size to prevent tank flooding at the maximum rate at which the tanks are supplied with water. The overflow of a flush tank shall discharge into the water closet or urinal connected thereto.

### **901.3g Flush Valves Connected Directly to Water Supply System**

**901.3g-1** Flush valves connected directly to the potable water supply system shall be installed in conformity with 902.3g to prevent contamination of the system.

**901.3g-2** Flush valves shall be readily accessible for repairs. A convenient means shall be provided for adjustment of volume and rate of water discharged by flush valves.

**901.3g-3** Flush valves shall be designed so that when manually activated they shall complete their cycle of operation, opening fully and closing positively under service pressure, and shall deliver water in sufficient volume and rate to flush thoroughly the fixture supplied and refill the fixture trap seal.

## **901.4 Lavatories**

**901.4a Waste Outlets.** Lavatories shall have waste outlets not less than 1¼ inches in diameter.

**901.4b Equivalency of Multiple Type Lavatories.** Multiple type lavatories, such as circular or straight-line multiple wash sinks or washfountains, shall be considered equivalent to a number of ordinary lavatories on the basis of one lavatory for each 18-inch unit length of usable space at which hot and cold water are available along the perimeter of the fixture.

### 901.5 Bathtubs

**901.5a Waste Outlets and Overflows.** Bathtubs shall be provided with waste outlets and overflows at least 1½ inches in diameter, and shall be equipped with a suitable stopper.

### 901.6 Showers

**901.6a Waste Outlets.** Waste outlets of showers shall have removable strainers and shall be at least 2 inches in diameter, except for bathtubs serving as receptors for shower heads installed above, and except for emergency showers for which no drains are provided.

**901.6b Shower Compartments.** Shower compartments, except those installed directly on the ground or those having watertight enameled metal receptors or an approved equivalent, shall have floors constructed in a water tight shower pan of durable material. The pan shall turn up on all sides at least 2 inches above the finished floor level, and shall be securely fastened to the fixture waste outlet pipe at the seepage entrance, making a watertight joint between the pan and the outlet pipe.

**901.6c Receptors on the Ground.** Shower compartments directly on the ground shall have floors or receptors constructed of smooth, noncorrosive, and nonabsorbent waterproof materials, and shall have such floors or receptors securely fastened to the fixture waste outlet pipe, making a watertight joint thereto.

**901.6d Dimensions.** Individual shower compartments shall have floor areas of at least 900 square inches, and if rectangular, square or triangular in plan, shall be not less than 30 inches nominally in least dimension.

**901.6e Floor Construction.** Floors under shower compartments shall be smooth and structurally sound.

**901.6f Drainage of Public or Institutional Shower Room Floors.** Floors of public or institutional shower rooms shall be drained in such manner that water from any shower head will not drain across areas occupied by other bathers.

**901.6g Wall Construction.** Shower compartments shall have walls constructed of smooth, noncorrosive and nonabsorbent waterproof materials to a height of not less than 6 feet above the floor.

**901.6h Wall Construction Above Built-in Bathtubs.** Built-in bathtubs above which shower heads are installed, shall have waterproof joints between the tub and walls, and such walls shall be constructed of smooth, noncorrosive and nonabsorbent waterproof materials to a height of not less than 6 feet above the floor.

### **901.7 Laundry Trays**

**901.7a Waste Outlets.** Each compartment of a laundry tray shall be provided with a waste outlet at least 1½ inches in diameter, and shall be equipped with a suitable stopper.

### **901.8 Sinks**

**901.8a Waste Outlets.** Sinks shall be provided with waste outlets at least 1½ inches in diameter.

**901.8b Approval Required for Use of Food Waste Grinder Units.** No food waste grinder unit shall be installed as part of the plumbing system unless the use of such units is specially approved.

**901.8c Waste Openings for Food Waste Grinders.** A sink equipped with a food waste grinder shall have a waste opening at least 3½ inches in diameter.

**901.8d Water Control for Food Waste Grinders.** Food waste grinder units installed in sinks shall be equipped with either automatic or hand-operated water supply controls, so that the unit will operate only when water flows.

### **901.9 Drinking Fountains and Equivalent Fixtures**

**901.9a Design and Construction of Drinking Fountains.** Drinking fountains shall conform to generally accepted standards.

**901.9b Nozzle Elevation.** Drinking fountain nozzles shall be placed so that the lower edge of the nozzle orifice is at an elevation not less than three-fourths of an inch above the flood level rim of the receptacle.

**901.9c Equivalent Fixtures.** Drinking fountains equipped with more than one nozzle shall be deemed equivalent in number to the number of nozzles provided at reasonable spacing and accessible for users. Where properly

installed drinking fountain nozzles are provided and approved for use at sinks or lavatories, such nozzles shall be deemed equivalent drinking fountain fixtures.

### **901.10 Dishwashing Machines and Fixtures**

**901.10a Domestic Machines.** A separate trap shall be provided for a dishwashing machine which drains by gravity and is directly connected to the drainage system. Machines having drainage pumps may discharge into the waste outlet piping of an adjacent kitchen sink by means of a wye-branch fitting on the inlet side of the sink trap provided that the pump discharge line rises to an elevation at least as high as the underside of the sink rim or counter. Where indirectly connected, dishwashing machines shall discharge through an air break into a fixture approved for such use.

**901.10b Hot Water for Commercial Machines and Fixtures.** Commercial dishwashing machines and dishwashing fixtures using hot water shall be provided with water at 140° to 160° F. for washing, and at 180° to 190° F. for sanitizing.

### **901.11 Floor Drains**

**901.11a Strainers.** Floor drains shall be provided with removable strainers. The open area of the strainer shall be at least two thirds of the cross-sectional area of the drain pipe to which the floor drain connects.

**901.11b Accessibility.** The floor drain inlet shall be located so that it is readily accessible at all times.

**901.11c Provision for Evaporation.** Traps of floor drains shall be of the deep seal type. Floor drains shall be provided with water supply by means of a faucet located not more than 3 feet above the floor area drained, except where other suitable means for maintaining the trap seal are approved.

**901.11d Size.** Floor drains shall be of such size as to serve efficiently the purpose for which they are intended, but in no case less than 3 inches in nominal diameter.

### **901.12 Fixture Overflows**

**901.12a Design.** Fixture provided with overflows, shall have their wastes arranged so that standing water in the fixture cannot rise in the overflow when the stopper is closed or remain in the overflow when the fixture is empty.

**901.12b Connection.** The overflow pipe from a fixture shall be connected on the inlet side of the fixture trap, except that overflows for flush tanks may discharge into the water closets or urinals served by their flush tanks.

**901.13 Common Fixture Strainers.** Common plumbing fixtures, except water closets and siphon action washdown or blowout urinals, shall be provided with durable strainers installed in the fixture waste outlets. Such strainers shall have waterway areas adequate for satisfactorily rapid fixture drainage.

#### **901.14 Special Use Fixtures**

**901.14a Detrimental Wastes.** No fixture shall be provided or used to receive and discharge into the building drainage system any objectionable quantities of detrimental wastes, such as substances which will clog the pipes, destroy the pipes or their joints, interfere unduly with the sewage disposal process, or produce explosive mixtures, unless such fixtures are provided with efficient and approved means for the satisfactory treatment and handling of such wastes to render them unobjectionable and harmless.

**901.14b Waste Treatment and Handling at Fixtures.** The means provided for the treatment and handling of wastes at such fixtures shall conform to the provisions of this chapter, or such fixtures shall be connected to an independent drainage system conforming to the provisions for such systems in Part 903.

**901.14c Fixtures Prohibited for Indirect Waste Use.** No fixture used for domestic or culinary purposes shall be used to receive the discharge of an indirect waste pipe, except that sinks and wash trays in dwelling units may receive the indirect wastes from domestic appliances. No water closet, urinal, bathtub or shower shall be used to receive indirect wastes.

**901.14d Shape and Capacity of Receptors for Indirect Wastes.** Fixtures which receive the discharge of indirect waste pipes shall be of such shape and capacity as to prevent splashing and flooding.

**901.14e Garbage Can Washers.** No garbage can washer shall discharge through a trap serving any other device or fixture.

#### **901.15 Intercepting Strainers For Special Use Fixtures.**

**901.15a Use and Design.** An approved intercepting stainer, basket or equivalent device, shall be installed in the waste outlet of every receptacle receiving wastes which contain large, objectionable solid substances to

prevent their passage into the drainage system. The intercepting device shall be designed to intercept solids one half inch and larger in size, and to be easily removable for cleaning purposes.

**901.15b In Commercial Laundries.** Plumbing receptacles permitted to receive wastes containing strings, rags, buttons or similar solid substances, shall be equipped with an approved intercepting strainer, basket or equivalent device.

**901.15c In Slaughterhouses.** Plumbing receptacles permitted to receive wastes containing feathers, entrails or similar solid substances, shall be equipped with an approved intercepting strainer, basket or equivalent device.

**901.15d For Receptors of Indirect Wastes.** A fixture which receives from indirect waste pipes discharges containing large objectionable solid substances, shall be equipped with a readily removable metal basket or beehive strainer, not less than 4 inches in height, installed at the waste outlet in the fixture.

**901.15e For Garbage Can Washers.** The receptacle receiving the wash from garbage cans shall be provided with a strainer, basket or similar intercepting device to prevent the discharge of large particles into the building sanitary drainage system.

## **901.16 Swimming Pools**

### **901.16a Conformity and Standard**

**901.16a-1** Swimming pools for other than private family use, shall be designed, installed and maintained in accordance with the New York State Health Department regulations in Part 6 of the State Sanitary Code.

**901.16a-2** Swimming pools for private family use (one- and two-family dwellings) shall be designed and installed in accordance with the requirements set forth in this section.

**901.16b Construction.** Swimming pools shall be of watertight construction. Inside surfaces shall be of smooth, nonabsorbent material with rounded corners and nonskid floors, and shall be constructed so as to be easily cleaned.

### **901.16c Drainage**

**901.16c-1** Swimming pools shall be provided with at least one drain outlet so located that the entire pool can be emptied, and the drain therefrom shall be equipped with a readily accessible gate valve.

**901.16c-2** Each drain outlet shall be equipped with a vortex and suction reducing device consisting of an outlet strainer or grate having a total open area at least equal to 4 times the cross sectional area of the pool drain pipe.

**901.16c-3** The drain outlet and the drain piping therefrom shall be sized to permit the pool to be completely drained without causing flooding or sewer back up.

**901.16c-4** Swimming pool drain, gutter drain, deck drain or overflow from the recirculation system when discharged to the sewer system or storm drain shall connect to a suitable air gap so as to preclude possibility of backup of sewage or wastewater into the swimming pool piping system.

#### **901.16d Filtering, Sterilizing and Auxiliary Equipment**

**901.16d-1** Filtering, sterilizing and auxiliary equipment where required by the health authority having jurisdiction, shall be adequate to maintain the sanitary quality of pool water during each period the pool is in use.

**901.16d-2** Equipment containing gases or disinfectants capable of giving off irritating, toxic or flammable fumes shall be located in ventilated rooms.

**901.16e Foreign Matter.** The installation shall be designed to prevent dirt, sand, foreign matter and water from surrounding areas from entering the pool.

**901.16f Water Supply.** Water supply used for filling or for cleaning of the pool shall be clean. Water supply serving the swimming pool shall be protected against potential pollution from all sources, including cross-connection and backflow. Water introduced into the pool, either directly or to the recirculation system, shall be supplied through an air gap.

**901.17 Religious, Ornamental and Aquarium Fixtures.** Baptistries, ornamental and lily pools, aquaria, ornamental fountain basins, and similar specialty fixtures, when provided with water supply or drainage connections to the plumbing system, shall have such connections in conformity with this Code.

#### **901.18 Fixture Installation**

##### **901.18a Light and Ventilation for Fixture Locations**

**901.18a-1** Plumbing fixtures, except drinking fountains and single lavatories, shall be located only in rooms or compartments which are accessible, lighted and ventilated in conformity with the requirements of this code and the State Energy Conservation Construction Code.

**901.18a-2** Water closets, urinals, bathtubs and showers shall be located only in rooms or compartments which are ventilated directly to the outer air or provided with independent mechanical ventilating systems which exhaust air from such spaces to the outer air.

**901.18a-3** Fixtures which receive indirect wastes shall be located in properly lighted and ventilated spaces where the use of such fixtures does not constitute a nuisance, and shall not be located in any unventilated storeroom or closet.

#### **901.18b Location for Water Closets, Urinals, Bathtubs and Showers**

**901.18b-1** In buildings other than one- and two-family dwellings, water closets, urinals, bathtubs and showers shall be located only in toilet rooms or bathrooms provided with waterproof floors and with waterproofing extending at least 4 inches above the floors, except at doors.

**901.18b-2** Water closets, urinals, bathtubs and showers shall not be located on the next floor directly above space used for manufacture, preparation, packaging, storage or display of food, except that they may be so located if an additional watertight barrier is provided to prevent seepage between the toilet room, bathroom floor, plumbing piping and such space immediately below. (See illustration entitled, "Watertight Floor or Intervening Watertight Barrier.")

**901.18c Prohibited Locations for Drinking Fountains and Equivalent Fixtures.** 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.

**901.18d Locations Relative to Windows, Doors and Exit Openings.** Fixtures and equipment shall be located so as not to interfere with the normal operation of windows, doors or exit openings.

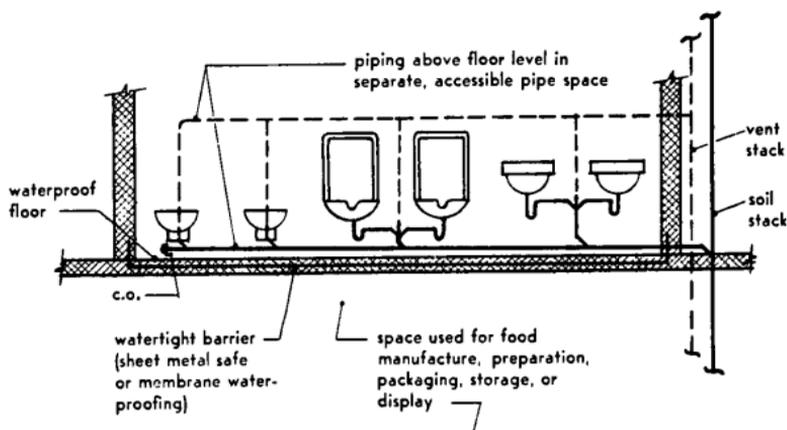
**901.18e Location and Usability of Children's Fixtures.** In schools, nurseries and other similar occupancies where fixtures are provided for the use of children under six years of age, such fixtures shall be located convenient to the spaces in which the children study, play or sleep, and shall be installed so as to be fully and safely usable.

**901.18f Accessibility.** Plumbing fixtures shall be installed with regard to spacing so as to be reasonably accessible for their intended use, and for cleaning and repairs. Where practical, fixture supply and drain pipes shall be run to piping connections in the nearest wall rather than through the floor. Fixtures having concealed packing or gasket type slip-joint connections shall be provided with an access panel or utility space arranged so as to make the slip-joint accessible for repair.

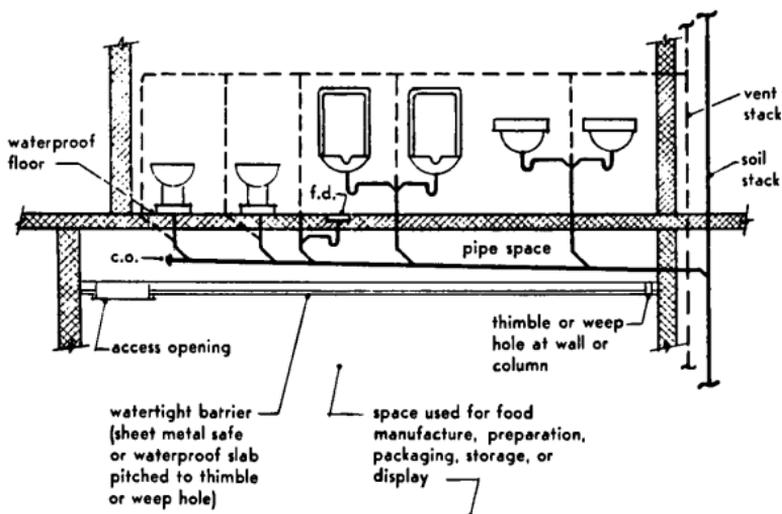
**901.18g Setting.** Fixtures shall be set level and in proper alignment with adjacent walls.

**Watertight Floor or Intervening Watertight Barrier**  
(See 901.18b-2)

**WHERE WATERPROOF FLOORS OF TOILET ROOMS OR BATHROOMS ARE UNPIERCED BY FIXTURE CONNECTIONS OR PIPING**



**WHERE WATERPROOF FLOORS OF TOILET ROOMS OR BATHROOMS ARE PIERCED BY FIXTURE CONNECTIONS OR PIPING**



**901.18h Sealing.** Where fixtures are installed in contact with walls or floors, the space at the outer edge of fixture contact shall be sealed against water seepage. See illustration entitled, "Watertight Floor or Intervening Watertight Barrier."

**901.18i Securing and Supporting Wall-Hung Water Closets and Urinals.** Wall-hung water closets and urinals shall be rigidly secured against the wall and shall be rigidly supported by a durable concealed support so that no strain is transmitted to the piping connections.

**901.18j Securing Floor-Outlet Fixtures.** Fixtures having floor outlets shall be rigidly secured to the floor.

**901.18k Connections for Water Closets, Pedestal Urinals, Floor-Outlet Service Sinks and Earthenware Trap Standards.** Fixture connections between drainage pipes and water closets, pedestal urinals, floor-outlet service sinks and earthenware trap standards, shall be made by means of approved flanges which shall be soldered, screwed or otherwise securely attached to the drainage pipes in a manner approved for the type of drainage piping. The flange shall be set on an approved firm base made of materials impervious to moisture. The connection shall be bolted, with an approved gasket, washer or setting compound between the earthenware and the flange. The use of commercial putty or plaster instead of an approved gasket, washer or setting compound is prohibited.

## **901.19 Fixture Traps**

**901.19a Separate Traps for Fixtures.** Plumbing fixtures, other than those having integral traps, shall be provided with separate water seal traps placed as close as possible to the fixture waste outlets, with the following exceptions:

**901.19a-1** A combination plumbing fixture, not equipped with a food waste grinder unit, may be installed on one trap if one compartment is not more than 6 inches deeper than the other.

**901.19a-2** One trap may be installed for a group of not more than three single laundry trays, or three single sinks, or one sink and two laundry trays, immediately adjacent to each other in the same room, if the trap is centrally located when three such fixtures are installed.

**901.19a-3** No trap need be provided for fixtures and equipment which discharge their wastes indirectly through drainage piping not exceeding 4 feet in developed length, measured from the fixture outlet.

**901.19a-4** No trap need be provided for swimming pools which discharge their wastes indirectly or for private pools which discharge through an independent drainage and disposal system.

**901.19b Prohibited Traps.** The following traps are prohibited: a trap which depends for its seal upon the action of movable parts; crown-vented traps; and bell traps, except where installed in refrigerator safes or receptors.

**901.19c Design of Traps.** All fixture traps, except grease and sediment intercepting traps, shall be self-cleaning; traps which are integral with fixtures shall have uniform interiors and smooth waterways; traps shall have no movable parts; traps shall have no interior partitions except where such traps are integral with fixtures or are designed for grease or sediment interception; and the bodies of drum traps shall be either 3 or 4 inches in diameter. Intercepting traps shall be designed so as not to become airborne.

**901.19d Water Seal.** Each fixture trap shall have a water seal of not less than 2 inches and not more than 4 inches in depth, except for traps having a deeper water seal and approved for use in special conditions.

**901.19e Maximum Developed Length from Fixture Waste Outlet to Trap.** The maximum developed length from the fixture waste outlet to the trap shall be not more than 24 inches, except that where a fixture is located remote from all walls such developed length shall be not more than 48 inches, provided the fixture either has an interior flat bottom exceeding 120 square inches in area or is not equipped with a waste outlet stopper or plug.

**901.19f Trap Setting and Protection.** Traps shall be set level with respect to their water seals and, where necessary, shall be protected against damage from freezing.

**901.19g Cleanouts.** Fixture traps, except those which are integral or combined with fixtures wherein the trap seal is readily accessible, and except those having a portion of the trap readily removable for cleaning purposes, shall have accessible brass screw cleanouts or plugs so installed as to be watertight; special approved traps used for the interception of grease, plaster, hair or similar substances, may have covers, handholes or other cleanout provisions held in place by lugs or bolts.

**901.19h Traps for Indirect Waste Receptors Set Below Floor Level.** Where a receptor for indirect waste is set below floor level, it shall be provided with a running trap set adjacent thereto with the trap cleanout extended to the floor level.

**901.19I Trap Size.** The size of trap for any given fixture shall be sufficient to drain the fixture rapidly but not smaller than as stated in table I-901. No trap shall be larger than the fixture drain to which it is connected.

**TABLE I-901 MINIMUM SIZES OF TRAPS FOR VARIOUS PLUMBING FIXTURES**

Fixture	Size in inches
Bathtub (with or without overhead shower) .....	1½
Bidet .....	1½
Combination sink and wash tray .....	1½
Combination sink and wash tray with food waste grinder unit .....	1½ <sup>1</sup>
Dental unit or cuspidor .....	1¼
Dental lavatory .....	1¼
Drinking fountain .....	1¼
Dishwasher, commercial .....	2
Dishwasher, domestic .....	1½
Floor drain .....	3
Kitchen sink, domestic .....	1½
Kitchen sink, domestic, with food waste grinder unit .....	1½
Lavatory, common .....	1¼
Lavatory (barber shop, beauty parlor or surgeon's) .....	1½
Lavatory, multiple type (washfountain or wash sink) .....	1½
Laundry tray (1 or 2 compartments) .....	1½
Shower stall .....	2
Sink (surgeon's) .....	1½
Sink (flushing rim type, flush valve supplied) .....	3
Sink (service type with floor outlet trap standard) .....	3
Sink (service type with P trap) .....	2
Sink, commercial (pot, scullery or similar type) .....	2
Sink, commercial (with food waste grinder unit) .....	2
Urinal (pedestal type, integral trap) .....	3 nominal
Urinal (all types with integral trap except pedestal type) .....	2 nominal
Urinal (stall washout type, separate trap) .....	2
Urinal (wall hung washout type, separate trap) .....	1½
Water closet .....	3 nominal

<sup>1</sup> Separate trap required for wash tray and separate trap required for sink compartment with food waste grinder unit.

### 901.19J Grease Intercepting Traps Where Required

**901.19J-1** An approved grease intercepting trap shall be installed in the fixture drain of sinks, floor drains and other fixtures through which grease usually is introduced into the drainage system in objectionable quantities in the following establishments: restaurants, hotel kitchens or bars, factory cafeterias or restaurants, clubs and other commercial kitchens. In such establishments, grease traps shall be installed in the fixture drains of pot, scullery or food scrap sinks, and of floor drains receiving waste or spillage from soup or stock kettles.

**901.19j-2** No grease intercepting trap shall be installed in the fixture drain of a sink equipped with a food waste grinder unit.

**901.19k Sediment Intercepting Traps Where Required.** In commercial establishments, an approved sediment intercepting trap for intercepting plaster, hair, silt, sand or similar solid substances, shall be installed in the fixture drain of each fixture through which sediment usually is introduced into the drainage system in objectionable quantities. Sediment intercepting traps shall be installed in the fixture drains of dental laboratory sinks, orthopedic laboratory sinks, sinks receiving wastes resulting from hair removal processes and commercial car washing equipment.

**901.19l Installation of Intercepting Traps.** Intercepting traps shall be installed in accordance with approvals as to type, size, rating and location, and so that no wastes shall be discharged through the traps other than those which the traps are designed to handle. Each intercepting trap shall be installed so as to provide ready accessibility to the cover and other means for maintaining the device in efficient operating condition.

**901.19m Maintenance of Intercepting Traps.** Intercepting traps shall be maintained in efficient operating condition by periodic removal of accumulated intercepted matter.

#### **901.20 Vapor Relief Pipes For Fixtures.**

**901.20a** Where fixtures are provided with vapor relief pipes, such pipes shall be independent of other pipes, ventilating ducts and flues.

**901.20b** Vapor relief pipes in which condensation can collect shall be provided with drip pipes. Such drip pipes shall be either connected to the waste outlet piping on the inlet side of the trap of the fixture served by the vapor relief pipe, or shall drain into a fixture or receptacle approved for such use.

**901.20c** Vapor relief pipes provided for bedpan washers and bedpan steamers shall be independent of vapor relief pipes serving other types of fixtures.

**901.20d** Where vapor relief pipes are provided for fixtures on two or more floors and are connected as branches to a vapor relief stack, the stack shall be extended independently through the roof, or to an approved location in the open air, and shall be terminated as required by section 903.18.

**901.20e** Individual vapor relief pipes for fixtures shall be at least as large as the fixture relief outlets. Vapor relief stacks and branch pipes serving two or

more individual vapor relief pipes shall be at least one standard pipe size larger than the largest individual pipe connecting thereto, but shall be at least 1¼ inches in size. Vapor relief stacks shall extend upward undiminished in size from the lowest vapor relief branch to the stack's terminal in the open air. Drip pipes connected at the base of vapor relief stacks shall be at least 1¼ inches in size.

## PART 902 WATER SUPPLY SYSTEMS

### 902.1 Source and Quality of Water Supply

#### 902.1a Source

**902.1a-1** Buildings in which plumbing fixtures are installed shall be provided with ample supply of potable water by connection to a public water supply system. Where a public system is not available, an approved source of private water supply shall be provided.

**902.1a-2** For a one- or two-family dwelling, a public water supply system shall be deemed available when such system is within 100 feet of the premises on which the dwelling is located, measured along a street; and a connection may be made lawfully thereto.

**902.1a-3** For buildings of any other occupancies, a public water supply system shall be deemed available when such system is within 500 feet of the premises on which the building is located, measured along a street; and a connection may be made lawfully thereto.

#### 902.1b Quality

**902.1b-1** Only potable water shall be supplied to fixtures and equipment at which water is provided for drinking, cooking, food preparation, bottling, canning or packing, washing of dishes, glasses, cutlery or kitchen utensils or for similar domestic purposes. Such water shall conform to the chemical and bacteriological quality standards for potable water established by the health authority having jurisdiction.

**902.1b-2** Nonpotable water shall not be supplied to fixtures or equipment unless specially approved by the health authority having jurisdiction; and the supply of non-potable water shall be limited to water closets, urinals and other fixtures and equipment which do not require potable water supply. All nonpotable water faucets and outlets, and piping conveying nonpotable water shall be adequately and properly identified by conspicuous markings as hazards.

**902.2 Protection of Potable Water Supply****902.2a Toxic Materials**

**902.2a-1** No piping materials that could produce toxic conditions in the potable water supply system shall be used in such system.

**902.2a-2** No chemicals that could produce toxic conditions in the potable water supply system shall be introduced into such system except as specially approved by the health authority having jurisdiction.

**902.2b Used Piping.** No piping that has been used for other than a potable water supply system shall be used for conveying potable water.

**902.2c Cross Connections**

**902.2c-1** No private water supply system shall be cross connected with any public potable water supply system unless specially approved in conformity with Part 5 of Chapter I of the New York State Sanitary Code by the authority having jurisdiction.

**902.2c-2** Potable water supply systems shall be protected against contamination from standpipe and sprinkler systems, and other water uses that would constitute a health hazard.

**902.2d Interconnections**

**902.2d-1** No part of a potable water supply system including discharge pipes from relief valves, and other extensions of the water supply system, shall be connected directly to any drainage or vent piping.

**902.2d-2** Potable water supply piping, water discharge outlets, vacuum breakers and similar equipment shall be located so as to prevent them from being submerged in any contaminated or polluted liquid or substance, except as otherwise provided in these rules; or as may be specially approved for swimming pool system connections, in conformity with Part VI of Chapter I of the New York State Sanitary Code, by the authority having jurisdiction.

**902.2e Prohibited Direct Connection to Fixtures and Equipment.** No direct connection of the potable water supply system shall be made to the following fixtures and equipment:

**902.2e-1 Bidets.**

**902.2e-2** Operating, dissection, embalming and mortuary tables or similar equipment. The hose used for water supply shall terminate at least 12 inches away from every point of the table or attachments.

**902.2e-3** Pumps used for nonpotable water. Potable water supply connections for priming purposes may be made to the inlet side of such pumps, provided a fixed air gap of approved type is installed in a vertical section of the water supply piping connection.

**902.2e-4** Sterilizers, aspirators, water siphons or similar equipment or any chemical solution tank or apparatus, except where specially approved.

**902.2f Condensers and Cooling Jackets of Refrigeration Units.** Where a direct connection of the potable water supply system is made to condensers or cooling jackets of refrigeration units, the water supply pipe thereto shall be equipped with an approved check valve, except in such installations where the water supply piping is entirely outside of the piping or tank containing the refrigerant, and two independent wall thicknesses of metal separate the refrigerant from the potable water supply. Refrigeration units containing more than 20 pounds of refrigerant shall be provided also with an approved pressure relief valve installed adjacent to and at the outlet side of the check valve. Such relief valve shall be set to relieve at 5 psi above the maximum water pressure at the point of installation.

**902.2g Water Used for Processing.** Water used for cooling, heating, processing or similar purposes shall not be reintroduced into the potable water supply system nor be distributed to plumbing fixtures requiring potable water supply. When discharged to the building drainage system, such water shall be discharged into a fixture or receptacle approved for such use through an air gap conforming with 902.2i.

**902.2h Above Rim Potable Water Supply Outlets.** Where practicable, potable water supply outlets shall have the outlet end spaced a distance above the flood level rim of the fixture or receptacle, to provide an air gap conforming with 902.2i, except as otherwise provided herein.

**902.2i Minimum Required Air Gaps.** The minimum required air gap, measured vertically downward from the outlet end of a faucet or other water outlet to the flood level rim of the receiving fixture or receptacle, shall be at least twice the diameter of an outlet of equivalent circular cross section; but the minimum required air gap shall be at least three times such diameter where the outside edge of the outlet is less than three diameters away from the wall or, where walls intersect, less than four diameters away from each wall.

**902.2j Below-Rim Potable Water Supply Outlets.** Below-rim potable water supply outlets to fixtures shall be prohibited except where such outlets are absolutely essential for proper functioning of the fixture, and protective methods have been applied in conformity with section 902.3.

### **902.3 Protective Methods For Use With Below-Rim Potable Water Supply Outlets**

**902.3a Individual Fixture Equipment.** Fixtures with below-rim potable water supply outlets shall be individually equipped with approved vacuum breakers, of the same nominal size as the fixture supply pipes, installed as required in this section. Vacuum breakers shall be of suitable type for the use intended.

#### **902.3b Vacuum Breaker Installation**

**902.3b-1** Vacuum breakers shall be installed in proper position for satisfactory operation.

**902.3b-2** Vacuum breakers shall be located at least 4 inches above the flood level rim of the fixture or receptacle supplied, except as otherwise provided in this section.

**902.3c Maintenance of Vacuum Breakers.** Vacuum breakers installed in a potable water supply system shall be maintained in good working condition.

**902.3d Accessibility of Vacuum Breakers.** Vacuum breakers, except those on ballcocks, shall be exposed in the same room as the fixtures they serve, and shall be readily accessible for inspection.

**902.3e Preheating Equipment Utilizing Heat from Waste Water.** Potable water supply lines to water preheating equipment utilizing waste water as a source of heat, shall be equipped with a vacuum breaker and with a check valve located between the vacuum breaker and the preheating equipment. Where a hot water storage tank is supplied through such preheating equipment and has an independent cold water supply line, such cold water supply line shall be equipped with a vacuum breaker located at least 4 inches above the highest elevation of the tank, and with a check valve located between the vacuum breaker and the tank.

**902.3f Water Outlets for Hose Connection.** Each hose coupling water outlet and serrated tip water outlet shall be individually equipped with a vacuum breaker installed on the individual supply line to the water outlet, or installed on the water outlet with provision for hose attachment to the outlet side of the vacuum breaker. However, this requirement shall not apply to drain

cocks for building heating systems. Such vacuum breaker shall be at least 6 inches above the highest point of hose usage. Hose coupling water outlets for bedpan washing shall also be equipped with a check valve located between the vacuum breaker and the hose coupling.

**902.3g Direct Supply Flush Valves.** Flush valves which are directly connected to the potable water supply system shall be equipped with vacuum breakers. Such vacuum breakers shall be located on the discharge side of the flush valves and at least 4 inches above the top of the fixture supplied.

**902.3h Flush Tanks.** Flush tanks shall be equipped with approved ballcocks. Where ballcocks are in contact with tank water, they shall be equipped with vacuum breakers at least 1 inch above the overflow outlet of the flush tank. Where ballcocks are not in contact with tank water, the ballcock outlet shall be installed at least 1 inch above the overflow outlet of the flush tank or a vacuum breaker shall be installed as in the preceding provision.

**902.3i Lawn Sprinkler and Irrigation Systems.** The supply pipe to a lawn sprinkler or irrigation system shall be equipped with a vacuum breaker at least 12 inches above the highest sprinkler or discharge outlet of the system.

#### **902.4 Water Supply Requirements**

**902.4a Volume and Pressure Conditions.** Plumbing fixtures and equipment shall be provided with water in sufficient volume and at pressures adequate to enable them to function satisfactorily and without excessive noise under normal conditions of use.

**902.4b Design, Adjustment and Maintenance.** The water supply distributing system shall be designed and adjusted to supply fixtures and equipment with the minimum quantity of water consistent with proper performance and cleaning. The system shall be maintained to prevent leakage and excessive waste of water.

**902.4c Minimum Pressure at Water Outlets.** The minimum pressure available at all times at water outlets shall be 8 psi, except at direct supply flush valves at which the minimum shall be 15 psi, and except at other equipment requiring higher pressure at which the minimum shall be that required for satisfactory performance.

**902.4d Water Supply Tanks-Where Required.** Where the water pressure available at the public water main is insufficient to maintain the minimum pressures required at all water outlets, an automatically controlled water supply tank of either the pressure or gravity type shall be provided. Such tank shall be designed and installed to provide the required minimum pressures.

**902.4e Pressure Hazard and Noise.** Where water pressures are over 70 psi gage, or where self-closing faucets or valves are installed, approved air chambers or mechanical devices shall be provided to prevent pressure hazard, water hammer and objectionable line noises.

#### **902.4f Water Services for Standpipe and Automatic Sprinkler Systems**

**902.4f-1** Where standpipe or automatic sprinkler systems are supplied by potable water services, the services shall be connected to water mains which are reliable and of adequate capacity.

**902.4f-2** Water services for standpipe or automatic sprinkler systems shall be designed and installed to provide at all times a supply of water in sufficient volume to enable them to function satisfactorily.

#### **902.5 Water Supply Tanks**

##### **902.5a Construction**

**902.5a-1** 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.

**902.5a-2** Tanks shall be provided with safe and easy means of access for inspection.

**902.5a-3** 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.

##### **902.5b Supports**

**902.5b-1** Supports for tanks shall be of noncombustible construction.

**902.5b-2** 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.

**902.5c Location of Tanks.** 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.

##### **902.5d Potable Water Tanks for Domestic Supply and Standpipe or Automatic Sprinkler Systems**

**902.5d-1** 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 system.

**902.5d-2** 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.

**902.5d-3** Potable water supply tanks which supply water 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.

**902.5e Overflow Control-Where Required.** Where water supply tanks of the gravity type are supplied directly by pressure of the public water main, or may be so supplied at times, ballcocks or other automatic valves shall be installed to control the supply of water to such tanks and prevent their overflowing.

**902.5f Potable Water Supply Inlets to Tanks of Gravity Type.** Potable water supply inlets within tanks of the gravity type shall terminate at an elevation above the overflow pipe not less than is required for an air gap conforming with 902.2i; the elevation shall not be less than 4 inches above the top of the overflow pipe.

**902.5g Overflow Pipes for Tanks of Gravity Type.** Overflow pipes shall be provided for water supply tanks of the gravity type. Such pipes shall discharge above and within 6 inches of a roof or catch basin, or they shall discharge into an open water-supplied fixture approved for such use. Overflow pipes shall be at least one pipe size larger than tank fill pipes, and not less than the following:

**TABLE I-902 MINIMUM SIZE OF OVERFLOW PIPES FOR GRAVITY TANKS**

Tank capacity (gallons)	Overflow pipe size (in inches)
0 to 750.....	1
751 to 1,500.....	1½
1,501 to 3,000.....	2
3,001 to 5,000.....	2½
5,001 to 7,500.....	3
Over 7,500.....	4

**902.5h Emptying Pipes for Water Supply Tanks.** Emptying pipes shall be provided for all water supply tanks, located and arranged so as to prevent damage from water discharge, and shall discharge as required for overflow pipes. Each tank shall be provided with an emptying pipe not smaller in size than the following:

**TABLE II-902 MINIMUM SIZE FOR EMPTYING PIPES FOR WATER SUPPLY TANKS**

Tank capacity (gallons)	Emptying pipe size (in inches)
0 to 5,000 .....	2½
5,001 to 10,000 .....	3
Over 10,000 .....	4

Each emptying pipe shall be provided with an approved valve of the same diameter as the pipe.

**902.5i Prohibited Location of Potable Water Supply Tanks.** No potable water supply tanks of the gravity type, nor manholes of potable water supply tanks of the pressure type, shall be located directly beneath any soil or waste piping.

**902.5j Screening for Potable Water Supply Tanks.** Overflow pipes and air vent pipes of potable water supply tanks of the gravity type shall be provided with durable screens of not less than 100 mesh.

**902.5k Cleaning, Painting and Repairing of Potable Water Supply Tanks.** When water supply tanks are lined, painted or repaired they shall be disconnected from the system. No material shall be used during such operations which may affect the taste or potability of the water supply.

## **902.6 Hot Water Supply System**

**902.6a Hazardous Pressure and Temperature.** Hot water supply systems shall be provided with safety devices arranged to relieve hazardous pressure and excessive temperature. Where a hazardous vacuum conditions may occur, a safety device shall also be provided to relieve the vacuum.

**902.6b Pressure Relief Valve.** An approved pressure relief valve shall be provided on plumbing equipment used for heating or storing hot water. Such valve shall be of adequate relief rating for the equipment served.

**902.6c Temperature Relief Valve or Energy Shutoff Device.** An approved temperature relief valve or energy shutoff device shall be provided on equipment used for heating or storing hot water. Temperature relief valves shall be of adequate relief rating for the equipment served. Energy shutoff devices shall be of adequate performance rating for the equipment served.

**902.6d Combination Pressure-Temperature Relief Valve.** An approved combination pressure-temperature relief valve may be provided in lieu of separate pressure and temperature relief valves for equipment having storage capacity of 120 gallons or less, and having hourly heat input capacity of 100,000 Btu or less.

### **902.6e Location of Relief Valves and Energy Shutoff Devices**

**902.6e-1** Pressure relief valves shall be installed in the cold water supply line to the heater or tank served, except that, in areas where scale formation due to water hardness is appreciable, such valve may be installed in an approved location in the hot water supply line from the heater or tank served.

**902.6e-2** Temperature and combination pressure-temperature relief valves shall be installed so that the temperature-sensitive element is immersed in the hottest water, such as: (a) within the top 6 inches of the tank of an underfired hot water storage heater, (b) above the hot water inlet to a tank equipped with a side-arm type water heater, and (c) above the topmost heating element of an electric water heater.

**902.6e-3** Relief valves shall be installed so that no check valve or shutoff valve intervenes between a relief valve and the heater or tank served.

**902.6e-4** Immersion type energy shutoff devices shall be installed so that the temperature-sensitive element is immersed as required for temperature relief valves. Strap-on type energy shutoff devices shall be installed so that the temperature-sensitive element is mounted on the tank wall and is responsive to the highest water temperature within the tank.

**902.6f Relief Valve Outlet Connections.** No relief outlets of relief valves shall be directly connected to drainage or vent piping. Where pipes from such relief outlets discharge into plumbing fixtures, an air gap shall be provided in conformity with 902.2i. No relief outlet or relief pipe shall discharge so as to be a hazard, a potential cause of damage or otherwise be a nuisance.

**902.6g Location of Pressure Markings on Hot Water Storage Tanks.** Hot water storage tanks shall be installed so that their pressure markings, showing the maximum allowable water working pressure, are in accessible location for inspection.

**902.6h Drain Cocks or Valves for Hot Water Storage Tanks.** Hot water storage tanks shall be provided with cocks or valves for emptying.

**902.6i Maintaining Hot Water Where Required.** Domestic hot water, in other than one- and two-family dwellings, shall be maintained within 25 feet of

fixtures requiring hot water, where the developed length of hot water piping from the source of hot water to the farthest fixture exceeds 50 feet.

### **902.7 Water Supply Control Valves**

**902.7a Prohibited Use of Stop-and-Waste Valves and Cocks.** No combination stop-and-waste valve or cock shall be installed underground in water supply piping.

**902.7b Curb Valve.** An approved type gate valve or ground key stopcock shall be installed in the water service pipe near the curblin, between the property line and the curblin. Such control valve shall be provided with an approved curb valve box and shall not be located under a driveway.

**902.7c Building Valve.** A gate valve or ground key stopcock shall be installed in the water service pipe inside the building near the point of entry.

**902.7d Water Supply Tank Valve.** A gate valve shall be installed in water piping supplied from a water supply tank and shall be located at or near such tank.

**902.7e Riser Valve.** A control valve shall be installed at the foot of each water supply riser, except in one-family dwellings.

**902.7f Dwelling Unit Valve.** In two-family or multiple dwellings, the water supply piping shall be equipped with one or more valves to shut off the water supply to fixtures and equipment in each dwelling unit without interference with the water supply to other dwelling units or other portions of the building. Such dwelling unit control valves shall be located within the dwelling unit so controlled.

**902.7g Water Heating Equipment Valve.** A control valve shall be installed in the cold water supply branch to water heating equipment.

**902.7h Other Valves.** Water supply piping to fixtures and equipment, in occupancies other than dwelling units, shall be equipped with valves to shut off the water supply to individual fixtures and equipment or to the room where they are located.

**902.7i Water Meter Outlet Valve.** Control valve installed at the outlets of water meters shall be gate valves or ground key stopcocks, and at least as large as the size of the supply piping at the inlets of the water meters.

**902.7j Accessibility of Valves.** Water supply control valves shall be installed in accessible locations so that they can be readily shut off.

**902.7k Design of Line Valves.** Water supply control valves in the distributing system, except those which control the supply to single fixtures, shall be designed to provide, when fully opened, crosssectional area throughout the water passage not less than that of the pipe in which the valve is installed.

## **902.8 Water Supply Piping Installation**

### **902.8a Prohibited Location of Piping**

**902.8a-1** No water supply piping shall be located in stairways, nor so as to interfere with the normal operation of windows, doors or other openings. No water supply piping shall be installed in a hoistway or under an elevator or counterweight.

**902.8a-2** Underground water supply piping parallel to walls, other than subsoil drains, shall be located at least 3 feet from footings or bearing walls, except where a lesser distance is approved as safe. Where such underground piping is installed parallel to and deeper than footings, it shall be no deeper below than horizontally distant from the footings, except as may be approved upon a finding that a greater depth to distance ratio is safe.

**902.8b Water Service Pipe.** Water service pipes shall be installed in accordance with the regulations of the authority having jurisdiction.

**902.8c Freezing.** No piping of the water supply distributing system shall be installed outside of buildings, or concealed in exterior walls, or located where it may be subjected to freezing temperatures, unless adequate provision is made to protect such piping against damage from freezing.

**902.8d External Corrosion.** Water supply piping passing through or under cinders or other corrosive material, shall be provided with approved coating, wrapping or other means of protecting against damage from external corrosion.

**902.8e Strain.** Water supply piping shall be installed so as not to be subject to undue strain. Provision shall be made to protect the piping against damage from strain due to normal expansion and contraction, and to building settlement.

**902.8f Breakage.** Water supply piping passing through foundation or bearing walls shall be protected against breakage by means of sleeves or arches or approved equivalent protection shall be provided. The space between sleeves or arches and the pipes passing through the wall shall be filled with approved sealing material. Sleeves shall be of iron or steel pipe two standard sizes larger than the pipe passing through.

**902.8g Excavation, Support and Backfilling for Underground Piping**

**902.8g-1** Excavation for the installation of underground water supply piping shall be open trench work. Such piping shall be supported on a firm bed for its entire length.

**902.8g-2** Precautions shall be taken to assure proper compactness or backfill without damage to the piping. Trenches shall be backfilled and compacted to at least 12 inches above the top of piping with clean earth, sand or screened gravel, which shall not contain boulders, cinders or other substances which may damage or break the piping or cause corrosive action. Thereafter, backfilling shall be completed up to grade and be properly compacted.

**902.8h Support and Attachment of Aboveground Piping.** Water supply piping aboveground shall be securely attached to the building construction at no greater distances between supports than given in the following:

**902.8h-1** Screwed pipe (standard pipe size), horizontal: 12 feet.

**902.8h-2** Screwed pipe (standard pipe size), vertical: every other story; and so as to take the load off the base of the riser.

**902.8h-3** Copper tube (type K and L), horizontal: 10 feet, for piping 2 inches and larger in size; 6 feet, for smaller piping.

**902.8h-4** Copper tube (type K and L), vertical: every story; and so as to take the load off the base of the riser.

**902.8h-5** Lead pipe, horizontal: support continuously for entire horizontal length.

**902.8h-6** Lead pipe, vertical: 4 feet.

**902.8i Hangers, Anchors and Piers.** Hangers, anchors and piers for the support and attachment of piping shall be of approved material and have sufficient strength to support the piping and its contents.

**902.8j Drainage of Water Piping.** Water supply piping shall be pitched so that the entire system or parts thereof can be drained and a drain cock, faucet or valve shall be provided at the lowest point. The formation of traps or sags shall be avoided wherever possible.

**902.9 Sizing the Water Supply System**

**902.9a Water Service Pipe.** The water service pipe shall be of sufficient size to furnish an adequate supply of water to meet the requirements of the building at peak demand. No water service pipe shall be smaller than  $\frac{3}{4}$  inch nominal size, except that where direct supply flush valves are supplied at pressure from the water service pipe, such pipe shall be at least  $1\frac{1}{4}$  inch nominal size.

**902.9b Minimum Available Pressure.** The distributing system shall be designed on the basis of the minimum available pressure at the water main or other source of water supply.

**902.9c Demand Load.** The water supply demand load in the distributing system shall be based upon the number, type and probable simultaneous use of the fixtures to be supplied.

**902.9d Fixture Supply Pipes.** The minimum size of fixture supply pipes shall be as follows:

**TABLE III-902 MINIMUM SIZE OF FIXTURE SUPPLY PIPES**

Fixture or device	Size in inches
Bathtub .....	$\frac{1}{2}$
Combination sink and laundry tray .....	$\frac{1}{2}$
Drinking fountain .....	$\frac{3}{8}$
Dishwashing machine (domestic) .....	$\frac{1}{2}$
Kitchen sink (domestic) .....	$\frac{1}{2}$
Kitchen sink (commercial) .....	$\frac{3}{4}$
Lavatory .....	$\frac{3}{8}$
Laundry tray (1, 2 or 3 compartments) .....	$\frac{1}{2}$
Shower (single head) .....	$\frac{1}{2}$
Sink (service, slop) .....	$\frac{1}{2}$
Sink (flushing rim) .....	$\frac{3}{4}$
Urinal (1" flush valve) .....	1
Urinal ( $\frac{3}{4}$ " flush valve) .....	$\frac{3}{4}$
Urinal (flush tank) .....	$\frac{1}{2}$
Water closet (flush tank) .....	$\frac{3}{8}$
Water closet (flush valve) .....	1
Hose bibb .....	$\frac{1}{2}$
Wall hydrant .....	$\frac{1}{2}$

For fixtures not listed in the above table, the minimum size of fixture supply pipes shall be the same as given in the table for comparable fixtures.

**902.9e Risers.** The minimum size of water supply risers shall be not less than  $\frac{1}{2}$  inch when no flush valves are supplied directly therefrom, nor less than  $1\frac{1}{4}$  inch when one or two flush valves are supplied directly therefrom, nor less than  $1\frac{1}{2}$  inch when three or more flush valves are supplied directly therefrom.

**902.9f Allowance for Water Characteristics.** Where the piping is subject to excessive corrosion or deposits because of the characteristics of the water, pipe sizes shall be at least one standard size larger than the minimums specified in this section.

### 902.9g Sizing Procedure

**902.9g-1** The procedure for sizing the piping of the water supply distributing system shall conform to good engineering practice. Adequate and approved design factors shall be used to determine pipe sizes.

**902.9g-2** The size of piping, other than individual fixture supply pipes, should be such that the velocity of water flow during maximum demand will not exceed 10 feet per second for piping aboveground, within dwelling portions of buildings.

**902.9g-3** In determining the available pressure at outlets, proper allowance should be made for the pressure loss owing to friction in the piping system.

TABLE IV-902 DEMAND LOAD OF FIXTURES

Fixture	Occupancy	Type of supply control	Load, in fixture units
Water closet .....	Public	Flush valve	10
Water closet .....	Public	Flush tank	5
Urinal .....	Public	1" flush valve	10
Urinal .....	Public	$\frac{3}{4}$ " flush valve	5
Urinal .....	Public	Flush tank	3
Lavatory .....	Public	Faucet	2
Bath tub .....	Public	Faucet	4
Shower head .....	Public	Mixing valve	4
Service sink .....	Office, etc.	Faucet	3
Kitchen sink .....	Hotel, restaurant	Faucet	4
Water closet .....	Private	Flush valve	6
Water closet .....	Private	Flush tank	3
Lavatory .....	Private	Faucet	1
Bath tub .....	Private	Faucet	2
Shower head .....	Private	Mixing valve	2
Bathroom group .....	Private	Flush valve for closet	8
Bathroom group .....	Private	Flush tank for closet	6
Separate shower .....	Private	Mixing valve	2
Kitchen sink .....	Private	Faucet	2
Laundry trays (1 to 3)	Private	Faucet	3
Combination fixture ....	Private	Faucet	3

NOTE: For fixtures not listed loads should be assumed by comparing the fixture to one listed using water in similar quantities and at similar rates. The given loads are for total demand. For fixtures with both hot and cold water supplies, the loads for separate demands may be taken as three-fourths of the loads listed.

**902.9h Estimated Water Supply Demand Load**

**902.9h-1** For purposes of estimating the water supply load, the demand load values, in terms of water supply fixture units, for different plumbing fixtures under several conditions of service, are given in table IV-902 entitled, "Demand Load of Fixtures."

**902.9h-2** The estimated demand load for fixtures used intermittently on any supply pipe, in gallons per minute corresponding to the total number of supply fixture units, is given in table V-902.

**902.9h-3** To estimate the total demand in gallons per minute, the demands for outlets, such as hose connections and air conditioning apparatus, which impose continuous demand during times of heavy use, should be calculated separately and added to the demand for fixtures used intermittently.

**902.10 Tests.** Testing of water supply systems shall conform to the methods described in Part 907.

**902.11 Methods for Disinfecting Potable Water Supply System.** Whenever disinfection of the potable water supply system, or part thereof, is officially ordered, one of the following methods shall be used before the system, or part thereof, is placed in operation or returned to service:

**902.11a** The system, or part thereof, shall be filled with a water solution containing 50 parts per million of available chlorine and allowed to stand for 24 hours before flushing and returning to service.

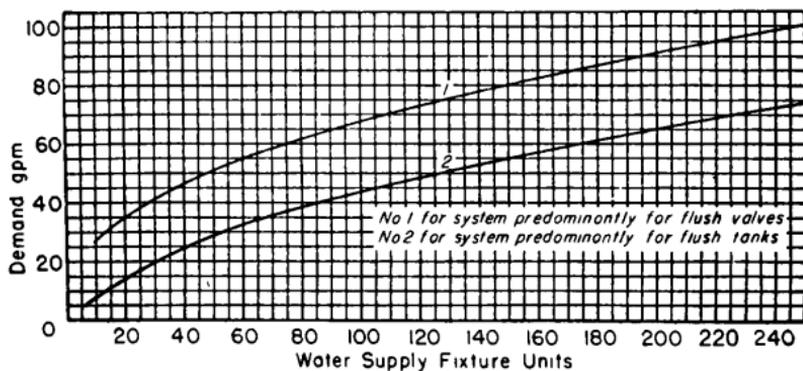
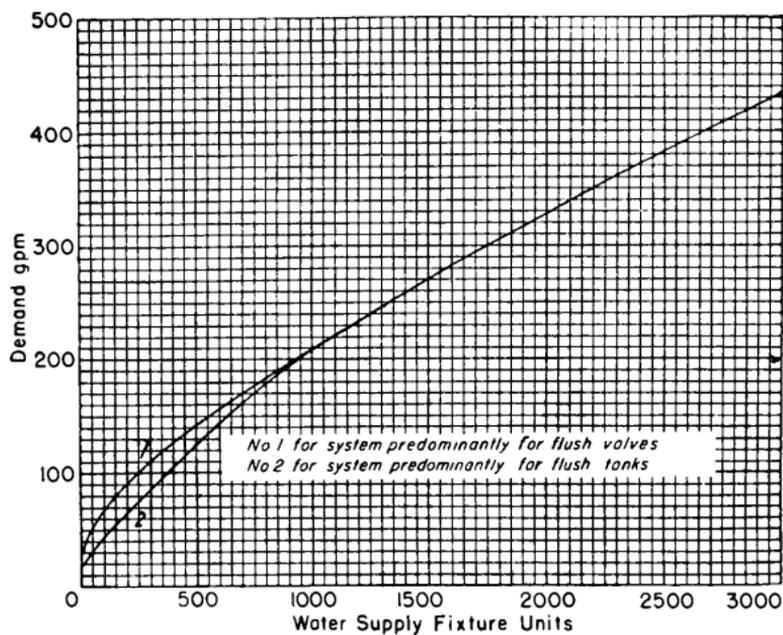
**902.11b** The system, or part thereof, shall be filled with a water solution containing 200 parts per million of available chlorine and allowed to stand for 1 hour before flushing and returning to service.

**902.11c** For a potable water storage tank, where it is not practicable to disinfect by the foregoing methods, the entire interior of the tank shall be swabbed with a water solution containing 200 parts per million of available chlorine and allowed to stand for 2 hours before flushing and returning to service.

**902.11d** For potable water filters and similar devices, the dosage shall be specially approved under the circumstances prevailing.

## BUILDING CONSTRUCTION

TABLE V-902 CURVES FOR ESTIMATING DEMAND LOADS



**PART 903 DRAINAGE AND VENT SYSTEMS****903.1 Method of Sewage Disposal**

**903.1a** In buildings in which plumbing fixtures are installed, a sanitary drainage system shall be provided for conveying sewage from the fixtures to a public sanitary or combined sewer system. Where a public system is not available, an approved method of sewage disposal shall be provided.

**903.1b** For a one- or two-family dwelling, a public sanitary or combined sewer shall be deemed available when such sewer is within 100 feet of the premises on which the dwelling is located, measured along a street, and a connection may be made lawfully thereto.

**903.1c** For buildings of any other occupancies, a public sanitary or combined sewer shall be deemed available when such sewer is within 500 feet of the premises on which the building is located, measured along a street and a connection may be made lawfully thereto.

**903.1d** Private sewage disposal systems shall conform to the regulations of the authority having jurisdiction.

**903.1e** No sanitary drainage system or part thereof shall be installed so as to discharge sewage into sewers intended for storm water only.

**903.1f** Disposal of radioactive wastes shall conform to Part 16 of Chapter 1 of the New York State Sanitary Code. The method of disposal of such wastes shall be as specially approved by the authority having jurisdiction.

**903.1g** No sewage from a plumbing system shall be disposed of into the waters of the State of New York, except if specially approved by the authority having jurisdiction, in accordance with Article 17 of the Environmental Conservation Law.

**903.1h** Sewage or other waste which may be deleterious to surface or subsurface waters, shall not be discharged into the ground or into a waterway unless it has first been rendered harmless through subjection to treatment in conformity with generally accepted standards.

**903.2 Method of Storm Water Disposal**

**903.2a** Buildings shall have drainage provisions for conveying storm water from roofs and paved areas on the premises to a public storm or combined sewer, except that where such sewer is not available, an approved method of storm water disposal shall be provided.

**903.2b** For a one- or two-family dwelling, a public storm or combined sewer shall be deemed available when such sewer is within 100 feet of the premises on which the dwelling is located, measured along a street, and a connection may be made lawfully thereto.

**903.2c** For buildings of any other occupancies, a public storm or combined sewer shall be deemed available when such sewer is within 500 feet of the premises on which the building is located, measured along a street, and a connection may be made lawfully thereto.

**903.2d** No storm water shall be drained into sewers intended for sewage only, nor be discharged so that water will flow onto public sidewalks.

### **903.3 Fixture and Equipment Connections to Sanitary Drainage System**

**903.3a Fixtures and Equipment Requiring Direct Connections.** Plumbing fixtures and equipment which discharge liquid wastes or sewage shall be directly connected to the sanitary drainage system, except as otherwise provided in this section.

**903.3b Fixtures and Equipment Requiring Air Breaks at Waste Outlets.** Fixtures and equipment used for storage, preparation, or processing of food or drink, sterile goods or similar materials shall have their waste outlets equipped with air breaks, adequate to prevent contamination of such contents from any possible backup of sewage through the direct or indirect waste piping. Such air breaks shall be located within 2 feet of the waste outlet and on the inlet side of the trap. Waste outlets of sterilizers shall be equipped with such air breaks.

**903.3c Fixtures Which May Have Indirect Waste Connections.** Bar sinks, soda fountains, drinking fountains and dishwashing machines may be connected to indirect waste pipes.

### **903.3d Fixtures and Equipment Requiring Indirect Waste Connections**

**903.3d-1** Fixtures and equipment which have interior surfaces not readily accessible to permit effective cleaning, shall be connected to the sanitary drainage system by means of indirect waste pipes.

**903.3d-2** Portable household appliances, such as portable laundry and dishwashing machines, which are not permanently connected to the plumbing system, shall discharge by means of suitable flexible piping into a sink, laundry tray or other fixture approved for such use.

**903.3d-3** Refrigerators, ice boxes or receptacles where food is stored, when provided with waste outlets, shall discharge by means of drip pipes; such drip pipes shall discharge through an air break either into a floor drain or sink approved for such use, or into a safe pan or receptor which is equipped with a bell trap or ordinary type trap and discharge to the sanitary drainage system by means of an indirect waste pipe.

**903.3d-4** Kitchen and similar equipment which is not water supplied but is equipped with waste outlets shall be discharged to the sanitary drainage system by means of an indirect waste pipe.

**903.3d-5** Swimming pools and wading pools which have overflow connections located at an elevation below street level, shall have their drainage outlets connected to the sanitary drainage system by means of an indirect waste pipe. Such drainage outlets shall include pool drains, scum gutter drains, backwash outlets from pool water filters and floor drains which serve walks around the pools. When such drainage piping is below the grade of the building sewer, any existing circulation pump for pool water may be used for pumping the wastes to an elevation suitable for gravity discharge into a fixture approved for such use.

**903.3d-6** Drains provided in the pits of hoistways shall be connected by means of indirect waste pipes to the sanitary drainage system, or to the storm drainage system where approved.

**903.4 Venting of Sanitary Drainage System.** The sanitary drainage system shall be provided with an attendant system of vent piping designed to permit adequate circulation of air in all pipes, and the admission and emission of air so that the seals of fixture traps are subjected to an air pressure differential of not more than 1 inch of water column.

**903.5 Methods for Handling Objectionable Wastes.** 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.

**903.5a Swimming Pool Wastes.** Where sewage from the sanitary drainage system is disposed of through a private sewage disposal system, swimming pool wastes shall not be discharged into the regular sanitary drainage system but shall discharge through an independent sanitary drainage and disposal system.

**903.5b High Temperature Wastes.** No direct connection of a steam exhaust, boiler blowoff or similar drip pipe shall be made to a building drainage system. Where such wastes are discharged into the drainage system they shall be at a temperature not higher than 140°F.

**903.5c Industrial Wastes.** Industrial wastes which may be detrimental to the sanitary drainage system or to the public or private sewage treatment plant shall be treated and disposed of by an approved method.

**903.5d Clogging Wastes.** Wastes which may produce clogging conditions in the sanitary drainage system or sewer shall not be discharged thereinto, except where intercepting strainers, or grease or sediment intercepting fixture traps are provided and approved as satisfactory for rendering such wastes unobjectionable.

### **903.5e Chemical Wastes**

**903.5e-1** No corrosive liquids, acids, strong alkalis or other chemicals which might destroy or injure a drain, soil, waste or vent pipe, or which might create noxious fumes, shall be discharged into the regular sanitary drainage system.

**903.5e-2** Such chemicals shall be discharged through an independent sanitary drainage system directly to a sewer, or to a dilution or neutralizing device, or to some other means of disposal, approved for such use.

**903.5e-3** Where means are provided for the dilution or neutralization of such chemicals by passage through an approved dilution or neutralizing device for which adequate maintenance is assured, such treated wastes may be discharged into the regular sanitary drainage system.

**903.5e-4** Chemical waste and vent piping shall be of materials resistant to the corrosive action of chemicals and fumes.

### **903.5f Flammable Oil Wastes**

**903.5f-1** Where the authority having jurisdiction determines that a hazard would exist due to oil or other flammables which could be introduced or admitted into the regular sanitary drainage system by accident or otherwise, the fixtures receiving such wastes shall be connected to an independent sanitary drainage system discharging through an approved oil separator. Where an oil separator discharges into a public sanitary or combined sewer, the oil separator shall be connected to the building sanitary sewer, or to the building sanitary drain, on the outlet side of any building (house) trap. Where the oil separator must discharge into a private disposal system, the system shall be one approved for such use.

**903.5f-2** Oil separators shall be equipped with an individual 3-inch vapor vent pipe extending from the top of the separator and terminating in the open air at an approved location at least 12 feet above grade.

**903.5f-3** The depth of liquid retained by oil separators shall be at least 2 feet.

**903.5f-4** The capacity of oil separators shall be specially approved for each installation, but such capacity shall be at least 6 cubic feet.

**903.5f-5** Where provision is made for draining rain water from diked 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.

**903.5g Radioactive Wastes.** No radioactive wastes shall be discharged into the regular sanitary drainage system, or to a public or private sewer system or sewage treatment plant, except where such wastes are treated and disposed of by a method specially approved by the authority having jurisdiction.

**903.6 Methods For Handling Drainage Below Sewer Level.** Drainage from parts of drainage systems which cannot drain by gravity into the sewer shall be disposed of through subbuilding (subhouse) drainage systems and discharged into the building gravity drainage system by automatic equipment or by another approved method. Drainage and vent piping of sanitary subbuilding drainage systems shall be installed in the same manner as for gravity system, except that the building drains of such systems shall drain into airtight and vented sumps, ejectors or receiving tanks from which the sewage shall be discharged as required herein. Sumps, ejectors and receiving tanks which receive only clear water drainage and from which sewage is excluded, need not be airtight and vented.

**903.7 Methods For Handling Subsoil Drainage.** Where subsoil drainage is discharged to a public sewer, subsoil drains shall discharge into an accessible approved silt and sand intercepting trap, the drainage from which shall be disposed of into the storm drainage system. Where such piping from intercepting traps is directly connected to the gravity storm drainage system, such piping shall be provided with an approved and accessibly located backwater valve.

### **903.8 Prevention of Overflow Into Building**

**903.8a Fixtures and Area Drains Subject to Backwater.** Where fixtures or area drains are subject to overflow as the result of backwater, accessible backwater valves shall be installed in the fixture drains of such fixtures or in the branch drains to such area drains, or an accessible gate valve shall be installed in the building drain at its point of exit from the building and downstream from any building trap, or other approved suitable provisions shall be made to prevent its overflow into the building.

**903.8b Design of Backwater Valves.** Backwater valves shall be designed so as to provide a positive mechanical seal against backwater, and when fully opened such valves shall have flow capacity not less than that of the piping in which they are installed. All bearing parts of such valves shall be of corrosion resistant material.

### **903.9 Piping Installation**

#### **903.9a Prohibited Location of Piping**

**903.9a-1** No drainage or vent piping shall be located in stairways, nor so as to interfere with the normal operation of windows, doors or other building openings.

**903.9a-2** No drainage or vent piping shall be located in a hoistway or under an elevator or counterweight.

**903.9a-3** No horizontal drainage piping shall 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.

**903.9a-4 Underground.** Drainage piping parallel to walls, other than subsoil drains, shall be located at least 3 feet from footings or bearing walls, except where a lesser distance is approved as safe. Where such underground piping is installed parallel to and deeper than footings, it shall be no deeper below than horizontally distant from the footings, except as may be approved upon a finding that a greater depth-to-distance ratio is safe.

**903.9b Building Sewers.** Building sewers shall be installed in accordance with the regulations of the authority having jurisdiction.

**903.9c Freezing.** No soil or waste piping shall be installed outside of buildings or concealed in exterior walls, or located where it may be subjected to freezing temperatures, unless adequate provision is made to protect such piping against damage from freezing.

**903.9d External Corrosion.** Drainage and vent piping passing through or under cinders or other corrosive material shall be provided with approved coating, wrapping, or other means of protection against damage from external corrosion.

**903.9e Strain.** Drainage and vent piping shall be installed so as not to be subject to undue strain. Provision shall be made to protect the piping

against damage from strain due to normal expansion and contraction, and to building settlement.

### **903.9f Breakage**

**903.9f-1** Drainage and vent piping passing through foundation or bearing walls shall be protected by means of sleeves or arches, or approved equivalent protection shall be provided. The space between sleeves or arches and the pipes passing through the wall shall be filled with approved sealing material. Sleeves shall be of iron or steel pipe two standard sizes larger than the pipe passing through.

**903.9f-2** Outside leaders installed along alleyways, driveways or other locations where they may be exposed to damage, shall be protected by guards or recessed in a wall.

### **903.9g Excavation, Support and Backfilling for Underground Piping**

**903.9g-1** Excavation for the installation of underground drainage and vent piping shall be open trenchwork. Such piping shall be supported on a firm bed for its entire length.

**903.9g-2** Precautions shall be taken to assure proper compactness of backfill without damage to the piping. Trenches shall be back-filled and compacted to at least 12 inches above the top of piping with clean earth, sand or screened gravel, which shall not contain boulders, cinders or other substances which may damage or break the piping or cause corrosive action. Thereafter, backfilling shall be completed up to grade and be properly compacted.

**903.9h Support and Attachment of Aboveground Piping.** Drainage and vent piping aboveground shall be securely attached to the building construction at no greater distances between supports than given in the following:

**903.9h-1** Cast iron pipe, horizontal: 5 feet.

**903.9h-2** Cast iron pipe, vertical: every story; and so as to take the load off the base of the stack.

**903.9h-3** Screwed pipe (standard pipe size), horizontal: 12 feet.

**903.9h-4** Screwed pipe (standard pipe size), vertical: every other story; and so as to take the load off the base of the stack.

**903.9h-5** Copper tube (types K, L, M and DWV), horizontal: 10 feet, for piping 2 inches and larger; 6 feet, for smaller piping.

**903.9h-6** Copper tube (types K, L, M and DWV), vertical: every story; and so as to take the load off the base of the stack.

**903.9h-7** Lead pipe, horizontal: support continuously for entire horizontal length.

**903.9h-8** Lead pipe, vertical: 4 feet.

**903.9h-9** Plastic pipe, horizontal: 4 feet, for piping 2 inches and larger; 3 feet, for smaller piping; trap arms, at trap discharge; at least  $\frac{3}{4}$  inch bearing for brackets or straps.

**903.9h-10** Plastic pipe, vertical: 4 feet; for lengths more than 30 feet with approved expansion joints or restraining fittings, intervals not exceeding 30 feet.

**903.9i Hangers, Anchors and Piers.** Hangers, anchors and piers for the support and attachment of drainage and vent piping shall be of approved material and have sufficient strength to support the piping and its contents.

### **903.9j Slope of Drainage and Vent Piping**

**903.9j-1** Horizontal drainage piping shall be installed in practical alignment at a uniform downstream slope of not less than one-fourth inch per foot for piping of 3-inch diameter or smaller, and not less than one-eighth inch per foot for larger piping. Lesser slope may be used only when specially approved.

**903.9j-2** Vent piping shall be sloped upward continuously from its lowest connection with soil or waste piping to its terminal so as to provide ventilation of all parts of the drainage system by gravity circulation of air.

### **903.9k Changes in Direction of Drainage Piping**

**903.9k-1** Changes in direction of drainage piping shall be made by the use of 45-degree wyes; long sweeps; sixth, eighth or sixteenth bends; or approved combinations of these or equivalent fittings, except as otherwise provided in this section.

**903.9k-2** Short sweeps may be permitted only in drainage piping which is 3 inches or larger in size.

**903.9k-3** Single and double sanitary tees may be permitted only in vertical drainage piping.

### **903.9l Prohibited Fittings and Connections**

**903.9l-1** No running threads, bands, or saddles shall be used in drainage or vent piping. No drainage or vent pipes shall be drilled or tapped.

**903.9l-2** No fitting, connection, device, or method of installation which retards the flow of water, wastes, sewage, or air in the drainage or vent systems to an extent greater than the normal frictional resistance to flow, shall be installed. Double hubs are prohibited for use in drainage piping. No fitting having a hub faced downstream shall be used as a drainage fitting. No tee branch of a drainage fitting shall be used as an inlet branch for wastes.

**903.9l-3** No heel- or side-inlet quarter bend shall be used as a vent connection fitting in drainage piping when the heel- or side-inlet is placed in a horizontal position.

**903.9l-4** The expanding or swaging of 3-inch lead bends or stubs to 4-inch size, thereby causing a reduction in pipe wall thickness, is prohibited. Approved 3- by 4-inch lead bends and stubs which have uniformly proper wall thickness may be used for connection to 4-inch floor flanges, and approved 4- by 3-inch floor flanges may be used for connection to 3-inch lead bends and stubs.

**903.9m Dead Ends.** Dead ends shall be prohibited in the drainage system, except where necessary to extend piping for a cleanout so that it will be accessible.

**903.9n Provisions for Future Fixtures.** Drainage and vent piping provisions for future fixture installations shall consist of plugged fittings at the stacks, or of piping installed without dead ends.

**903.9o Warning Signs for Radioactive Waste Piping and Equipment.** Piping and piping equipment conveying radioactive wastes shall be adequately and properly identified as hazards by means of conspicuous warning signs conforming to Sub Part 16.12 of Chapter I of the New York State Sanitary Code.

**903.10 Cleanouts for Piping.** Adequate cleanouts shall be provided and arranged so that the pipes may be readily cleaned.

**903.10a Building Drain Junction.** There shall be an accessible cleanout on the building drain near its junction with the building sewer outside the building, or at a wye branch fitting or building trap immediately inside the building.

**903.10b Change in Direction of Building Drain.** Cleanouts shall be installed at changes in direction of the building drain greater than 45 degrees.

**903.10c Horizontal Drainage Piping.** Horizontal drainage piping shall be provided with cleanouts spaced not more than 50 feet apart for piping 4 inches or less in diameter, and not more than 100 feet apart for larger piping, except that for underground piping over 10 inches in diameter, approved manholes with covers shall be installed at each 90-degree change in direction and at maximum intervals of 150 feet.

**903.10d Base of Stacks and Leaders.** An accessible cleanout shall be provided at the base of each waste stack, soil stack and leader.

**903.10e Direction of Cleanout Opening.** Cleanouts shall be installed in such a manner that the cleanout opening is in a direction opposite to the direction of flow in the drain or at a right angle thereto.

**903.10f Cleanout Extensions for Concealed Drainage Piping.** Cleanouts on concealed or underground piping shall be extended so as to be accessible at the wall, floor or grade.

**903.10g Cleanout Equivalent.** A fixture trap or a fixture with an integral trap, readily removable without disturbing concealed piping, may be accepted as a cleanout equivalent provided there is not more than one 90-degree bend in the line to be rodded.

**903.10h Size of Cleanouts.** Cleanouts shall be of the same nominal size as the pipe, but need not be larger than 4 inches.

**903.10i Clearance at Cleanouts.** Cleanouts on piping less than 3 inches in size shall be so installed that there are at least 12 inches of clearance to permit rodding; for larger piping such clearance shall be at least 18 inches.

**903.10j Underground Traps.** Underground traps, except P traps into which floor drains having removable strainers discharge, shall be provided with accessible and removable cleanouts.

**903.11 Existing Building Sewers and Building Drains.** Existing building sewers and building drains may be used for new drainage systems only when tested and approved as conforming to the requirements for new

building sewers and building drains. The enforcement officer shall have authority to required exposure of part or all of such piping.

### **903.12 Building (House) Traps and Fresh Air Inlets**

**903.12a Required Installation or Omission of Building (House) Traps.** Building (house) traps may be required in accordance with local conditions. Where the local authority having jurisdiction requires a building trap to be installed on, or omitted from, a building drain, the installation shall conform to such local determination.

**903.12b Building Trap Cleanouts.** Building traps shall be provided with two brass cleanout plugs. Such plugs shall be of the same size as the trap for traps up to 4 inches in size, and shall be at least 4 inches in size for larger traps. Cleanout plugs shall be located at the trap so as to provide access for cleaning the trap interior and for rodding upstream and downstream from the trap, except that, where the authority having jurisdiction requires the cleanouts of traps to be extended above the floor level because of local conditions, the cleanouts shall be installed in conformity with such local determination.

**903.12c Location of Building Traps on Building Drains.** Where a building trap is installed, it shall be located within the property lie, inside the building wherever practicable, on the building drain within 2 feet of the exterior wall of the structure, and on the sewer side of all connections except those provided to receive the discharge from a sewer lift, oil separator, blowoff and condensing tank, or leader. Where the cleanouts of such trap are located underground or below a cellar floor, an approved masonry or concrete pit or manhole shall be provided for access to the cleanouts.

**903.12d Fresh Air Inlets.** Every sanitary or combined building drain equipped with a building (house) trap, sewage sump, ejector, receiving tank, oil separator or similar equipment, shall be provided with a fresh air inlet pipe connected to the building drain immediately upstream from and within 4 feet of such trap or equipment. Such connection shall be made in the same manner as prescribed herein for vent connections to horizontal drains, and the fresh air inlet pipe shall be extended to the outer air and shall be terminated in an open end at least 6 inches above grade. The open end shall be protected by a perforated metal plate permanently fixed in the mouth of the inlet and having an open ventilating area at least equal to the area of the pipe; or a return bend with its unprotected open end at least 6 inches above grade shall be installed within the property line in an approved location. The size of the fresh air inlet pipe shall be at least one half the diameter of the building drain at the point of connection, but at least 3 inches.

### 903.13 Sanitary Drainage Fixture Units

**903.13a Values for Fixtures.** Fixture unit values given in table I-903 shall be employed in computing the total load carried by a soil or waste pipe, and shall be used with the tables for sizing soil, waste, drain and vent pipes, except as otherwise prescribed in this chapter. The total discharge flow in gallons per minute for any single fixture, divided by 7.5, provides the fixture unit value for that particular fixture.

**903.13b Values for Continuous or Intermittent Flow.** For continuous or intermittent flow into a drain, as from a pump, ejector, air conditioning equipment or similar equipment, a fixture unit value of 2 shall be assigned for each gallon per minute of flow at rated capacity.

### 903.14 Sizing the Sanitary Drainage System

**903.14a Maximum Fixture Unit Load.** The maximum permissible fixture unit load that may be connected to any horizontal fixture branch, soil stack, waste stack, building drain and building drain branches from stacks, shall be determined from table II-903, except as otherwise provided in this section.

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TABLE I-903 SANITARY DRAINAGE FIXTURE UNIT VALUES

Fixture or group	Fixture unit value
Bathroom group consisting of a lavatory, bathtub or shower stall, and a water closet (direct flush, valve) .....	8
Bathroom group consisting of a lavatory, bathtub or shower stall, and a water closet (flush tank) .....	6
Bathtub with 1½" trap .....	2
Bathtub with 2" trap .....	3
Bidet with 1½" trap .....	3
Combination sink and wash tray with 1½" trap .....	3
Combination sink and wash tray with food waste grinder unit (separate 1½" trap for each unit) .....	4
Dental unit or cuspidor .....	1
Dental lavatory .....	1
Drinking fountain .....	½
Dishwasher, domestic type .....	2
Floor drain .....	1
Kitchen sink, domestic type .....	2
Kitchen sink, domestic type with food waste grinder unit .....	3
Lavatory with 1½" waste plug outlet .....	2
Lavatory with 1¼" or 1⅜" waste plug outlet .....	1
Lavatory (barber shop, beauty parlor or surgeon's) .....	2
Lavatory, multiple type (wash fountain or wash sink), per each equivalent lavatory unit .....	2
Laundry tray (1 or 2 compartments) .....	2
Shower stall .....	2
Showers (group) per head .....	3
Sink (surgeon's) .....	3
Sink (flushing rim type, direct flush valve) .....	8
Sink (service type with floor outlet trap standard) .....	3
Sink (service type with P trap) .....	2
Sink (pot, scullery or similar type) .....	4
Urinal (1" flush valve) .....	8
Urinal (¾" flush valve) .....	4
Urinal (flush tank) .....	4
Water closet (direct flush valve) .....	8
Water closet (flush tank) .....	4
Swimming pools, per each 1000 gallons of capacity .....	1
Unlisted fixture, 1¼" or less fixture drain or trap size .....	1
Unlisted fixture, 1½" fixture drain or trap size .....	2
Unlisted fixture, 2" fixture drain or trap size .....	3
Unlisted fixture, 2½" fixture drain or trap size .....	4
Unlisted fixture, 3" fixture drain or trap size .....	5
Unlisted fixture, 4" fixture drain or trap size .....	6

**903.14b Main Stack of Sanitary Drainage System.** Sanitary drainage systems shall have at least one main stack extending undiminished in size and as directly as possible from the building drain to the open air above the roof. Such attack shall be at least 3 inches in size but not larger than the size of the building drain.

**903.14c Minimum Size of Soil and waste Stacks.** Soil and waste stacks shall be at least as large as the largest branch connection thereto, except that it shall be permissible to connect the 4-inch fixture drain of a water closet to a 3-inch soil stack by means of a 3-by-4-inch TY or sanitary tee.

**903.14d Minimum Size of Sanitary Building Drains.** The size of the sanitary building drain at any point shall be at least as large as the largest branch or stack located upstream from such point.

**903.14e Minimum Size of Underground Waste Piping.** Underground waste piping shall be at least 2 inches in size.

**903.14f Size of Soil and Waste Stack Offsets of More Than 45 Degrees.** Where a soil or waste stack is offset at an angle of more than 45 degrees from the vertical, and the fixture unit load conveyed by the offset exceeds the permissible load for building drains of the same size as the stack, then the offset shall be sized as a building drain for the load; and the size of the stack section below the offset shall be at least as large as the offset.

**903.14g Provision for Future Fixtures.** Where drainage or vent piping outlets are provided for future fixture installations, they shall be considered in determining the sizes of drainage and vent piping. (See table II-903.)

**903.15 Prohibited Drain Connections at Soil and Waste Stack Offsets.** No drainage branch shall be connected to a soil or waste stack within 2 feet above or below a stack offset, made at an angle of more than 45 degrees from the vertical, except where no other drainage branch is connected to the stack at a higher story.

**903.16 Soil and Waste Stack Connections to Building Drain.** Where two or more soil or waste stacks discharge into a building drain or a main branch thereof, they shall connect into the upper half (air space portion) of the horizontal building drain or main branch where practicable.

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**TABLE II-903 MAXIMUM PERMISSIBLE LOADS FOR SANITARY DRAINAGE PIPING**  
(In terms of fixture units)

Pipe diameter in inches	Any horizontal fixture branch	One stack of 3 stories or less in height	Stacks more than 3 stories in height		Building drain, and building drain branches from stacks			
			Total for stack	Total at one story	Slope, in inches per foot			
					1/16	1/8	1/4	1/2
1 1/4 <sup>1</sup>	1	2	2	1	np	np	np	np
1 1/2 <sup>1</sup>	3	4	8	2	np	np	np	np
2 <sup>1</sup>	6	10	24	6	np	np	21	26
2 1/2 <sup>1</sup>	12	20	42	9	np	np	24	31
3	20 <sup>2</sup>	30 <sup>3</sup>	60 <sup>3</sup>	16 <sup>2</sup>	np	np	27 <sup>2</sup>	36 <sup>2</sup>
4	160	240	500	90	np	180	216	250
5	360	540	1,100	200	np	390	480	575
6	—	960	1,900	350	np	700	840	1,000
8	—	—	3,600	600	1,400	1,600	1,920	2,300
10	—	—	5,600	1,000	2,500	2,900	3,500	4,200
12	—	—	—	—	3,900	4,600	5,600	6,700

<sup>1</sup> No water closets permitted.

<sup>2</sup> Not over two water closets permitted

<sup>3</sup> Not over six water closets permitted

### 903.17 Vent Stacks and Stack Vents

**903.17a Vent Stack-Where Required.** A vent stack shall be installed with a soil or waste stack which has provision for the connection of present or future fixtures in two or more stories.

**903.17b Connection at Base.** Vent stacks shall connected full size at their base to the building drain, or to the soil or waste stack at or below the level of the lowest drainage connection to the soil or waste stack.

**903.17c Connection at Top.** Vent stacks shall extend undiminished in size to a point at least 1 foot below the roof and connect to an independent vent extension through the roof, or to a vent header, or to the stack vent portion of the soil or waste stack, at least 6 inches above the flood level of the highest fixture discharging into the soil or waste stack.

**903.17d Angle of Offsets and Connections.** Offsets in the stack vent portion of soil and waste stacks (above the highest fixture drainage connection), offsets in vent stacks and connections of vent stacks at the bottom to a soil or waste pipe or to the house drain, shall be made at an angle of at least 45 degrees to the horizontal. However, where the entire piping above such

offsets is of nonscaling type, the offset angle may be increased, provided there is sufficient slope for condensation to drain back to soil or waste pipe connections.

**903.17e Vent Headers.** Where stack vents and vent stacks are connected into a vent header, such connections shall be made at the tops of the stacks. The vent header shall connect to a vent extension through the roof.

**903.18 Vent Extensions Through Roofs.** 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.

**903.18a Terminal Height.** Vent extensions through roofs shall terminate at least 6 inches above roofs, except that where a roof is used for other than incidental access, such vent extension shall terminate at least 5 feet above the roof.

#### **903.18b Terminal Location**

**903.18b-1** No vent terminal shall be located within 10 feet directly beneath any door, window or ventilating opening. Vent terminals shall not be located within 10 feet horizontally of such openings unless the vent terminal is at least 2 feet above the top of the opening.

**903.18b-2** Where a structure is to be built higher than the vent terminal of an adjacent building and thereby adversely affects the vent system of the adjacent building or when such vent is a potential nuisance to the occupants of the higher structure, then the owner of the higher structure shall, at his expense and with the consent of the owner of the adjacent building, cause such vent to be extended or altered to correct the condition.

**903.18b-3** Where a 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 this section, including any necessary extension of the vent terminal to a location sufficiently remote to prevent the creation of a foul air nuisance to occupants of the higher building.

**903.18c Size of Vent Extension.** Each vent extension shall be at least as large as the soil stack, waste stack, vent stack or vent header served thereby, but in no case less than 3 inches in size. Where it is necessary to increase the size of a vent pipe at its vent extension, the change in size shall be made by use of a long increaser at the base of the vent extension.

**903.18d Vent Extensions Outside Building.** No vent extension shall be attached on the outside of an exterior wall, but shall be extended up inside the building unless such exterior installation is specially approved.

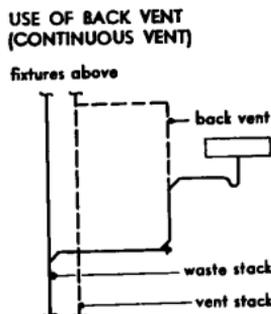
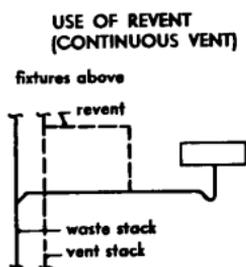
**903.18e Vent Extensions Through Wall.** Vent extensions shall not be run through an exterior wall unless specially approved. Where installed, the terminals shall open downward and be effectively screened, and shall not be located under an overhang of the building nor within 10 feet measured horizontally from any lot line.

**903.18f Attachment to Vent Extensions.** No antenna, flag pole or similar equipment shall be attached to a vent extension.

**903.18g Weathertightness at Roofs.** The openings through roofs for vent extensions shall be made weathertight.

### 903.19 Fixture Trap Vents

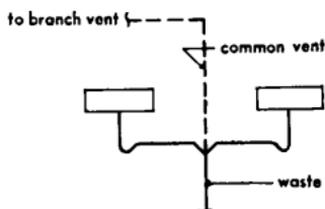
**903.19a Venting of Fixture Trap Seals.** Individual vents shall be provided for the traps of blowout type fixtures. The traps of other type fixtures shall be provided with individual vents, except that special methods of venting as prescribed in this Part under the headings of "Wet Venting," "Stack Venting," "Circuit and Loop Venting" and "Combination Waste-and-Vent System," may be used in accordance with the special conditions stated for such installation. See illustrations entitled "Typical Drainage and Vent System for One-Family Dwelling," "Use of Revent" and "Use of Back Vent."



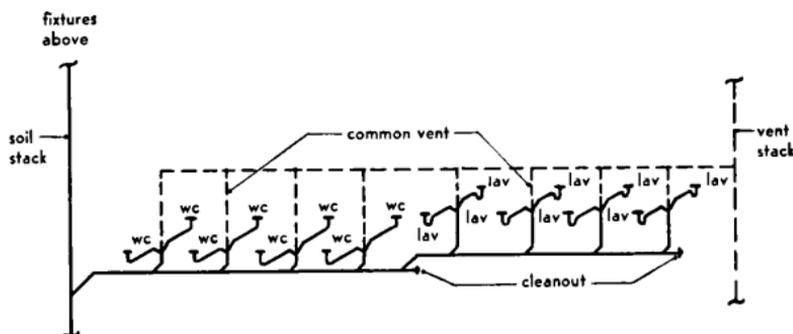
**903.19b Common Vent.** A common vent may serve as an individual vent for not more than two fixture traps. Such common vent shall connect at the junction of the two fixture drains and shall rise vertically from the connection before offsetting horizontally. See illustrations entitled, "Use of Common Vent" and "Common Venting for Back-to-Back Arrangement."

## BUILDING CONSTRUCTION

## USE OF COMMON VENT



## COMMON VENTING FOR BACK-TO-BACK ARRANGEMENT



**903.19c Crown Vents Prohibited.** No vent connection shall be made to the crown of a fixture trap nor to a fixture drain within two drain pipe diameters of the trap weir.

**903.19d Maximum Distance of Vent from Fixture Trap.** The vent connection shall be installed so that the developed length of fixture drain between the vent connection and the weir of the fixture trap does not exceed the distance set forth in Table III-903.

TABLE III-903 MAXIMUM DISTANCE OF VENT FROM FIXTURE TRAP

Size of fixture drain (in inches)	Maximum distance of vent to trap (in feet)
1¼	2½
1½	3½
2	5
3	6
4	10

**903.19e Elevation of Vent Connection Relative to Dip of Fixture Trap.** The vent connection of the fixture drain shall be above the level of the dip of the fixture trap, except in the case of fixture drains of floor-outlet type water closets and urinals, and of floor-outlet type trap standards for service sinks.

**903.19f Vent Rise and Connection.** The vent pipe connected to a soil or waste pipe shall rise to a level at least 6 inches above the flood rim of the highest fixture discharging into such soil or waste pipe before connecting to a branch vent, vent stack or stack vent. The vent connection to a horizontal soil or waste pipe shall be made to the upper half of such pipe.

### **903.20 Wet Venting**

**903.20a Single Bathroom Group on Top Story.** On the top story the drain from a back-vented lavatory, kitchen sink or combination fixture may serve as a wet vent for the traps of bathtub, shower stall and water closet provided that all of the following are complied with:

**903.20a-1** Not more than 1 fixture unit is drained into a 1½-inch wet vent or not more than 4 fixture units are drained into a 2-inch wet vent.

**903.20a-2** The length of each fixture drain conforms to table III-903.

**903.20a-3** The horizontal branch drain connects to the stack at the same level as, or below, the water closet drain; or the horizontal branch drain connects directly to the upper half of the horizontal portion of the water closet drain, at an angle no greater than 45 degrees from the direction of flow. See illustrations entitled, "Wet-Vented Single Bathroom and Kitchen Fixture Group" and "Typical Drainage and Vent System for One-Family Dwelling."

**903.20b Double Bathroom Groups on Top Story.** On the top story the drain from two common vented lavatories may serve as a wet vent for the traps of the bathtubs and shower stalls installed back to back provided that all of the following are complied with:

**903.20b-1** The fixtures discharge into the same horizontal branch drain.

**903.20b-2** The length of each fixture drain conforms to table III-903.

**903.20b-3** The wet vent is at least 2 inches in size.

**903.20c Bathroom Groups Below the Top Story.** Below the top story the drain from one or two individually vented lavatories may serve as a wet vent for the traps of one or two bathtubs or shower stalls provided that all of the following are complied with:

**903.20c-1** The wet vent and its extension to the vent stack is at least 2 inches in diameter.

**903.20c-2** Each water closet below the top story is individually vented.

**903.20c-3** The length of each fixture drain conforms to table III-903.

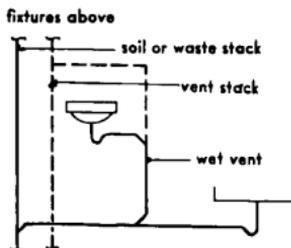
**903.20c-4** The vent stack is sized in accordance with the following special vent stack sizing table:

**TABLE IV-903 SIZE OF VENT STACKS FOR WET VENTING BATHROOM GROUPS**

Number of wet-vented fixtures	Diameter of vent stacks, in inches
1 — 2 bathtubs or showers .....	2
3 — 5 bathtubs or showers .....	2½
6 — 9 bathtubs or showers .....	3
10 — 16 bathtubs or showers .....	4

**903.20d** In bathroom groups, vented in accordance with this section, water closets below the top story need not be individually vented if the 2-inch wet vented waste pipe connects directly to the upper half of the horizontal portion of the water closet drain, at an angle no greater than 45 degrees from the direction of flow. See illustrations entitled, "Use of Wet Vent," "Wet-Vented Single Bathroom and Kitchen Fixture Group," and "Wet-Vented Multistory Bathroom Fixture Groups."

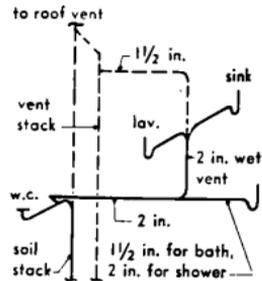
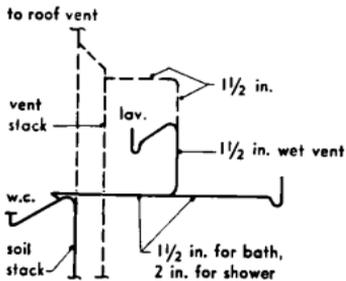
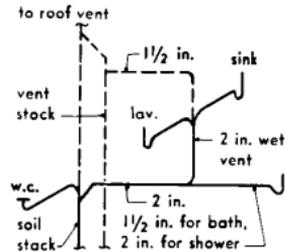
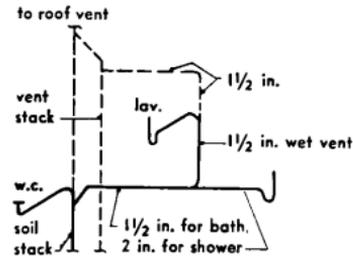
**USE OF WET VENT**



## WET-VENTED SINGLE BATHROOM AND KITCHEN FIXTURE GROUP

ON A STACK OR AT TOP FLOOR OF A STACK SERVING MULTISTORY BATHROOM GROUPS

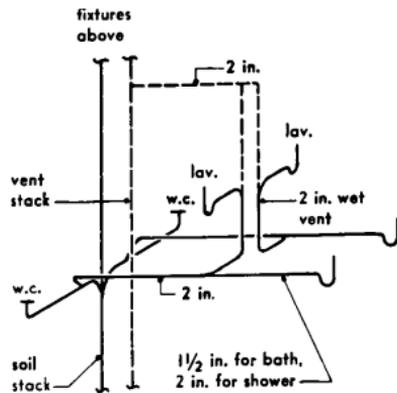
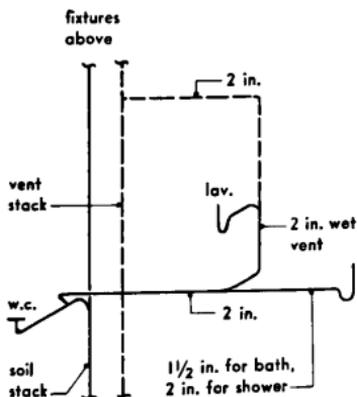
(See 903.20a)

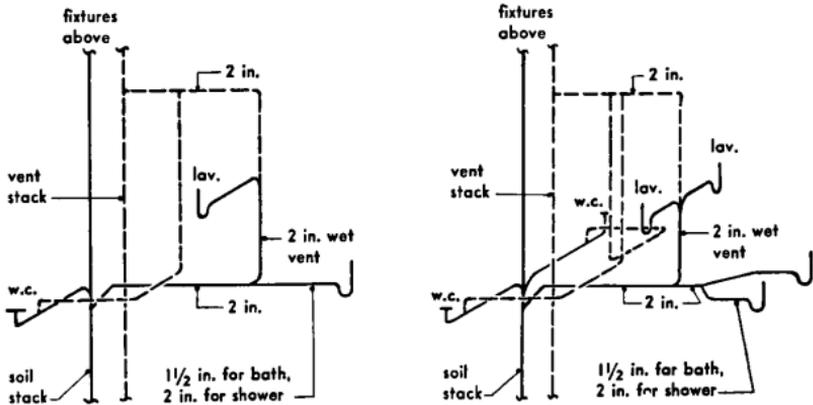


## WET-VENTED MULTISTORY BATHROOM FIXTURE GROUPS

BELOW TOP FLOOR GROUP

(See 903.20c)





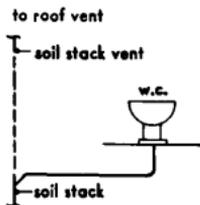
### 903.21 Stack Venting

**903.21a Highest Fixture Connection to Soil or Waste Stack.** Where a fixture discharges directly into a soil or waste stack at a level above all other drain connections thereto, the stack vent may serve as the vent for the fixture trap provided that all of the following are complied with:

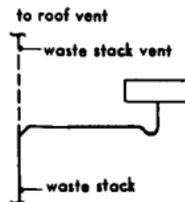
**903.21a-1** Such vent connection is above the level of the dip of the trap, except for fixture drains of floor-outlet type water closets and urinals, and of floor-outlet type trap standards for service sinks.

**903.21a-2** Such vent connection is within the permitted distance given in table III-903. See illustrations entitled, "Use of Soil Stack," and "Use of Waste Stack."

#### USE OF SOIL STACK



#### USE OF WASTE STACK



**903.21b Highest Two Drain Connections to Soil or Waste Stack.** Where the highest two drain connections to a soil or waste stack are for two horizontal fixture drains serving fixtures on the same floor level, the traps of both fixtures may be vented by the stack, provided that the soil or waste stack is at least one pipe size larger than the highest fixture drain and not smaller than

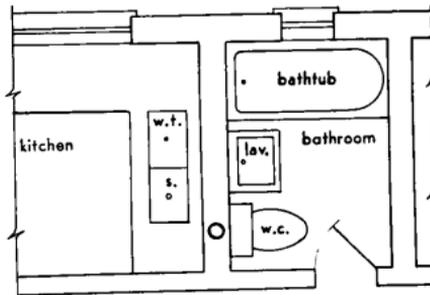
the lower fixture drain, and that both fixture drains have their fixture traps no farther from the stack than permitted by table III-903.

### 903.21c One Bathroom and Kitchen Fixture Group

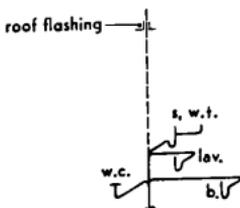
**903.21c-1** Except as provided in 903.21c-2, a group of fixtures on the same floor level, consisting of one bathroom group and a kitchen sink or combination fixture, may be installed without individual vents for fixture traps in a one-story building, or on the top floor of a building, provided that each fixture drain connects independently to the soil stack and that the water closet and the bathtub or shower stall drains enter the stack at the same level and in accordance with the distances permitted in table III-903.

**903.21c-2** Where a public sewer is overloaded sufficiently to cause frequent backwater conditions in the building sewer, a relief vent or an individually vented fixture drain shall be connected to the soil stack below the fixture drain connections serving a stack-vented water closet, bathtub or shower stall. See illustration entitled "Typical Drainage and Vent System for One-Family Dwelling."

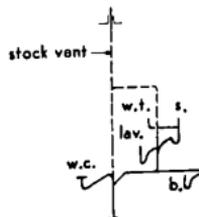
### TYPICAL DRAINAGE AND VENT SYSTEM FOR ONE-FAMILY DWELLING



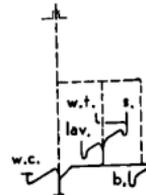
PLAN



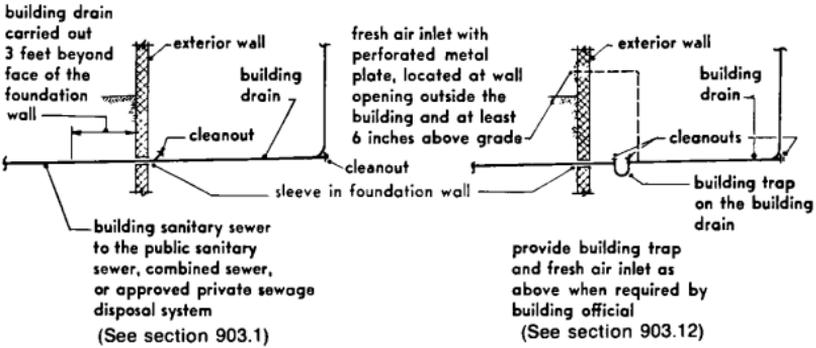
STACK VENTED UNIT  
(See section 903.21)



WET VENTED UNIT  
(See section 903.20)



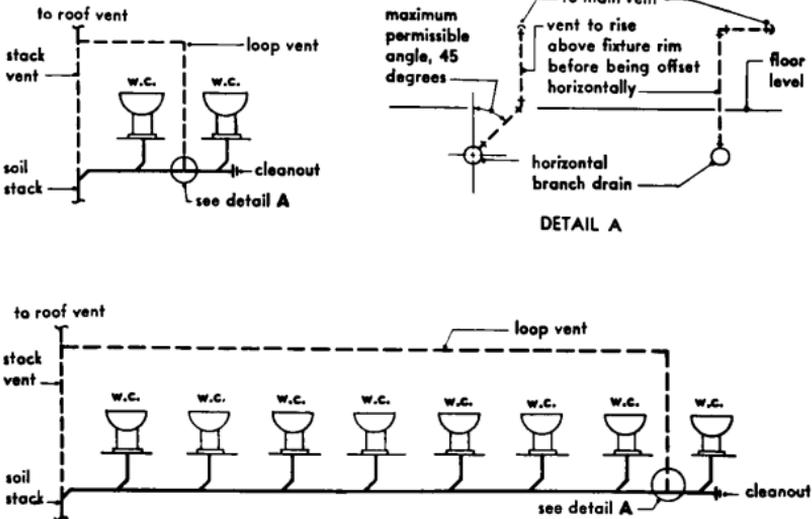
INDIVIDUAL VENTED UNIT  
(See section 903.19)

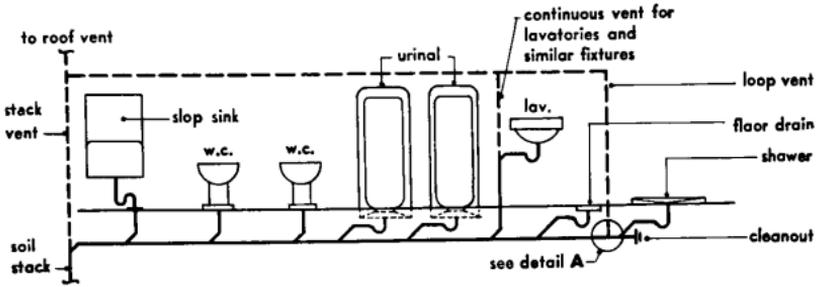


**903.22 Circuit and Loop Venting.** A uniformly sized horizontal branch soil or waste pipe to which two or more, but not exceeding eight, floor-outlet type water closets and urinals, floor-outlet type trap standards for service sinks, shower stalls or floor drains are connected in battery arrangement, may be vented by means of a circuit or loop vent connected to the horizontal branch soil or waste pipe at a point between the two fixture connections farthest from the stack or main drain. Lavatories or similar fixtures may be connected to a circuit or loop vented branch soil or waste pipe provided the traps of such fixtures are protected by individual or common vents. See illustrations entitled "venting for Batteries of Fixtures: Loop Venting," and "Venting for Batteries of Fixtures: Circuit Venting."

**VENTING FOR BATTERIES OF FIXTURES: LOOP VENTING**

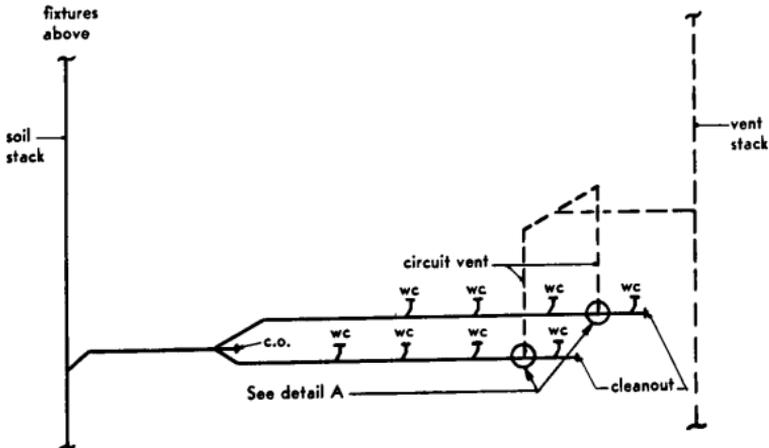
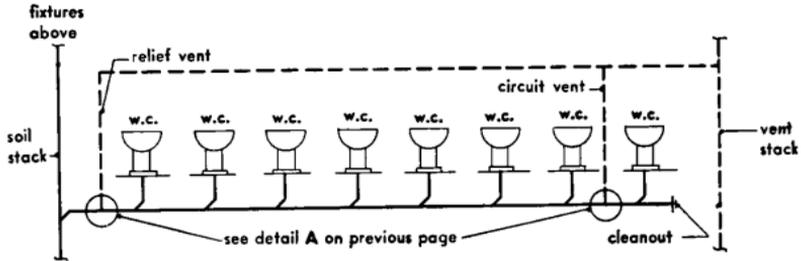
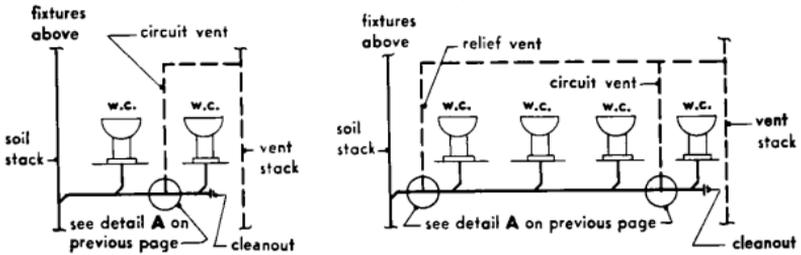
(See section 903.22)





**VENTING FOR BATTERIES OF FIXTURES: CIRCUIT VENTING**

(See section 903.22)

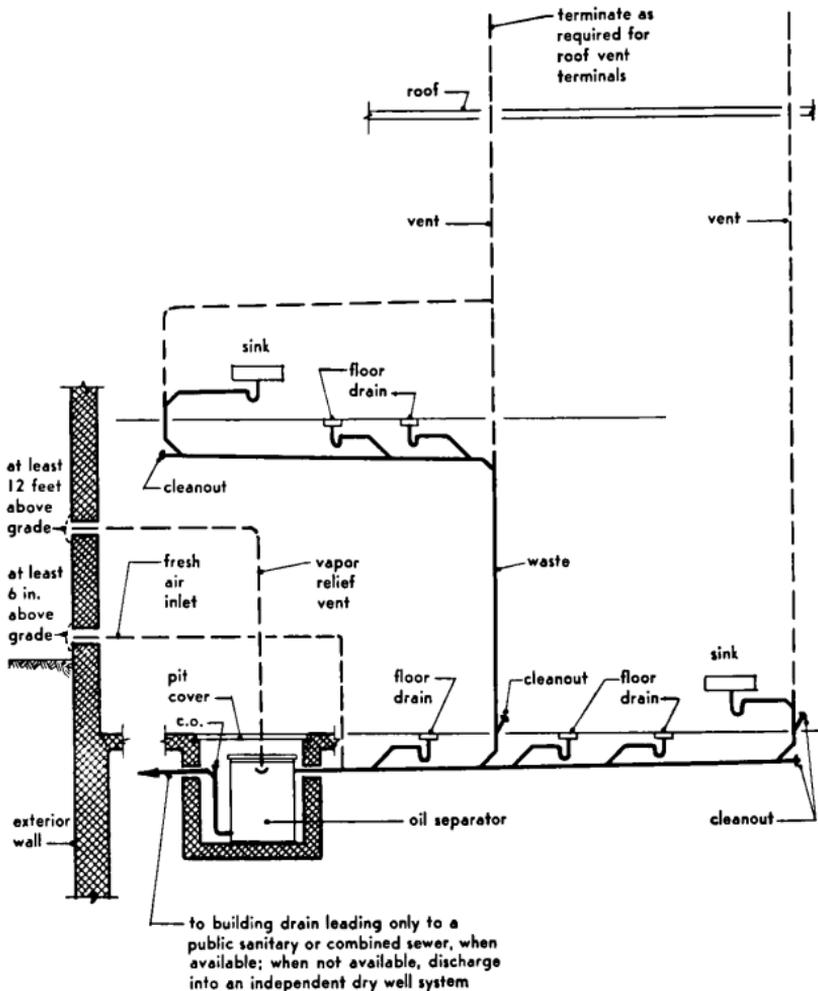


**CIRCUIT VENTING OF PARALLEL BRANCH DRAINS**

**903.23 Combination Waste and Vent System.** A combination waste and vent piping system, limited for use as a means of venting the traps of floor drains and laboratory sinks, shall be permitted in conjunction with horizontal branch waste piping of an independent acid waste system, or an independent flammable oil waste system, or where specially approved for other systems. See illustrations entitled, "Combination Waste and Vent Arrangement for Volatile, Flammable Oil Waste Drainage," and "Acid Waste System With Neutralizing Unit."

**COMBINATION WASTE AND VENT ARRANGEMENT FOR VOLATILE,  
FLAMMABLE OIL WASTE DRAINAGE**

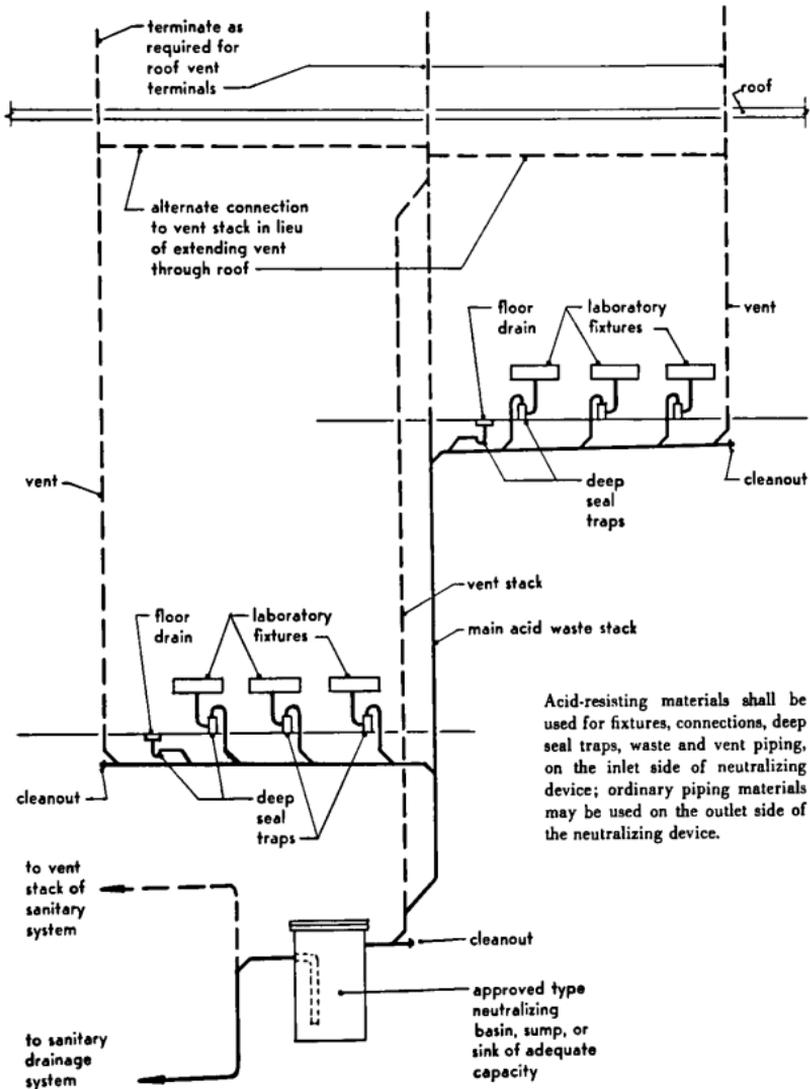
(See section 903.23)



## ACID WASTE SYSTEM WITH NEUTRALIZING UNIT

(May be used only where adequate maintenance is assured)

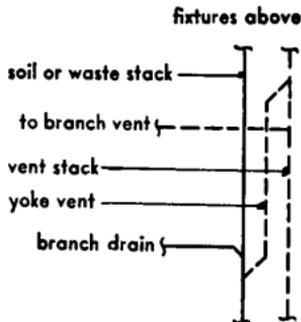
(See section 903.23)



**903.24 Relief Vents.**

**903.24a Vertical Offsets in Building Drains.** Where an offset between horizontal portions of the building drain rises vertically more than 10 feet, a relief vent shall be provided at the top of the vertical offset. The size of such relief vent shall be at least one-half the diameter of the building drain at the offset. Where the building drain is equipped with a building trap, a relief vent also shall be provided at the base of, and within 3 feet of, the vertical offset. The relief vent connected to the base of the offset shall be sized as a vent stack, considering the vertical portion of the building drain as a soil or waste stack, and shall be branch connected to the upper relief vent at a sufficient height so that the relief vents cannot serve as soil or waste pipes in the event of a stoppage in the vertical offset.

**903.24b Soil and Waste Stacks More Than 10 Stories High.** Soil and waste stacks more than 10 stories high shall be provided with a yoke relief vent at each tenth story, counting from the top story. The lower end of the yoke vent shall connect to the soil or waste stack through a wye located below the horizontal branch drain serving fixtures in that story and the upper end shall connect to the vent stack through a tee or inverted wye not less than 3 feet above the floor level. See illustration entitled, "Use of Yoke Vent."

**USE OF YOKE VENT**

**903.24c Soil and Waste Stack Offsets of More Than 45 Degrees.** Soil and waste stack offsets made at an angle of more than 45 degrees from the vertical and located more than 40 feet below the highest drain connection thereto, shall be equipped with relief vents according to one of the following methods:

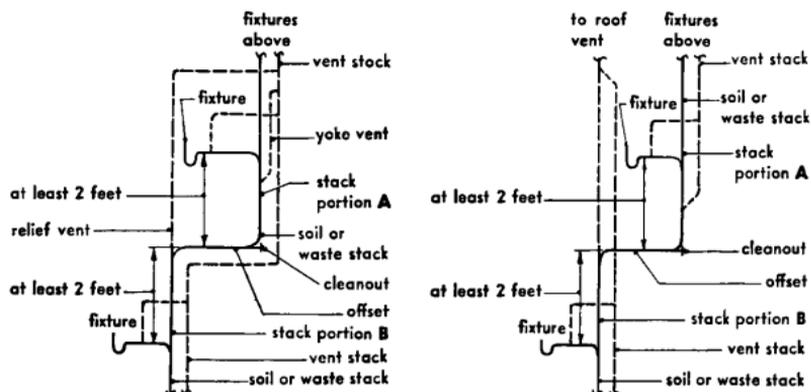
**903.24c-1** Provide for the stack section below the offset and for the stack section above the offset the same venting provisions as would be required if they were two separate soil or waste stacks.

**903.24c-2** Provide a relief vent at the top of the stack section below the offset, and a yoke vent at the base of the upper stack section. See illustration entitled, "Alternate Methods of Relief Venting for 60- and 90-Degree Offsets in Drainage Stacks."

### ALTERNATE METHODS OF RELIEF VENTING FOR 60- AND 90-DEGREE OFFSETS IN DRAINAGE STACKS

(See 903.24c)

#### IN BUILDINGS FIVE STORIES OR MORE IN HEIGHT



Size offset as for a building drain serving load of stack portion (A). Size stack portion (A) as a separate stack. Size stack portion (B) as a separate stack serving total load of both stack portions (A) plus (B). Size relief and yoke vents not smaller than main vent or soil or waste stacks connected.

**903.24d Soil and Waste Stack Offsets of 30 to 45 Degrees.** Where a drainage branch connects within 2 feet above or below a soil or waste stack offset made at an angle of 30 to 45 degrees from the vertical and located more than 40 feet below the highest drain connection thereto, a relief vent shall be provided at the top of the stack section below the offset.

#### 903.24e Suds Pressure Zones

**903.24e-1** Where sinks, laundry trays, laundry washing machines and similar fixtures in which sudsy detergents are normally used, discharge at an upper floor level into a soil or waste stack which also serves fixtures in other occupancy units at a lower floor level, the drainage and vent piping for such lower fixtures shall be arranged so as to avoid connection to suds pressure zones in the sanitary drainage and vent systems; or a suds relief vent, relieving to a nonpressure zone, shall be provided at each suds pressure zone where such connections are installed. The size of such relief vent shall be at least three quarters the diameter of the piping in which the pressure zone occurs, but not less than 2 inches.

**903.24e-2** Suds pressure zones shall be considered to exist at the following locations in sanitary drainage and vent systems:

- (i) In a soil or waste stack, which serves fixtures on two or more floors and receives wastes from fixtures wherein sudsy detergents are used, a zone shall be considered to exist in the vertical portion within 40 stack diameters of the base fitting.
- (ii) In the horizontal drain at the base of a soil or waste stack, which serves fixtures on two or more floors and receives wastes from fixtures wherein sudsy detergents are used, a zone shall be considered to exist in the horizontal portion within 10 stack diameters of the base fitting and where a 60- or 90-degree fitting is installed in the horizontal drain, a zone shall be considered to exist in the horizontal portion within 40 drain diameters upstream of, and 10 drain diameters downstream of the fitting.
- (iii) In a soil or waste stack offset of 60- or 90-degrees, which serves fixtures on two or more floors and receives wastes from fixtures wherein sudsy detergents are used, a zone shall be considered to exist in the vertical portion of the stack within 40 stack diameters of the base fitting for the upper section of the stack, and zones shall be considered to exist in the horizontal offset within 10 stack diameters of such base fitting and within 40 stack diameters of the top fitting for the lower section of the stack.
- (iv) In a vent stack, which has its base connected to a suds pressure zone in the sanitary drainage system, a zone shall be considered to exist in the portion of the vent stack extending from its base connection up to the lowest branch vent fitting located above the level of the suds pressure zone in the sanitary drainage system.

**903.25 Air Pressure Relief Pipe for Pneumatic Ejector.** The air pressure relief pipe from a pneumatic ejector shall not be connected to the regular venting system, but shall be connected to an independent 3-inch vent stack terminating as required for vent extensions through roofs. Such relief pipe shall be of sufficient size to relieve air pressure inside the ejector to atmospheric pressure within 10 seconds, but shall be not less than 1¼ inches in size.

### **903.26 Size of Vent Piping**

**903.26a Size of Individual Vents.** Individual vents shall be at least 1¼ inches in diameter and no less than one half the diameter of the fixture drain to which they connect, except that a 1½-inch individual vent may be installed where a 4-inch fixture drain is provided for a water closet or similar fixture.

**903.26b Size of Circuit and Loop Vents.** Circuit or Loop vents shall be at least one half the diameter of the horizontal soil or waste branch to which they connect.

**903.26c Size of Branch Vents.** Branch vents connecting more than one individual vent to a vent stack or stack vent shall be in accordance with table V-903. In determining the size of such piping, the column headed, "Size of soil or waste stack, in inches," shall be disregarded; and the size shall be based upon the number of fixture units connected thereto, and the developed length of the branch vent measured from its vent stack or stack vent connection to the farthest fixture drain connection served by the branch vent.

**TABLE V-903 SIZE OF VENT STACKS AND BRANCH VENTS**

Size of soil or waste stack, in inches	Fixture units connected	Diameter of vent required, in inches								
		1¼	1½	2	2½	3	4	5	6	8
		Maximum developed length of vent, in feet								
1¼ .....	2	30	—	—	—	—	—	—	—	—
1½ .....	8	np	150	—	—	—	—	—	—	—
2 .....	24	np	50	150	—	—	—	—	—	—
2½ .....	42	np	np	100	300	—	—	—	—	—
3 .....	60	np	np	np	80	400	—	—	—	—
4 .....	500	np	np	np	np	180	700	—	—	—
5 .....	1,100	np	np	np	np	np	200	700	—	—
6 .....	1,900	np	np	np	np	np	np	200	700	—
8 .....	3,600	np	np	np	np	np	np	np	250	800
10 .....	5,600	np	np	np	np	np	np	np	np	250

**903.26d Size of Vents for Building Sewage Sumps, and Receiving Tanks.** Vents for building sewage sumps and receiving tanks, other than pneumatic ejectors, shall be sized as branch vents.

**903.26e Size of Relief and Yoke Vents for Soil and Waste Stacks.** Relief and yoke vents for soil and waste stacks shall be not less than the size of the vent stacks to which they connect.

**903.26f Size of Vent Headers.** Sections of a vent header and its vent extension through the roof shall be in accordance with table V-903. In

determining the size of such piping, the column headed, "Size of soil or waste stack, in inches," shall be disregarded; and the size shall be based upon the sum of the fixture unit loads of the stacks vented through such section of the header, and the developed length shall be that of the vent stack having the longest developed length to the open air.

**903.26g Size of Vent Stacks.** The size of vent stacks shall be determined from table V-903 based upon the size of soil or waste stacks served thereby, the number of fixture units connected to the soil or waste stack, and the developed length of the vent stack. Such developed length shall be that measured from the lowest connection of the vent stack with the soil stack, waste stack, or building drain, to the vent terminal in the open air.

### **903.27 Indirect Waste Piping**

**903.27a Discharge.** Indirect waste pipes shall discharge through an air break into a water-supplied sink or into a water-supplied floor drain directly connected to the sanitary drainage system and approved for such use.

**903.27b Air Break.** The air break for an indirect waste pipe shall be provided by terminating the open end of the pipe at least 1 inch above the flood rim of the receiving fixture.

### **903.27c Venting**

**903.27c-1** No vents need be provided for the traps of fixtures which are connected to indirect waste piping.

**903.27c-2** Indirect waste piping which exceeds 15 feet developed length and is used exclusively to convey drippage from refrigerators and show-cases, and all other indirect waste piping which exceeds 100 feet in developed length, shall be extended through the roof, independent of vents for the regular sanitary system, or to an approved location in the outer air, and terminated as required by section 903.18.

**903.27d Cleanouts.** Indirect waste piping shall be installed with cleanouts at each change of direction on horizontal runs.

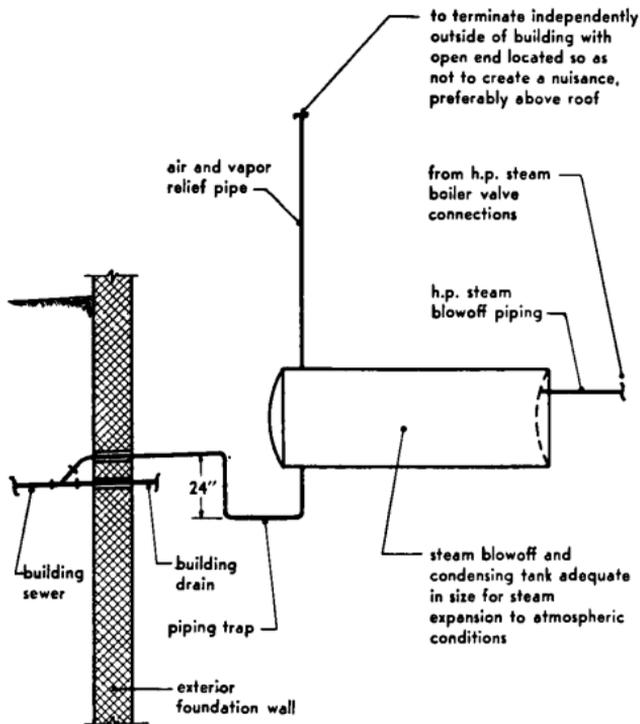
**903.27e Size of Piping.** The size of indirect waste piping shall be the same as required for direct waste piping.

### **903.28 Special Wastes**

**903.28-a Emptying, Overflow and Relief Pipes of Water Supply System.** Emptying, overflow and relief pipes of the water supply system shall discharge through an air break into a fixture approved for such use, or onto a roof.

## HIGH PRESSURE STEAM BLOWOFF TANK CONNECTION TO DRAINAGE SYSTEM

(See 903.28c)



**903.28b Equipment Discharging Clear Water Wastes.** Expansion tanks, cooling jackets, sprinkler systems, drip or overflow pans or similar equipment which discharge clear water only, shall discharge through an air break into a fixture approved for such use, or onto a roof.

**903.28c Steam Exhaust and Boiler Blowoff Pipes.** Where steam exhaust and boiler blowoff pipes discharge through properly installed and approved expansion, blowoff, condenser or cooling tanks, such tanks shall discharge through an air break into a fixture approved for such use or shall discharge through a direct connection to the building sewer. See illustration entitled, "High Pressure Steam Blowoff Tank Connection to Drainage System."

### 903.29 Roof Drains

**903.29a Strainers.** Strainers shall be provided in the inlets to leaders. Strainers shall extend not less than 4 inches above the roof or gutter surface immediately adjacent to the leader inlet, and shall have total open area not less than 1½ times the area of the leader. However, strainers at roof drains for sun decks, parking decks or similar areas which are normally serviced and maintained, may be of the flat surface type installed level with the deck; but such strainers shall have total open area not less than twice the area of the leader.

**903.29b Watertightness at Roofs.** The openings through roofs for roof drains shall be made watertight.

### 903.30 Traps on Storm Water Drains

**903.30a Where Required.** Where leaders and storm drains connect to a combined building drain or sewer, individual traps shall be installed in the horizontal branch serving each leader and each area drain; or a single trap shall be installed in the main storm drain before its connection with a combined building drain, combined building sewer or combined public sewer.

**903.30b Cleanouts on Traps.** Traps installed on storm water drains shall be provided with an accessible cleanout on the inlet side.

**903.30c Size.** Traps shall be of the same size as the horizontal drain in which they are installed.

### 903.31 Sizing the Storm Water Drainage System

**903.31a Building Storm Drains and Horizontal Branches.** The size of a building storm drain or any of its horizontal branches having a slope of one half inch or less per foot, shall be based upon the total drainage area served by such drains in accordance with table VI-903.

**903.31b Subsoil Drains.** The size of subsoil drains shall be not less than 4 inches where installed under a cellar or basement floor or where installed surrounding the outer walls of a building.

**903.31c Leaders.** Leaders shall be sized on the basis of the horizontally projected roof areas served, except that an allowance shall be made for any additional storm water drainage load received by such roof areas from adjacent walls exposed to the elements; such allowance shall be equal to 50 per cent of the area of the largest single wall draining onto the roof. Leaders shall be sized in accordance with table VI-903.

**903.31d Roof Gutters.** The size of a semicircular gutter shall be based upon the horizontally projected roof area served by such gutter in accordance with table VI-903.

### **903.32 Combined Storm Water and Sanitary Drainage Systems**

**903.32a Method of Combining Systems.** Sanitary and storm drainage systems of a building shall be entirely separate from each other, except that where a combined public sewer is available for disposal of such drainage, a building storm drain may connect to a combined building drain in the same horizontal plane through a single wye fitting located at least 10 feet from any sanitary drainage branch to the drain.

**903.32b Sizing the Combined Drains.** The size of any combined drain shall be based on a drainage area equivalent to the total sanitary and storm drainage loads served by such drain, and shall be determined as for horizontal storm drains using table VI-903. The sanitary drainage load shall be converted to equivalent storm drainage area and then added to the storm drainage area. Sanitary drainage loads shall be converted as follows:

**903.32b-1** Where the total fixture unit load on the combined drain is less than 256 fixture units, the sanitary drainage load shall be taken as equivalent to 1000 square feet of storm drainage area.

**903.32b-2** Where the total fixture unit load on the combined drain is more than 256 fixture units, the sanitary drainage load shall be computed by considering each fixture unit as equivalent to 3.9 square feet of storm drainage area.

**903.32b-3** Where there is a continuous or intermittent flow into the drain or sewer, as from a pump, ejector, air conditioning equipment or similar equipment, each gallon per minute of flow at rated capacity shall be computed as being equivalent to 24 square feet of storm drainage area.

**903.33 Tests.** Testing of drainage and vent systems shall conform to the methods described in Part 907.

**TABLE VI-903 MAXIMUM PER MISSIBLE LOADS FOR  
STORM DRAINAGE PIPING AND GUTTERS<sup>1</sup>**  
(In terms of square feet of projected drainage area)

Pipe or gutter diameter in inches <sup>2,3</sup>	Leaders	Horizontal storm drainage piping			Horizontal storm drainage gutters			
		Slope, inches per foot			Slope, inches per foot			
		1/8	1/4	1/2	1/16	1/8	1/4	1/2
2	720	np	np	np	np	np	np	np
2½	1,300	np	np	np	np	np	np	np
3	2,200	822	1,160	1,644	170	240	340	480
4	4,600	1,880	2,650	3,760	360	510	720	1,020
5	8,650	3,340	4,720	6,680	625	880	1,250	1,760
6	13,500	5,350	7,550	10,700	960	1,360	1,920	2,720
8	29,000	11,500	16,300	23,000	1,990	2,800	3,980	5,600
10		20,700	29,200	41,400	3,600	5,100	7,200	10,200
12		33,300	47,000	66,600				
15		59,500	84,000	119,000				

<sup>1</sup> This table is based upon a rainfall rate of 4 inches per hour. Where greater rates frequently occur, the area given in the table shall be adjusted by multiplying them by 4 and dividing by such greater rate, in inches per hour.

<sup>2</sup> The equivalent diameter of a square or rectangular leader may be taken as the diameter of that circle which may be inscribed within the cross-sectional area of the leader.

## PART 904 MATERIALS

### 904.1 Performance Requirements

**904.1a** Plumbing 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.

**904.1b** Before proceeding with an installation, the installer shall consult with the local authority having jurisdiction to determine the durability of materials and joints used under local conditions. Determination by the local authority shall take precedence over the uses of standard materials and joints permitted in this chapter.

**904.1c** The installer shall observe the manufacturer's good practice recommendations regarding care, handling, installation and adjustment of his products in order that the performance of such products will not be impaired by defects or damage during installation, or by bad installation practices.

## 904.2 Quality of Materials

**904.2a** Materials shall be free of manufacturing defects or damage, however occasioned, which would render or tend to render such materials defective, insanitary or otherwise improper for the purpose of this Code.

**904.2b** Used plumbing equipment or material shall not be installed unless specially approved as complying in all respects with this Code.

**904.2c** Plumbing equipment or material which is potentially defective because of wear, damage, sanitary hazards or prior use shall not be reused for plumbing purposes.

**904.3 Standards for Plumbing Materials.** The standards which are applicable to plumbing materials are listed in Table III-904, Standards for Plumbing Materials, in Chapter G, of this code.

**904.4 Identification of Standard Materials.** Materials shall be identified by markings as specified in the standard to which the material conforms.

**904.5 Use of Nonstandard Materials.** Materials which do not conform to any of the applicable materials standards listed in this part shall not be installed unless approved by the local authority having jurisdiction. Such materials and their joints shall be installed in conformity with all special conditions as the local authority having jurisdiction may require for approval based upon performance.

## 904.6 Uses of Standard Piping Materials

**904.6a Building Sewers Under Public Ways.** Building sewers under public ways shall conform to the requirements of the authority having jurisdiction.

**904.6b Building Sewers Within Property Lines.** Building sewers within property lines shall conform to the requirements of the authority having jurisdiction.

**904.6c Underground Sanitary Drainage Piping Within Buildings.** Underground sanitary drainage piping within buildings shall be not less than service weight cast iron soil pipe, or hard temper copper tube of types K or L, except that underground chemical waste piping shall be of materials approved for such use.

**904.6d Sanitary Drainage Piping Above Ground Within Buildings.** Sanitary drainage piping above ground within buildings shall be of extra heavy or

service weight cast iron soil pipe, hubless cast iron pipe and fittings, galvanized wrought iron pipe, galvanized steel pipe, galvanized open-hearth iron pipe, brass pipe, copper pipe or hard temper copper tube of types K, L, M or DWV, except that chemical waste piping shall be of materials approved for such use. In one- and two-family dwellings, and in multiple dwellings not exceeding six stories in height, ABS or PVC, DWV Schedule 40 or heavier plastic pipe may be used.

**904.6e Fittings for Drainage Piping.** Fittings for drainage piping shall not have a ledge, shoulder, or reduction of pipe area which would retard or obstruct flow. Threaded fittings shall be of the recessed drainage type.

**904.6f Underground Vent Piping.** Underground vent piping shall be not less than service weight cast iron soil pipe, or hard temper copper tube of types K or L, except that underground vent piping of chemical waste systems shall be of materials approved for such use.

**904.6g Aboveground Vent Piping.** Vent piping installed above ground shall be of extra heavy or service weight cast iron soil pipe, hubless cast iron pipe and fittings, galvanized wrought iron pipe, galvanized steel pipe, galvanized open-hearth iron pipe, lead pipe, brass pipe, copper pipe or hard temper copper tube of types K, L, M or DWV, except that vent piping of chemical waste systems shall be of material approved for such use. In one- and two-family dwellings, and in multiple dwellings not exceeding six stories in height, ABS or PVC, DWV plastic piping may be used.

**904.6h Underground Storm Drainage Piping.** Underground storm drainage piping, either under buildings or within 3 feet outside of exterior walls, shall be not less than service weight cast iron soil pipe, or hard temper copper tube of types K or L, or other approved materials.

**904.6i Inside Leaders.** Leaders installed above ground inside a building shall be of extra heavy or service weight cast iron soil pipe, hubless cast iron pipe and fittings, galvanized wrought iron pipe, galvanized open-hearth iron pipe, galvanized steel pipe, lead pipe, brass pipe, copper pipe or hard temper copper tube of types K, L, M or DWV.

**904.6j Exterior Leaders and Gutters.** Aboveground sections of exterior leaders and gutters, if used, shall be constructed of approved noncombustible material, except that approved wood leaders and gutters may be installed on buildings not more than three stories high.

**904.6k Roof Drains.** Roof drains shall be of cast iron, copper, lead or other approved corrosion resistant material.

**904.6l Subsoil Drains.** Subsoil drains shall be of open-jointed or horizontally split or perforated clay tile, or perforated bituminized-fiber or asbestos cement pipe, or open-jointed cast iron soil pipe.

**904.6m Water Service Pipes Under Public Ways.** Water service pipes under public ways shall conform to the requirements of the authority having jurisdiction.

**904.6n Water Service Pipes Within Property Lines.** Water service pipes within property lines shall conform to the requirements of the authority having jurisdiction.

**904.6o Water Distributing System Piping.** Piping of the water distributing system shall be of galvanized wrought iron pipe, galvanized open-hearth iron pipe, galvanized steel pipe, brass pipe, copper pipe or copper tube of types K or L. Copper tube installed above ground shall be of hard temper, except that soft temper copper tube with approved solder joints may be installed only in vertical piping.

#### **904.7 Use of Miscellaneous Standard Materials**

**904.7a Sheet Lead.** Sheet lead for general use shall weigh at least 4 pounds per square foot, except that sheet lead flashings for pipes shall weigh at least 3 pounds per square foot.

**904.7b Lead Bends and Lead Traps.** Lead bends and lead traps shall be at least one-eighth inch in wall thickness.

**904.7c Sheet Copper.** Sheet copper for general use shall weigh at least 12 ounces per square foot, except that sheet copper flashings for pipes shall weigh at least 8 ounces per square foot, and sheet copper linings for flush tanks shall weigh at least 10 ounces per square foot.

**904.7d Calking Ferrules.** Calking ferrules shall be of red brass in accordance with the following table:

## BUILDING CONSTRUCTION

TABLE I-904 CALKING FERRULES

Pipe size (in inches)	Inside diameter (in inches)	Length (in inches)	Minimum weight each
2	2¼	4½	1 lb.
3	3¼	4½	1 lb. 12 oz.
4	4¼	4½	2 lb. 8 oz.

**904.7e Soldering Bushings.** Soldering bushings shall be of red brass and in accordance with the following table:

TABLE II-904 SOLDERING BUSHINGS

Pipe size (in inches)	Minimum weight each
1¼	6 oz.
1½	8 oz.
2	14 oz.
2½	1 lb. 6 oz.
3	2 lb.
4	3 lb. 8 oz.

**904.7f Floor Flanges.** Floor flanges for closets and similar fixtures shall be at least one eighth inch thick when of brass, and at least one quarter inch thick and 2-inch calking depth when of cast iron or galvanized malleable iron. Floor flanges of hard lead shall weigh at least 1 pound 9 ounces and be composed of lead alloy having at least 7.75 per cent antimony by weight. Brass and hard lead floor flanges shall be soldered to lead bends and stubs and to copper tube. Cast iron and galvanized malleable iron floor flanges shall be calked or screwed to cast iron galvanized iron, or steel pipe.

**904.7g Cleanout Plugs.** Cleanout plugs shall be of brass and shall have raised or countersunk square heads, except that countersunk heads shall be installed where raised heads may be a hazard.

**904.7h Flush Pipes and Fittings.** Flush pipes and fittings shall be of nonferrous material. When of brass or copper tubing, they shall be at least 0.0313 inch in thickness (No. 22 U.S. gage).

## PART 905 TYPES OF JOINTS

**905.1 Calked Joints**

**905.1a** Calked joints for cast iron soil pipe shall be firmly packed with oakum or hemp and filled with molten lead not less than 1 inch deep. Lead shall be run in one pouring to approximately flush with the face of the hub and shall be calked tight. No paint, varnish, or other coatings shall be applied over the joint until after it has been tested and approved.

**905.1b** Calked joints for cast iron water pipe shall be firmly packed with clean, sound jute free from tar, and the remaining space in the hub shall be filled with molten lead not less than  $2\frac{3}{8}$  inches deep, except that for pipes over 8 inches in size, such minimum depth of lead shall be 3 inches. Lead shall be run in one pouring and shall be calked tight.

**905.2 Threaded Joints.** Threads for threaded joints shall conform to the standard American National Taper Pipe Thread. All burrs shall be removed. Pipe ends shall be reamed or filed out to size of the bore, and all chips shall be removed. Pipe joint cement and paint shall be used only on male threads.

**905.3 Wiped Joints.** Wiped joints shall be made with plumbers' wiping solder, shall extend at least three quarters of an inch on each of the pipe ends being joined, and shall be at least three eighths of an inch thick at the thickest part of the joint. Wiped flange joints for connecting lead pipes at wall or floor openings shall be made using a lead ring or washer placed behind the joint at the wall or floor.

**905.4 Burned Lead Joints.** Burned (welded) lead joints shall be lapped and the lead shall be fused together to form a uniform weld at least as thick as the lead being joined.

**905.5 Copper Tube Solder Joints.** Surfaces to be soldered in copper tube solder joints shall be cleaned bright, properly fluxed, and the joint made with solder approved for such use. Lead content in solder shall be limited to 0.20 per cent when it has been determined by the authority having jurisdiction that a higher lead content constitutes a health hazard.

**905.6 Copper Tube Brazed or Welded Solder Joints.** Brazed joints in copper tube shall be made by cleaning the surfaces to be brazed, applying flux approved for such joints, and making the joint with approved brazing alloy.

**905.7 Copper Tube Flared Joints.** Flared joints for soft temper copper tube

shall be made in connection with approved flare joint fittings. The tube shall be flared using a proper flaring tool.

**905.8 Hot Poured Compound Joints.** Hot poured compound for joints in clay or concrete sewer pipe shall be of approved material. If wet surfaces are unavoidable, an approved primer shall be applied. Approximately 25 per cent of the joint space at the base of the hub shall be filled with jute, hemp or asbestos rope. The hot poured compound shall be poured in one operation until the joint is filled to the face of the hub. Joints shall not be tested until 1 hour after pouring.

**905.9 Precast Joints.** Precast joints for clay or concrete sewer pipes shall have approved precast collars in both the spigot and the hub of the pipe before installation. Prior to making joint contact, surfaces shall be cleaned and coated with approved solvents and adhesives. When the spigot is inserted in the hub, the spigot end shall bind before contacting the base of the hub.

**905.10 Cement Mortar Joints.** Cement mortar joints for clay or concrete sewer pipe shall be used only where approved. A layer of jute or hemp shall be firmly packed into the base of the hub. Not more than 25 per cent of the joint space shall be used for jute or hemp. Before insertion into the hub, the jute or hemp shall be dipped into a slurry suspension of Portland cement in water. The remaining hub space shall be filled in one continuous operation with a thoroughly mixed mortar composed of one part cement and two parts sand, with only enough water to make the mixture workable by hand. After one half hour of setting, the joint shall be rammed around its entire periphery with a blunt tool to force the partially stiffened mortar into the joint and to repair any cracks formed during the initial setting period. The pipe interior shall be swabbed to remove any material that might have fallen into the interior. Additional mortar of the same composition shall then be troweled onto the joint so as to form a 45-degree taper with the barrel of the pipe.

#### **905.11 Flexible Mechanical Joints**

**905.11a Asbestos Cement Pipe.** Every joint in asbestos cement pipe shall be made with sleeve couplings of the same composition as the pipe, sealed with rubber rings.

#### **905.11b Cast Iron Pipe**

**905.11b-1 Mechanical joint:** Every mechanical joint in cast iron pipe shall be made with a flanged collar, rubber ring gasket and appropriate number of securing bolts.

**905.11b-2 Hubless Pipe:** Joints for hubless cast iron soil pipe and fittings shall be made with an approved elastomeric sealing sleeve and stainless steel clamp, clamping screw and housing.

**905.11b-3 Bell and Spigot Pipe:** Joints for bell and spigot cast iron soil pipe and fittings may be made by calking with lead and oakum, or by use of a compression gasket that is compressed when the spigot is inserted into the hub of the pipe.

**905.11c Clay Pipe.** Flexible joints between lengths of clay pipe may be made using approved resilient materials both on the spigot end and in the bell end of the pipe.

**905.11d Concrete Pipe.** Flexible joints between lengths of concrete pipe may be made using approved elastomeric materials both on the spigot end and in the bell end of the pipe.

**905.12 Bituminized-Fiber Sewer Pipe Joints.** Joints in bituminized-fiber sewer pipe shall be made with tapered type couplings of the same material as the pipe. Joints between bituminized-fiber sewer pipe and metal pipe shall be made by means of an adapter coupling caulked as required for caulked joints.

**905.13 Unions.** Unions shall have metal-to-metal ground seats and shall conform to the type of piping in which they are installed.

**905.14 Slip Joints.** Slip joints shall be made using approved packing or gasket material, or approved ground joint brass-compression rings.

**905.15 Expansion Joints.** Expansion joints shall be of approved type and shall conform to the type of piping in which they are installed.

## PART 906 USES OF JOINTS

**906.1 Clay Sewer Pipe.** Joints in clay sewer pipe or between such pipe and metal pipe shall be hot poured compound joints or precast joints, except where cement mortar joints are approved for use.

**906.2 Concrete Sewer Pipe.** Joints in concrete sewer pipe or between such pipe and metal pipe shall be hot poured compound joints or precast joints, except where cement mortar joints are approved for use.

**906.3 Cast Iron Pipe.** Joints in cast iron pipe shall be calked, threaded or flexible mechanical joints.

**906.4 Cast Iron Pipe Joints with Standard Pipe.** Joints between cast iron pipe and wrought iron, steel, brass or copper pipe of standard pipe size, shall be calked or threaded, or shall be made with approved adapter fittings.

**906.5 Lead Pipe Joints with Lead, Brass or Copper Pipe.** Joints in lead pipes, or between lead pipe and brass or copper pipe, shall be fill-wiped joints.

**906.6 Lead Pipe Joints with Cast Iron, Wrought Iron or Steel Pipe.** Joints between lead pipe and cast iron, wrought iron, open-hearth iron or steel pipe, shall be made by means of a wiped joint connecting the lead pipe to a calking ferrule, solder nipple or solder bushing, which in turn shall be connected to such other pipe by a calked or threaded joint.

**906.7 Copper Tube Joints with Copper Tube.** Joints in copper tube for water supply or vent piping shall be made by use of approved solder joint brass, bronze or copper fittings. Joints in copper tube for drainage piping shall be made by the use of cast brass solder joint drainage fittings.

**906.8 Copper Tube Joints with Threaded Pipe.** Joints between copper tube and threaded pipe shall be made by use of brass or bronze converter fittings.

**906.9 Copper Tube Flared Joints.** Flared joints shall be permitted only for connecting soft temper copper tube to approved flare joint fittings.

**906.10 Unions.** Unions shall be permitted only on the inlet side of fixture traps or in their trap seals, and in water supply piping.

**906.11 Slip Joints.** Packing or gasket-type slip joints shall be permitted only on the inlet side of fixture traps or as part of approved expansion joints. Ground joint brass compression-ring type slip joints shall be permitted only on the inlet side of fixture traps, in fixture trap seals, and on exposed fixture water supplies. Packing or gasket-type slip joints shall be permitted only where accessible.

**906.12 Expansion Joints.** Expansion joints shall be permitted only where necessary to provide for expansion and contraction. Expansion joints shall be permitted only where accessible.

**PART 907 TESTING OF PLUMBING SYSTEMS****907.1 General Requirements****907.1a New, Altered, Extended, Repaired or Defective Plumbing Systems.**

New plumbing work, and portions of existing plumbing systems affected by new work or plumbing changes, except ordinary repairs, shall be subject to tests as prescribed herein to disclose leaks and defects. Where there is reason to believe that the plumbing system of any building has become defective, the enforcement officer may direct that such system shall be subjected to tests as prescribed herein to disclose leaks and defects. In the event that tests disclose leaks or defects, such plumbing work shall be subjected to retesting after necessary corrections have been completed.

**907.1b Testing Not Required.** Ordinary repairs to a plumbing system which do not include an addition to, alteration of, replacement of, or relocation of any water supply, drainage or vent piping shall not be required to be tested.

**907.1c Exposure of Work for Testing.** No plumbing system or part thereof which is installed, altered, extended or replaced shall be covered or concealed until after it has been tested and approved. If such work has been covered or concealed before being tested and approved, it shall be exposed for testing.

**907.1d Equipment, Material and Labor for Tests.** Equipment, material and labor necessary for tests shall be furnished by, and at the expense of, the person to whom the permit is issued.

**907.1e Duration of Tests.** Tests shall be conducted for a sufficient period of time to disclose leaks and defects.

**907.2 Test Methods**

**907.2a Water Supply.** Water supply systems shall be proved watertight by applying a water pressure test, using potable water in piping of the potable water supply system. Test pressure shall be equal to at least the maximum pressure at which the piping is to serve. Such tests shall be applied to water service pipes and rough piping installations prior to covering or concealment.

**907.2b Rough Piping Installations**

**907.2b-1** Building drains, drainage and vent piping, except outside leaders, open jointed or perforated subsoil drainage pipes, and exposed short fixture connection drain pipes, shall be tested and proven watertight upon completion of the rough piping installation, prior to covering or concealment.

**907.2b-2** Where the developed length of continuous drainage and vent pipe installation is less than 10 feet, a water flow test shall be applied to the drainage piping. Water flow through the drainage piping shall be provided at rates similar to the service conditions under which the piping is to function. This test method may be applied in testing existing buried building drains when permission is granted by the enforcement officer.

**907.2b-3** Where the developed length of continuous drainage and vent pipe installation is 10 feet or more, a water pressure test shall be applied to the drainage and vent piping. Test pressure shall be equal to at least a 10-foot column of water at all points, except that the uppermost 10 feet of the system, measured downward from the highest roof vent terminal, need be subjected only to the pressure produced when water overflows from that terminal. The piping may be tested in sections when approved test fittings are provided at appropriate locations. Test pressure at any point in the system shall not be allowed to exceed the equivalent of a 100-foot column of water. This test shall be applied to all building drains except those for which a water flow test is specially permitted.

**907.2b-4** An air pressure test, at 5 pounds per square inch gage pressure, may be applied instead of the water pressure test when special permission is granted by the enforcement officer.

### **907.2c Completed Sanitary Drainage and Vent Systems**

**907.2c-1** Sanitary drainage and vent systems, upon completion, shall be tested and proven gastight.

**907.2c-2** After all plumbing fixtures have been installed and all traps have been filled with water, every part of new sanitary drainage and vent systems within building walls shall be subjected to a final test as prescribed herein. For the duration of testing, flow of water in the system shall be halted and the building drain shall be sealed adjacent to its point of entry inside the building. The enforcement officer may require the removal of any cleanout plugs to ascertain that the testing is effective in all parts of the system. Whenever there is reason to believe that the sanitary drainage or vent system of an existing building has become defective, a final test as prescribed herein shall be applied when deemed necessary by the enforcement officer.

**907.2c-3** A smoke pressure test shall be applied to the system by introducing into its lowest part a pungent, thick smoke produced by one or more approved smoke machines. As smoke belches from all roof vent terminals, they shall be sealed. Then the system shall be subjected to smoke pressure, equivalent to a 1-inch column of water, for the duration of testing.

**907.2c-4** A peppermint vapor test may be applied instead of a smoke pressure test when special permission is granted by the enforcement officer. The peppermint vapor shall be applied to the system by introducing into the roof vent terminal of every line or stack under test, at least 2 ounces of oil of peppermint, followed immediately by the introduction of 10 quarts of boiling water. Then, the roof vent terminals shall be promptly sealed for the duration of testing. The presence of oil of peppermint or persons in contact with such vapor shall be excluded from the test area inside the building.

**ARTICLE 10 HEATING, VENTILATING AND  
AIR CONDITIONING REQUIREMENTS**

**PART 1000 HEATING**

**1000.1 General Requirements**

**1000.1a** Heating systems shall conform to the requirements of Part 850.

**1000.1b** 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 achieve the minimum indoor design temperatures in table I-1000 at a distance of 2 feet and more from exterior walls, and at a level of 5 feet above the floor, in habitable spaces, kitchenettes, bathrooms, toilet rooms and for the comfort of the occupants relative to the physical activity in which they are usually engaged in other spaces. The capability of the heating equipment to achieve the indoor design temperature shall be based on the average of the recorded annual minimum outside temperatures for the locality.

**1000.1c** 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.

**1000.1d** Swimming pools, shower and dressing rooms, shall have heating equipment designed and installed so as not to be a hazard owing to accidental contact.

**1000.2 Heat Producing Equipment**

**1000.2a Combustion Space.** Fuel-burning heat producing equipment shall have combustion space designed and constructed to withstand the maximum temperature attained and to operate efficiently at the expected loads.

**1000.2b Smoke Control.** Fuel-burning heat producing equipment shall be designed and installed so that the emission or discharge into the atmosphere of smoke, dust, particles, 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.

**1000.2c Warm Air Heating.** Ducts and other air handling equipment used for heating shall conform to the requirements of such equipment used for ventilating purposes. For multiple dwelling and general building construction, registers and grilles shall not be permitted on floors of required exits.

## 1000.2d Prohibited Locations for Heat Producing Equipment

1000.2d-1 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.

TABLE I-1000 MINIMUM INDOOR DESIGN TEMPERATURE

Space <sup>1</sup>	Temperature in degrees F.
Group A1, A2 and B1:	
Dwelling units .....	68
Group B2:	
Dwelling units or sleeping rooms .....	68
Group B3, B4:	
Dwelling units or sleeping rooms .....	75
Group C1:	
Offices, waiting rooms, studios, telephone exchanges, and spaces where persons are engaged in sedentary activities .....	68
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 .....	68
Group C4:	
Aircraft hangars, garages .....	None
Storage of ammunition and explosives .....	None
Group C5:	
Art galleries, courtrooms, museums, libraries, meeting rooms .....	68
Churches, classrooms, 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 .....	70 <sup>2</sup>
All occupancies:	
Building equipment and machinery rooms .....	50
Spaces requiring low temperature .....	None

<sup>1</sup> 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.

<sup>2</sup> For Medical Facilities, see State Hospital Code.

**1000.2d-2** Fuel burning water heaters shall not be located in sleeping rooms, bathrooms or toilet rooms.

**1000.2d-3** Heating equipment burning solid or liquid fuel shall not be located in assembly spaces or in spaces used as classrooms or in dormitories.

**1000.2d-4** Fuel burning equipment shall not be installed in a manner which may be a potential hazard to occupants in the event of accidental contact.

**1000.2e 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.

#### **1000.2f Installation and Clearance**

**1000.2f-1** Primary heat producing equipment shall be of the fixed type.

**1000.2f-2** 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.

#### **1000.2g Air Supply**

**1000.2g-1** Direct-fired heat producing equipment and the enclosure in which 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 1004.2b-3.

**1000.2g-2** 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.

**1000.2g-3** Openings shall be adequate to provide air for combustion and ventilation for the simultaneous operation of all fuel burning equipment within rooms.

#### **1000.2h Removal of Products of Combustion**

**1000.2h-1** Equipment for burning solids or liquid fuel shall be connected to suitable chimneys or flues, or vented as set forth in 1000.2h-4 and shall not be connected to gasvents.

**1000.2h-2** Gas-fired space heating equipment shall be connected to a suitable chimney, flue or gasvent or shall be vented as set forth in Section 1000.2h-4. 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.

**1000.2h-3** Smoke pipes and gasvent connections shall not be permitted in spaces of high hazard classification.

**1000.2h-4** Equipment having an intergral 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.

**1000.2h-5** Equipment requiring mechanical draft shall have an interlock to shut off fuel supply when the venting system is inoperative.

**1000.2h-6** 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.

## **1000.2i Safety Devices**

**1000.2i-1** Equipment capable of developing hazardous pressures or temperatures shall be provided with means to safely control such pressures and temperatures.

**1000.2i-2** Controls for the safe operation of automatically operated heat producing equipment shall be provided and shall function as follows:

- (i) When failure or interruption of flame or ignition occurs, the fuel supply to the main burners shall be cut off.
- (ii) When a predetermined temperature or pressure is exceeded, the input of additional heat shall be prevented or reduced to a safe rate.
- (iii) When the water level in a steam boiler drops below a predetermined level, the fuel supply to the main burners shall be cut off.
- (iv) 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.

**1000.2i-3** 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.

### **1000.2j Insulation**

**1000.2j-1** Insulation provided to reduce the rate of heat flow through building construction shall conform to the requirements Part 850.

**1000.2j-2** Insulation on surfaces of heat producing equipment shall be of noncombustible materials.

**1000.2k Expansion Tanks.** Hot water heating systems shall be provided with expansion tanks or other means to allow for the expansion of water in the system.

### **1000.2l Heating Equipment in Hazardous Spaces**

**1000.2l-1** 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 area, except as otherwise permitted in 1000.2m and 1000.2n. Controls shall be provided to limit the temperature of such water, steam or electrical coil °F.

**1000.2l-2** 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.

### **1000.2m Heating of Aircraft Hangars, Garages and Gasoline Service Stations**

**1000.2m-1** Fuel-burning equipment for aircraft hangars, garages, and gasoline service stations shall be located in heater rooms as set forth in 771.4j-5 except that suspended-type unit heaters located in vehicle storage space 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 garages, in stories at or above grade provided they are installed on a noncombustible platform not less than 18 inches above the floor.

**1000.2m-2** 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.

#### **1000.2n Ovens**

**1000.2n-1** Ovens used for industrial purposes shall be designed and installed in conformity with generally accepted standards.

**1000.2n-2** Ovens where toxic or flammable vapors are generated shall have mechanical ventilation to prevent the accumulation of vapors.

**1001.2o Unit Heaters.** 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.

### **PART 1001 FUEL GAS PIPING EQUIPMENT AND SYSTEMS**

#### **1001.1 General Requirements**

**1001.1a** Fuel gas piping systems shall be in conformity with the requirements of Part 850.

**1001.1b** 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.

**1001.1c** Gas piping shall not be installed in cinder fill or other corrosive material unless protected against corrosion.

**1001.1d** Cleanouts shall be provided where condensate, dirt or other foreign matter may collect.

**1001.1e** Fuel gas piping and equipment shall not be located in ducts, chutes, chimneys, flues, hoistways, stairways or exits.

**1001.1f** 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.

**1001.1g** Buried openings from the exterior for service pipes entering the building shall be made gastight where the area contains utility gas pipe.

### 1001.2 Shutoff Valves

**1001.2a** Gas piping service lines supplied from utility mains shall have at least one accessible means for shutting off all gas supply to the building. Additional means of shut-off shall comply with the requirements set forth in the regulations promulgated by the State Public Service Commission.

**1001.2b** An easily accessible shutoff valve or cock shall be provided in the piping in closed proximity to, and ahead of, every gas appliance or outlet for gas connection.

### 1001.3 Service Equipment for Gas Supplied from Utility Mains

**1001.3a** Gas meters located inside buildings shall be 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.

**1001.3b** 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.

### 1001.4 Gas Refrigerators

**1001.4a** Gas refrigerators shall be installed with clearance for ventilation.

**1001.4b** Refrigerator parts serving as flues shall be resistant to the action of the products of combustion.

### 1001.5 High Pressure Gas

**1001.5a** 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 except where such service supplies equipment using gas at higher pressure.

**1001.5b** Buildings supplied with gas from utility mains at pressures exceeding 1 psi gage shall have all exterior wall openings below grade and within 10 feet of the gas service pipe made gastight. Where such openings are provided for service pipes, the pipes shall be protected from damage by settlement or corrosion.

### 1001.6 Liquefied Petroleum Gas

**1001.6a** 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.

**1001.6b** 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.

**1001.6c** 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.

**1001.6d** Containers shall be designed, stored, and located so as not to be a hazard to the premises served, or to the surrounding property.

**1001.6e** 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 5 feet horizontal distance of gas service entrance shall be made gastight.

**1001.6f** 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.

**1001.6g** Systems shall be provided with safety devices to relieve excessive pressures, and shall be arranged so that the discharge terminates at a safe location.

**1001.6h** 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 1001.2a.

**1001.6i** 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.

## PART 1002 FUEL OIL, FLAMMABLE AND COMBUSTIBLE LIQUIDS

**1002.1 General Requirements.** Fuel oil, flammable and combustible liquids shall be received, stored, and conveyed by means of fixed liquid tight equipment, designed and installed in conformity with the requirements set forth in Part 850.

**1002.2 Storage Tanks - General**

**1002.2a** Storage tanks shall rest on noncombustible supports.

**1002.2b** 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.

**1002.2c** Tanks shall be located at a safe distance from 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.

**1002.2d** Tanks shall be provided with means for venting.

**1002.2e** Tanks shall be designed and installed so as not to be a hazard to the premises served or the surrounding property.

**1002.3 Storage Tanks Inside Buildings**

**1002.3a Level Indicators.** Storage tanks inside of buildings for combustible or flammable liquids having a flash point of less than 200°F. shall be provided with liquid level indicating devices of fixed vapor tight construction.

**1002.3b Fuel Oil Storage Tanks.** Capacity of fuel oil storage tanks shall be in accordance with table I-1002. For greater storage capacity, tank installation shall be in accordance with generally accepted standards.

**TABLE I-1002 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 tanks, in gallons
Type 5	( <sup>1</sup> )	660	660
Type 1, 2, 3, 4	( <sup>1</sup> )	1,120 <sup>2</sup>	660
Type 2, 3, 4	3	10,000	10,000
Type 1	3	15,000	15,000

<sup>1</sup> No enclosure required where separated by a distance of at least 5 feet from an open flame or open electrical coil.

<sup>2</sup> Valves shall be provided to limit capacity of tanks connected to an oil burner to 660 gallons at any one time.

**1002.3c Storage Tanks for Flammable and Other Combustible Liquids.** Storage tanks for flammable and other combustible liquids shall be in accordance with generally accepted standards.

## **1002.4 Storage Tanks Outside of Buildings**

**1002.4a** Above ground storage tanks shall be located with respect to property lines, public ways and other buildings on the same property so as not to constitute a hazard and shall be designed and installed with means to minimize possibility of tank rupture in the event of emergency.

**1002.4b** Minimum distance between such tanks shall be sufficient to gain access for fire fighting.

**1002.4c** Above ground tanks shall be provided with means to prevent accidental discharge from spreading to waterways, adjoining property, or other facilities. Where diked or enclosed areas around such tanks include drains for storm water, such drains shall be provided with suitable and accessible shutoff valves capable of normally being kept closed.

## **1002.5 Underground Tanks**

**1002.5a** Underground tanks shall be located so that loads carried by building foundations and supports cannot be transmitted to the tank, and shall be located with respect to walkways and property lines so as not to constitute a hazard.

**1002.5b** Underground tanks shall be installed so as to be protected from vehicular traffic.

**1002.5c** Underground tanks shall be protected against corrosion.

## **1002.6 Piping**

**1002.6a** Pipes for fuel oil and flammable liquids entering buildings shall be protected from damage by settlement or corrosion.

**1002.6b** Where such pipes enter a building below grade, all exterior wall openings below grade and within 10 feet of such pipe entrance shall be vaportight.

**1002.6c** Such pipes having discharge outlets located within buildings shall be provided with remote control to stop the flow during fire or other emergency.

**1002.6d** 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.

**1002.7 Equipment Using Flammable Liquids Inside Buildings**

**1002.7a** Occupied spaces wherein 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 Parts 1004 and 1064. Heating of such spaces shall conform to the requirements of Part 1000.2i; electrical equipment shall conform to the requirements of Part 1030.

**1002.7b** Equipment having open tanks of flammable liquid shall be provided with controls to function as follows:

**1002.7b-1** 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.

**1002.7b-2** 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.

**1002.7c** 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.

**1002.8 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.

**PART 1003 HAZARDOUS GASES****1003.1 General Requirements**

**1003.1a** 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 1066.1.

**1003.1b** 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 I-771.

**1003.1c** 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.

**1003.1d** Piping located outside of rooms containing the source of supply shall be conspicuously marked to identify the gas contained therein.

**1003.1e** 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.

**1003.1f** Storage and regulating equipment for 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 771.4j-5.

**1003.1g** Storage tanks for liquefied natural gas or for compressed natural gas shall be in accordance with generally accepted standards.

## **PART 1004 REFRIGERATION, AIR CONDITIONING AND MECHANICAL VENTILATION**

### **1004.1 Refrigeration**

**1004.1a General Requirements.** Refrigeration, air conditioning, and mechanical ventilation equipment shall conform to the requirements of Part 850, and shall be designed and installed so as not to be a potential source of hazard from excessive pressure or refrigerant leakage.

**1004.1b 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.

**1004.1c 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.

### **1004.1d Refrigerants**

**1004.1d-1** Refrigerants shall be classified as to their flammable or toxic qualities.

**1004.1d-2** Refrigerants that are highly flammable or toxic shall not be used in multiple dwellings or buildings of group C1, C2, C5, or C6 occupancies.

**1004.1d-3** 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.

**1004.1d-4** Direct systems using refrigerants that are flammable or toxic shall not be used for air conditioning purposes.

**1004.1d-5** Systems containing refrigerants exceeding the limits stated in 1004.1d-3 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 1004.1f-1, 1004.1f-2 and 1004.1f-3.

**1004.1d-6** Systems containing refrigerants that are flammable or toxic shall be located in a machinery room conforming to the requirements set forth in 1004.1f-2, 1004.1f-3 and 1004.1f-4.

### **1004.1e Refrigerant Piping**

**1004.1e-1** Refrigerant piping shall not be located in ducts, chutes, exits, stairways, or hoistways, or where it may be subject to mechanical damage.

**1004.1e-2** 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.

### **1004.1f Machinery Room**

**1004.1f-1** 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.

**1004.1f-2** Refrigeration machinery rooms shall be used for no purpose other than for mechanical equipment.

**1004.1f-3** 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.

**1004.1f-4** 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 765.1o and 771.4g-4. Motor control for refrigeration and ventilating equipment in such a machinery room shall be located outside the room.

**1004.1g Safety Controls.** Refrigerating equipment shall be provided with means to relieve excessive pressures safely.

**1004.1h Plumbing Connections.** Plumbing connections for refrigerating equipment shall be in conformity with the requirements set forth in Article 9.

#### **1004.1i Cooling Towers**

**1004.1i-1** 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.

**1004.1i-2** Cooling towers located outside fire limits shall be in conformity with 1004.1i-1 with the following exceptions permitted for buildings of group C1, C2, C3 and C4 occupancies:

- (i) 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.
- (ii) 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.

**1004.1i-3** Cooling towers shall be designed, installed, and located so that when in operation, noise, fog, or water spray will not cause a nuisance.

**1004.1i-4** Outdoor cooling towers located on buildings shall permit access for fire fighting, and shall not constitute a fire hazard.

## 1004.2 Ventilating Systems

### 1004.2a General Requirements

**1004.2a-1** 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.

**1004.2a-2** Exhaust air from a dwelling unit shall not be circulated from another dwelling unit.

**1004.2a-3** 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 and directly to the exterior.

**1004.2a-4** 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 that open directly to such corridors 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 1004.2e-2.

**1004.2a-5** Ducts shall be securely fastened in place, and shall be fire-stopped as set forth in 739.6a.

**1004.2a-6** 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.

**1004.2a-7** 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 1064.1e and 1064.2b.

**1004.2a-8** Filters shall be designed and installed so as not to constitute a fire or smoke hazard.

**1004.2a-9** 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.

**1004.2a-10** Ducts passing through fire separations shall be equipped with fire dampers as set forth in 739.5c or 771.4l-4 or be provided with other means to prevent the spread of heat, smoke or flame.

**1004.2a-11** Plenum chambers or enclosures for ventilating purposes shall conform to the requirements for ducts.

**1004.2a-12** 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 the performance when subjected to wind velocities of 4 miles per hour.

**1004.2a-13** Ducts shall not be located between fire-protective material and structural members which are individually 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 ceiling and beams or joists protected by such ceiling, provided that where they pass through fire separations, fire dampers are installed.

**1004.2a-14** Air required for ventilation shall be taken from the exterior and where recirculated shall include an amount of exterior air equal to the quantities set forth in the applicable requirements of the State Energy Conservation Construction Code.

#### **1004.2b Air Intake and Exhaust Openings**

**1004.2b-1** 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.

**1004.2b-2** 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.

**1004.2b-3** 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.

**1004.2b-4** 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.

**1004.2b-5** Exhaust openings shall be located so that the exhaust air will not create a nuisance.

**1004.2c Ventilation Requirements**

**1004.2c-1** Mechanical ventilation rates shall be provided in accordance with the quantities set forth in the applicable requirements of the State Energy Conservation Construction Code. For mechanical ventilation as an alternative to natural ventilation in one-family dwellings see 712.1b.

**1004.2c-2** 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.

**1004.2c-3** Heat, smoke, or fumes which are a potential hazard shall be removed as close to their source as is practicable.

**1004.2c-4** Spaces shall be provided with means for obtaining air supply for the maximum number of persons for which such spaces are designed.

**1004.2c-5** 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.

**1004.2c-6** Central mechanical ventilating systems for kitchens, kitchenettes and corridors shall be provided with controls that will permit automatic intermittent operation.

**1004.2c-7** For exhaust systems for stacks, dust or vapors, see section 1064.2.

**1004.2c-8** Film projection rooms shall be provided with supply and exhaust ventilation.

**1004.2d 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.

**1004.2e Safety Controls**

**1004.2e-1** 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.

**1004.2e-2** Every system using recirculated air and serving an area of public assembly 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 have 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.

**1004.2e-3** 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.

**1004.2e-4** 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.

**1004.2e-5** Systems ventilating high hazard spaces shall be provided with automatic devices to function as follows:

- (i) When the accumulation of dust on air filters creates excessive resistance to air flow, an audible or visual signal shall be actuated.
- (ii) 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.

#### **1004.2f Emergency Ventilation**

**1004.2f-1** 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.

**1004.2f-2** Telephone rooms, pump rooms, and emergency equipment rooms which require the attendance of an operator during a fire or other emergency, 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.

**1004.2f-3** Required emergency ventilation as set forth in 1004.2f-1 and 1004.2f-2 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.

**1004.2f-4** Required emergency ventilation as set forth in 1004.2f-1 and 1004.2f-2 shall be installed in accordance with table I-1004.

**TABLE I-1004 REQUIRED EMERGENCY VENTILATION**

Spaces served	Air changes per hour	Means for obtaining ventilation		
		Openings to the outer air	Ducts connected to wind- and gravity-operated ventilators	Mechanical ventilating equipment
Exits .....	20	( <sup>1</sup> )	( <sup>1</sup> )	Required
Equipment rooms ..	10	Permitted	Permitted	Permitted

<sup>1</sup> Not permitted as the sole means for obtaining ventilation.

**1004.2f-5** Buildings more than 70 feet in height, conforming to the requirements set forth in section 774.9 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 located at the fire control panel.

## PART 1005 CHIMNEY AND GASVENTS

### 1005.1 General Requirements

**1005.1a Masonry and factory-built.** Chimneys, 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.

**1005.1b** Such facilities shall effectively convey the products of combustion to the outer air.

**1005.1c** Masonry chimneys, except approved prefabricated chimneys, shall have noncombustible foundations.

**1005.1d** 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.

**1005.1e** Metal chimneys shall be sufficiently separated from building construction so as not to constitute a potential hazard.

**1005.1f** Openings for connectors shall be provided with means for easy connections without restriction of flue.

### **1005.2 Prohibited Use**

**1005.2a** No chimneys or gasvents shall have connectors in more than one story of a building.

**1005.2b** Fuel burning equipment located in different tenancies shall not be connected to the same flue.

**1005.2c** Fireplaces and stoves shall each be connected to an individual flue which serves no other equipment.

**1005.2d** Incinerators equipped with service openings shall not be used as a flue for other fuel burning equipment.

### **1005.3 Draft**

**1005.3a** Chimneys, gasvents or other draft producing devices installed on fuel burning equipment, shall provided sufficient draft to develop the rated output of the connected equipment.

**1005.3b** Gas-fired equipment operating on natural draft and connected to a chimney or gasvent shall be provided with a draft hood, except that draft hoods are not permitted on incinerators.

**1005.4 Fire Safety.** Chimneys and gasvents shall be located, designed and constructed so that under conditions of use, the temperature of any combustibile materials adjacent thereto, insulated therefrom or in contact therewith, does not exceed 175° F.

**1005.5 Spark Arresters.** Any chimney connected to an incinerator, and any chimney 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.

**1005.6 Location of Outlet**

**1005.6a** The height of a chimney or gasvent above the roof through which it passes, the distance to a roof ridge, parapet, or other construction and the distance to windows shall be in accordance with tables I-1005 and II-1005.

**1005.6b** The location of an outlet from an integral venting system shall conform to the requirements of generally accepted standards.

**TABLE I-1005 LOCATION OF OUTLETS FOR CHIMNEYS  
AND GAS VENTS FOR FUEL BURNING EQUIPMENT**

**Minimum distance in feet**

DESCRIPTION	MASONRY AND METAL CHIMNEYS	GASVENTS
Vertical distance above the highest point on the roof where the flue passes through.....	3 <sup>1</sup>	2 <sup>2</sup>
Vertical distance above a ridge, wall, parapet or other construction where the horizontal distance to such construction is within 10 feet.....	2	2 <sup>2</sup>
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.....	20 <sup>3</sup>	15

<sup>1</sup> Where a roof can be reached by a stairway, minimum distance shall be 8 feet. For 1-2 family dwellings, minimum distance shall be 2 feet

<sup>2</sup> 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.

<sup>3</sup> Outlets 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

TABLE II-1005 LOCATION OF OUTLETS FOR INCINERATOR CHIMNEY

Minimum distance in feet

DESCRIPTION	DOMESTIC INCINERATOR 5 CU. FT. OF FURNACE VOLUME MAXIMUM		COMMERCIAL INDUSTRIAL INCINERATOR MORE THAN 5 CU. FT. FURNACE VOLUME
	Hearth and grate area 7 sq. feet or less	Hearth and grate area over 7 sq. feet	
Vertical distance above the highest point of the roof where the flue passes through . . . . .	3	10	10
Vertical distance above ridge, wall, parapet or other construction where the horizontal distance to the construction is: within 10 feet . . . . . within 25 feet . . . . .	2	10	10'

<sup>1</sup> Chimneys on incinerators where the secondary combustion chamber is designed to be operated at over 1,800° F. shall extend not less than 20 feet higher than any portion of any building within 50 feet.

**1005.6c** Outlets of incinerator flues shall be carried above the top of windows or other exterior openings in walls within a horizontal distance of 50 feet.

### 1005.7 Extending Existing Chimneys, Flues, and Gasvents

**1005.7a** Where a structure is built higher than an existing chimney, flue, or gasvent on the same or adjacent premises, the minimum distance of windows, or 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 1005.5.

**1005.7b** 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.

**1005.7c** 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 Part 1005 and may, at his expense, and with the consent of the owner of the higher building, be attached to such higher building.

## PART 1006 FIREPLACES AND STOVES

### 1006.1 Built-In Fireplaces

**1006.1a 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 Part 1005 and shall be installed so that, when in use, nearby or adjacent combustible material and structural members shall not be heated to temperatures in excess of 175° F.

**1006.1b 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.

**1006.1c 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.

### 1006.2 Factory Built Fireplaces and Fireplace Inserts

**1006.2a** Factory built fireplaces and fireplace inserts shall be of a type listed and approved by a nationally recognized testing agency and shall be installed and operated in accordance with such listing.

**1006.2b** Factory built chimneys intended for use with such devices shall be approved for such use.

**1006.2c** Fireplace inserts shall be capable of being easily removed so as to facilitate cleaning of the chimney.

**1006.3 Combustion Air Supply.** Fireplaces as defined in sections 1006.1 and 1006.2 require an air intake with damper, as required by the State Energy Conservation Construction Code to provide a source of outside air of sufficient quantity to support combustion in the fireplace, shall be constructed of noncombustible material and shall be installed in a manner that will prevent the backflow of fire and products of combustion through such intake.

**1006.4 Solid Fuel Burning Stoves**

**1006.4a** Solid fuel burning stoves shall be of a type listed and approved by a nationally recognized testing agency and shall be installed and operated in accordance with such listing.

**1006.4b** Factory built chimneys intended for use with solid fuel burning stoves shall be approved for such use.

**ARTICLE 11 ELECTRICAL REQUIREMENTS**

**PART 1030 ELECTRICAL WIRING AND EQUIPMENT**

**1030.1 General Requirements**

**1030.1a** Electrical wiring and equipment shall conform to the requirements of Part 850, 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.

**1030.1b** Electrical installations shall be so made that the spread of fire or products of combustion will not be substantially increased through fire rated, or fire stopped walls, partitions, ceilings and floors; hollow spaces; vertical shafts; and ventilating or air-handling ducts.

**1030.1c** 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.

**1030.1d** Electrical wiring and equipment shall be firmly secured to the surface on which it is mounted.

**1030.1e** 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.

**1030.1f** 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.

**1030.1g** Metal roofs, veneers, and sidings on buildings shall be made electrically continuous and shall be grounded as recommended in generally accepted standards.

**1030.1h** Where the service equipment has a rated capacity of more than 200 amperes or where the voltage between service entrance conductors exceeds 600 volts, a room or enclosure shall be provided to be used for electric service, metering and main distribution equipment. Such room or enclosure may also contain gas or water meters and shall be of ample size to provide proper clearance for the equipment and shall be ventilated as required in 1004.2c.

**1030.1i** Electrical equipment which in ordinary operation produces arcs, sparks, flames or molten metal, shall be enclosed unless separated and isolated from all combustible material.

**1030.1j** In buildings of group C6.3 occupancy, electrical equipment shall be enclosed, elevated, or isolated so as to minimize the possibility of tampering.

**1030.1k** 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.

**1030.1l** 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.

**1030.2 Temporary Wiring and Equipment.** 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.

## PART 1031 ARTIFICIAL LIGHTING

### 1031.1 General Requirements

**1031.1a** 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. Owner-occupied, one-family dwellings shall be exempt from this requirement subject to approval by the authority having jurisdiction.

**1031.1b** During occupancy, light of intensity sufficient for safe travel shall be provided throughout exits, in residential spaces, and in spaces to which the public has access, or in which persons work, including elevators, escalators, and manlifts.

**1031.1c** Artificial lighting fixtures in occupied space shall be designed and installed so as to avoid glare and objectionable shadow.

**BUILDING CONSTRUCTION**

**1031.1d** Luminous ceilings used as artificial light diffusers shall be installed in conformity with 740.3e, 740.3f, 772.3h and 772.3i.

**1031.1e** 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.

**1031.2 Location of Controls**

**1031.2a** Lighting switches in residential occupancies shall be provided near the point of entrance to each space.

**1031.2b** Lighting switches in commercial occupancy 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.

**PART 1032 EMERGENCY POWER AND LIGHTING**

**1032.1 General Requirements.** Emergency power and lighting shall be furnished through independent electrical wiring supplied from a main source, and from an auxiliary source.

**1032.2 Emergency Power**

**1032.2a** Emergency power shall be provided for the emergency lighting load, fire pumps supplying sprinkler systems, fire control panel as set forth in section 1061.2, industrial processes where current interruption would cause hazards, fire protection signal systems, voice communication systems used as a means of warning or direction in emergencies, and heating equipment in group C6.3 occupancies.

**1032.2b** In the event of failure of the main source, means shall be provided for automatically transferring the power which supplies the emergency power load from the main source to the auxiliary source within 10 seconds.

**1032.2c** The auxiliary source shall have a capacity sufficient to supply the total emergency power load for a period of at least 90 minutes, with no more than a 12½ per cent reduction from rated system voltage, except that for group C6.3 occupancies, such period shall be at least 24 hours.

**1032.3 Emergency Lighting**

**1032.3a** Emergency lighting shall be provided in occupied spaces, public spaces and exits in buildings listed in table I-1032 so as to permit occupants to make their way safely out of the building in the event of failure of the normal lighting.

**TABLE I-1032 BUILDINGS THAT REQUIRE EMERGENCY LIGHTING**

Occupancy	Buildings
B1, B2, B3, B4 .....	All. <sup>1</sup>
C1 .....	Four stories or more in height.
C2 .....	Three stories or more in height.
C3, C4 .....	Unsprinklered buildings where distance of travel is more than 100 feet. Sprinklered buildings where distance of travel is more than 200 ft.
C5 .....	Total occupant load is 50 persons or more.
C6 .....	All.
C1 to C6 .....	Windowless buildings where total occupant load is 50 persons or more.

<sup>1</sup> Except in buildings in which the exit from each dwelling unit or sleeping room is directly to the exterior

**1032.3b** In addition to the requirements in 1032.3a, the following spaces in all buildings shall be provided with emergency lighting:

**1032.3b-1** Areas of public assembly.

**1032.3b-2** Enclosed malls and passageways.

**1032.3b-3** Fire pump rooms.

**1032.3b-4** Fire control rooms.

**1032.3b-5** Passenger elevators.

**1032.3b-6** Escalators and below-grade spaces exceeding 2,000 square feet.

## PART 1033 EXIT AND DIRECTIONAL SIGNS

## 1033.1 General Requirements

**1033.1a** Exit and directional signs, visible from the approach to the exits, shall be provided in building's as set forth in table I-1033, to permit occupants to make their way safely out of the building.

TABLE I-1033 BUILDINGS THAT REQUIRE EXIT AND DIRECTIONAL SIGNS

Occupancy	Buildings
B1, B2, B3, B4 .....	All. <sup>1,2</sup>
C1 .....	More than 2,500 square feet of floor area on any story.
C2 .....	All.
C3, C4 .....	More than 5,000 square feet of floor area on any story.
C5, C6 .....	All.

<sup>1</sup> Not required in B1 and B3 occupancies in those portions of a building which contain dwelling units only

<sup>2</sup> Not required in B2 occupancy where exit from each sleeping room is directly to the exterior.

**1033.1b** Exit and directional signs shall be illuminated either externally or internally by artificial light and shall be kept illuminated at all times when the building is occupied.

**1033.1c** Such signs shall be worded in plainly legible block letters with the word EXIT for exit signs and the word 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 with  $\frac{3}{4}$  inch wide strokes.

## 1033.2 Location

**1033.2a** Exit signs shall be provided over each exit doorway, except main entrance doorways in buildings of group C1 and C5.4 occupancy.

**1033.2b** Directional signs shall be provided at locations in the hallways, corridor or aisle from which the exit doorway is not readily discernible.

**1033.3 Power Source**

**1033.3a** Power for electrically illuminated exit and directional signs shall be supplied from a separate circuit or circuits which supplies no other outlets and is controlled from a central location.

**1033.3b** Self-luminous exit and directional signs shall be provided with a self-contained reliable power source.

**1033.3c** Where emergency lighting is provided, electric lights illuminating exit and directional signs shall be supplied from the emergency lighting system.

**ARTICLE 12 EQUIPMENT REQUIREMENTS**

**PART 1060 FIRE PROTECTION EQUIPMENT**

**1060.1 General Requirements.** Fire protection equipment shall be provided as set forth in Part 774 and such required equipment shall be in conformity with the requirements set forth in this Part.

**1060.2 Alarm Systems**

**1060.2a General Requirements**

**1060.2a-1** Fire alarm systems shall conform to the requirements of Part 850 and shall be designed and installed so as to warn all the occupants in the event of fire or other emergency.

**1060.2a-2** 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.

**1060.2a-3** 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.

**1060.2a-4** Fire alarm systems required in groups B1, B3, B4, C6.2 and C6.3 occupancy 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 approved 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.

**1060.2a-5** 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.

**1060.2a-6** 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.

**1060.2a-7** 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.

### **1060.2b Manual Fire Alarm Boxes**

**1060.2b-1** 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.

**1060.2b-2** There shall be at least one such box in each fire area.

**1060.2b-3** 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.

**1060.2b-4** 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 I-1060.

**TABLE I-1060 MAXIMUM DISTANCE OF TRAVEL TO MANUAL FIRE ALARM BOX**

**Distance in feet**

Occupancy or fire hazard classification	With sprinkler system	Without sprinkler system
Group B1 and B2 . . . . .	200	200
Group C6 or high hazard . . . . .	150	100
Others . . . . .	300	200

**1060.2b-5** Boxes shall be in a position and ready at all times to operate when actuated.

**1060.2b-6** Boxes shall be identified and shall have a conspicuous exterior color. Durable signs, conspicuously located, shall be provided directing attention to the locations of such boxes.

**1060.2b-7** Boxes shall be designated to be used only for fire protection purposes or other emergency.

### **1060.2c Sounding Devices**

**1060.2c-1** 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.

**1060.2c-2** All fire alarm sounding devices within a building shall be of the same type.

**1060.2c-3** A sufficient number of sounding devices shall be provided and so locate that the alarm is audible in all parts of the building.

### **1060.2d Electrical Requirements**

**1060.2d-1** 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.

**1060.2d-2** 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.

**1060.2d-3** Electrical wiring shall be protected against corrosion, moisture and mechanical damage. Wiring shall be protected by raceway, armor or nonmetallic 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.

**1060.2d-4** Raceway and boxes containing fire alarm conductors shall not contain conductors used for any purpose other than fire protection.

## **1060.3 Fire- and Smoke-Detecting Systems**

### **1060.3a General Requirements**

**1060.3a-1** Fire- and smoke-detecting systems shall conform to the requirements of Part 850 and shall be designed and installed so as to detect fire and smoke in its initial stage, and automatically to actuate an alarm.

**1060.3a-2** 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.

**1060.3a-3** Fire- and smoke-detecting systems shall be provided with devices arranged to transmit an alarm signal to sounding devices located throughout the building.

**1060.3b Fire- and Smoke-Detecting Devices.** Fire- and smoke-detecting devices shall be located so that they are protected from damage and will operate without delay.

### **1060.3c Manually Operated Fire Alarm Box**

**1060.3c-1** 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.

**1060.3c-2** 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.

**1060.3c-3** In Group C5.5 and C6.2 occupancies, manually operated fire alarm boxes shall be located as set forth in 1060.2b.

**1060.3d 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 1060.2a, 1061.2c, 1060.2d and 1060.2e.

## **1060.4 Sprinkler Systems**

### **1060.4a General Requirements**

**1060.4a-1** Sprinkler systems shall conform to the requirements of Part 850.

**1060.4a-2** 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.

**1060.4a-3** 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.

**1060.4a-4** Connection to a sprinkler system for other than sprinkler or standpipe use is prohibited, except as otherwise provided in 1060.4g, 1060.4h and 1060.4i.

**1060.4a-5** 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.

**1060.4a-6** Sprinklers connected to a potable water supply system shall be designed and installed so that they will not cause pollution.

**1060.4a-7** 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.

**1060.4a-8** 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.

**1060.4a-9** 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.

#### **1060.4b Water Supply**

**1060.4b-1** Sprinkler systems shall have at least one approved source of water supply of adequate pressure, capacity, and reliability.

**1060.4b-2** 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.

**1060.4b-3** 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.

**1060.4b-4** 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.

**1060.4b-5** Sprinkler systems of adjacent buildings may be connected from a common source of water supply 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.

**1060.4c Sprinkler Heads**

**1060.4c-1** Sprinkler heads shall be located and arranged to spray all parts of the area to be protected, including closets and alcoves.

**1060.4c-2** 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.

**1060.4c-3** 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.

**1060.4c-4** Sprinkler heads operating at temperatures exceeding 212°F. shall be used only for locations where unusually high temperatures prevail.

**1060.4c-5** Sprinkler heads shall be located so that there is no interference with the effective distribution of water.

**1060.4c-6** Luminous ceilings located above or below sprinkler heads shall be installed in conformity with 772.3h and 772.3i.

**1060.4d Fire Department Connections**

**1060.4d-1** 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.

**1060.4d-2** 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.

**1060.4d-3** Fire department connections shall be located on a street front of the building accessible for fire department use without being a potential hazard.

**1060.4d-4** Where the building faces or abuts more than one street, additional connections shall be provided so that at least one connection is 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.

**1060.4e Sprinkler Alarm**

**1060.4e-1** A required sprinkler system in a multiple dwelling occupied by

transients or in a 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.

**1060.4e-2** 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, other than residential, 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.

**1060.4e-3** A required sprinkler system shall be equipped with a local alarm, except as otherwise provided in 1060.4e-1. 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 six stories or less in height, such sounding devices shall be audible in all parts of the building. In multiple dwellings seven stories or more in height, such sounding devices shall be audible on the fire floor, the floor below and the floor above the fire floor. In buildings more than 70 feet in height other than residential, 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.

**1060.4e-4** 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 while trained personnel is available at all times to receive the signal and take proper action.

**1060.4f 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.

**1060.4g Special Sprinkler Installation Supplied from the Domestic Water System**

**1060.4g-1** Sprinkler heads installed in conformity with this section do not constitute a sprinkler system.

**1060.4g-2** 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.

**1060.4g-3** 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.

**1060.4g-4** A special sprinkler installation within a dwelling unit, or a sleeping room for transient occupancy, shall be supplied and controlled by a valve that controls domestic water supply to one or more fixtures for the dwelling unit or transient occupancy. The sprinkler head shall be connected to the cold water supply for the dwelling unit or sleeping room through a pipe of at least  $\frac{3}{4}$  inch inside diameter. No local alarm is required.

**1060.4g-5** Special sprinkler installations containing more than ten heads shall be equipped with an automatic local alarm to function as set forth in 1060.4e-3.

**1060.4h Connections for First-Aid Hose.** First-aid hose connections may be made from a  $2\frac{1}{2}$  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.

## **1060.5 Standpipe Systems**

### **1060.5a General Requirements**

**1060.5a-1** Standpipe systems shall conform to the requirements of Part 850 and shall be designed and installed so that all parts of every floor area can be quickly reached by an effective stream of water.

**1060.5a-2** Standpipe systems shall be designed for furnishing heavy hose streams for severe fires, and first-aid streams to control incipient fires.

**1060.5a-3** Required standpipe systems shall be available during construction.

### **1060.5b Piping**

**1060.5b-1** Standpipes shall be of ample size to convey water from any designated source in sufficient quantity to supply the hose streams that are likely to be in simultaneous use.

**1060.5b-2** 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.

**1060.5b-3** At least one riser shall be located in an enclosed stairway.

### **1060.5c Hose Stations**

**1060.5c-1** 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.

**1060.5c-2** 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 B1 transient, C3, C4, C5.5, C6.2 and C6.3 occupancy, first-aid hose and connection for heavy stream protection shall be provided.

**1060.5c-3** 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.

**1060.5c-4** 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.

**1060.5c-5** 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.

### **1060.5d Water Supply**

**1060.5d-1** 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.

**1060.5d-2** 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.

**1060.5d-3** 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.

**1060.5d-4** 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.

**1060.5d-5** 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.

#### **1060.5e Fire Department Connection**

**1060.5e-1** At least one fire department connection shall be provided.

**1060.5e-2** Fire department connections shall be conspicuously identified for standpipe use, and shall be in conformity with the requirements set forth in 1060.4d-2 and 1060.4d-3.

#### **1060.5f Controls**

**1060.5f-1** Control of water flow shall be obtained by means of devices located at each hose station.

**1060.5f-2** 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 1060.4e-4.

#### **1060.6 Yard Hydrant Systems**

**1060.6a** Yard hydrant systems shall be in conformity with Part 850 and shall be designed and installed so that an ample supply of water will be provided to hydrants, sprinkler and standpipe systems.

**1060.6b** Connection to fire hydrants for other than fire protection purposes shall be prohibited.

**1060.6c** 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.

**1060.6d** 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.

**1060.7 Fire-Extinguishing Systems Using Extinguishing Agents other than Water**

**1060.7a** Fire-extinguishing systems using extinguishing agents other than water shall conform to the requirements set forth in Part 850 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.

**1060.7b** 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.

**1060.8 Watchman's Systems**

**1060.8a** Watchman's systems shall conform to the requirements of Part 850 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.

**1060.8b** Station shall be located so that a watchman can visit every space to be patrolled within a period of 40 minutes.

**1060.8c** 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.

**1060.9 Automatic Operation of Doors and Vents**

**1060.9a** 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, or 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.

**1060.9b** Smoke or heat vents conforming to the requirements of generally accepted standards shall be provided as set forth in 774.8b shall be arranged for manual and automatic release, and shall be actuated by a smoke detector as set forth in 1060.9a or by a fusible link.

**1060.10 Single-Station Smoke Detecting Alarm Devices**

**1060.10a** Single-station smoke detecting alarm devices shall conform to the requirements of Part 850.

**1060.10b** Such device shall be designed and installed so as to avoid dead air space, detect smoke and activate the alarm, be reasonably free from false alarm and provide visible indication that the alarm is energized.

**1060.10c** The alarm shall be clearly audible in sleeping spaces with intervening doors closed.

**1060.10d** The device shall be directly connected to the lighting circuit of the dwelling unit or sleeping room with no intervening wall switch. Cord-connected installations shall not be permitted.

**1060.11 Heat-Detecting Alarm Systems**

**1060.11a** Heat-detecting alarm systems shall conform to requirements of Part 850.

**1060.11b** Such system shall be designed and installed so as to detect abnormally high temperature, activate an audible alarm in the corridor on the same floor as the detector which initiated the alarm, and simultaneously activate the light indicator on the hall side above the door of the dwelling unit.

**1060.11c** The heat detector shall be located on or near the ceiling in kitchens and kitchenettes in dwelling units.

**1060.11d** The alarm shall be a common alarm for all heat detectors on the same floor level, and shall be clearly audible in all dwelling units on the alarm-initiated floor. Such alarm may be one of the audible alarms associated with other fire protection equipment. For exception see 1060.11f.

**1060.11e** Such system shall be directly connected to the lighting circuit of the dwelling unit with no intervening wall switch.

**1060.11f** Where exits from dwelling units do not open upon corridors but instead open directly to the exterior, the audible alarm shall be an alarm common to all heat detectors in such dwelling units, and shall be centrally located on the exterior of the building so as to be audible in all dwelling units. For such dwelling units, the light indicator shall be located on the exterior above the door of the dwelling unit.

**PART 1061 COORDINATED FIRE SAFETY SYSTEM**

**1061.1 General Requirements.** Fire safety systems shall conform to the requirements of Part 850 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:

**1061.1a** Fire alarm system as set forth in section 1060.2, or a fire- and smoke-detecting system as set forth in section 1060.3.

**1061.1b** Full sprinkler system as set forth in section 1060.4.

**1061.1c** Standpipe system as set forth in section 1060.5.

**1061.1d** Elevator emergency controls as set forth in 1062.7b.

**1061.1e** Recirculating fan controls as set forth in 1004.2e-2 and 1004.2f-5.

**1061.1f** Emergency power and lighting as set forth in Part 1032.

**1061.1a** Fire control panel as set forth in section 1061.2.

**1061.1h** Voice communication system as set forth in section 1061.3.

**1061.1i** Exit stairway door unlocking system as set forth in section 735.1, 765.1n and 1061.4

**1061.1j** Instructional signs for use of exits as set forth in section 735.1n, 765.1n and 1061.5.

**1061.2 Fire Control Panel**

**1061.2a** 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.

**1061.2b** The fire control panel shall provide visible and audible indication so as to identify the origin of:

**1061.2b-1** Alarm, trouble and supervisory signals from fire protection equipment.

**1061.2b-2** 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.

**1061.2b-3** Voice communication system calls.

**1061.2c** The fire control panel shall be provided with means to perform the following:

**1061.2c-1** Transmit a fire alarm signal to the local fire department.

**1061.2c-2** Activate alarms selectively in the building.

**1061.2c-3** Open automatic smoke vents in stairways and shafts.

**1061.2c-4** Release doors held open by magnetic holds.

**1061.2c-5** Release locked doors for reentry from exit stairways.

**1061.2c-6** Shut off and restart recirculating air system.

**1061.2c-7** Respond to calls from the two-way voice communication system.

**1061.2c-8** Communicate via the public address system.

**1061.2c-9** Test of panel operations and indications.

**1061.2d** 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.

**1061.2e** 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.

### **1061.3 Voice Communication Systems.**

**1061.3a** 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 1004.2f-2. 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.

**1061.3b** Floor communication stations shall be provided on every floor, shall be located as set forth in 1060.2b for manual fire alarm boxes, and shall be provided with two-way voice communication equipment.

**1061.3c** 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.

**1061.3d** Electrical wiring for voice communication systems shall conform to the requirements of 1060.2d-3.

**1061.4 Exit Stairway Door Unlocking Systems.** 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.

## **PART 1062 ELEVATORS, DUMBWAITERS, AND ESCALATORS**

### **1062.1 General Requirements.**

**1062.1a** Elevators, dumbwaiters, and escalators shall conform to the requirements of Part 850 and shall be designed and installed so as to be free from physical and fire hazards.

**1062.1b** One or more passenger elevators shall be provided in buildings of group B1 and B2 exceeding four stories in height, in buildings of group B3 occupancy exceeding two stories in height and in buildings of group B4 occupancy exceeding one story in height.

**1062.1c** 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 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.

**1062.1d** Where passenger elevators are required, at least one elevator landing shall be provided at each level accessible by occupants.

**1062.1e** Elevators, dumbwaiters, and escalators shall be designed and installed to sustain safely the loads to which they are subject.

**1062.1f** Elevator and dumbwaiter cars shall be provided with durable signs, in conspicuous locations, on which the rated capacity shall be indicated.

## 1062.2 Self Service Passenger Elevators

### 1062.2a Car Controls

**1062.2a-1** Floor registration buttons, exclusive of border, shall be a minimum of three-fourths inch in size, raised, flush or recessed. Depth of flush or recessed buttons when operated shall not exceed three-eighths inch.

**1062.2a-2** Markings shall be adjacent to the controls on a contrasting color background to the left of the controls. Letters or numbers shall be a minimum of  $\frac{5}{8}$  inch high and raised or recessed thirty-thousandths of an inch. Applied plates permanently attached shall be acceptable.

**1062.2a-3** Emergency controls shall be grouped together at the bottom of the control panel.

**1062.2a-4** The centerline of the alarm button and the emergency stop switch shall be at a nominal thirty-five inches and the highest floor buttons no higher than fifty-four inches from the floor.

**1062.2a-5** Uniform symbols as indicated shall be used to assist in readily identifying essential controls. Such car control symbol designations shall be:

### CAR CONTROL SYMBOLS



**1062.2b Door Jamb Markings.** The floor designation shall be provided at each elevator entrance on both sides of the hoistway door jamb visible from within the car and the elevator lobby at a height of sixty inches above the floor. Designations shall be on a contrasting color background, be a minimum of two inches high and be raised thirty-thousandths of an inch. Applied plates, permanently attached, shall be acceptable.

**1062.2c Operation and leveling.** The elevator shall be automatic and be provided with a self-leveling feature that will automatically bring the car to the floor landings within a tolerance of one-half inch under normal loading and unloading conditions. This self-leveling feature, within its zone, shall be entirely automatic and independent of the operating device and shall correct for overtravel or undertravel. The car shall also be maintained approximately level with the landing, irrespective of load.

#### **1062.2d Doors**

**1062.2d-1** Minimum clear width for hoistway doors and car doors shall be thirty-two inches.

**1062.2d-2** Power operated horizontally sliding car and hoistway doors opened and closed by automatic means shall be provided.

**1062.2d-3** Doors closed by automatic means shall be provided with a door reopening device which will function to stop and reopen a car door and adjacent hoistway door in case the car door is obstructed while closing. This reopening device shall also be capable of sensing an object or person in the path of a closing door without requiring contact for activation at a nominal five and twenty-nine inches above the floor. Door reopening devices shall remain effective for a period of not less than twenty seconds.

**1062.2d-4** The minimum acceptable time for doors to remain fully open shall not be less than 3 seconds. The minimum acceptable time from notification that a car is answering a call (lantern and audible signal) until the doors of that car start to close shall be as indicated in the following table I-1062.

**TABLE I-1062 MINIMUM TIME FOR THE OPERATION OF ELEVATOR DOORS**

Distance in feet	Time
0-5	4 seconds
10	7 seconds
15	10 seconds
20	13 seconds

The distance shall be established from a point in the center of the corridor or lobby, but at a maximum of 5 feet, directly opposite the farthest hall button to the centerline of the elevator entrance.

**1062.2d-5** An unobstructed area at least 4 feet by 5 feet shall be provided in front of the elevator door on the entrance story.

**1062.2e Hall Buttons.** The centerline of the hall call buttons shall be nominal forty-two inches above the floor. Direction buttons, exclusive of border shall

be a minimum of three-quarters inch in size, raised, flush or recessed. Visual indication shall be provided to show each call registered and extinguished when the call is answered. Depth of flush or recessed buttons when operated shall not exceed three-eighths inch.

### **1062.2f Hall Lantern**

**1062.2f-1** Visual and audible signal shall be provided at each elevator entrance, indicating to the prospective passenger the car answering the call and its direction of travel.

**1062.2f-2** The visual signal for each direction shall be a minimum of two and one-half inches in size, visible from the proximity of the hall call button.

**1062.2f-3** The audible signal shall sound once for the up direction and twice for the down direction.

**1062.2f-4** The centerline of the fixture shall be located a minimum of six feet from the floor. The use of in-car lanterns conforming to above and located in car door jamb shall be acceptable.

### **1062.3 Hoistway**

**1062.3a** Elevator and dumbwaiter hoistways shall be enclosed with construction having fire-resistance ratings as set forth in table II-704 and III-704 except for hoistway enclosures of elevators and dumbwaiters which pierce no solid floors or for sidewalk elevators having a travel of not more than one story below the grade level.

**1062.3b** 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.

**1062.3c** Not more than four elevators shall be installed in a multiple hoistway.

**1062.3d** 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.

**1062.3e** Hoistways of elevators and dumbwaiters shall be provided with 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 739.4d and 771.4h.

**1062.3f** 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.

**1062.3g** 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.

**1062.3h** Elevator hoistways shall have not more than two landing openings on a floor for each car.

**1062.3i** Elevator and dumbwaiter hoistway landing openings shall be provided with opening protectives having fire-resistance ratings as set forth in section 771.4l.

**1062.3j** 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.

**1062.3k** Safe and convenient access shall be provided at the top of the elevator hoistway for inspection and servicing of elevator machinery, sheaves and governors.

**1062.3l** Window openings shall be prohibited in exterior building walls of hoistways.

**1062.3m** Hoistways of sidewalk elevators shall not be located either wholly or partially in front of any entrance or exit of a building.

**1062.3n** 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 metal conduit, and other electrical equipment shall be of weatherproof type.

#### **1062.4 Machine Rooms**

**1062.4a** 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 739.4d-10 and 771.4h-12.

**1062.4b** 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.

**1062.4c** Exposed auxiliary equipment used in raising or lowering the elevator car shall be guarded to protect against accidental contact.

### **1062.5 Machines and Machinery**

**1062.5a** Electric elevators shall be of the counterweighted traction type, except that non-counterweighted drumtype and screw machines may be used when designed in conformity with generally accepted standards.

**1062.5b** 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.

**1062.5c** 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.

### **1062.6 Elevator and Dumbwaiter Car Construction**

**1062.6a** Passenger elevator cars shall be fully enclosed at sides, top, and bottom, except that openings shall be provided for entrance, escape, and ventilation.

**1062.6b** 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.

**1062.6c** Elevator cars shall be provided with openings for ventilation.

**1062.6d** The interior of passenger elevator cars may be lined with class A or B interior finish material, as classified in sections 740.2 and 772.2, firmly bonded flat to the sides without intervening air spaces. Such material shall not be padded or tufted.

**1062.6e** Glass used in elevator cars shall be of the non-shatterable type.

**1062.6f** 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.

**1062.6g** 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.

**1062.6h** No elevator car shall have more than one compartment.

**1062.6i** No elevator car shall be arranged to counterbalance another elevator.

**1062.6j** Passenger elevator cars shall have not more than two entrances.

**1062.6k** An emergency exit shall be provided in the top of elevator cars.

## **1062.7 Controls**

**1062.7a** General Requirements.

**1062.7a-1** 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.

**1062.7a-2** Power elevators shall not be controlled by direct hand-operated rope, rod, wheel or lever mechanism.

**1062.7a-3** Hydraulic elevators shall be provided with full electric control.

**1062.7a-4** 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.

**1062.7a-5** Sidewalk elevators shall be provided with an audible warning device at the sidewalk level arranged to sound when the elevator is ascending.

**1062.7b Emergency Operation.** Buildings more than 30 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 shall 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, or to an alternate level, if the detector at the main or intermediate lobby floor level is activated by fire or smoke. Such detectors shall be located at each interior elevator landing and shall be designed and installed so as to actuate an alarm automatically.

**1062.8 Escalators**

**1062.8a** Escalators shall be constructed of noncombustible materials throughout, except for handrails and step wheels.

**1062.8b** 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.

**1062.8c** Clear and unobstructed access and egress shall be provided for each escalator.

**1062.8d** Step treads and landings shall be of a material and design affording a secure foothold.

**1062.8e** Minimum clearance between all exposed moving parts shall be maintained and guards shall be provided so as to prevent injury to passengers.

**1062.8f** 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.

**1062.8g** 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.

**1062.8h** 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 739.4d and 771.4h.

**1062.8i** 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.

**PART 1063 CONVEYORS AND LIFTS**

**1063.1 General Requirements.** Conveyors, manlifts, automotive lifts, industrial lifts and similar transporting and elevating equipment shall conform to the requirements set forth in Part 850 and shall be designed and installed so as to be free from physical and fire hazards.

**1063.2 Conveyors**

**1063.2a** 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 dumb-waiters as set forth in 1062.3a. In lieu of this, floor openings shall be protected as set forth in 771.4h-3 and 771.4h-5.

**1063.2b** 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.

**1063.2c** Safety guards shall be provided at moving parts wherever such parts may constitute a physical hazard.

**1063.2d** Controls to stop the motor in case of emergency shall be provided at intervals where potential hazards exist.

**1063.2e** 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.

**1063.3 Manlifts**

**1063.3a** Manlifts shall be enclosed except in buildings of low hazard classification where such manlifts are not accessible to the public.

**1063.3b** Enclosures required in buildings of moderate or high hazard classification shall conform to the requirements for elevators and dumb-waiters set forth in 1062.3a.

**1063.3c** 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.

**1063.3d** Floor openings shall be uniform in size and shall have guards and clearances designed and installed so as to prevent injury to passengers.

**1063.3e** Entrances and exits shall be guarded by railings and self-closing gates.

**1063.3f** Steps and handholds shall be designed to sustain safely the loads to which they are subject, and shall be attached securely to the belt.

**1063.3g** 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.

#### **1063.4 Automotive Lifts**

**1063.4a** Automotive lifts shall be designed to support the load safely without exceeding the stresses permitted in generally accepted standards.

**1063.4b** Automotive lifts shall be provided with means for limiting the speed of descent to 20 feet per minute.

**1063.4c** The direct control device shall be of a type that will return automatically to its off position upon release.

**1063.4d** 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.

**1063.4e** 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.

**1063.4f** 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.

#### **1063.5 Industrial Lifts**

**1063.5a** 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.

**1063.5b** 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.

**1063.5c** The lift platform and its support shall be designed to transport the rated load without such deformation as may cause movement of the load.

**1063.5d** 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.

**1063.6 Automobile Parking Lifts**

**1063.6a** Automobile parking lifts shall be designed to support the rated load without exceeding the allowable stresses in foundation, suspension beams or track.

**1063.6b** The hoistway shall be enclosed to a height of at least 6 feet at all levels to which the public has access.

**1063.6c** 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.

**1063.6d** 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.

**1063.6e** 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.

**1063.6f** Machinery and controls shall be adequately protected from the elements and shall be accessible for inspection.

**PART 1064 CONVEYING AND REMOVAL SYSTEMS FOR STOCK, DUST, OR VAPORS**

**1064.1 General Requirements**

**1064.1a** Conveying and removal systems for stock, including feathers, grain or shavings, and dust or vapors, shall conform to the requirements set forth in Part 850 and section 1004.2.

**1064.1b** Such systems shall be of approved materials which are resistant to the destructive effects of substances conveyed. Ducts carrying materials which may accumulate shall have means for easy inspection and cleaning.

**1064.1c** 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 1030.1.

**1064.1d** 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.

**1064.1e** 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 771.4j-5.

## **1064.2 Exhaust Systems**

**1064.2a** 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.

**1064.2b** Cooking equipment in kitchens serving restaurants or 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.

**1064.2c** 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.

**1064.2d** Flammable gases and vapors which are heavier than air and may descend into cellars, basements 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.

**1064.2e** 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.

## **PART 1065 INCINERATORS AND REFUSE CHUTES**

### **1065.1 General Requirements**

**1065.1a** Incinerators shall conform to the applicable requirements of Parts 850, 1000 and 1005. They shall be of adequate capacity for the intended use.

**1065.1b** Incinerators shall be equipped with means for burning auxiliary fuel in sufficient quantity to assure complete combustion of refuse.

**1065.1c** Incinerator combustion space shall be designed and constructed so as to be durable and gastight.

**1065.1d** Incinerators shall be equipped with means for regulating the draft and for minimizing the emission of fly ash, smoke, dust, particles, and odors.

**1065.1e** Every flue serving an incinerator shall be provided with a substantially constructed spark arrester.

**1065.1f** Every incinerator shall be connected to a suitable noncombustible chimney, smokestack, or flue. Flue-fed incinerators are not permitted.

**1065.1g** 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.

**1065.1h** Incinerator rooms may contain boilers, furnaces, and heating equipment, but shall not be used for any other purpose.

### **1065.2 Service Openings**

**1065.2a** Service openings shall be readily accessible to the building occupants.

**1065.2b** Service openings shall be equipped with metal, self-closing charging devices of fire-resistive construction as set forth in 739.5d and 771.4l-7. No part of the charging devices shall project into a refuse chute.

**1065.2c** Durable signs with plainly legible letters prohibiting disposal of highly flammable substances in incinerators shall be provided near service openings.

**1065.3 Incinerator Rooms and Refuse Rooms.** Openings in refuse rooms used to charge refuse into incinerators shall be provided with charging doors designed and installed so as to minimize the heat transmitted to the refuse room and to prevent tampering by unauthorized persons.

## **PART 1066. EQUIPMENT AND SYSTEMS FOR POWER AND INDUSTRIAL USE**

**1066.1 General Requirements.** Piping equipment and systems designed and installed for power generation, processing, industrial, or high pressure use shall be in conformity with the requirements of Part 850.

### **1066.2 Installation**

**1066.2a** Systems conveying corrosive substances shall be designed and installed to resist corrosion.

**1066.2b** 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.

## **PART 1067. MISCELLANEOUS EQUIPMENT**

**1067.1 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.

**1067.2 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.

### **1067.3 Static Electricity**

**1067.3a** 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.

**1067.3b** 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 ignitable mixtures, shall be provided with approved means for preventing accumulation of static electricity in conformity with generally accepted standards.

**1067.4 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.

#### **1067.5 Window Cleaning Equipment**

**1067.5a** 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.

**1067.5b** 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.

**ARTICLE 13 FACILITIES FOR THE PHYSICALLY HANDICAPPED****PART 1100 GENERAL REQUIREMENTS****1100.1 Applicability.**

**1100.1a** As set forth in this section, buildings shall be provided with an exterior accessible route, interior accessible route, usable or adaptable space and accessible elements and facilities to make buildings accessible and usable by and to establish a safe environment for, the physically handicapped.

**1100.1b** The provisions of this section with respect to the following items shall be supplemental to and take precedence over other less restrictive provisions of this code:

Space allowances and reach range

Accessible route

Walks — maximum slope shall not exceed 1 in 20 (5 percent gradient)

Ramps — maximum slope shall not exceed 1 in 12 (8.3 percent gradient)

Protruding objects

Ground and floor surfaces

Parking and passenger loading zones

Curb ramps

Ramps

Stairs

Elevators

Platform lifts

Doors

Entrances

Drinking fountains and water coolers

Water closets

Urinals

Lavatories and mirrors

Bathtubs

Shower stalls

Toilet rooms

Bathrooms, bathing facilities, and shower rooms

Sinks

Storage

Handrails, grab bars, and tub and shower seats

Controls and operating mechanisms

Alarms

Tactile warnings

- Signage
- Telephones
- Seating tables and work surfaces
- Assembly areas
- Dwelling units

**1100.1c** Details, dimensions and construction specifications for items listed in 1100.1b shall comply with the requirements set forth in the American National Standards Institute standard ANSI A117.1-1980 "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.

**1100.2 Accessible Route**

**1100.2a** As set forth in this article, buildings shall be provided with an exterior accessible route to permit entry at a principal entrance of the building from the following locations:

- Public street or sidewalk
- Driveways
- Parking area
- Passenger loading zone
- Transportation stops
- Other buildings and facilities on the same premises including but not limited to:
  - Laundry rooms
  - Refuse disposal locations
  - Mail box areas
  - Recreational and assembly areas
  - Storage rooms
  - Management offices
  - Shops
  - Dining area

**1100.2b** Buildings shall be provided with an interior accessible route from the entrance used by the physically handicapped to usable or adaptable spaces and rooms.

**1100.2c** The path of travel in the exterior and interior accessible route shall provide unobstructed access, and applicable items in such path of travel shall comply with the requirements set forth in 1100.1c.

**1100.2d** Where provided, all elevators on an accessible route shall comply with the requirements set forth in 1100.1c.

**1100.2e** At the main entry level, required exits in the exterior wall shall be usable by the physically handicapped as a means of departure to the outside of the building.

### 1100.3 Assembly Areas.

**1100.3a** For assembly areas, minimum number of wheelchair viewing positions shall comply with table I-1100.

**1100.3b** Size and placement of wheelchair location, surfaces, access to performing area and listening systems where required shall comply with the provisions of 1100.1c.

**TABLE I-1100 REQUIRED NUMBER OF WHEELCHAIR VIEWING POSITIONS**

Capacity of Assembly Area (persons)	Minimum number of accessible wheelchair viewing positions
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
Over 1000	20 plus 1 for each 100 over 1000

### 1100.4 Drinking Fountains

**1100.4a** The location and number of drinking fountains shall be provided in accordance with the requirements set forth in Part 900.

**1100.4b** At least one drinking fountain on a story on which drinking fountains are provided shall be accessible and comply with the requirements set forth in 1100.1c.

**1100.4c** Where outside drinking fountains are provided, at least one shall comply with the requirements set forth in 1100.1c.

**1100.5 Public Telephones.** At each location where public telephones are provided, at least one telephone shall be accessible and usable by wheelchair persons and by persons with hearing impairment, and shall comply with the requirements set forth in 1100.1c.

**1100.6 Alarms.** Where emergency warning systems are provided in spaces used by the physically handicapped, they shall include applicable audible and visual alarms that comply with the requirements set forth in 1100.1c.

**1100.7 Control and Operating Mechanisms.** Where controls and operating mechanisms for light switches, dispensers, alarms and other similar devices are provided, they shall be accessible and comply with the requirements set forth in 1100.1c.

**1100.8 Tactile Warnings.** Tactile warnings shall be provided at hazardous locations on floors, doors, stairs, hazardous vehicular areas and pools, and shall comply with applicable requirements as set forth in 1100.1c.

#### **1100.9 Signage.**

**1100.9a** Symbols of accessibility shall be provided at the following locations:

- Parking spaces designated as reserved for the physically handicapped
- Passenger loading zones
- Public toilet and bathing facilities
- Drinking fountains
- Public telephones

**1100.9b** Informational and directional signage shall be provided where deemed necessary.

**1100.9c** Symbols and characters shall comply with the applicable requirements set forth in 1100.1c.

### **PART 1101 MULTIPLE DWELLINGS**

**1101.1 Applicability.** This section is applicable to the following occupancy classifications:

- Group B1 — Permanent Occupancy
- Group B2 — Transient Occupancy
- Group B3 — Senior Citizen Housing
- Group B4 — Adult Residential Care

**1101.2 Accessibility.** Buildings having adaptable or useable dwelling units shall be accessible as set forth in Part 1100.

**1101.3 Adaptable Dwelling Units****1101.3a General Requirements**

**1101.3a-1** Adaptable dwelling units are units in multiple dwellings which when constructed are accessible and equipped as set forth in Section 1100.1c so that they can be converted to be used by the physically handicapped with a minimum of structural change.

**1101.3a-2** Such units shall be provided with door widths, clear floor space and provisions for making dwelling unit usable as set forth in Section 1101.4 when occupied by physically handicapped.

**1101.3a-3** Interior access, storage, controls, windows, doors, floor surfaces, adaptable kitchens and adaptable bathrooms in these dwelling units shall comply with the requirements set forth in 1100.1c.

**1101.3a-4** Where an adaptable dwelling unit occupies two or more stories within itself, accessibility shall only be required at the first story of such dwelling unit.

**1101.3b Number of Adaptable Dwelling Units.** The number of adaptable dwelling units shall comply with table I-1101 based on the total number of dwelling units in all residential buildings on the same premises.

**TABLE I-1101 ADAPTABLE DWELLING UNITS**

Occupancy Classification	Number of Adaptable Dwelling Units <sup>1</sup>
Buildings of Group B1 and B3 occupancy with elevator	All
Buildings of Group B1 and B3 occupancy without elevator	At least one but not less than 25 percent of the total number of dwelling units

<sup>1</sup> Where determination by percent results in a number containing a decimal of .5 or more, use the next higher number

**1101.3c Adaptable Bathrooms.** Bathrooms within adaptable dwelling units shall be constructed and equipped in accordance with the requirements set forth in Section 1100.1c with respect to the following:

- Door
- Clear floor space
- Floor surface
- Water closet and toilet paper dispenser

Lavatory and removable base cabinet  
 Mirrors  
 Medicine cabinet  
 Bathtub and controls  
 Shower and controls  
 Bathtub and shower enclosure  
 Reinforced areas for grab bars

**1101.3d Adaptable Kitchen.** Kitchens within adaptable dwelling units shall be constructed and equipped in accordance with the requirements set forth in 1101.1c with respect to the following:

Access doorway or opening  
 Clear floor space  
 Floor surface  
 Clearance between opposing base cabinets, counter tops, appliances and walls  
 Adjustable or replaceable counter work surfaces and removable base cabinets  
 Adjustable or replaceable sink and removable base cabinet  
 Storage cabinets, drawers and shelves  
 Provision for usable range, cooktop, oven, refrigerator/freezer or dishwasher

**1101.3e Washing Machines and Clothes Dryers Within Adaptable Dwelling Units.** Where washing machines and clothes dryers are located within adaptable dwelling units they shall comply with, or be capable of being converted to, the requirements set forth in 1100.1c.

**1101.3f Emergency Warning Alarms Within Adaptable Dwelling Units** Emergency warning alarms located within adaptable dwelling units shall be capable of being converted to audible and visual indication as required, and conform to requirements set forth in 1100.1c.

#### **1101.4 Usable Dwelling Units**

##### **1101.4a General Requirements**

**1101.4a-1** Usable units are dwelling units or sleeping rooms which are accessible, constructed and equipped as set forth in 1100.1c so as to be usable by the physically handicapped.

**1101.4a-2** Access, storage, controls, windows, doors, floor surfaces, kitchens and bathrooms, appliances and alarms in these units shall comply with the requirements set forth in 1100.1c.

**1101.4b Number of Usable Units**

**1101.4b-1** In groups B1 and B3 occupancy a usable dwelling unit shall be established by conversion from an adaptable dwelling unit when the unit becomes occupied by a physically handicapped person.

**1101.4b-2** In group B2 occupancy having 10 or more units, at least one unit but not less than 5 percent of the total number of units shall be constructed as a usable unit. Where determination by percent results in a number containing a decimal of .5 or more use the next higher number.

**1101.4b-3** In group B4 occupancy, all units shall be usable.

**1101.4c Usable bathrooms.** Bathrooms shall be made usable in accordance with the requirements set forth in 1101.1c with respect to the following:

- Removal of base cabinet

- Installation of grab bars at water closet, bathtub and shower

- Addition of seat for bathtub and shower

- Installation of shower spray with hose

- Insulation of exposed knee space at hot water piping under lavatory

**1101.4d Usable Kitchens.** Kitchens shall be made usable in accordance with the requirements set forth in 1100.1c with respect to the following:

- Removal of base cabinets

- Adjustment or replacement of counter work surface

- Adjustment or replacement of sink

- Installation of usable range, cooktop, oven, refrigerator/freezer or dishwasher

- Insulation of exposed knee space at hot water piping under sink

- Insulation of exposed knee space contact surfaces under oven or cooktop

**1101.5 Parking Spaces**

**1101.5a** Where parking areas or garages are provided for groups B1, B2 and B3 occupancies, at least one parking space for each usable unit but not less than 5 percent of the total number of parking spaces provided, shall be suitable for use by the physically handicapped; for group B4 occupancies, at least 5 percent of the total number of parking spaces shall be suitable. Where determination by percent results in a number containing a decimal of .5 or more, use the next higher number.

**1101.5b** Location, space, size and signage for parking spaces suitable for use by the physically handicapped shall comply with provisions set forth in 1100.1c.

**1101.6 Passenger Loading Zone.** Where passenger loading zones are provided, location and access aisle for at least one vehicle shall comply with requirements set forth in 1101.1c.

**1101.7 Public Toilet Rooms.** Where public toilet rooms are provided, at least one toilet room for each sex shall be accessible and usable and comply with requirements set forth in 1101.1c.

## PART 1102 GENERAL BUILDING CONSTRUCTION

**1102.1 Applicability.** This section is applicable to the following building occupancy classifications:

- C1 Business
- C2 Mercantile
- C3 Industrial
- C4 Storage
- C5 Assembly
- C6 Institutional

**1102.2 Accessibility.** Buildings shall be accessible as set forth in part 1100, with the following exceptions:

**1102.2a** For assembly occupancies having a mezzanine or balcony which provides the same view as the main floor, accessibility to the mezzanine or balcony shall not be required provided toilet rooms are on the main floor.

**1102.2b** For restaurants, dining rooms and similar occupancies having the same services on levels other than the main floor, accessibility to such levels shall not be required provided that toilet rooms are on the main floor.

**1102.2c** For buildings in which the intended use is the storage of goods or merchandise, the only requirement shall be accessibility at the primary entrance.

### 1102.3 Usable Spaces

#### 1102.3a Functional Spaces and Rooms

**1102.3a-1** Spaces and rooms intended for general public and occupant use shall be accessible and usable. Such spaces and rooms include but are not necessarily limited to the following:

- Business spaces

Mercantile spaces  
Industrial spaces  
Assembly spaces  
Institutional spaces  
Toilet rooms  
Bathrooms, bathing facilities and shower rooms

**1102.3a-2** Doors, floor surfaces and clear floor area in usable spaces shall comply with the requirements set forth in 1100.1c.

**1102.3a-3** Where seating, tables and work surfaces are provided in usable spaces, at least one and not less than 5 percent shall comply with the requirements set forth in 1100.1c.

**1102.3a-4** Where storage facilities such as cabinets, shelves, closets or drawers are provided in usable spaces, at least one storage facility of each type shall comply with the requirements set forth in 1100.1c.

### **1102.3b Toilet Rooms**

**1102.3b-1** The location and number of water closets, urinals and lavatories shall be provided in accordance with the requirements set forth in Section 1100.1c.

**1102.3b-2** On a floor where a toilet room is provided, such room shall be accessible and usable by the physically handicapped, and at least one of each appropriate type of fixture or accessory in each room shall comply with the requirements set forth in 1100.1c.

**1102.3b-3** Where toilet rooms are not accessible by elevator, they shall be located so that physically handicapped persons need not travel more than one story thereto by ramp.

### **1102.3c Bathing Facilities**

**1102.3c-1** The location and number of bathtubs and showers shall be provided in accordance with the requirements set forth in 1100.1c.

**1102.3c-2** Each required bathing facility shall be accessible, and at least one of each type of fixture or accessory that is provided in such bathing facility shall comply with the requirements set forth in 1100.1c.

### **1102.4 Parking Spaces**

**1102.4a** Parking areas, where provided, and parking garages shall comply with table I-1102.

## BUILDING CONSTRUCTION

TABLE I-1102 REQUIRED NUMBER OF PARKING SPACES

Total Parking Spaces in lot or garage	Number of accessible parking spaces <sup>1</sup>
1 to 25	1
26 to 50	2
51 to 75	3
76 to 100	4
101 to 150	5
151 to 200	6
201 to 300	7
301 to 400	8
401 to 500	9
501 to 1000	2 percent of total
Over 1000	20 plus 1 for each 100 over 1,000

<sup>1</sup> For a shopping center or facility having at least five separate retail stores and at least 20 public off street parking spaces, a minimum of 5 percent of such parking spaces or 10 spaces, whichever is less, shall be for use by the physically handicapped. (Chapter 203-Laws of 1981)

**1102.4b** Location, space size and signage for parking spaces suitable for use by the physically handicapped shall comply with the requirements set forth in 1100.1c.

**1102.5 Passenger Loading Zones.** Where passenger loading zones are provided, the location and access aisle for at least one zone shall comply with the requirements set forth in 1100.1c.

## ARTICLE 14 SPECIAL REQUIREMENTS

## PART 1110 STATE AGENCIES

**1110.1 General Requirements.** Any building or premises under the custody, supervision, or jurisdiction of a Department or Agency of the State of New York shall comply with this Code provided, however, that where a department or agency has established a more restrictive or specific provision than contained herein, any such building or premises shall conform to said provision, and provided further that where a department or agency has established a provision not otherwise required by this Code, any such building or premises shall conform to such provision and to this Code.

**1110.2 Rules and Regulations.** For the purpose of this Article the following Rules and Regulations from the Official Compilation of the State Codes, Rules and Regulations shall apply:

Title 1 — Agricultural and Market

Title 5 — Commerce

Title 6 — Environmental Conservation

Title 7 — Correctional Services

Title 8 — Education

Title 9 — Executive

Sub-Title F — Office for Local Government

Sub-Title G — Office of General Services

Sub-Title I — Office of Parks and Recreation

Sub-Title K — New York State Police

Sub-Title L — Division of Military and Naval Affairs

Sub-Title S — Division of Housing and Community Renewal

Sub-Title AA — State Commission of Correction

Title 10 — Health

Title 11 — Insurance

Title 12 — Labor

Title 14 — Mental Hygiene

Title 16 — Public Services

Title 17 — Transportation

Title 18 — Social Services

Title 19 — State

**1110.3 State Labor Department Jurisdiction.** Nothing herein shall be construed as affecting the authority of the state labor department to enforce a safety or health standard issued under provisions of sections twenty-seven and twenty-seven-a of the labor law.

**BUILDING CONSTRUCTION**

**ARTICLE 15 TOXICITY**

Specific performance standards of and the rating of toxicity of smoke and gases from materials used in building construction and furnishings shall be incorporated into this Article within six months from the date of completion of the Secretary of State's report and recommendations with respect thereto.



**CHAPTER C**

**FIRE PREVENTION**



## CHAPTER C FIRE PREVENTION CODE

## ARTICLE 1 GENERAL PROVISIONS

## PART 1150 PURPOSE

**1150.1 Purpose.** The purpose of this Chapter is to establish minimum rules and regulations to safeguard life and property from the hazards of fire, explosion, structural instability, or release of toxic gases arising from the storage, handling, or use of hazardous substances, materials or devices.

## PART 1151 APPLICABILITY

**1151.1 Scope.** This Chapter shall apply to property, materials and fire safety practices.

**1151.2 Mixed Occupancy In Existing Buildings.** A building which is occupied or used by two or more occupancies or uses classified in Part 700, shall be deemed to be a building of mixed occupancy. Each occupancy type within such building shall be required to meet the code provisions for their individual classifications, including proper division by fire separations.

## PART 1152 MAINTENANCE

**1152.1 Requirements.** Property, equipment and materials subject to this Chapter shall be maintained in a proper operating and safe condition, in conformity with the provisions of this Chapter.

## PART 1153 DANGEROUS OR UNSAFE BUILDINGS OR STRUCTURES

**1153.1 General Requirements**

**1153.1a** A building or structure which is in imminent danger to life and safety as a result of structural instability, fire, explosion, or other hazardous situation shall be made safe and secure or demolished and removed by the owner thereof.

**1153.1b** The occupants of any such building or structure shall vacate the premises forthwith. No persons shall use or occupy such building or structure until it is deemed safe and secure by the Code Enforcement Official.

**1153.1c** Except for the owner, no person shall enter premises which have been ordered vacated unless authorized to perform inspections, repairs, or demolish and remove such building or structure.

**PART 1154 VACANT BUILDINGS OR STRUCTURES**

**1154.1 Requirements.** Every person owning or having charge or control of any building which has been vacant for over 60 days shall remove all combustible waste and refuse therefrom and lock, barricade, guard continuously, or otherwise secure all windows, doors, and other openings in the building to prohibit entry by unauthorized persons.

**ARTICLE 2 PROPERTY AND BUILDINGS****PART 1160 CLASSIFICATION BY OCCUPANCY OR USE****1160.1 General Requirements**

**1160.1a** Buildings and property shall be classified as set forth in Part 701 of chapter B of this Code. Such classification shall establish and control the applicability of chapter C "Fire Prevention" with respect to building occupancy or use, including mixed occupancy.

**1160.1b** Additionally, the requirements of this chapter shall be applicable to the premises of mobile homes and parks and to the premises of recreational vehicles and parks, and to industrial buildings which may be frequented by the public in which the primary or intended occupancy or use is repairing, cleaning, laundering, baking and similar operation which include but are not limited to bakeries, dry cleaning plants, laundries, motor vehicle repair shops and motor vehicle service stations.

**PART 1161 FIRE DEPARTMENT AND EMERGENCY SERVICE ACCESS**

**1161.1 General Requirements.** Buildings, structures and property shall be provided with unobstructed access for fire fighting and emergency service personnel, apparatus, and equipment.

**1161.2 Accessibility**

**1161.2a** Premises which are not readily accessible from public roads, and which the fire department or an emergency service may be called upon to protect in case of fire or other emergency, shall be provided with access roads or fire lanes so that all buildings on the premises are accessible to the fire department and emergency service apparatus.

**1161.2b** Access roads and fire lanes shall be adequately maintained and kept free and clear of obstructions at all times.

**1161.2c** The designation and maintenance of fire lanes on private property shall be established as specified by the Code Enforcement Official.

**1161.2d** It shall be a violation of this Part to park motor vehicles on, or otherwise obstruct, any fire lane or emergency access road.

**PART 1162 MEANS OF EGRESS**

**1162.1 General Requirements.** Property subject to the applicability of this Code shall be provided with safe means of egress.

**1162.2 Obstruction**

**1162.2a** Exits shall be maintained to provide free and unobstructed egress from all parts of the building or structure.

**1162.2b** No barrier, lock or fastening device to prevent free escape from any building or structure shall be installed except in institutions where supervisory personnel are constantly on duty and effective provisions are made to remove occupants in case of fire or other emergency.

**1162.2c** Materials shall not be placed, stored, or kept in stairways or corridors.

**1162.2d** No aisle or passageway shall be obstructed so as to reduce its required width as an exit.

**1162.2e** Exit enclosures shall be maintained free of building facilities which could interfere with use as an exit, such as piping for flammable liquids or gases. Interior decorations such as draperies, tapestries, or mirrors shall not be permitted to obscure, conceal, or confuse exit doors or signs or exit passageways.

**1162.2f** Exit access and exit discharge areas shall be so maintained as to provide a permanent, reasonable straight path of travel unimpeded by railings, barriers or gates dividing such areas into sections ancillary to adjoining individual rooms or spaces.

**1162.2g Aisles.** In every portion of a building or area where seats, tables, merchandise, equipment or similar impediments to egress are present, required aisles shall be maintained free of all obstructions. Aisles, corridors or passageways leading directly to every exit shall be created and maintained in open floor areas where exits are not immediately accessible. Except where single exits or limited dead ends are permitted by the building code or other regulations, such aisles shall be arranged as to provide access to at least two remote exits by separate paths of travel.

**1162.3 Exit Lighting and Exit Signs For Other Than Group A Occupancy Classification**

**1162.3a** Interior and exterior exits shall be adequately lighted at all times when a building or structure is occupied.

**1162.3b** Exit signs shall be maintained in a clean and legible condition, unobstructed by decorations, furnishings or equipment and illuminated at all times.

**1162.3c** A sign reading "EXIT", and indicating the direction, shall be placed in every location where the direction of travel to reach the nearest exit is not immediately apparent.

**1162.4 Elevator Warning Signs.** In buildings provided with elevators, warning signs shall be provided and located at elevator landings advising occupants to use stairways during a fire emergency.

### **1162.5 Openings in Fire Walls and Fire Separations**

**1162.5a** Doors and opening protectives in fire walls fire separations and smoke stops shall be maintained in good working order including all hardware necessary for proper operation.

**1162.5b** Fire, exit, stair and smoke stop doors shall be kept closed at all times, except for those equipped with approved automatic releasing hold-open devices installed and maintained in accordance with generally accepted standards.

**1162.5c** Heat actuated self-closing devices shall be prohibited on exit doors, smoke stop doors, and stair doors. The use of door stops, wedges, or other nonautomatic hold-open devices is prohibited for openings in fire wall, fire separations and smoke stops.

### **1162.6 Exterior Egress**

**1162.6a** Exterior stairways, balconies, fire escapes, or ladders shall be free of obstructions.

**1162.6b** Fire escapes shall be maintained free of rust and in a safe and operable condition. Exterior stairway, fire escapes, and access to open space shall be maintained free of ice and snow.

**1162.6c** Portable ladders or window escape ladders shall not be permitted for use as a required exterior means of egress.

**1162.7 Facilities for the Handicapped.** All ramps, doors, handrails, elevator controls, telephones and similar facilities installed for use by the handicapped shall be maintained in a safe and operable condition.

**PART 1163 EQUIPMENT AND SYSTEMS**

**1163.1 General Requirements**

**1163.1a** Heating, electrical, ventilating, air conditioning, refrigerating, fire protection, elevators, escalators or other equipment and systems shall be maintained so that under normal conditions of use such equipment and systems will not be a potential danger to the safety of occupants or a source of ignition.

**1163.1b** Equipment and systems shall be capable of performing their functions satisfactorily without being forced to operate beyond their safe capacity.

**1163.2 Fuel Gas Systems**

**1163.2a** Fuel gas piping systems shall be maintained gastight, safe and operative under conditions of use.

**1163.2b** Gas piping systems shall have at least one accessible manual valve for shutting off all gas supply.

**1163.2c** 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.

**1163.2d** Spaces in which gas meters are located shall be maintained accessible, ventilated and dry.

**1163.2e** Connections to the fuel gas piping systems shall be made so as to prevent gas leaks.

**1163.3 Liquefied Petroleum Gas, Containers and Tanks**

**1163.3a** Liquefied petroleum gas in liquid form shall be stored in accordance with generally accepted standards.

**1163.3b** Liquefied petroleum gas shall be vaporized only as permitted by generally accepted standards.

**1163.3c** Where 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.

**1163.3d** Containers shall be protected against physical damage, and located so as not to be a hazard to the premises served. Containers shall rest on noncombustible supports.

**1163.3e** Liquefied petroleum gases shall be odorized, so that the presence of gas will be recognizable by a distinct odor.

**1163.3f** Safety devices shall be provided to relieve excessive pressure to the outer air, at a safe distance from building openings.

**1163.3g** Shut off valves shall be maintained in safe operating condition.

**1163.3h** Gas service entrance shall be protected from damage by settlement or corrosion. Exposed exterior wall openings located below and within 3 feet of gas service entrance shall be made gastight.

**1163.3i** Loose or piled combustible material and weeds and long dry grass shall not be permitted within 10 feet of any liquified petroleum gas container.

**1163.3j** Suitable means shall be used to prevent the accumulation or flow of flammable liquids under adjacent liquefied petroleum gas containers such as by dikes, diversion curbs or grading.

**1163.3k** The storage, transfer and use of all liquefied petroleum gases and the fire protection features for those areas shall be in accordance with generally accepted standards.

**1163.4 LPG — No Smoking.** Smoking shall be prohibited in the vicinity of all bulk liquefied gas facilities and suitable signs to that effect shall be displayed at each point of entry.

**1163.5 LPG — Tank Paint.** All outside storage tanks shall be suitably painted with a light reflecting color and shall be clearly identified in conformity with the U. S. Department of Transportation Code of Federal Regulations Title 49.

### **1163.6 Fuel Oil Systems**

**1163.6a General Requirements.** Fuel oil shall be stored and conveyed by means of fixed liquid-tight equipment.

#### **1163.6b Storage Tanks.**

**1163.6b-1** Storage tanks above ground shall rest on noncombustible supports that are maintained in a structurally sound condition.

**1163.6b-2** Storage tanks located in areas subject to traffic shall be protected against vehicle damage.

**1163.6b-3** Storage tanks inside buildings shall not be in a damaged or leaking condition.

### **1163.6c Piping**

**1163.6c-1** Means for shutting off fuel flow shall be accessible and maintained in safe operating condition.

**1163.6c-2** Filling, emptying, and venting of tanks shall be by means of fixed piping which shall be located outside of the structure.

**1163.6d Oil Burning Equipment.** There shall be no obstructions to oil burning equipment for the purpose of cleaning heating surfaces, removing burners, replacing motors, controls, air filters, draft regulators and other working parts and for adjusting, cleaning and lubricating parts requiring such attention.

**1163.7 Prohibited Fuel.** Class 1 flammable liquids shall be prohibited as fuel for heating or cooking, except for camping and outdoor use.

### **1163.8 Heating Systems**

**1163.8a General Requirements.** Heating equipment for buildings and structures shall be maintained so as to be safe to persons and property and in accordance with generally accepted standards.

**1163.8b Prohibited Uses.** Use of any stove, oven, furnace, incinerator, boiler or any other heat producing device or appliance found to be defective or which creates an immediate fire hazard or imperils occupants or is not designed for the purpose of heating shall be prohibited.

**1163.8c Air Supply.** Spaces containing fuel-burning equipment shall be provided with air supply for combustion and for ventilation of the enclosure.

**1163.8d Safety Devices.** Safety devices on heat producing equipment and pressure vessels shall not be rendered inoperable and shall be maintained in safe operating condition.

### **1163.8e Storage of Combustible Materials.**

**1163.8e-1** Combustible materials shall not be stored within a required enclosure containing a heat producing device.

**1163.8e-2** If the heat source is not within an enclosure, then combustible materials shall not be stored within 36 inches of such device.

### **1163.9 Chimneys, Flues and Gasvents**

**1163.9a** Chimneys, smokestacks, flues, gasvents, smoke pipes and connectors shall be maintained in accordance with generally accepted standards, so as not to create fire hazard.

**1163.9b** Masonry chimneys which are cracked and which permit smoke or gases to be discharged into the building shall be made safe in accordance with generally accepted standards.

**1163.9c** Metal chimney or vent connectors which leak or are improperly supported shall be repaired or replaced.

**1163.9d** An incinerator or a chimney which emits sparks shall be provided with a spark arrester of noncombustible construction. Spark arresters shall have sufficient total clear area to permit unrestricted passage of flue gases. Openings in spark arresters shall be of such size so as to prevent passage of embers and to minimize clogging by soot.

**1163.9e** If a fire should occur in any chimney, smokestack, flue, gasvent, smokepipe or connector then that item shall be inspected for damage by the Code Enforcement Official before any further use.

### **1163.10 Incinerators and Compactors**

**1163.10a** Service openings for incinerators and compactors shall be maintained in a safe and operable condition to prevent the passage of smoke, flame or gases into the building space.

**1163.10b** Incinerator and compactor rooms shall be secured to prevent tampering by unauthorized persons.

**1163.10c** Incinerator ash compartments shall be maintained clean.

**1163.10d** Discharge of lighted, highly flammable, highly combustible or explosive materials into incinerator or compactor chutes is prohibited.

### **1163.11 Electrical Systems**

**1163.11a** Electrical wiring and equipment shall not be a fire hazard nor a source of ignition for combustible or hazardous substances, materials or devices.

**1163.11b** Electrical wiring and equipment shall be maintained so as to be firmly secured to the surface on which it is mounted.

**1163.11c** Overcurrent protection devices shall be maintained in safe operating condition, shall not be locked or fastened in the "on" position and shall be accessible.

**1163.11d** Grounding of electrical wiring and equipment shall be maintained to provide protection against fire or shock hazards.

**1163.11e** Nonmetallic extension cords shall not be used in place of permanent fixed wiring and the temporary use thereof shall be kept to a minimum.

**1163.11f** Flexible cord and nonmetallic extension cords shall not be run through holes in walls, ceilings or floors; or run through doorways, windows or similar openings; or attached to building surfaces; or concealed behind walls or above ceilings or under floors or floor coverings.

**1163.11g** All exposed wiring shall be enclosed or protected according to applicable generally accepted standards.

**1163.11h** Wiring systems shall be deemed to be a fire hazard when conditions such as but not limited to the following are found:

**1163.11h-1** A switch or receptacle faceplate feels unusually warm or there is a burning odor in their immediate vicinity.

**1163.11h-2** There is a flickering of lights which is not traceable to appliances or obvious external causes.

**1163.11h-3** Any abnormal heating or sparking of any wiring system.

### **1163.12 Commercial Cooking Equipment**

**1163.12a** Exhaust systems provided for commercial cooking equipment shall be maintained in a safe operating condition.

**1163.12b** Hoods, grease removal devices, fans, ducts and other devices shall be maintained clean and free of grease and deposits of residues.

**1163.12c** Fixed automatic fire extinguishing systems for range hoods including component parts shall be maintained in proper operating condition. Manufacturer's instructions for manually operating the system shall be posted conspicuously in the kitchen.

**1163.12d** Fire dampers shall be maintained so as to be operable.

### **1163.13 Fire Protection Equipment**

#### **1163.13a Water Supply**

**1163.13a-1** Water supply tanks shall be maintained watertight, verminproof, rodentproof, resistant to corrosion and protected against freezing.

**1163.13a-2** 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.

**1163.13a-3** Means for emptying water supply tanks shall be maintained in proper working condition.

**1163.13a-4** Water supply tanks for standpipe and sprinkler systems shall be maintained to furnish water in sufficient quantity and pressure for such systems.

**1163.13a-5** Fire department connections shall be conspicuously identified, maintained readily accessible for fire department use, and designed or adapted to fit the equipment specifications of the fire department.

#### **1163.13b Sprinkler Systems**

**1163.13b-1** Sprinkler systems shall be maintained in operative condition, free from mechanical injury, structural failure, water failure, or obstructions. Sprinklers shall be maintained clear and free from corrosion, paint, whitewash and other coatings which impair their operation. Such sprinkler system shall be tested on an annual basis.

**1163.13b-2** Valves controlling water supply to sprinklers shall be secured in the open position or electronically supervised according to generally accepted standards, shall be readily accessible at all times and shall be free of any obstructions.

**1163.13b-3** Supports for piping and equipment shall be structurally sound.

**1163.13b-4** Portions of the system subject to freezing shall be appropriately protected.

**1163.13b-5** Storage of materials shall not interfere with the effective discharge of water from the sprinklers.

**1163.13b-6** Connections to sprinkler systems for other than fire protection shall be prohibited unless acceptable to the Code Enforcement Official.

### **1163.13c Standpipe Systems**

**1163.13c-1** Valves shall be maintained tight against leaks.

**1163.13c-2** Hose shall be properly stored, ready for operation, dry, and free of deterioration.

**1163.13c-3** Hose stations shall be conspicuously identified, located for easy accessibility, and installed to provide for the quick and easy use of equipment.

**1163.13c-4** Valves in the water supply pipe for the standpipe system other than hose station valves shall be open and readily accessible at all times, and shall be free of any obstructions.

### **1163.13d Yard Hydrant Systems**

**1163.13d-1** Connection to hydrants on the distribution system for other than fire protection purposes shall be prohibited unless authorized by the Code Enforcement Official.

**1163.13d-2** Hydrants shall be readily accessible at all times and shall be free of any obstructions including, but not limited to, fencing, vehicles, snow and ice, etc.

**1163.13d-3** All hydrants shall be inspected and tested at least annually to insure the proper operation thereof.

**1163.13d-4** Yard hydrant systems employing outside fire hose shall have said hose properly stored so as to be readily accessible and protected from the weather.

### **1163.13e Portable Fire Extinguishers**

**1163.13e-1** The provision for installation of, and maintenance of portable fire extinguishers shall be in accordance with this Chapter and the generally accepted standards.

**1163.13e-2** Fire extinguishers shall be required in accordance with the hazards involved and with generally accepted standards.

**1163.13e-3** Portable fire extinguishers shall be appropriate as to type, size and location, listed by a nationally accepted testing laboratory, and shall be

in their designated location and clearly visible, except that they may be located in an enclosure or recess conspicuously identified as containing a fire extinguisher.

**1163.13e-4** Portable fire extinguishers shall be maintained in a proper operating condition at all times.

**1163.13f Fire Alarm Systems.**

**1163.13f-1** Fire alarm systems shall be maintained in a proper operating condition.

**1163.13f-2** Fire alarm boxes shall not be obstructed and shall be in full view at all times.

**1163.13f-3** Proper instructions for use of fire alarm boxes shall be conspicuously posted in the immediate vicinity of each alarm box.

**1163.13f-4** Unless directly connected to a central station alarm service, municipal alarm system or local manned fire alarm dispatch station, a clearly legible sign shall be posted above each box stating: "LOCAL ALARM ONLY — NOT CONNECTED TO FIRE DEPARTMENT — CALL FIRE DEPARTMENT BY TELEPHONE."

**1163.13g Fire and Smoke Detectors.** Heat, smoke and flame detectors, and similar devices, shall be maintained in a proper operating condition.

**1163.13h Foam and Chemical Fire Extinguishing Systems.** Foam and chemical fire extinguishing systems shall be appropriate for their intended use and shall be maintained in a proper operating condition.

**1163.14 Elevator Equipment.**

**1163.14a** Elevator hoistways and pits shall be maintained free of rubbish or other debris.

**1163.14b** Elevator machine rooms shall be maintained free of oil and grease, including oily and greasy clothes, rags, and other combustible materials, and shall not be used for storage of articles or materials unnecessary for maintenance of equipment. Flammable liquids shall not be kept in machine rooms.

**1163.15 Hoistways and Shafts.**

**1163.15a** Exterior access openings to above-grade hoistways and shafts shall be clearly and permanently marked to indicate that such access opens on a hoistway or shaft.

**1163.15b** All interior access openings to hoistways and shafts which are of sufficient size to allow a person to enter shall be clearly and permanently marked to indicate that such access opens on a hoistway and shaft and shall be adequately protected against accidental entry.

**1163.16 Combustible Cooling Towers.** Access to combustible cooling towers shall be maintained free of obstructions which could interfere with fire fighting activities.

**1163.17 Swimming Pools.**

**1163.17a** Swimming pool disinfection and auxiliary equipment, using materials capable of giving off irritating, toxic, or flammable fumes, shall be maintained in a safe operating condition. Such materials shall be stored in a dry, oil free, ventilated area.

**1163.17b** Buildings or rooms used for storage of chlorine gas shall be labelled with a clearly legible and conspicuous sign stating "DANGER-NO SMOKING-CHLORINE GAS STORAGE."

**1163.18 Sewage and Storm Drainage.** Volatile, flammable liquids and substances which will produce explosive mixtures shall not be discharged into sewage and storm drainage systems.

**1163.19 Commercial Ovens.** Controls for ventilation, fuel, temperature and conveyors shall be maintained in safe operating condition.

**PART 1164 SPECIAL PROPERTY USES OR CONDITIONS**

**1164.1 General Requirements.**

**1164.1a** This section provides regulations for public safety from the hazards of fire which may result from special property uses or conditions.

**1164.1b** These regulations apply in addition to other applicable regulations of this Article.

**1164.2 Assembly Spaces.**

**1164.2a** The maximum number of occupants permitted within assembly spaces shall be established by the code enforcement official, shall be conspicuously posted in each space, and shall not be exceeded.

**1164.2a-1** For the purpose of determining the maximum number of persons, divide the net floor area for the assembly space by the appropriate value for floor area per person shown in table VII-765. If multiple uses occur within the net floor area, the maximum number of persons is the sum of persons computed from the table for the respective portions of the net floor area.

**1164.2a-2** In any case the occupant load shall not exceed the capacity of the means of egress.

**1164.2b** It is the responsibility of the manager or person in charge to assure that the occupant load does not exceed the number established by the code enforcement official.

**1164.2c** No person shall fail to leave or vacate any premises which exceed the maximum occupant load, when told to do so by the management of the premises, the code enforcement official or their authorized designee.

**1164.2d** No decorative material shall be used which, as applied, will ignite or support combustion or allow burning particles to drop.

**1164.2e** Screens for projection of pictures and stage curtains shall be of noncombustible material or materials treated and maintained to be fire resistant.

**1164.2f** No apparatus in which combustible or flammable fuels in portable containers are used in the preparation of foods, refreshments or other materials, shall be permitted in a lobby, exitway, corridor, foyer or auditorium of a place of assembly.

### **1164.3 Self-Service Stations, Regular Service Stations and Garages.**

#### **1164.3a Storage and Handling.**

**1164.3a-1** All new equipment, piping, tanks electrical systems and dispensers shall be installed and maintained according to generally accepted standards.

**1164.3a-2** All existing equipment, piping, tanks electrical systems, and dispensers shall be in compliance with the requirements specified in section 1164.3a-1 except they may be permitted to continue in use if they do not constitute a distinct hazard to life or property.

**1164.3a-3** Class I and Class II liquids storage shall not be permitted within a regular service station, self-service station or garage containing a pit, basement or depressed area, unless adequate ventilation is provided to

prevent the accumulation of flammable vapors. All possible sources of ignition in the pit area should be eliminated or properly protected to assure that the ignition of vapors does not occur.

**1164.3a-4** Handling of Class I and Class II liquids in open containers is prohibited.

**1164.3a-5** Portable containers for Class I and Class II liquids shall be made of metal or suitable listed unbreakable material. Such containers shall have a spring or screw type cover with a spout or other design to prevent spilling when poured.

**1164.3a-6** Accurate daily product inventory and water level records shall be maintained and recorded on all Class I and Class II liquid storage tanks for indication of possible leakage from tanks or piping. The records shall be kept at the premises, available for inspection by the code enforcement official, and shall include as a minimum, records showing by product, daily comparison between sales, use, receipts, and inventory on hand. If there is more than one system consisting of a tank serving separate pump or dispenser for any product, the comparison shall be maintained separately for each tank system.

**1164.3a-7** No sale or purchase of any Class I, Class II or Class III liquids shall be made in containers unless such containers are clearly marked with the name of the product contained therein.

**1164.3a-8** Crankcase drainings and similar liquids shall not be dumped into sewers, streams, or adjoining property, but shall be stored temporarily in tanks or drums outside the building until removed from the premises.

#### **1164.3b Dispensing of Class I and Class II Liquids.**

**1164.3b-1** Dispensers shall be maintained to prevent leakage or accidental discharge.

**1164.3b-2** Remote master control devices, to shut off all pumps in the event of an emergency, shall be accessible and properly identified as pump shut-off controls.

**1164.3b-3** Dispenser hoses shall be of a type with automatic self-closing nozzles.

**1164.3b-4** Impact valves, which close automatically in the event of fire or severe impact, shall be maintained in safe operating condition. The automatic closing features of this valve shall be checked at the time of initial installation and at least once a year thereafter by tripping the hold-open device.

**1164.3b-5** There shall be no smoking, welding, burning, or open flames in the areas used for fueling, servicing fuel systems for internal combustion engines, or receiving or dispensing of Class I or II liquids. The motors of all equipment being fueled shall be shut off during the fueling operations.

**1164.3b-6** Warning signs shall be conspicuously posted in the dispensing areas incorporating the following or equivalent wording: Warning: It is unlawful and dangerous to dispense gasoline into unapproved containers. No Smoking. Stop Motor.

**1164.3b-7** Listed portable fire extinguishers of an appropriate type and with a rating of not less than 10 BC shall be provided at regular service stations and garages dispensing Class I and Class II liquids. Extinguishers shall be located so that an extinguisher will be within 100 feet of each pump, dispenser, underground fill pipe opening, and lubrication or service room.

**1164.3b-8** Each regular service station and garage which is open to the public shall have an attendant or supervisor on duty whenever the station is open for business.

**1164.3b-9** Listed "self-service" dispensing devices are permitted at regular service stations and garages. The areas containing such devices shall meet the requirements specified in 1164.3c.

**1164.3b-10** Dispensing of liquids at private locations, where the dispensing equipment is not open to the public, does not require an attendant or supervisor. Such location may include a card or key controlled dispenser, however, coin operated dispensers are prohibited.

**1164.3b-11** A hose nozzle valve used for dispensing Class I and Class II liquids into a portable container shall be manually held open during the dispensing operation.

### **1164.3c Dispensing of Class I or Class II Liquids at Self-Service Gas Stations.**

**1164.3c-1** All self-service gas stations, in addition to the requirements specified in this section, shall meet the requirements of 1164.3b.

**1164.3c-2** All self-service gas stations shall have at least one attendant on duty while the station is open to the public. The attendant's primary function shall be to supervise, observe, and control the dispensing of Class I and II liquids while said liquids are actually being dispensed.

**1164.3c-3** It shall be the responsibility of the attendant to: prevent the dispensing of Class I and II liquids into portable containers not in

compliance with 1164.3a-4 and 1164.3a-5; control sources of ignition; and immediately handle accidental spills and fire extinguishers if needed. The attendant or supervisor on duty shall be mentally and physically capable of performing the functions and assuming the responsibility prescribed in this section.

**1164.3c-4** Operating instructions shall be conspicuously posted in the dispensing area.

**1164.3c-5** The dispensing area shall at all times be in clear view of the attendant, and the placing or allowing of any obstacle to come between the dispensing area and the attendant control area shall be prohibited. The attendant shall at all times be able to communicate with persons in the dispensing area.

**1164.3c-6** Latch hold open devices on hose nozzle valves are prohibited.

#### **1164.4 Bulk Plants and Terminals.**

**1164.4a** The storage and handling of Class I, II, and III liquids in buildings, bulk plants, terminals, loading and unloading facilities shall be in accordance with generally accepted standards.

**1164.4b** All heating systems, ventilation systems, electrical equipment, and fire extinguishing systems located in buildings, bulk plants, terminals, loading and unloading facilities shall be installed, operated, and maintained in accordance with generally accepted standards.

#### **1164.5 Abandonment or Removal of Any Class I, II and III Liquid Storage Tank.**

**1164.5a** Storage tanks rendered temporarily out of service for a period of 30 days to one year shall be made safe by capping the fill line, gage opening, and pump suction and securing against tampering.

**1164.5b** Storage tanks not placed back in service within one year must be removed or abandoned in place with proper safeguarding.

**1164.5c** All storage tanks abandoned in place shall be made safe by removing flammable or combustible liquids from the tank and connecting lines; disconnecting the suction, inlet, gage, and vent lines; filling the tanks completely with an inert, solid material and capping the remaining piping.

**1164.5d** All storage tanks removed from their location shall be made safe by removing flammable or combustible liquids from the tank and connecting

lines, disconnecting the suction, inlet, gage, and vent lines, removing sections of connecting lines not to be used further, and capping or plugging inlets, outlets, and leaks, if any.

**1164.5e** The code enforcement official shall be notified by the owner of the storage tanks whenever tanks are rendered temporarily out of service, abandoned in place or removed.

**1164.5f** All storage tanks disposed of as junk shall be rendered free of hazardous vapors.

**1164.5g** Above ground tanks which have been removed shall not be reinstalled until the tank has been appropriately cleaned, repaired if necessary, tested and made corrosion resistant. These tanks shall not be used for underground storage.

**1164.5h** Underground tanks which have been removed from the ground shall not be used for the storage of any Class I, II or III liquid or any other hazardous chemical, unless approved by code enforcement official and reinstalled according to generally accepted standards.

**1164.5i** In cases where tanks are either rendered "temporarily out of service" or permanently abandoned, records shall be supplied to the code enforcement official of tank size, location, date of abandonment, and method used for placing the abandoned tank in a safe condition.

## **1164.6 Dry Cleaning Plants**

### **1164.6a General Requirements.**

**1164.6a-1** This section shall apply to dry cleaning plants, including coin-operated self-service establishments, using solvents classified as non-flammable.

**1164.6a-2** Dry cleaning plants using combustible or flammable liquids in quantities exceeding 4 gallons shall be maintained in accordance with generally accepted standards.

**1164.6b Ventilation.** Exhaust systems shall be maintained so as to adequately limit solvent vapor concentration within the plant.

**1164.6c Pumps and Piping.** Pumps, pipes, valves, fittings, and solvent handling equipment shall be maintained free from leaks.

**1164.6d Spotting Operations.** Flammable or combustible liquids used for spotting operations shall be in safety cans or not more than one gallon

capacity with an aggregate amount not exceeding 4 gallons. Flammable or combustible liquids shall be prohibited in coin-operated self-service establishments.

#### **1164.7 Bowling Establishments.**

**1164.7a** Lane resurfacing operations shall not be commenced until such time that the Code Enforcement Official and the Fire Chief are notified.

**1164.7b** Lane resurfacing operations shall be carried on in a safe manner and shall not be carried on while the establishment is open for business. During such operations, proper ventilation shall be provided; heating, ventilating, or cooling systems employing recirculation of air shall not be operated; electric motors or other equipment which might be a source of ignition shall be shut down; and smoking shall be prohibited.

**1164.7c** Pin refinishing operations involving the application of flammable finishes shall be conducted in a room designed for this type of operation and under conditions conforming with the requirements of paragraph b of this section.

**1164.7d** Power tools used in connection with resurfacing or refinishing operations shall be effectively grounded, or of a double-insulated type. Safety receptacles shall be used for storing and disposing of dust and other residual matter from the operations of lathes, sanding and buffing machines.

**1164.7e** Flammable or combustible liquids for use in resurfacing or refinishing operations shall be appropriately stored and shall not exceed 60 gallons of storage, either in original metal containers or in individual 5 gallon maximum capacity safety containers.

#### **1164.8 Lumber Yards.**

**1164.8a** Lumber shall be stored in piles which are neat, stable and appropriately spaced.

**1164.8b** Driveways between and around lumber piles shall be wide enough to accommodate apparatus of the fire department rendering service, and shall be maintained free from accumulation of rubbish, equipment and other articles or materials.

**1164.8c** Lumber yards shall be maintained and operated in accordance with generally accepted standards.

**1164.9 Tents and Air-Supported Structures.**

**1164.9a** Tents and air-supported structures including decorative materials shall be of flame resistive materials or materials treated and maintained to be fire resistant.

**1164.9b** Operating pressure shall be maintained at the appropriate level to assure structural stability and to avoid excessive distortion during high wind or snow loads.

**1164.9c** Doors shall not be left open under any condition during high winds. Use of doors in air-supported structures shall be controlled to avoid excessive air loss.

**1164.9d** Hay, straw, shavings or similar combustible materials shall be prohibited within any tent or air-supported structure used for assembly other than that necessary for the daily feeding and care of animals. Sawdust and shavings may be used for a public performance or exhibit when kept damp. Combustible materials shall not be permitted under stands or seats at any time. The area within and adjacent to the tent or air-supported structure shall be maintained clear of combustible material or vegetation which may constitute a fire hazard.

**1164.9e** Open-flame devices shall not be allowed inside or within 20 feet of the tent or air-supported structures unless approved by the code enforcement official.

**1164.10 Tire Rebuilding Plants**

**1164.10a** Dust collecting equipment for buffing operations shall be maintained in safe operating condition.

**1164.10b** Adequate ventilation shall be maintained in rooms where rubber cement is used or mixed or where flammable or combustible solvents are applied.

**1164.11 Vehicle Wrecking Yards, Junk Yards and Waste Material Handling Plants.**

**1164.11a** Access for fire department equipment to yard areas, including areas where stripped vehicle bodies are stored, shall be unobstructed.

**1164.11b** Where permitted, burning of wrecked or discarded vehicles or any parts thereof, or junk or any waste material, shall be performed in a safe manner.

**1164.11c** In waste material picking rooms the exhaust system for removal of dust and lint shall be maintained in proper operating condition.

**1164.11d** Fuel tanks in junked vehicles shall be drained and fuel shall be stored in containers conforming to 1164.3a-5.

**1164.12 Airports, Heliports and Helistops.**

**1164.12a** No dispensing, transfer or storage of flammable or combustible liquids shall be permitted inside of any building or structure except as provided in part 1171.

**1164.12b** Every aircraft hangar, where jet aircraft are housed, shall be equipped and maintained with metal drip pans under the engines of all aircraft stored or parked therein, and contents shall be disposed of in a safe and timely manner.

**1164.12c** Open flame, flame-producing device or other source of ignition shall not be permitted in any hangar, except in approved locations prescribed by the code enforcement official.

**1164.12d** "NO SMOKING" signs shall be provided in accordance with section 1191.1.

**1164.12e** Repairing of aircraft requiring the use of open flames, spark producing devices or the heating of parts shall be done in a safe manner.

**1164.12f** Portable fire extinguishers shall be appropriate as to type, size and location, shall be in their designated location and clearly visible. Portable fire extinguishers shall be maintained in an operating condition at all times.

**1164.12g** Landing areas on structures shall be maintained so as to confine any flammable liquid spillage to the landing area only, and provision shall be made to drain such spillage away from exitways servicing the landing area or from structures housing such exitways.

**1164.12h** Refueling aircraft shall not be permitted on the rooftop of any structure.

**1164.12i** Any regulation not specifically contained herein pertaining to airports, aircraft hangers and appurtenant operations, shall comply with generally accepted standards.

**1164.13 Piers, Wharves and Marine Terminals.**

**1164.13a** Covers for nozzle openings in the pier deck for substructure fire protection shall be accessible and easily removable.

**1164.13b** Combustible pier members shall be kept free of excessive oil accumulation.

**1164.13c** Trusses, girders and other structural members shall be maintained free of combustible materials.

**1164.14 Marinas and Boatyards.** Berthing, repairing, painting, paint removal, welding, soldering, cutting, fuel handling and boat storing shall be performed in a manner which minimizes the hazards of fire and in accordance with generally accepted standards.

**1164.15 General Outdoor Storage.**

**1164.15a** Access to all portions of the storage area by fire department equipment shall be unobstructed.

**1164.15b** It shall be prohibited to use salamanders, braziers, portable heaters or open fires in the area of stored combustible material.

**1164.15c** All areas shall be in accordance with generally accepted standards.

**1164.16 Gases in Balloons.** Flammable, oxidizing, toxic, corrosive, or reactive gases shall not be used to inflate balloons of any size or type. For this purpose, air and inert gases lighter than air are acceptable.

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## ARTICLE 3 MATERIALS

## PART 1170 PREVENTION OF FIRE SPREAD

**1170.1 Applicability.** This Part is applicable to the prevention of fire spread resulting from fire, explosion or release of toxic gases arising from the storage, handling or use of combustible or hazardous substances, materials or devices, to provide for public safety and the protection of property therein and there-about.

**1170.2 Materials.** Materials includes products with the following characteristics:

- Burn with extreme rapidity
- Produce dust subject to explosion or spontaneous combustion
- Produce poisonous fumes or gases, or
- Explode

## PART 1171 FLAMMABLE AND COMBUSTIBLE LIQUIDS

**1171.1 General Requirements.**

**1171.1a** This Part shall apply to flammable and combustible liquids.

**1171.1a-1** Flammable liquids, having a flash point below 100° F and having a vapor pressure not exceeding 40 pounds per square inch absolute at 100° F, shall be known as Class I liquids, and shall be subdivided as follows:

- (i) Class IA shall include those having flash points below 73° F and having a boiling point below 100° F
- (ii) Class IB shall include those having flash points below 73° F and having a boiling point at or above 100° F
- (iii) Class IC shall include those having flash points at or above 73° F and below 100° F

**1171.1a-2** Combustible liquids, having a flash point at or above 100° F, shall be subdivided as follows:

- (i) Class II liquids shall include those having flash points at or above 100° F and below 140° F.
- (ii) Class IIIA liquids shall include those having flash points at or above 140° F and below 200° F.

(iii) Class IIIB liquids shall include those having flash points at or above 200°F.

**1171.1b** Listed fire extinguishing equipment shall be provided where flammable or combustible liquids are stored, handled or used, in accordance with generally accepted standards.

**1171.1c** Where flammable vapors are present, precautions shall be taken to prevent ignition by eliminating or controlling sources of ignition, which may include open flames, lightning, smoking, cutting and welding, hot surfaces, frictional heat, sparks, spontaneous ignition, chemical and physical-chemical reactions and radiant heat.

**1171.1d** Containers having a capacity of 10 gallons or more, and equipment used for flammable liquids, shall be electrically bonded or grounded during transfer or liquids.

**1171.1e** Mechanical ventilation to prevent the dangerous accumulation of vapors and to remove such vapors to a safe location shall be maintained in safe operating condition, and shall not in itself constitute a fire hazard.

**1171.1f** Cans or containers which contain flammable liquids, and are offered for sale, shall comply with 1164.3a-5, shall be provided with a warning label painted or printed on the container stating that the contents are flammable, and shall be kept away from heat or open flame.

## **1171.2 Storage Tanks.**

**1171.2a** All storage tanks shall be installed, protected and maintained in accordance with generally accepted standards.

**1171.2b** Storage tanks above ground shall rest on supports that are in a structurally sound condition and protected against loss of structural stability by heat or fire.

**1171.2c** Storage tanks located in areas subject to traffic shall be protected against vehicle damage.

**1171.2d** Storage tanks shall not be in a damaged or leaking condition.

**1171.2e** Pressure relief devices are required on storage tanks and shall be maintained in safe operating condition so as to relieve excessive internal pressure.

**1171.3 Portable Tanks and Containers.**

**1171.3a General Requirements.** This section shall apply to the storage and dispensing of flammable or combustible liquids in drums or other containers not exceeding sixty gallons individual capacity and those portable tanks not exceeding six hundred sixty gallons individual capacity.

**1171.3b Storage Inside Buildings.**

**1171.3b-1** Flammable or combustible liquids shall not be stored in exits, stairways or areas normally used for the egress of people.

**1171.3b-2** Upon presentation of satisfactory proof that storage of flammable or combustible liquids in metal containers would affect their chemical purity or result in excessive corrosion of the container, the Code Enforcement Official may approve other containers such as glass.

**1171.3b-3** The storage of Class I, Class II or Class III liquids in closed containers shall comply with the following paragraphs, except that the Code Enforcement Official may impose a quantity limitation or require greater protection where unusual hazard to life or property is involved, or he may authorize an increase of these amounts where the type of construction, fire protection provided, or other factors, substantially reduce the hazard.

- (i) **A1, A2 Occupancies, including attached and detached garages.** Storage in excess of 6½ gallons shall be prohibited, not including fuel oil for oil burner service.
- (ii) **B1, B2, B3, B4, C5 Occupancies, except schools, colleges and similar places of education.** Storage in excess of ten gallons shall be in containers stored in a storage cabinet or in safety cans or in an inside storage room not having an opening communicating with that portion of the building used by the public. Storage quantities shall be limited to that required for building and equipment operation or maintenance not including fuel oil for oil burner service. In B1 and B3 occupancies the storage of Class I and Class II liquids shall be prohibited in tenant storage spaces.
- (iii) **C1 Occupancies.** Storage shall be prohibited except that which is required for maintenance and operation of building and operation of equipment. Such storage shall be kept in closed metal containers stored in a storage cabinet or in safety cans or in an inside storage room not having a door that opens into that portion of the building used by the public.
- (iv) **C2 Occupancies.** In rooms or areas accessible to the public storage shall be limited to quantities needed for display and normal mer-

chandising purposes but shall not exceed two gallons per square foot of gross floor area. The gross floor area used for computing the maximum quantity permitted shall be considered as that portion of the store actually being used for merchandising flammable and combustible liquids.

Where the aggregate quantity of additional stock exceeds sixty gallons of Class IA, one hundred twenty gallons of Class IB, one hundred eighty gallons of Class IC, two hundred forty gallons of Class II, or five hundred gallons of combustible liquids or any combination of flammable liquids exceeding two hundred forty gallons, it shall be stored in a room or portion of the building that complies with the construction provisions for an inside storage room as provided in 1171.3b-5.

Containers in display area shall not be stacked more than three feet or two containers high, whichever is greater, unless on fixed shelving or otherwise satisfactorily secured.

Shelving shall be of stable construction, of sufficient depth and arrangement such that containers displayed thereon shall not be easily displaced.

(v) **C3 Occupancies.**

(a) **Storage.** Flammable or combustible liquids shall be stored in tanks, closed containers or approved safety cans.

(b) **Tanks.** Flammable or combustible liquids stored in tanks shall conform to the applicable requirements of section 1171.2.

(c) **Dispensing**

(1) Class I flammable liquids shall be dispensed only in an inside storage and handling room, or from approved safety cans, or original containers in rooms designed for such use.

(2) Flammable and combustible liquids shall be dispensed by approved pumps taking suction through the top of the container. Alternate methods may be approved by the Code Enforcement Official.

(3) Class I flammable liquids shall not be dispensed within a room or building which contain sources of ignition. Dispensing devices shall be provided with iron or steel valves where compatible with the liquid handled. There shall be in addition to the outlet value, a secondary control device or valve outside of the immediate area, by which the flow may be stopped in the event of fire or other accident at the outlet. Outlet valves, where practicable, shall be of the self-closing type.

- (4) Class I flammable liquids shall not be run into containers unless the nozzle and container are electrically interconnected. Where the metallic floor plate on which the container stands while filling is electrically connected to the fill stem or where the fill stem is bonded to the container during filling operations by the means of a bond-wire, the provisions of this section shall be deemed to have been complied with.
- (d) **Ventilation.** Buildings or other enclosures in which flammable or combustible liquids are stored in open systems and processes shall be provided with ventilation sufficient at all times to prevent accumulation of flammable vapors.
- (e) **Sources of Ignition.** Open flames, heating devices and processes employing temperatures capable of igniting vapors of the flammable liquids used, shall be prohibited in buildings, rooms or other confined spaces in which Class I flammable liquids are used in the open or in which Class II or III liquids are used for the purpose of saturating, coating or otherwise treating goods or materials. Electrical devices shall be of a type approved for such locations and shall comply with the applicable provisions of the generally accepted standards. Smoking shall be prohibited and signs with the wording, "NO SMOKING" shall be displayed.
- (f) **Fire Control and Maintenance**
- (1) Fire extinguishers shall be provided where flammable or combustible liquids are used or dispensed. The number of type of extinguishers shall be as provided in generally accepted standards.
- (2) Access for fire equipment shall be provided by unobstructed aisles.
- (3) In buildings or other confined spaces in which flammable or combustible liquids are stored, no combustible waste materials shall be allowed to accumulate.
- (4) Flammable or combustible liquids shall not be dumped on the ground, into sewers, drainage ditches or storm drains, but shall be stored in tanks or tight drums outside of any building until removed from the premises. Leaking containers shall be removed or repaired.
- (vi) **C4.1 and C4.2 Occupancies.** Storage shall be in accordance with Table I-1171 and in buildings or in portions of such buildings separated by approved fire walls. Materials creating no fire exposure hazard to the flammable or combustible liquids may be stored in the same area.

- (vii) **C4.3 Occupancies.** If a storage building is located fifty feet or less from a building or line of adjoining property that may be built upon, the exposing wall shall be a blank wall having a fire resistance rating of at least two hours. In particular installations, the distance requirements between the storage building and other buildings may be altered at the discretion of the Code Enforcement Official after consideration of the height, size and character of construction and occupancy of the exposed buildings. At the discretion of the Code Enforcement Official, approved self-closing fire doors suitable for Class D openings may be installed in an approved manner on the otherwise blank walls. If these requirements are not met, then storage shall be in accordance with table I-1171.

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TABLE I-1171 INDOOR CONTAINER STORAGE<sup>1</sup>

CLASS LIQUID	STORAGE LEVEL	PROTECTED STORAGE <sup>2</sup> MAXIMUM PER PILE <sup>3</sup>		UNPROTECTED STORAGE MAXIMUM PER PILE <sup>3</sup>	
		GALLONS	HEIGHT	GALLONS	HEIGHT
IA	Ground & Upper Floors	2,750	3 ft.	660	3 ft.
	Basement	NOT PERMITTED		NOT PERMITTED	
IB	Ground & Upper Floors	5,500	6 ft.	1,375	3 ft.
	Basement	NOT PERMITTED		NOT PERMITTED	
IC	Ground & Upper Floors	16,500	6 ft.	4,125	3 ft.
	Basement	NOT PERMITTED		NOT PERMITTED	
II	Ground & Upper Floors	16,500	9 ft.	4,125	9 ft.
	Basement	5,500	9 ft.	NOT PERMITTED	
Combustible	Ground & Upper Floors	55,000	15 ft.	13,750	12 ft.
	Basement	8,250	9 ft.	NOT PERMITTED	

<sup>1</sup> Aisles shall be provided so that no container is more than twelve feet from an aisle. Main aisles shall be at least eight feet wide, and side aisles at least four feet wide.

<sup>2</sup> An automatic sprinkler or equivalent fire-protection system installed in accordance with the applicable generally accepted standards.

<sup>3</sup> When two or more classes of materials are stored in a single pile, the maximum gallonage permitted in that pile shall be the smallest of the two or more separate maximum gallonages.

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(viii) **C5 and C6 Occupancies.**

- (a) Storage shall be limited to that required for maintenance, demonstration, treatment, and laboratory work not including fuel oil for oil burner service. All liquids in laboratories and at other points of use shall meet the following storage provisions:
- (b) No glass or approved plastic container shall exceed the capacity requirements of Table II-1171, and safety cans shall not exceed two gallons capacity.
- (c) Not more than ten gallons of flammable or combustible liquids not in safety cans, plus twenty-five gallons in safety cans, shall be stored outside of a storage cabinet or storage room.
- (d) Quantities of flammable and combustible liquids in excess of those set forth in this section shall be stored in an inside storage room or storage cabinet.

**TABLE II-1171 MAXIMUM ALLOWABLE SIZE OF CONTAINERS AND PORTABLE TANKS**

CONTAINER TYPE	FLAMMABLE LIQUIDS				COMBUSTIBLE LIQUIDS CLASS II
	CLASS IA	CLASS IB	CLASS IC	CLASS II	
Glass (or approved plastic)	1 pt.	1 qt.	1 gal.	1 gal.	1 gal.
Metal (other than DOT Drums)	1 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Safety Cans	2 gal.	5 gal.	5 gal.	5 gal.	5 gal.
Metal Drums (DOT Spec.)	60 gal.	60 gal.	60 gal.	60 gal.	60 gal.
Approved Portable Tanks	660 gal.	660 gal.	660 gal.	660 gal.	660 gal.
Polyethylene DOT Spec. 34, or as authorized by DOT Exemption	1 gal.	5 gal.	5 gal.	60 gal.	60 gal.

- (ix) **Mixed Occupancies.** The maximum amount stored in mixed occupancy buildings shall be the most restrictive amount of the individual occupancy requirements. The code enforcement official may authorize an increase of this amount when the construction, fire resistance rating of assemblies, fire protection provided, or other factors substantially reduce the hazard.

**1171.3b-4 Storage Cabinets.** Not more than 120 gallons of flammable or combustible liquids may be stored in a storage cabinet. No individual container may exceed five gallons capacity.

**1171.3b-5 Storage in Inside Storage Rooms.**

- (i) Storage shall only be allowed when the inside storage room is in compliance with Table III-1171.

**TABLE III-1171 STORAGE OF FLAMMABLE OR COMBUSTIBLE LIQUIDS IN CLOSED CONTAINERS IN INSIDE STORAGE ROOMS**

AUTOMATIC EXTINGUISHING <sup>1</sup> SYSTEM PROVIDED	FIRE RESISTANCE	MAXIMUM SIZE	TOTAL ALLOWABLE QUANTITIES GALS./SQ. FT. OF FLOOR AREA
YES	2 hour	500 sq. ft.	10
NO	2 hour	500 sq. ft.	4
YES	1 hour	150 sq. ft.	5
NO	1 hour	150 sq. ft.	2

<sup>1</sup> Fire protection system shall be sprinkler, water spray, carbon dioxide or other system approved by the Code Enforcement Official and in accordance with generally accepted standards.

- (ii) Inside storage rooms shall contain at least one aisle with a minimum width of three feet. Storage shall be no closer than three feet to ceiling or automatic sprinklers.
- (iii) Containers over thirty gallons capacity shall not be stacked one upon the other. Containers under thirty gallons capacity shall not be stacked more than three feet high, unless safely secured.
- (iv) The dispensing of flammable or combustible liquids shall be by approved pumps taking suction through the top of the container or other approved method.

**1171.3c Outside Storage.**

**1171.3c-1** Storage of over one hundred drums of Class I liquids shall be limited to groups of one hundred drums, located at least sixty feet from the nearest main building or line of adjacent property that may be built upon, and each group shall be separated by at least forty feet. Storage of over three hundred drums of Class II or III liquids shall be limited to groups of three hundred drums located at least fifty feet from the nearest building or line of adjoining property that may be built upon, and each group shall be separated by at least thirty feet. These distances may be reduced fifty percent if sprinklers, and drainage away from exposures, are provided.

**1171.3c-2** The drum storage shall be located to prevent runoff or drainage toward other storage or buildings. The distance of not less than fifteen feet shall be maintained between the liquid storage and any combustible material. Signs shall be posted prohibiting open flames and smoking. Fences or other control measures shall be provided where necessary to protect against tampering or trespassers.

**1171.3c-3** Storage of flammable or combustible liquids in closed containers in quantities of five thousand gallons or less outside of buildings shall be located with respect to buildings or line of adjoining property which may be built upon in accordance with Table IV-1171. Distances may be reduced with respect to warehouses and industrial buildings of noncombustible or fire-resistive construction, provided that the distances to property lines as set forth in Table IV-1171 are maintained.

**TABLE IV-1171 STORAGE OF FLAMMABLE OR COMBUSTIBLE LIQUIDS IN CLOSED CONTAINERS OUTSIDE OF BUILDINGS**

CLASS LIQUID	QUANTITY IN GALLONS	DISTANCE FROM BUILDINGS <sup>1</sup> OR LINE OF ADJOINING PROPERTY WHICH MAY BE BUILT UPON, IN FEET
I	1 to 150 (3 drums)	15
	150 to 500 (3 drums to 10 drums)	25
	500 to 5,000 (10 to 100 drums)	50
II, III	1 to 150 (3 drums)	5
	150 to 500 (3 to 10 drums)	10
	500 to 5,000 (10 to 100 drums)	30

<sup>1</sup> In occupancies where the public is invited or permitted, the distances shall be doubled.

**1171.3c-4** A distance of not less than fifteen feet shall be maintained between the liquid storage and any combustible material.

**1171.3c-5 Portable Tank Storage.** Portable tank storage shall not exceed the limitations set forth in Table V-1171.

**TABLE V-1171 OUTDOOR PORTABLE TANK STORAGE<sup>1,2</sup>**

Class Liquid	Maximum Per Pile Gallons	Distance Between Piles	Distance To Property Line That Can Be Built Upon <sup>3,4</sup>	Distance To Public Way, Street, Alley <sup>4</sup>
IA	2,200	5 ft.	20 ft.	10 ft.
IB	4,400	5 ft.	20 ft.	10 ft.
IC	8,800	5 ft.	20 ft.	10 ft.
II	17,600	5 ft.	10 ft.	5 ft.
Combustible	44,000	5 ft.	10 ft.	5 ft.

<sup>1</sup> When two or more classes of materials are stored in a single pile, the maximum gallonage in that pile shall be the smallest of the two or more separate gallonages.

<sup>2</sup> Within 150 feet of each portable tank, there shall be a twenty foot wide access way to permit approach of fire control apparatus.

<sup>3</sup> The distances listed apply to properties that have protection for exposures as per 1171.3b-3(vii). If there are exposures, and such protection for exposures does not exist, the distances shall be doubled.

<sup>4</sup> When total quantity stored does not exceed fifty percent of maximum per pile, the distances may be reduced fifty percent, but not less than three feet.

**1171.3c-6 Empty Containers.** Tanks and containers when emptied shall have the covers or plugs immediately replaced in openings.

#### **1171.3c-7 Fire Control.**

- (i) Suitable fire control devices such as small hose or listed portable fire appliances shall be available at locations where flammable or combustible liquids are stored.
- (ii) Where sprinklers are required they shall be installed in accordance with generally accepted standards.
- (iii) Open flames, smoking and other sources of ignition shall not be permitted in flammable or combustible liquid storage rooms.
- (iv) Materials which will react with water or other liquids to produce a hazard shall not be stored in the same room with flammable or combustible liquids.

#### **1171.4 Dip Tanks.**

**1171.4a** The ventilation, electrical installation, fire protection and construction of dip tanks shall be maintained in accordance with generally accepted standards.

**1171.4b** Dip tanks with hold open covers shall be equipped with a fusible link so as to enable the cover to automatically close in the case of fire.

**1171.4c** Covers shall be kept closed when tanks are not in use.

**1171.4d** Areas in the vicinity of dip tanks shall be kept free of combustible debris.

**1171.4e** Waste or rags used in connection with dipping operations shall be deposited in self-closing metal cans after use.

**1171.4f** Ventilating system interlocks shall be maintained so that the failure of the ventilating fan shall automatically stop any dipping conveyor system.

### **1171.5 Spray Finishing.**

**1171.5a** All spray areas shall be kept free from the accumulation of deposits of combustible residues. If residue accumulates to excess in booths, duct or duct discharge points or other spray areas, then all spraying operations shall be discontinued until conditions are corrected.

**1171.5b** Spray booths shall be readily accessible on all sides for cleaning. Area shall be kept free from storage or combustible construction.

**1171.5c** Discarded filter pads and filter rolls shall be removed to a safe, well-detached location or placed in a water-filled metal container.

### **1171.6 Electrostatic Apparatus.**

**1171.6a** This section shall apply to electrostatic equipment used in connection with paint spraying operations.

**1171.6b** The installation and use of electrostatic spraying equipment shall conform to generally accepted standards and the provisions of section 1171.5.

**1171.6c** Transformers, power packs, control apparatus and other electrical portions of the equipment, with the exception of high voltage grids and electrostatic atomizing heads and their connections, shall be located outside the spraying or vapor areas.

**1171.6d** A space of at least twice the sparking distance shall be maintained between goods painted and fixed electrodes, electrostatic atomizing heads or conductors. A suitable sign stating the sparking distance shall be conspicuously posted near the assembly.

**1171.6e** Power disconnects and ventilation interlocks shall be maintained in safe operating condition.

**1171.6f** Booths, fencing, railings or guards shall be placed around the equipment so that a safe isolation of the process is maintained. Such enclosures shall be of conductive material suitably grounded.

**1171.6g** Signs shall be posted designating process zones as a fire hazard.

**1171.6h** Insulators, drip plates and screens shall be kept clean and dry.

### **1171.7 Dry Cleaning.**

**1171.7a** This section shall apply to dry cleaning plants using solvents, classified as flammable or combustible, in excess of 4 gallons.

**1171.7b** The installation, use, operation and maintenance of dry cleaning plants as defined above shall be in accordance with generally accepted standards.

**1171.7c** Pumps, pipes, valves, fittings and solvent handling equipment shall be maintained free from leaks.

**1171.7d** Emergency drainage system shall be maintained in a safe operating condition.

**1171.7e** Dry cleaning equipment shall be electrically grounded.

**1171.7f** Stills shall be maintained liquid-tight and gas-tight.

**1171.8 Automobile Undercoating.** Automobile undercoating spray operations utilizing Class I liquids shall comply with the applicable provisions of Part 1171.

## **PART 1172 COMBUSTIBLE FIBERS**

### **1172.1 General Requirements**

**1172.1a** This Part shall apply to readily ignitable and free burning fibers, such as, but not limited to, cotton, sisal, henequen, ixtle, jutes, hemp, tow, cocoa fibers, oakum, rags, waste, cloth, waste paper, kapok, hay, straw, spanish moss, excelsior, synthetic fibers and other like materials, but shall not be applicable to nonresidential farm buildings.

**1172.1b** Portable fire extinguishers of an appropriate type shall be provided in storage areas.

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**1172.1c** Smoking and/or carrying of lighted cigarettes, pipes and cigars is prohibited in areas containing combustible fibers.

**1172.1d** Not less than 3 feet clearance shall be maintained between tops of piles and sprinkler heads or ceiling, whichever is lower.

**1172.1e** Combustible fibers shall be stored with adequate clearance from adjacent construction to allow for expansion when wet.

**1172.1f** Trucks or automobiles, other than appropriate industrial tractors and mechanical handling equipment, shall not enter any fiber storage room or building, but may be used at loading platforms.

**1172.2 Loose Storage**

**1172.2a** Loose combustible fibers, not in suitable bales or packages, whether housed or in the open, shall not be stored within 100 feet of a building except as hereinafter specified.

**1172.2b** Quantities less than 100 cubic feet of loose combustible fibers may be kept in a building, provided storage is in a metal or metal-lined bin equipped with a self-closing cover.

**1172.2c** Quantities exceeding 100 cubic feet of loose combustible fibers, but not exceeding 500 cubic feet, shall be stored in appropriate rooms or compartments with appropriate doors, to minimize fire hazard.

**1172.2d** Quantities exceeding 500 cubic feet of loose combustible fibers shall be stored in appropriate vaults located inside or outside buildings.

**1172.3 Baled Storage.** No single block or pile shall contain more than 25,000 cubic feet of fiber. Blocks or piles of baled fiber shall be separated from adjacent storage by aisles not less than 5 feet wide, or by appropriate fire barriers of noncombustible materials.

**PART 1173 DUST****1173.1 General Requirements**

**1173.1a** This Part shall apply to dust, consisting of pulverized particles of any material which, if mixed with air in the proper proportions, becomes explosive or may be ignited by a flame or spark.

**1173.1b** Listed portable fire extinguishers of an appropriate type shall be provided in dust-producing and dust-handling areas in accordance with generally accepted standards.

**1173.1c** Smoking and/or the carrying of lighted cigarettes, pipes and cigars and the carrying of matches or cigarette or cigar lighters is prohibited in dust-producing or dust-handling areas.

**1173.1d** The use of an open-flame device, or spark-producing equipment, is prohibited in areas containing dust-handling operations, except as may be permitted in accordance with generally accepted standards.

**1173.1e** Equipment, used to prevent the entrance of foreign materials, which may cause sparks to be generated shall be installed and be maintained in a safe operating condition.

**1173.1f** Machinery and metal parts of crushing, drying, pulverizing and conveying systems shall be electrically grounded and bonded.

**1173.1g** The accumulation of dust in quantities sufficient to create a fire or explosion hazard on electric motors, walls, ledges, or other interior surfaces, or on the roof of a building on which dust may settle, is prohibited.

**1173.1h** Dust collection systems shall be maintained so as to prevent hazardous accumulations of dust.

**1173.1i** Casings and enclosures for dust-producing or dust-handling machinery and conveyors shall be maintained dust-tight.

**1173.1j** All electrical equipment in areas where there is dust-producing or dust-handling machinery shall be maintained in accordance with generally accepted standards.

## **PART 1174 HAZARDOUS MATERIALS**

### **1174.1 General Requirements**

**1174.1a** This Part shall apply to materials, not otherwise covered in this Chapter, which are highly flammable or which may react to cause fires or explosions, or which, by their presence create or augment a fire or explosion hazard, or which because of the toxicity, flammability or liability to explosion render fire fighting abnormally dangerous or difficult; also to flammable or combustible liquids which are chemically unstable and which may spontaneously form explosive compounds or undergo spontaneous reactions of

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explosive violence or with sufficient evolution of heat to be a fire hazard. Hazardous chemicals shall include such materials as flammable solids, corrosive liquids, radioactive materials, oxidizing materials, potentially explosive chemicals, highly toxic materials and poisonous gases.

**1174.1b** The manufacture, storage, handling and use of hazardous chemicals shall be safeguarded in accordance with generally accepted standards.

**1174.1c** The Code Enforcement Official may require the separation or isolation of any chemical that in combination with other substances may bring about fire or explosion or may liberate a flammable or poisonous gas. The Code Enforcement Official may require separation from other storage, occupancies or buildings when the quantity stored constitutes a material hazard.

**1174.1d** All chemicals shall be properly stored as per manufacturer's recommendations or generally accepted standards.

**1174.1e** Defective containers which permit leakage or spillage shall be disposed of, repaired or replaced in accordance with recognized safe practices. No spilled material shall be allowed to accumulate on floors or shelves.

**1174.1f** The material used to absorb or clean up any spillage or leakage shall be disposed of properly.

**1174.1g** Containers or packages for retail trade shall be stored neatly and orderly, and shelves shall be of substantial construction.

**1174.1h** Legible, clearly visible warning signs and/or placards shall be posted at all entrances to locations where hazardous chemicals are stored, processed or used as per requirements of the Code Enforcement Official when in amounts equal to or greater than table I-1174.

TABLE I-1174 WARNING SIGN REQUIREMENTS

Materials	Requirements
Explosives and Blasting Agents	any amount
Poison Gas	any amount
Poison and Irritant	any amount
Flammable Liquid	over 5 gallons inside a building and over 10 gallons outside a building
Flammable Solid	any amount
Flammable Gas	over 2,000 cubic feet at normal temperature
Nonflammable Gas	over 6,000 cubic feet at normal temperature
Oxidizer	over 50 pounds
Organic Peroxide	over 10 pounds
Combustible Liquid	over 25 gallons inside a building and over 60 gallons outside a building
Radioactive Material	any amount
Corrosive Material	over 55 gallons
Dangerous When Wet Material	any amount
Etiologic Material	any amount

**1174.1i** The management or owner of any building or facility where the amounts of hazardous materials exceed those on Table I-1174 shall annually report the quantity and locations of those hazardous materials to the Fire Chief and the Code Enforcement Official. This section shall not apply to Group A occupancies or to agricultural buildings located in conjunction with Group A buildings or to hazardous materials used for heating systems when the storage is under 1,200 gallons inside any occupancy.

#### **1174.2 Corrosive Liquids**

**1174.2a** Corrosive liquids shall include liquids and their vapors that cause destruction of human tissue or have a severe corrosion rate on steel, aluminum or other metals.

**1174.2b** Provisions for containing and neutralizing or safely flushing away leakage of corrosive liquids which may occur during storage, handling or use shall be provided and be maintained in a safe operating condition.

### **1174.3 Flammable Solids**

**1174.3a** Flammable solids shall include any solid material, other than an explosive, which is liable to cause fires through friction, absorption of moisture, spontaneous chemical changes, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious hazard.

**1174.3b** Flammable solids shall be stored, handled and used in a manner which will minimize fire hazard. Storage, handling and the use of combustible metals shall be in accordance with generally accepted standards.

**1174.4 Highly Toxic Materials.** Drainage facilities and natural or mechanical ventilation for rooms in which highly toxic materials are stored, handled or used shall be provided and be maintained in a safe operating condition.

### **1174.5 Oxidizing Material**

**1174.5a** Oxidizing materials shall include a substance that yields oxygen readily to stimulate the combustion of organic matter.

**1174.5b** Oxidizing materials shall be stored in cool, dry, ventilated locations and separated from stored organic materials.

**1174.5c** Oxidizing materials shall be stored separately from flammable liquids, flammable solids, combustible materials, hazardous chemicals, corrosive liquids and such other noncompatible materials.

**1174.5d** Bulk oxidizing materials shall not be stored on or against wooden surfaces.

### **1174.6 Poisonous Gases**

**1174.6a** Poisonous gases shall include gases of such nature that a very small amount of the gas mixed with air is dangerous to life.

**1174.6b** Storage of poisonous gases shall be in rooms having natural or mechanical ventilation adequate to remove leaking gas. Such ventilation shall not discharge to a point where the gases may be a hazard.

### **1174.7 Radioactive Materials**

**1174.7a** Radioactive materials shall include any material, or combination of materials, that spontaneously emits ionizing radiation, and having a specific activity greater than 0.002 microcuries per gram.

**1174.7b** Legible, clearly visible signs warning of radiation dangers shall be placed at entrances to areas or rooms where radioactive materials are used or stored. In addition, each container in which radioactive materials are used or stored shall bear a label depicting the radiation hazard.

**1174.7c** When not in use, radioactive materials shall be kept in adequately shielded fire-resistant containers of such design that the gamma radiation will not exceed two hundred milliroentgens per hour or equivalent at any point on the surface.

#### **1174.8 Unstable Chemicals**

**1174.8a** Unstable chemicals shall be stored in appropriate containers so as to minimize breakage, leakage, or rupture of containers upon exposure to heat or water which may result in fire, explosion, or other dangerous reaction.

**1174.8b** Unstable chemicals shall not be stored in basements or below ground level.

**1174.8c** Smoking and/or the carrying of lighted cigarettes, pipes, and cigars is prohibited in or near areas where unstable chemicals are used, processed or stored.

**1174.8d** Unstable chemicals shall be kept away from heat-producing appliances and electrical devices and shall be protected from external heat.

**1174.8e** Electric bulbs shall be equipped with guards to prevent breakage.

**1174.8f** Internal combustion motor vehicles or lift trucks shall not be parked or stored in the room or compartment where such chemicals are located.

### **PART 1175 COMPRESSED GASES**

#### **1175.1 General Requirements**

**1175.1a** This Part shall apply to gases in a state exceeding 40 pounds per square inch absolute at 70° Fahrenheit, or 104 pounds per square inch absolute at 130° Fahrenheit and includes but is not limited to bulk oxygen, hydrogen, flammable anesthetics, nonflammable medical gases and anhydrous ammonia.

**1175.1b** Compressed gases shall be stored, handled, and used in accordance with generally accepted standards.

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**1175.1c** Cylinders, pressure vessels or containers shall be identified as to the gas contained therein.

**1175.1d** Compressed gas cylinders in storage or in service shall be secured to prevent falling or being upset and shall be protected against tampering by unauthorized persons.

**1175.1e** Storage tanks and cylinders located in areas subjected to traffic, shall be protected against vehicle damage.

**1175.1f** Compressed gas cylinders when not being used shall have their protective caps in place over the valve assembly.

**1175.1g** All outside storage tanks shall be suitably painted with a light reflecting color and shall be clearly identified in conformity with the U.S. Department of Transportation Code of Federal Regulations Title 49.

**1175.2 Bulk Oxygen**

**1175.2a** Bulk oxygen storage systems shall include oxygen stored in quantities of more than 20,000 cubic feet (566M<sup>3</sup>) of oxygen (NTP) including unconnected reserves on hand at the site.

**1175.2b** Bulk oxygen storage systems shall be deemed to terminate at the point where oxygen at the service pressure first enters the supply line.

**1175.2c** Bulk oxygen storage systems shall be located above ground out of doors, or shall be installed in a building of noncombustible construction, adequately vented and used for that purpose exclusively.

**1175.2d** Bulk oxygen storage system locations shall be permanently placarded to indicate: "OXYGEN — NO SMOKING — NO OPEN FLAMES", or an equivalent warning. Smoking or open flames in such locations shall be prohibited.

**1175.2e** Bulk oxygen storage systems shall not be located beneath electric power lines or close to piping for flammable or combustible liquids or piping for other flammable gases.

**1175.2f** Bulk oxygen storage systems near above ground flammable or combustible liquid storage, indoors or outdoors, shall be located on ground higher than the flammable or combustible liquid storage except when dikes, diversion curbs, grading, or separating solid walls are used to prevent accumulation of such liquids under the bulk oxygen storage system.

**1175.2g** Legible operating instructions shall be maintained at locations which require operation of equipment by the user.

**1175.2h** The area within 15 feet of any bulk oxygen storage container shall be kept free of weeds, dry vegetation and combustible material including asphalt.

**1175.2i** Bulk oxygen storage container shall not be placed on or above an area paved with asphalt or similar material.

### **1175.3 Hydrogen**

**1175.3a** This section shall apply to hydrogen which is delivered, stored and discharged to consumer piping and shall be deemed to terminate at the point where hydrogen first enters the consumer distribution piping.

**1175.3b** The hydrogen storage location shall be permanently placarded as follows: "HYDROGEN — FLAMMABLE GAS — NO SMOKING — NO OPEN FLAMES" or equivalent. Smoking or open flame in such locations shall be prohibited.

**1175.3c** Mobile hydrogen supply units shall be electrically bonded to the system before discharging hydrogen.

**1175.3d** Hydrogen systems shall not be located beneath electric power lines or close to piping for flammable liquids or piping for other flammable gases.

**1175.3e** Hydrogen systems near above ground flammable liquid storage shall be located on ground higher than the flammable liquid storage except when dikes, diversion curbs, grading, or separating solid walls are used to prevent accumulation of such liquids under the hydrogen system.

**1175.3f** The area under and within 15 feet of any hydrogen container shall be kept free of weeds, dry vegetation and combustible material.

**1175.3g** Hydrogen systems installed on consumer premises shall be inspected annually and maintained by a qualified representative of the equipment owner.

**1175.3h** Legible operating instructions shall be maintained at locations which require operation of equipment by the user.

### **1175.4 Flammable Anesthetics**

**1175.4a** Flammable anesthetics shall include, but not limited to, cyclopropane, divinyl ether, ethyl chloride, ethyl ether, trifluoro-ether, and ethylene.

**1175.4b** Extreme caution shall be observed in areas where flammable anesthetics are used so as to prevent electric sparks or discharge of static electricity.

**1175.4c** Smoking, open flames or hot materials in excess of 180° Fahrenheit shall be prohibited in areas containing flammable anesthetics.

**1175.4d** Piping systems shall not be used.

**1175.4e** Storage areas for flammable anesthetics shall not be used for any other purpose.

**1175.4f** Flammable anesthetics shall not be stored beyond the self-life date established by the manufacturer. All such materials shall be properly disposed of.

### **1175.5 Nonflammable Medical Gases**

**1175.5a** Nonflammable medical gases are gases for therapeutic purposes and include oxygen, nitrous oxide, medical compressed air, carbon dioxide, helium, nitrogen, and mixtures of such gases when used for medical purposes.

**1175.5b** Storage locations for oxygen and nitrous oxide shall be kept free of flammable or combustible materials including oil or grease.

**1175.5c** The main supply line for piping systems shall be provided with an identified shutoff valve so located as to be accessible in an emergency.

**1175.5d** Smoking shall be prohibited in supply system enclosures.

### **1175.6 Anhydrous Ammonia**

**1175.6a** Anhydrous ammonia containers shall be located outside of buildings or if within buildings shall be located in areas especially intended for this purpose.

**1175.6b** Anhydrous ammonia containers shall be located at least 50 feet from a dug well or other sources of potable water supply, unless the container is a part of a water treatment installation.

**1175.6c** The area surrounding a refrigerated ammonia tank or group of tanks shall be provided with drainage, or shall be diked to prevent accidental discharge of liquid from spreading to uncontrolled areas.

**PART 1176 EXPLOSIVES, AMMUNITION AND BLASTING AGENTS****1176.1 General Requirements**

**1176.1a** This Part shall apply to explosives, ammunition, blasting agents, and pyrotechnics, except that nothing in this Part shall be construed as applying to the following material listed in 1176.1a-1, 1176.1a-2, 1176.1a-3, 1176.1a-4, 1176.1a-5, 1176.1a-6, 1176.1a-7 and 1176.1a-8:

**1176.1a-1** Such material used by the Armed Forces of the United States or the State Militia.

**1176.1a-2** Explosives in forms prescribed by the official United States pharmacopeia.

**1176.1a-3** Fireworks.

**1176.1a-4** Small arms ammunition or special industrial explosive devices for personal or industrial use.

**1176.1a-5** Quantities of smokeless propellant not exceeding twenty pounds total for hand loading of small arms and small arms ammunition for personal use.

**1176.1a-6** Quantities of black powder not exceeding five pounds total for use in firing of antique firearms or artifacts or replicas thereof.

**1176.1a-7** Quantities of small arms primers and percussion caps not exceeding 10,000 total for use in initiating smokeless propellant and black powder for the said uses.

**1176.1a-8** Fifteen pounds or less of explosives or blasting agents, exclusive of smokeless propellants in educational, governmental or industrial laboratories for instruction or research purposes when under direct supervision of experienced competent persons.

**1176.1a-9** Explosives, ammunition and blasting agents of the United States Bureau of Mines, the Federal Bureau of Investigation, the United States Secret Service, and police and fire departments acting in their official capacity.

**1176.1b** Listed fire extinguishing equipment shall be provided where explosives, ammunition or blasting agents are manufactured or stored.

**1176.1c** Smoking, matches, spark producing devices and open flames shall be prohibited where explosive material is stored, handled or used, and within 50 feet of magazines.

**1176.1d** Explosive material, including special industrial explosive material and any newly developed and unclassified explosives, shall be stored in magazines. This shall not be construed as applying to wholesale and retail stocks of small arms ammunition, fuse lighters, fuse igniters and safety fuses in quantities involving less than 500 pounds of explosive material; nor shall it apply to explosive-actuated power devices, when employed in construction operations in populated areas, in quantities involving less than 50 pounds of explosive material.

**1176.1e** Magazines shall be located an appropriate distance from buildings, structures, railroads and highways commensurate with the type and quantity of explosives stored.

**1176.1f** Magazines shall be kept locked except when being inspected or when explosives are being placed therein or being removed therefrom.

**1176.1g** Magazines shall be kept clean, dry and free of grit, paper, empty packages and rubbish.

**1176.1h** Combustible materials shall not be stored within 50 feet of magazines.

**1176.1i** The land surrounding magazines shall be kept clear of brush, dried grass, leaves, trash and debris for a distance of at least 25 feet.

**1176.1j** Blasting caps, electric blasting caps, detonating primers and primed cartridges shall not be stored in the same magazine with other explosives.

**1176.1k** Blasting agents separate from explosives shall be stored in an area free from debris and empty containers. Spilled material shall be cleaned up promptly and safely removed.

**1176.1l** Sale or display of explosives or blasting agents on highways, sidewalks, public property or in places of assembly is prohibited.

**1176.1m** Explosives shall not be transported on public conveyances.

**1176.1n** Vehicles used for transporting explosives shall be in accordance with the United States Department of Transportation Code of Federal Regulations Title 49. Smoking, carrying matches, flame-producing devices, firearms or loaded cartridges shall be prohibited while in or near a vehicle transporting explosives.

**1176.1o** Wherever explosives regulated by this Part are stored or manufactured, legible, clearly visible warning signs or placards shall be displayed. Locations of such signs shall be established by the code enforcement official.

**PART 1177 FIREWORKS****1177.1 General Requirements**

**1177.1a** Requirements for fireworks shall be governed by sections 270.00 and 405.00 of the Penal Law of the State of New York.

**1177.1b** The manufacture and storage of fireworks shall be in accordance with generally accepted standards and other applicable laws.

**PART 1178 MATERIAL FOR WELDING AND CUTTING**

**1178.1 General Requirements.** This Part shall apply to oxygen, and fuel gas such as acetylene, hydrogen, natural gas, liquefied petroleum gas and other gases which are used for oxy-fuel gas welding or cutting; electric arc welding or cutting; and acetylene generators and calcium carbide.

**1178.2 Welding and Cutting**

**1178.2a** Appropriate fire extinguishing equipment shall be provided where welding or cutting is to be performed. Sprinklers subject to fusing from heat due to welding or cutting shall be temporarily shielded, with valves to remain open.

**1178.2b** Welding or cutting shall not be performed in or near rooms or locations where flammable gases, liquids or vapors, lint, dust or loose combustible stocks are present unless suitably protected when sparks or hot metal from the welding or cutting operations may cause ignition or explosion of such materials.

**1178.2c** Welding or cutting shall not be performed on containers and equipment which contain or have contained flammable liquids, gases or solids until these containers and equipment have been thoroughly cleaned or inerted or purged.

**1178.2d** When welding or cutting operations are performed above, or within 35 feet of combustible construction or material exposed to the operation, or within 35 feet of floor, ceiling or wall openings, the following shall be provided:

**1178.2d-1** Combustible construction or material shall be wetted down or protected by noncombustible shields or covers from possible sparks, hot metal or oxide.

**1178.2d-2** Floor, ceiling or wall openings shall be protected by noncombustible shields or covers.

**1178.2d-3** A fire watch shall be provided to watch for fires, make use of portable fire extinguishers or fire hose and perform similar fire prevention and protection duties. The fire watch shall remain for at least 30 minutes after the welding or cutting operations have been completed to insure that no fire exists.

### **1178.3 Oxy-Fuel Gas Welding and Cutting**

**1178.3a** Fuel gas cylinders stored inside of buildings, except those in actual use or attached ready for use, shall be limited to a total capacity of 2,000 cubic feet of gas or 300 pounds of liquefied petroleum gas. Storage exceeding 2,000 cubic feet total gas capacity of cylinders or 300 pounds of liquefied petroleum gas shall be in a separate room, or cylinders shall be stored outside or in a separate building.

**1178.3b** Oxygen cylinders stored inside buildings shall be separated from fuel gas cylinders or combustible materials by a minimum distance of 20 feet or by an appropriate noncombustible barrier. Temporary use of single oxygen cylinders adjacent to single gas cylinders to facilitate normal welding and cutting operation shall be permitted.

**1178.3c** Cylinders stored inside of buildings shall be located where they will not be exposed to excessive rise in temperature, physical damage or tampering by unauthorized persons.

**1178.3d** Separate rooms or buildings for fuel gas storage shall be ventilated and heating shall be by indirect means.

**1178.3e** Where caps are provided for valve protection, such caps shall be in place except when cylinders are in service or connected ready for service. Empty cylinders shall have their valves closed while in storage.

**1178.3f** Pressure regulators, valves and hose shall be maintained gastight and in safe operating condition, and when used for oxygen, shall be kept free from oil or grease.

**1178.3g** The use of liquid acetylene is prohibited.

**1178.3h** The aggregate capacity of fuel gas cylinders connected to one manifold inside a building shall not exceed 3,000 cubic feet of gas or 300 pounds of liquefied petroleum gas. More than one such manifold may be located in the same room provided the manifolds are at least 50 feet apart.

**1178.3i** A fuel gas manifold connected to cylinders having an aggregate capacity of more than 3,000 cubic feet of gas or 300 pounds of liquefied petroleum gas shall be located outside, in a separate building or in a separate room.

**1178.3j** The aggregate capacity of oxygen cylinders connected to one manifold inside a building shall not exceed 6,000 cubic feet. More than one such manifold may be located in the same room provided the manifolds are at least 50 feet apart.

**1178.3k** An oxygen manifold connected to cylinders having an aggregate capacity of more than 6,000 cubic feet shall be located outside, in a separate building, or in a separate room.

**1178.3l** Cylinders shall be kept in an upright position and properly secured to a fixed object or portable cart designed for this use.

#### **1178.4 Electric Arc-Welding and Cutting**

**1178.4a** The frame or case of electric arc-welding or cutting machines, except those powered by an internal combustion engine, shall be grounded. Suitable ground connections shall be provided and maintained.

**1178.4b** When not in use electric arc-welding or cutting equipment shall be disconnected from any separate power source.

#### **1178.5 Acetylene Generator Houses and Rooms**

**1178.5a** Buildings in which acetylene generators are located shall not exceed one story in height except that they may be installed on the top floor or roof of a multi-or single-story building. Generators shall be enclosed in a separate room of at least two hour rating.

**1178.5b** Explosion venting for generator houses and generator rooms shall be provided and arranged in a manner so as not to be a hazard to life or property. Adequate ventilation shall be maintained.

**1178.5c** Heating shall be by indirect means. Heating by flame or fire shall be prohibited.

**1178.5d** Electrical wiring and equipment in generator houses or generator rooms shall be maintained in safe operating condition.

**1178.5e** Sources of ignition shall be prohibited in generator houses or generator rooms.

**1178.5f** Operating instructions shall be posted in a conspicuous place near the generator or kept in a suitable place available for ready reference.

### **1178.6 Calcium Carbide Storage**

**1178.6a** Calcium carbide shall be contained in appropriate metal containers with a screw top or equivalent and be water- and air-tight. Containers shall be conspicuously marked: "CALCIUM CARBIDE — DANGEROUS IF NOT KEPT DRY" or with equivalent markings.

**1178.6b** Storage of calcium carbide inside buildings shall be in a dry, waterproof and well-ventilated location.

**1178.6c** Calcium carbide not exceeding 600 pounds may be stored inside buildings or in the same room with fuel gas cylinders.

**1178.6d** Calcium carbide exceeding 600 pounds but not exceeding 5,000 pounds shall be stored in an inside generator room or outside generator house, or in a separate room of at least two hour rated construction, in a one-story building which may contain other occupancies, but without cellar or basement beneath the carbide storage section. These rooms shall be used for no other purpose.

**1178.6e** Calcium carbide in excess of 5,000 pounds shall be stored in appropriate one-story buildings without cellar or basement and used for no other purpose, or in appropriate outside generator houses.

**1178.6f** Calcium carbide in unopened metal containers may be stored outdoors. Storage areas shall be at least 10 feet from adjoining property.

## **PART 1179 FUMIGANTS AND THERMAL INSECTICIDAL FOGGING LIQUIDS**

### **1179.1 General Requirements**

**1179.1a** This Part shall apply to substances such as methyl bromide, ethylene dibromide hydrogen cyanide, carbon disulphide and sulfuryl fluoride, but not limited to them, which by themselves or in combination with other substances emit or librate gases, fumes or vapors used for the destruction or control of insects, fungi, vermin, germs, rodents or other pests and shall be distinguished from insecticides and disinfectants which are essentially effective in the solid or liquid phases.

**1179.1b** Fires, open flames, smoking or other sources of ignition shall be prohibited in the space under fumigation or thermal insecticidal fogging. Heating shall be by indirect means with steam or hot water. Electricity shall be shut off except circulating fans may be used provided such equipment is designed and installed so as not to create an ignition hazard.

**1179.1c** Warning signs indicating the danger, type of chemical to be used, and recommended precautions, shall be posted at entrances to premises where fumigants will be used.

**1179.1d** It is prohibited to use Class I flammable liquids in fumigating and insecticidal operations.

**1179.1e** For thermal insecticidal fogging indoors, not more than one gallon of insecticide shall be used for each 50,000 cubi feet of space. Fog shall not be directed against combustible objects or materials.

**1179.1f** At the end of the exposure period, fumigators shall safely and properly ventilate the premises and contents, and properly dispose of all containers, residues, debris, and other materials used for such operations.

**1179.1g** The code enforcement and fire official shall be notified in writing at least twenty-four hours before any building, structure, ship or other transport vehicle is to be closed in connection with the use of any toxic or flammable fumigant.

## **PART 1180 FRUIT RIPENING GAS**

### **1180.1 General Requirements**

**1180.1a** This Part shall apply to ethylene gas used in fruit ripening.

**1180.1b** Appropriate fire extinguishing equipment shall be provided where ethylene gas is stored, handled, or used.

**1180.1c** Containers other than those connected for use shall be stored outside or in a special building except that not more than two portable containers meeting Department of Transportation specifications not connected for use may be stored inside the building.

**1180.1d** Equipment used to introduce ethylene gas shall be maintained in operating condition and shall limit the ethylene level to a non-hazardous concentration.

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**1180.1e** Open flame heaters, open lights and smoking shall not be permitted in ripening rooms.

**1180.1f** Fruit ripening rooms shall be kept free of unnecessary combustible materials.

**1180.1g** Ethylene piping shall be of iron pipe. Flexible hose and connectors when used shall be of the approved type. Tubing shall be of copper or brass with not less than forty-nine thousandths of an inch wall thickness.

**PART 1181 MATCHES****1181.1 General Requirements**

**1181.1a** Matches shall not be stored in piles exceeding 10 feet in height, or 1,500 cubic feet in volume.

**1181.1b** Storage in cases shall be no closer than 10 feet from an exit, open stairway, elevator shaft opening or any other vertical shaft opening.

**1181.1c** Matches shall be stored on shelves no closer than 10 feet from heaters and furnances.

**1181.1d** Upon removal from shipping containers, matches stored in bulk shall be in metal or metal-lined bins equipped with self-closing covers.

**1181.1e** Appropriate fire extinguishing equipment shall be provided where matches are manufactured or stored in bulk.

**PART 1182 POWDER COATINGS****1182.1 General Requirements**

**1182.1a** This Part shall apply to finely ground particles of protective finishing material applied in dry powder form by means of a fluidized bed, electrostatic fluidized bed, powder spray guns, or electrostatic powder spray guns.

**1182.1b** Exhaust ventilation shall be sufficient to maintain the atmosphere below the minimum explosive concentration for the material being applied. All nondeposited air-suspended powders shall be safely removed via exhaust ducts to the powder recovery receptacle.

**1182.1c** All areas shall be kept free of the accumulation of powder coating dusts, particularly on surfaces such as ledges, beams, pipes, hoods, booths and floors.

**1182.1d** Surfaces shall be cleaned in such manner as to avoid scattering of dust or creating dust clouds. Vacuum sweeping equipment approved for use in hazardous locations shall be used.

**1182.1e** Smoking shall be prohibited and NO SMOKING signs shall be conspicuously posted at all powder coating areas and storage rooms.

**1182.1f** Where interlock devices are provided so that electrical equipment cannot be operated unless the ventilation fans are in operation, such devices shall be maintained in safe operating condition.

## PART 1183 MAGNESIUM

### 1183.1 General Requirements

**1183.1a** This Part shall apply to the storage, processing or handling of magnesium in pure metal form as well as alloys of which magnesium is a major part.

**1183.1b** Appropriate fire extinguishing equipment shall be provided where magnesium is stored, handled or used. A supply of extinguishing powder in a substantial container with a hand scoop or shovel for applying powder on magnesium fires, or an extinguisher unit designed for use with such powder, shall be kept within easy reach of every operator performing a machining, grinding or other processing operation on magnesium.

**1183.1c** Smoking is prohibited in areas where magnesium is stored, handled, or used.

**1183.1d** Storage of magnesium pigs, ingots and billets outside shall be in piles not exceeding 1,000,000 pounds each and adequately separated from combustibles or other piles.

**1183.1e** Inside storage shall be on floors of noncombustible construction and in groups no larger than 500,000 pounds each.

**1183.1f** Magnesium dust in a dry state shall not be allowed to collect on or contact high speed moving parts.

**1183.1g** Interlocks that shut off dust-producing machines in the event of improper functioning of the collector system shall be maintained in safe operating condition.

**1183.1h** Electrical grounding of equipment shall be maintained continuously.

**1183.1i** Chips, turnings, and other fine magnesium scrap shall be placed in a covered, vented steel container and removed to a safe location on a daily basis.

**1183.1j** Magnesium filings shall be kept separate from other combustible materials.

## **PART 1184 ORGANIC COATINGS**

### **1184.1 General Requirements**

**1184.1a** Organic coatings shall be stored, manufactured, handled, and used in accordance with generally accepted standards.

**1184.1b** This section shall apply to liquid mixtures of binders such as alkyd, nitrocellulose, acrylic or oil, and flammable and combustible solvents such as hydrocarbon, ester, ketone or alcohol, which when spread in a thin film convert to a durable protective and decorative finish.

**1184.1c** Appropriate fire extinguishing equipment shall be provided where organic coatings are stored, handled or used.

**1184.1d** Smoking, open flames and heating equipment containing ignition sources shall be prohibited in areas where organic coatings are stored, handled or used.

**1184.1e** Mechanical ventilation to prevent the dangerous accumulation of vapors and to remove such vapors to a safe location shall be maintained in a safe operating condition, and shall not in itself constitute a fire hazard.

**1184.1f** Empty containers previously used for flammable or combustible liquids shall be removed to a safe location outdoors and, if not cleaned, removed from premises and disposed of in an appropriate manner.

**1184.1g** Drainage facilities provided to direct flammable and combustible liquid leakage and fire protection water to a safe location, away from buildings, structures, storage areas or adjoining property, shall be properly maintained in a safe operating condition.

**1184.1h** Bonding and grounding for tanks, machinery and piping shall be maintained electrically conductive.

**1184.1i** Spilled nitrocellulose shall be swept up, put into a pail of water, and disposed of.

**1184.1j** Solvent pump shut-off switch shall be maintained in operable condition to shut off pump in case of fire.

## **PART 1185 ORGANIC PEROXIDES**

### **1185.1 General Requirements**

**1185.1a** Organic peroxides, their storage, handling and use shall be in accordance with generally accepted standards and manufacturer's safe practices.

**1185.1b** Organic peroxides shall be kept away from all sources of heat including steam pipes, radiators, open flames, sparks and solar radiation. Smoking shall be prohibited in areas where organic peroxides are stored, handled or used.

**1185.1c** Non-sparking tools shall be used in any area where organic peroxides are stored, mixed, or applied.

**1185.1d** Dusts or overspray residues resulting from the sanding or spraying of finishing materials containing organic peroxides shall not be mixed with other materials.

**1185.1e** Spilled peroxides shall be promptly removed so there are no residues, and disposed of in a safe manner such as in accordance with the manufacturer's recommendation.

## **PART 1186 CRYOGENIC LIQUIDS**

### **1186.1 General Requirements**

**1186.1a** This Part shall apply to, but is not limited to, the storage, handling and use of flammable cryogenic liquids, liquid oxygen, and cryogenic oxidizers, having a boiling point of minus 200° Fahrenheit or below.

**1186.1b** The manufacture, storage, use and handling of cryogenic fluids shall be in accordance with generally accepted standards.

**1186.1c** Containers, valves and piping shall be readily accessible for inspection and repair, and protected against tampering.

**1186.1d** Warning labels and signs shall be posted on containers and equipment.

**1186.1e** Dispensing of flammable cryogenic liquids, liquefied oxygen or liquid oxidizers shall be only at appropriate locations. Water lines and hose shall be provided for cleaning and melting.

**1186.1f** Flammable cryogenic liquid, liquid oxygen or cryogenic oxidizers shall not be loaded, unloaded, dispensed or handled where vapors can reach a source of ignition. Smoking shall be prohibited. Loading, unloading, and dispensing of oxygen shall not be permitted in the vicinity of loading, unloading, or dispensing of gaseous or liquid fuel.

## **PART 1187 CELLULOSE NITRATE (PYROXYLIN) PLASTICS**

### **1187.1 General Requirements**

**1187.1a** This Part shall be applicable to raw cellulose nitrate (pyroxylin) plastics and to articles made from this material. For cellulose nitrate film, see Part 1188. For guncotton or other explosives having cellulose nitrate as a base, see Part 1176.

**1187.1b** Appropriate fire extinguishing equipment shall be provided where raw pyroxylin plastics are stored, handled or used.

**1187.1c** Smoking, open flames and heating equipment containing ignition sources shall be prohibited in areas containing raw cellulose nitrate (pyroxylin) plastics.

### **1187.2 Raw Cellulose Nitrate (Pyroxylin) Plastics**

**1187.2a** Where raw material in excess of 25 pounds is received in a building, an appropriately vented cabinet or vented and sprinklered vault shall be provided for the storage of the material.

**1187.2b** Not more than 1,000 pounds of raw material shall be stored in cabinets in any one workroom, and not more than 500 pounds in any one cabinet, nor more than 250 pounds in one compartment.

**1187.2c** Raw material in excess of that specified in 1187.2b shall be kept in appropriately vented vaults not exceeding 1,500 cubic feet capacity.

**1187.2d** No cellulose nitrate (pyroxylin) plastic material shall be stored within 2 feet of any heat producing appliances, steam pipes, radiators or chimneys.

**1187.2e** Waste cellulose nitrate (pyroxylin) plastic materials such as shavings, chips, turnings, dust, edgings and trimmings shall be kept under water in metal receptacles which and shall be removed from the premises daily.

### **1187.3 Articles of Cellulose Nitrate (Pyroxylin) Plastics**

**1187.3a** No electric light shall be located directly above cellulose nitrate (pyroxylin) plastic material, unless provided with a suitable guard to prevent heated particles from falling.

**1187.3b** Spaces underneath display tables shall not be used for storage and shall be kept free of accumulations of paper, refuse and other combustible material.

**1187.3c** Display of cellulose nitrate (pyroxylin) plastic articles shall be in showcases or show windows, except that such articles may be placed on tables or counters which are not over 3 feet wide and 10 feet long and spaced at least 3 feet apart.

**1187.3d** Cellulose nitrate (pyroxylin) plastic articles shall be protected against exposure to direct sunlight.

## **PART 1188 CELLULOSE NITRATE MOTION PICTURE FILM**

### **1188.1 General Requirements**

**1188.1a** This Part shall apply to cellulose nitrate motion picture film. Film having a cellulose acetate or other slow-burning base is excluded.

**1188.1b** Appropriate fire extinguishing equipment shall be provided where cellulose nitrate motion picture film is stored, handled or used.

**1188.1c** Motion picture projectors when used with cellulose nitrate motion picture film shall be located in enclosures specifically intended for such use.

**1188.1d** Smoking, carrying of matches, cigarettes and cigar lighters, and use of open flame and heating equipment containing ignition sources, shall be prohibited in areas where cellulose nitrate motion picture film is stored, handled or used.

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**1188.1e** Storage in excess of 25 pounds but not in excess of 1,000 pounds shall be kept in cabinets or in vaults.

**1188.1f** Storage in excess of 1,000 pounds shall be kept in vaults.

**1188.1g** Unexposed cellulose nitrate motion picture film enclosed in the original, unbroken shipping cases conforming to Department of Transportation regulations shall be kept in a sprinklered room. If the amount exceeds 750 pounds, it shall be stored in a room used for no other purpose.

**1188.1h** Archival cellulose nitrate motion picture film shall be stored in archival cabinets or vaults.

**1188.1i** Tables and racks used in connection with the handling of film shall be noncombustible, or shall be of wood construction with no member less than 1½ inch thick.

ARTICLE 4 FIRE SAFETY PRACTICE

PART 1190 GENERAL

**1190.1 Fire Safety Practice.** Fire safety practice shall be observed as set forth in this Article to insure that property and materials shall be maintained in a manner which will provide the public with safeguards from the hazards of fire, explosion, structural instability or the release of toxic gases.

PART 1191 FIRE SAFETY SAFEGUARDS

**1191.1 General Precautions**

**1191.1a** Precautions shall be taken to protect property and premises against the starting and spreading of fires.

**1191.1b** It is prohibited to:

**1191.1b-1** Deliberately setting a fire, or knowingly permit a fire to start or spread, which endangers the safety of persons or property.

**1191.1b-2** Discard, throw, or place flaming or glowing objects, such as matches, cigars and cigarettes, or other flaming or glowing substances, where such substances or things may ignite combustible or explosive materials.

**1191.1b-3** Dispose of hot or smoldering materials, including hot ashes or cinders, or smoldering coals, in other than noncombustible receptacles. Such receptacles, unless resting on a noncombustible floor or on the ground in an exterior open area, shall be placed on noncombustible stands at least two feet laterally away from combustible materials, structures, and exterior openings of buildings.

**1191.1b-4** Use or operate any internal combustion equipment or flame producing device unless suitable measures are taken to ensure against ignition of combustibles.

**1191.1c** Where conditions are such as to make smoking a hazard, the local Code Enforcement Official is authorized to order the owner or occupant in writing to post "NO SMOKING" signs in the specified areas. The lettering size, color and location of said signs shall be determined by the Code Enforcement Official.

**1191.1d** It shall be unlawful for any person to smoke or throw or deposit any lighted or smoldering substance in any place where "NO SMOKING" signs are posted or in any other place where smoking would constitute a fire or life hazard.

**1191.1e** No person shall knowingly maintain a fire hazard.

## **1191.2 Exterior Protection**

**1191.2a Dry Vegetation, Combustible Waste and Refuse.** Combustible waste, refuse and large quantities of dry vegetation, which by reason of their proximity to buildings or structures would constitute a fire hazard or contribute to the spread of fire, shall be removed.

### **1191.2b Obstructions**

It is prohibited to:

**1191.2b-1** Install or maintain wires, cables, ropes, aerial antennas, or other overhead obstructions on the roofs of buildings having a roof slope of less than 30 degrees, unless there is a full clearance of 7 feet or more between the roof surface and such obstruction, except that obstructions may be installed less than 7 feet high provided they are protected in a manner to prevent injury to firefighters working on the roof during periods of reduced visibility.

**1191.2b-2** Maintain or allow on roofs and fire escapes materials or objects which obstruct or could obstruct egress or fire department access.

**1191.2b-3** Attach or fasten ropes, wires, cables, or similar devices, except standard equipment thereof, to fire escapes.

**1191.2b-4** Place or to permit objects or materials to obscure or obstruct the use of fire hydrants and fire department connections.

### **1191.2c Outdoor Fires**

**1191.2c-1** Outdoor fires, including bonfires and rubbish fires, shall not be permitted unless legally authorized and in conformity with forest fire control regulations.

**1191.2c-2** Outdoor fires, where permitted, shall be attended at all times with appropriate fire extinguishing equipment readily available.

**1191.2c-3** The local fire department and Code Enforcement Official shall be notified whenever outdoor burning is being conducted. Notification shall include such information as time and location.

**1191.2d Waste Disposal Sites**

**1191.2d-1** Transporting burning waste or refuse is prohibited.

**1191.2d-2** Vehicles or conveyances used to transport combustible waste or refuse over public thoroughfares shall have all cargo space covered and maintained sufficiently tight to ensure against ignition from external fire sources.

**1191.2d-3** Burning debris shall not be dumped at a waste disposal site.

**1191.3 Interior Protection****1191.3a Combustible Waste and Refuse**

**1191.3a-1** Except for one- and two-family dwellings, premises shall provide specifically designated rooms, areas or containers, in or on the premises, for the temporary storage of combustible waste or refuse.

**1191.3a-2** Combustible waste and refuse shall be stored in:

- (i) Containers constructed of noncombustible materials, equipped with tight fitting covers.
- (ii) Bins constructed of noncombustible materials equipped with self-closing covers, or covers that close automatically in case of fire inside the bin.
- (iii) Rooms designed for such storage.
- (iv) Isolated areas outside buildings, suitable for such storage.

**1191.3a-3** Combustible waste and refuse shall be properly stored or disposed of to prevent unsafe accumulations.

**1191.3a-4 Waste Storage Compactors, Dumpsters or Similar Devices.**

Portable waste storage compactors, dumpsters or similar devices used for the temporary storage of combustible waste shall be located a sufficient distance from the structure or adequately protected with automatic extinguishing systems.

**1191.3b Combustible Decorations**

**1191.3b-1** In spaces of public assembly, dockside vessels serving as buildings, tents, air-supported structures, and enclosed malls, it is prohibited to install, maintain or use materials such as vegetation, bunting, cotton batting, textile, plastic materials, straw, excelsior, paper, or other combustible

materials for decorative purposes, unless such materials have been made flame-resistant.

**1191.3b-2** It shall be prohibited to use combustible decorations in retail stores unless the store is protected with an automatic sprinkler system. Electric light bulbs shall not be decorated with paper or other combustible materials.

**1191.3b-3** The test for determining the flame-resistance of combustible decorations shall be in accordance with the test applicable to the involved combustible decorations.

### **1191.3c Cleaning Compounds.**

**1191.3c-1** Only water solutions, detergents, or noncombustible floor sweeping compounds and grease absorbents shall be used for cleaning floors.

**1191.3c-2** The use of sawdust or similar combustible materials to soak up combustible or flammable liquids spilled or dropped on floor from machinery or processes is prohibited.

**1191.3c-3** The use of Class I flammable liquids for the cleaning of any items in other than approved areas or devices shall be prohibited.

### **1191.3d Portable Heaters**

**1191.3d-1** Unvented portable heating equipment using solid, liquid, or gaseous fuels shall be prohibited except during building construction, alterations or repair. During this period of building construction, alteration or repair, the heating equipment must have adequate ventilation and must have a means of fire extinguishing available. Unvented portable heating equipment used for this purpose must be listed by a nationally recognized testing laboratory and operated and maintained in accordance with manufacturer's recommendations. This paragraph (1191.3d-1) does not apply to New York State approved kerosene fueled heaters being used in one- and two-family dwellings.

**1191.3d-2** Portable heaters shall be appropriately located with respect to combustible materials, and maintained in proper operating condition.

**1191.3d-3** Portable electric heaters shall be equipped with automatic shut-off devices for safety purposes in the event of tip-over.

**1191.3d-4** Refueling operations for all solid, liquid, or gaseous fuel burning portable heating equipment shall be safely conducted when appropriate,

including the removing of the heater to a safe location and waiting for it to cool prior to refueling.

**1191.3d-5** Fuel supplies and its related equipment for solid, liquid or gaseous fuel burning portable heating equipment shall be protected from damage and excess heat, and shall comply with the applicable storage and handling requirements specified in this Chapter.

## **PART 1192 FLAME PRODUCING DEVICES**

**1192.1 General Requirements.** It shall be prohibited to remove paint or thaw out frozen pipes with a torch or other flame producing device unless there is a listed and appropriate type fire extinguisher and/or a water hose connected to a water supply that is capable of applying a water stream on all affected areas. In occupied structures the person or persons removing the paint or thawing the pipes shall remain in view of this area at all times and for one hour after using the torch or flame producing device.

### **1192.2 Asphalt Kettles**

**1192.2a** Asphalt kettles shall be in good repair, shall have a tight fitting cover or lid held open from the rear by a quick release device and be relatively free of a heavy accumulation of asphalt.

**1192.2b** The kettle shall not be located within ten feet of any structure, within twenty feet of any exit from an occupied structure, or near any window or opening into that structure.

**1192.2c** The kettle shall not be located on the roof or under any roof overhang or canopy without specific approval from the Code Enforcement Official.

**1192.2d** The kettle shall be accessible by fire apparatus at all times, and shall not be located within twenty-five feet of any fire hydrant.

**1192.2e** Two twenty-pound listed dry chemical or carbon dioxide fire extinguishers shall be immediately available at each asphalt kettle. A qualified operator shall be in attendance at the kettle whenever it is in operation.

**1192.2f** The liquid propane cylinders shall be connected with approved materials including but not limited to high pressure flexible hose, excess flow check valves and shutoff valves. The flow check valve and shutoff valves shall be located at the cylinder.

**1192.2g** The liquid propane cylinders in use shall be located a minimum of eight feet from the kettle, shall be on a noncombustible base, in an upright position and held with a quick release strap to a secure object. All other tanks not connected to the kettle shall be stored in an upright position with its safety cap in place, a minimum of twenty feet from the kettle and protected from damage.

## **PART 1193 FIRE SAFETY EQUIPMENT**

### **1193.1 General Requirements**

**1193.1a** Fire safety equipment including but not limited to fire extinguishing, fire warning and standpipe systems shall be maintained operable at all times and under all weather conditions except during regular repairs. The Code Enforcement Official and the fire department shall be notified when such equipment is placed out of service, or placed back in service.

**1193.1b** It shall be prohibited for any person to render fire extinguishing or fire warning device or system inoperable or inaccessible, except during drills, maintenance periods, emergencies or prescribed testing.

## **PART 1194 FIRE SAFETY SIGNS AND INSTRUCTIONS**

### **1194.1 General Requirements**

**1194.1a** Fire safety signs include, among others: Occupancy signs, limiting the maximum number of occupants permitted in public areas; no smoking signs, prohibiting smoking in areas where conditions exist which make smoking a fire hazard; danger signs, alerting persons to areas where special danger of fire or explosion exists; elevator warning signs, instructing occupants to use exit stairs in case of fire; and incinerator warning signs, prohibiting the disposal of lighted, flammable, combustible or explosive materials in the incinerator.

**1194.1b** Fire safety signs shall be posted on premises as specified in 1194.1a.

**1194.1c** Posted fire safety signs shall be complied with.

**1194.1d** No posted fire safety sign shall be removed, defaced, or destroyed except for replacement purposes, or when the condition which the sign was intended to identify is no longer present, or when the information conveyed by the sign is no longer necessary.

**PART 1195 FIRE SAFETY TRAINING****1195.1 General Requirements**

**1195.1a** All persons employed at facilities where hazardous materials are processed, used, handled or stored shall be properly trained in the use of all fire extinguishing, fire warning and fire notification equipment and systems located at the facility.

**1195.1b** In buildings or facilities equipped with fire alarm notification or warning systems, the persons employed or regularly at the building or facility shall be trained in the recognition and proper use of such systems and be trained in the evacuation procedures for the building or facility.

**1195.1c** The management of any building or facility other than one- or two-family dwellings, or B1 occupancies three stories or less in height, shall develop written evacuation procedures for each building in their management. The procedures shall be conspicuously posted and upon request made available for review and approval by the code enforcement official.

**PART 1196 FIRE DEPARTMENT NOTIFICATION****1196.1 General Requirements**

**1196.1a** Upon discovery of a fire, which poses a possible danger to life or property, even though it has apparently been extinguished, the existence, circumstances and location of such fire shall immediately be reported to the fire department.

**1196.1b** The fire department shall be promptly notified upon discovery of evidence of the spontaneous or abnormal heating of any merchandise, commodity, cargo, or material in buildings, structures, or premises which indicates a probable danger of fire or explosion, or upon discovery or being apprised of an uncontrolled hazardous gas leak, or hazardous material or combustible or flammable liquid spill.

**1196.1c** It is prohibited to make or issue regulations or orders, written or verbal, that would require any delaying action prior to reporting a serious fire hazard or fire to the fire department, except in the case of established on-premises fire fighting organizations which have coordinated and arranged procedures with the fire department.

**1196.1d** A reliable means of communication to the fire department which is accessible by all occupants shall be provided and maintained operable at all times.

**PART 1197 CODE ENFORCEMENT OFFICIAL NOTIFICATION**

**1197.1 General Requirements**

**1197.1a** The Code Enforcement Official shall be notified by the purchaser of any purchase or acquisition of any solid fuel burning heating appliance, chimney or flue.

**1197.1b** All businesses selling or installing solid fuel burning heating appliances, chimneys or flues shall notify the purchaser in writing at the time of sale or acquisition that they are legally required to notify their local Code Enforcement Official before installation or erection commences.

**1197.1c** The Fire Chief shall notify the Code Enforcement Official of any fire or explosion involving any structural damage, fuel burning appliance, chimney or gasvent.



**CHAPTER D**  
**MANUFACTURED HOUSING**



## MANUFACTURED HOUSING

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### CHAPTER D MANUFACTURED HOUSING

#### ARTICLE 1 GENERAL REQUIREMENTS

##### PART 1200 PURPOSE

**1200.1 Purpose.** The purpose of this article is to establish standards for construction and installation of manufactured housing which includes factory manufactured homes and mobile homes.

## MANUFACTURED HOUSING

### ARTICLE 2 FACTORY MANUFACTURED HOMES

#### PART 1210 GENERAL REQUIREMENTS

##### 1210.1 General Requirements

**1210.1a** For the purpose of this article, a factory manufactured home incorporates structures or components designed for residential occupancy, constructed by a method or system of construction whereby the structure or component is wholly or in substantial part manufactured in a manufacturing facility and is intended for permanent installation on a building site.

**1210.1b** For the purpose of this article a manufacturing facility means the place or places at which machinery, equipment, and other capital goods are assembled and operated for the purpose of making, fabricating, forming, or assembling factory manufactured homes or their components.

#### PART 1211 CONSTRUCTION AND INSTALLATION STANDARDS

**1211.1 Standards.** Factory manufactured homes shall be deemed to be one-or two-family dwellings or multiple dwellings and shall be constructed and installed in accordance with the requirements of Chapter B of this Code.

#### PART 1212 INSIGNIA OF APPROVAL

**1212.1 Requirements.** Every factory manufactured home or component shall bear an Insignia of Approval issued by the State Fire Prevention and Building Code Council.

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**ARTICLE 3 MOBILE HOMES****PART 1220 GENERAL REQUIREMENTS**

**1220.1 General Requirements.** For the purpose of this article a mobile home means a structure, transportable in one or more section, which, in the traveling mode, is eight body feet or more in width or forty body feet or more in length, or, when erected on site, is three hundred twenty or more square feet and which is built on a permanent chassis and designed to be used as a dwelling with or without a permanent foundation when connected to the required utilities, and includes the plumbing, heating, air conditioning and electrical systems contained therein.

**PART 1221 CONSTRUCTION STANDARDS**

**1221.1 Construction Standards.** Mobile homes shall be constructed in accordance with regulations set forth in the Compilation of Federal Regulations (CFR), Title 24 Housing and Urban Development, Chapter XX Office of Assistant Secretary for Housing — Federal Housing Commissioner, Department of Housing and Urban Development, Part 3280 Manufactured Mobile Home Construction and Safety Standards.

**PART 1222 CERTIFYING SEAL LABELS**

**1222.1 Certifying Labels.** Every mobile home shall have a manufacturer's label which certifies that to the best of his knowledge and belief the home is in compliance with all applicable federal construction and safety standards.

**1222.2 Data Plate.** Every mobile home shall bear a data plate, affixed in the manufacturing facility, bearing not less than the following information:

**1222.2a** The statement: "This mobile home is designed to comply with the Federal mobile home construction and safety standards in force at the time of manufacture."

**1222.2b** Reference to the structural zone and wind zone for which the home is designed.

**1222.3 Heating/Cooling Certificate.** Every mobile home shall bear data relative to the heating and insulation zone and outdoor design temperature.

**PART 1223 INSTALLATION STANDARDS**

**1223.1 Mobile Home Stand.** The area of the site reserved for the placement of the mobile home shall be characterized as the mobile home stand.

**1223.2 Utility Connections.** When placed on a mobile home stand, a mobile home shall be provided with water, sewer, electrical, and fuel utility connections. Such connections shall be installed as set forth in the Generally Accepted Standards by means of approved material.

**1223.3 Support System**

**1223.3a** Where mobile homes are provided with installation instructions, footings, piers or supports shall be sized and located to support the loads specified in the manufacturer's installation instructions.

**1223.3b** Where mobile homes are not provided with such instructions, the support system shall be designed by a registered professional engineer or architect, or supports shall be placed in accordance with the requirements set forth in the Generally Accepted Standards or specifications approved by the authority having jurisdiction.

**1223.4 Stabilizing Devices**

**1223.4a** Mobile homes shall be provided with stabilizing devices to prevent overturning due to wind when the home is located in a hurricane zone or a non-hurricane zone. Such devices shall not be required for homes located in exempt zones.

**1223.4a-1 Hurricane Zone** — Counties of Suffolk, Nassau, Queens and Kings.

**1223.4a-2 Non-Hurricane Zone** — Chautauqua, Cattaraugus, Erie, Wyoming, Genesee, Niagara, Orleans, Monroe, Wayne, Oswego, Jefferson and Cayuga county north of the New York State Thruway.

**1223.4a-3 Exempt Zone** — All other counties.

**1223.4b** For mobile homes that are provided with installation instructions by the manufacturer, the stabilizing system including footings and devices shall be installed in accordance with the manufacturer's installation instructions.

**1223.4c** Stabilizing devices that are not provided with the mobile home shall meet or exceed the design and capacity requirements of the mobile home manufacturer or the requirements set forth in the Generally Accepted Standards.

**1223.4d** Mobile homes that are not provided with manufacturer's instructions for stabilizing devices and their installation shall be provided with an anchoring and support system design by a registered professional engineer or architect or shall be spaced and located as set forth in the requirements of the Generally Accepted Standard.

**1223.4e** If an alternate method for stabilizing the mobile home with baling straps is used, such method shall conform to the requirements set forth in the Generally Accepted Standards.

### **1223.5 Anchoring Equipment**

**1223.5a** Anchoring equipment shall be capable of resisting the allowable working load set forth in the Generally Accepted Standards without failure of the anchoring equipment or the attachment point on the mobile home.

**1223.5b** When the stabilizing system is designed by a qualified registered professional engineer or architect, alternative working loads may be used as set forth in the requirements of the Generally Accepted Standards.

**1223.5c** The anchoring equipment exposed to weathering shall be resistive to weather deterioration.

**1223.5d** Ties connecting the ground anchor and the home shall comply with the requirements set forth in the Generally Accepted Standards.

### **1223.6 Ground Anchors**

**1223.6a** Ground anchors, including means for attaching ties, shall be located so as to effectively match the anchoring system instructions provided by the mobile home manufacturer or, if there are no instructions, in accordance with the requirements set forth in the Generally Accepted Standards, and shall be designed and installed to transfer the anchoring loads to the ground.

**1223.6b** Each manufactured ground anchor shall be listed and installed in accordance with the terms of its listing and the anchor manufacturer's instructions, and shall include means of attachment of the ties.

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**1223.6c** Ground anchor shall have the manufacturer's identification and listed model identification marked so that the number is visible after installation. The manufacturer's installation instructions shall include the amount of pre-load required, the methods of adjustment, and the load capacity in various types of soils. These instructions shall include tensioning adjustments which may be needed to prevent damage to the mobile home.

**1223.6d** Each type of anchor for mobile home use shall have specification data showing the soil classification for which it qualifies, and shall be installed to the full depth shown in the manufacturer's installation instructions.

### 1223.7 Clearances

**1223.7a** Mobile home shall be located at least 10 feet from any other adjacent mobile home, permanent building or structure for storage of highly combustible materials.

**1223.7b** Mobile homes shall be at least 3 feet from an adjacent accessory structure which include but are not limited to awnings, cabanas, ramadas, storage structures, carports, fences, wind breaks or porches.

## **CHAPTER E**

# **CONVERSIONS, ALTERATIONS, ADDITIONS AND REPAIRS TO EXISTING BUILDINGS**





**CHAPTER E CONVERSIONS, ALTERATIONS, ADDITIONS  
AND REPAIRS****TO EXISTING BUILDINGS****PART 1230 PURPOSE**

**1230.1 Purpose.** The purpose of this Chapter is to provide the conditions under which conversions, alterations, additions and repairs to existing buildings shall be subject to the applicability of the State Uniform Fire Prevention and Building Code.

**PART 1231 APPLICABILITY**

**1231.1 Conversions.** The provisions of Chapter B of this Code shall apply to existing buildings as if hereafter erected, where the general classification by occupancy or use as set forth in Part 701 is changed from one classification to another.

**1231.2 Relocations.** The provisions of Chapter B of this Code shall apply to existing buildings as if hereafter erected, where a building is physically relocated. Existing mobile homes shall be exempted from this requirement.

**1231.3 Alterations, Additions and Repairs**

**1231.3a** The provisions of Chapter B shall apply to alterations, additions and repairs made to buildings.

**1231.3b** The provisions of Chapter B shall apply to an entire existing building, as if hereafter erected, when the cost of any alterations, additions or repairs made within any six-month period exceed 50 percent of the cost of replacement of the building at the beginning of that six-month period.

**1231.3c** Repairs other than those set forth in 1231.3b shall be permitted to be made in buildings and systems with like or similar material, so as to replace existing conditions in need of repair, provided such repairs are made in a safe and sanitary manner.

**1231.3d** Where additions or alterations subject parts of existing systems to loads exceeding those permitted herein, such part shall be made to comply with this Code.

**1231.4 Roof Covering.** Whenever more than 25 percent 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 provisions of this Code.

**1231.5 Equipment.** New equipment installed in existing buildings shall conform to the requirements of this Code.

**1231.6 Existing Uses Continued.** Provisions of this Code shall not be retroactively applicable except as herein required.

## PART 1232 SPECIAL CONDITIONS

### 1232.1 Multiple Dwellings

**1232.1a** Except within fire limits A, 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 B1 occupancy provided that such building, when so altered or converted, complies in all other respects with the requirements of this Code.

**1232.1b** In altered or converted buildings, a special sprinkler installation conforming to the requirements of 1060.4h shall be provided in storage and service rooms, and in kitchens and cooking spaces serving dining rooms, that do not have fire-resistive ratings required by 739.4c and 739.4e.

### 1232.2 General Building Construction

**1232.2a** Except within fire limits A, 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 occupancy or use of low or moderate hazard classification provided that such building, when so altered or converted, complies in all other respect with the requirements of this Code.

**1232.2b** Except within fire limits A, a building of type 5 construction, not exceeding two stories in height, existing prior to the effective date of this Code, may be altered or converted to a day-care center (group C6.1 or C6.2) occupancy provided that such building, when so altered or converted, complies in all other respects with the requirements of this Code and the provisions set forth in table VIII-705 including footnotes 2 and 3.

**1232.2c** Within fire limits A, a building of type 5 construction, not exceeding two stories in height, existing prior to the effective date of this Code, may be

altered or converted to group C1 or C2 occupancy or use provided that such building, when so altered or converted, complies in all other respects with the requirements of this Code and is provided with smoke or heat detectors which will activate an alarm audible throughout the building. For each such building alteration or conversion, the type and location of the detectors and alarm shall be determined by the local authority having jurisdiction.

**1232.3 Assembly.** Where an existing multiple dwelling or an existing building of low or moderate hazard classification is altered, assembly space in such building shall not require a 9-foot height as set forth in 732.3b-1 provided the assembly space is at least 8 feet high, and the alteration does not increase the building height nor increase the area of any story or floor level.

### PART 1233 HISTORIC BUILDINGS

**1233.1 General Requirements.** Buildings which are officially designated as historic buildings because of historical or architectural importance shall be permitted to be repaired for the purpose of historical preservation or restoration without conforming to the requirements of the Code provided that the existing use is continued and the repairs are acceptable to and deemed safe by the local authority having jurisdiction, except that requirements for facilities for the physically handicapped shall remain applicable.

### PART 1234 EXISTING AREAS OF PUBLIC ASSEMBLY

**1234.1 Existing Areas of Public Assembly.** For retrofit of existing areas of public assembly shall comply with Part 794.



**CHAPTER F**  
**HOUSING MAINTENANCE**



## CHAPTER F HOUSING MAINTENANCE

## PART 1240 PURPOSE

**1240.1 Purpose.** This Chapter provides standards governing the facilities and the condition, use, occupancy, and maintenance of residential premises, to safeguard the safety, health and welfare of the occupants and users thereof.

**1240.2 Scope.** This Chapter shall be applicable to the following:

**1240.2a** Lots, plots, or parcels of land, on which are located buildings devoted to residential use or occupancy, mixed occupancy buildings, or accessory structures.

**1240.2b** Buildings devoted to residential use or occupancy, including one- and two-family dwellings and multiple dwellings, mixed occupancy buildings, accessory structures, and migrant housing.

## PART 1241 OCCUPANCY STANDARDS

**1241.1 Prohibited Uses**

**1241.1a** It shall be prohibited to use for sleeping purposes any kitchen or nonhabitable space. Public space shall be permitted to be used for temporary shelter.

**1241.1b** It shall be prohibited to prepare meals in hotel units, lodging units, and dormitory units which have no kitchens or kitchenettes.

**1241.1c** It shall be prohibited to use any cellar space as habitable space.

**1241.1d** It shall be prohibited, in dwelling units, hotel units, lodging units, and dormitory units, to conduct a home occupation as set forth in 1241.1d-1 or 1241.1d-2, as follows:

**1241.1d-1** When the utilized floor area is more than 25 percent of the total floor area of the unit, and in no event more than 500 square feet of floor area.

**1241.1d-2** When the home occupation produces offensive noise, vibration, smoke, dust or other particulate matter, odorous matter, heat, humidity, glare or other objectionable effects.

**1241.1e** It shall be prohibited to occupy or use for residential purposes the residential part of a mixed occupancy building, if the non-residential part of such building is classified for use as a high hazard occupancy, or if the non-residential use is obnoxious or offensive to residential occupancy or use.

**1241.1f** Dwelling units shall be separate and apart from each other.

## **PART 1242 PHYSICAL STANDARDS**

### **1242.1 Habitable Space**

#### **1242.1a Light and Ventilation**

**1242.1a-1** Habitable space shall have natural light provided by means of one or more windows, skylights, transparent or translucent panels, or any combination thereof, that face directly on open space.

**1242.1a-2** Habitable space shall be provided with electric light appropriate for the intended use.

**1242.1a-3** Habitable space shall have natural ventilation provided by means of openable parts of windows or other openings in exterior walls that face directly on open space, or through openable parts of skylights.

**1242.1a-4** Kitchens without windows shall be provided with mechanical ventilation.

**1242.1a-5** Habitable space located partially below grade shall conform to the definition of a basement, with the floor level of such space not more than 4 feet below the average finished grade.

### **1242.2 Nonhabitable Space**

#### **1242.2a Toilet Rooms and Bathrooms**

**1242.2a-1** Toilet rooms and bathrooms shall be arranged to provide privacy.

**1242.2a-2** Toilet rooms and bathrooms serving hotel units, lodging units, or dormitory units, unless located within such respective units, or directly connected thereto, shall be provided on the same story with such units, and be accessible only from a common hall or passageway.

**1242.2a-3** Toilet rooms for employees in multiple dwellings shall be separate for each sex where there are 5 or more employees, shall be readily accessible to such employees, and shall not open directly into any public kitchen or other public space used for the cooking or preparation of food.

**1242.2a-4** The entrance to every toilet room with facilities to serve more than one person at a time, and opening into a public space or passageway, shall be provided with a vestibule or fixed partition to screen the interior from view. The door of every such toilet room, with multiple facilities, shall have an effective self-closing device. Doors of toilet rooms, with facilities to serve one person at a time, shall be provided with an interior door lock.

### **1242.2b Light and Ventilation**

**1242.2b-1** Kitchenettes, bathrooms and toilet rooms shall be provided with electric light of sufficient intensity and so distributed as to permit the maintenance of sanitary conditions and the safe use of the space and the appliances, equipment, and fixtures.

**1242.2b-2** Kitchenettes, bathrooms and toilet rooms shall be provided with natural or mechanical ventilation.

**1242.2b-3** Stairs shall be provided with electric light to allow safe ascent and descent.

**1242.2b-4** Laundry rooms, furnace rooms, and similar nonhabitable spaces shall be provided with electric light appropriate for the intended use of such rooms.

**1242.2b-5** Spaces in multiple dwellings which contain central heat producing equipment or incinerator shall be ventilated.

**1242.2b-6** Shower rooms, locker rooms, dressing rooms and laundry rooms shall be provided with either natural or mechanical ventilation.

**1242.2b-7** Garages within or accessory to multiple dwellings shall be provided with electric light.

### **1242.3 Exits**

**1242.3a** Safe, continuous and unobstructed exit shall be maintained from the interior of a building or structure to the exterior, at a street, or to a yard, court or passageway leading to a public open area.

**1242.3b** Nothing shall be placed, accumulated, or stored on residential premises which obstructs egress from stairways, passageways, doors, windows, fire escapes, or other means of exit.

**1242.3c** In multiple dwellings, exits, including vestibules, stairways, passageways, corridors and hallways, but excluding fire escapes, shall be lighted with natural or electric light at all times, so as to afford safe passage.

**1242.3d** Stairways shall have handrails on at least one side.

**1242.3e** Fire escapes shall be maintained free of encumbrances.

**1242.3f** Vending machines and other equipment or materials shall not be located in lobbies, corridors, or passageways if it constitutes a fire hazard or interferes with the exit facilities.

**1242.4 Exterior Lighting.** Exterior artificial lighting shall be maintained in operating condition.

#### **1242.5 Exterior Protection**

**1242.5a** Exterior walls, including foundations, shall be maintained so that ground and surface water does not penetrate into basements and cellars.

**1242.5b** Exterior doors, windows, skylights and similar openings shall be maintained weathertight.

**1242.5c** Exterior stairs, porches, entrance platforms, fire escapes and the railings thereon shall be maintained in a safe and sound condition.

**1242.5d** Roofs shall be maintained in a watertight condition.

**1242.5e** Exterior surfaces shall be maintained in good condition. Surfaces not inherently resistant to deterioration shall be treated with a protective coating of paint or other suitable preservative.

**1242.6 Railings and Parapet Walls.** Railings or parapet walls shall be provided at open sides of balconies, mezzanines, porches, accessible roofs, exit passageways, areaways, motor vehicle parking decks and ramps, and around floor openings.

#### **1242.7 Interior Protection**

**1242.7a** Structural members shall be protected and maintained to resist and prevent deterioration.

**1242.7b** Unheated attics, spaces below flat roofs and crawl spaces shall be ventilated, to minimize deterioration.

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**1242.7c** Ceilings, walls, floors and stairways shall be maintained in a safe and sound condition.

**1242.7d** Toilet room, bathroom and laundry room floors shall be maintained in a watertight condition.

**1242.8 Garbage and Refuse**

**1242.8a** Adequate sanitary facilities and methods shall be used for the collection, storage, handling and disposal of garbage and refuse.

**1242.8b** The accumulation or storage of garbage or refuse in public halls or stairways shall be prohibited.

**1242.9 Infestation.** Buildings and structures shall be maintained free of insect, vermin and rodent harborage and infestation.

**1242.10 Junk**

**1242.10a** Refrigerators, and similar equipment with locking mechanisms, shall not be discarded, abandoned, or stored on premises accessible to children, without first removing the locking devices or the hinges of the doors.

**1242.10b** Junked vehicles, equipment and materials shall not be stored in open areas of premises.

**PART 1243 HEATING, PLUMBING, ELECTRICAL AND MISCELLANEOUS EQUIPMENT**

**1243.1a Equipment.** Except in one family dwellings, heating equipment shall be maintained so as to provide an indoor temperature of 68° F measured at a distance of 2 feet and more from exterior walls and at a level of 5 feet above the floor.

**1243.1b Chimneys.** Chimneys, smokestacks, flues, gasvents, smokepipes and connectors shall be maintained structurally safe and smoketight so as to safely convey the products of combustion to the outer air.

**1243.2 Fuel Gas.** Fuel gas piping systems shall maintained gas-tight, safe, and operative under conditions of use.

## HOUSING MAINTENANCE

### 1243.3 Fuel Oil

**1243.3a** Fuel oil shall be stored and conveyed by means of fixed liquidtight equipment.

**1243.3b** Tanks subject to damage by vehicles shall be protected against such damage.

**1243.3c** Tanks shall be maintained so as not to be a hazard to the premises served.

**1243.4 Prohibited Fuel.** Gasoline shall be prohibited as fuel for heating and cooking.

### 1243.5 Cooking and Refrigeration.

**1243.5a** There shall be provided within each dwelling unit approved-type cooking and approved-type refrigeration equipment located in a kitchen or kitchenette.

**1243.5b** Electrical cooking and refrigeration equipment shall be properly connected to the electrical system.

**1243.5c** Gas-burning cooking and refrigeration equipment shall be connected to the gas supply system with pipe or tubing of solid metal, or with approved appliance connectors.

**1243.5d** Cooking and refrigeration equipment shall be maintained in good operating condition.

**1243.6 Air Conditioning and Mechanical Ventilation.** Central air-conditioning and ventilating systems shall be maintained so that the rapid spread of heat, flame, or smoke through the system will be prevented.

### 1243.7 Plumbing

**1243.7a** General plumbing systems shall be maintained in good, safe, sanitary and serviceable condition.

#### 1243.7b Water Supply

**1243.7b-1** Potable water from an approved source shall be available at all times. The domestic water supply system of the building shall be connected to such approved source, shall not be subject to contamination and shall not be connected to unsafe water supplies.

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**1243.7b-2** Water supply systems shall be maintained 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.

**1243.7c Hot Water.** Hot water shall be supplied. Water heaters or central water heating equipment shall be maintained in operating condition.

**1243.7d Drainage.** Sewage and storm water drainage systems shall be maintained so as to function properly and be kept free from obstructions, leaks and defects.

**1243.7e Water Supply Tanks**

**1243.7e-1** Water supply tanks shall be maintained watertight, verminproof, rodentproof and resistant to corrosion.

**1243.7e-2** Means for emptying water supply tanks shall be maintained in proper working condition.

**1243.7e-3** Potable water supply tanks for domestic supply and standpipe or automatic sprinkler systems shall be maintained to furnish water in sufficient quantity and pressure for such systems.

**1243.7f Swimming Pools.** An approved enclosure, at least 4 feet in height, shall be provided around outdoor swimming pools, so that such pools are inaccessible to children. The enclosure may surround either the pool area or the property.

**1243.8 Electrical**

**1243.8a** Electrical fixtures, devices, wiring and systems shall be maintained in safe working conditions in a manner which will avoid a potential source of ignition or shock. Deteriorated material and equipment shall be removed and replaced, as may be required.

**1243.8b** Panel boards shall be kept free from encumbrances and shall be accessible at all times.

**1243.8c** Exit and Directional signs shall be kept illuminated at all times that the buildings is occupied.

**1243.9 Elevators, Dumbwaiters and Escalators**

**1243.9a** Elevators, dumbwaiters and escalators shall be maintained to

safely sustain the loads to which they are subject, to operate properly and to be free of physical and fire hazards.

**1243.9b** Hoistways and pits shall be maintained free of rubbish or other debris.

**1243.9c** Machine rooms shall be maintained free of oil and grease, including oily and greasy clothes, rags and other such materials, and shall not be used for storage of articles or materials unnecessary for the maintenance of the elevator or dumbwaiter. Flammable liquids shall not be kept in such rooms.

**1243.9d** Safety devices and electrical protective devices shall be operative at all times, except during tests, inspections or repairs.

#### **1243.10 Fire Protection Equipment**

**1243.10a** Fire protection equipment, including fire alarm, fire detecting, watchman, sprinkler and standpipe systems and portable fire extinguishers, shall be maintained in proper operating condition at all times.

**1243.10b** Sprinkler and standpipe systems shall have an adequate water supply available at all times.

**1243.10c** Fire department connections shall be conspicuously identified and maintained readily accessible for fire department use.

**1243.10d** Sprinkler systems shall be maintained in good condition, free from mechanical injury. Sprinkler heads shall be maintained clean, free of corrosion and paint and not bent or damaged.

**1243.10e** Unsupervised valves controlling water supply to sprinklers shall be secured in the open position.

**1243.10f** Portions of the system subject to freezing shall be appropriately protected.

**1243.10g** Storage of materials shall not interfere with the effective discharge of water from the sprinkler heads.

**1243.10h** Gate valves at hose stations shall be maintained tight against leaks.

**1243.10i** Hose shall be in proper position ready for operation, dry and free of deterioration.

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**1243.10j** Portable fire extinguishers shall be in their designated location and shall be maintained in an efficient and safe operating condition.

**PART 1244 PROPERTY MAINTENANCE****1244.1 Exterior Property Areas**

**1244.1a** Surface and subsurface water shall be appropriately drained to protect buildings and structures and to prevent ponding.

**1244.1b** Fences, walls and other minor constructions shall be maintained in safe, good and substantial condition.

**1244.1c** Steps, walks, driveways, parking spaces, and similar paved areas shall be maintained to afford safe and convenient passage.

**1244.1d** Yards, courts and vacant lots shall be kept clean and free of hazards.

**1244.1e** Ground cover shall be properly established to prevent undue soil erosion, due to the elements.

**1244.1f** Heavy undergrowth and accumulations of plant growth which are noxious or detrimental to health or safety shall be eliminated.

**PART 1245 RESPONSIBILITY OF OWNER, OPERATOR OR AGENT**

**1245.1 Responsibility.** The Owner, Operator or Agent in control of the building shall be responsible for the following:

**1245.1a** Limiting occupancy to the maximum number of persons permitted and prohibiting unlawful uses.

**1245.1b** Posting required statements of the maximum number of occupants permitted.

**1245.1c** Maintenance of the premises in a clean, safe and sanitary condition.

**1245.1d** Maintenance and operation of service facilities in good order and condition.

**1245.1e** Maintenance of plumbing, heating, and electrical equipment and systems, appliances, fixtures, as well as other building equipment and facilities, in an appropriate, good operative, clean, and sanitary condition.

**1245.1f** Maintenance of walls, floors and ceiling in public places in a clean and sanitary condition.

**1245.1g** Keeping exits free and clear.

**1245.1h** Disposing of garbage, refuse and junk in a safe and sanitary manner and keeping the premises free and clear therefrom, and broom clean.

**1245.1i** Extermination of insects, vermin, rodents, pests and elimination of harborage.

### **PART 1246 RESPONSIBILITY OF OCCUPANTS**

**1246.1 Responsibility.** With respect to that part of a building which the occupant occupies, controls or uses, the occupant shall be responsible for the following:

**1246.1a** Occupancy limitations and its lawfully permitted use.

**1246.1b** Maintenance in a clean, safe and sanitary condition.

**1246.1c** Maintenance of plumbing, cooking and refrigeration equipment, appliances, fixtures and facilities, in a clean and sanitary condition, and providing reasonable care in the operation and use thereof.

**1246.1d** Keeping exits free and clear.

**1246.1e** Disposing of garbage and refuse into provided facilities in a sanitary manner and keeping the premises free and clear therefrom.

**1246.1f** Keeping domestic animals and pets in an appropriate manner and under control.

**CHAPTER G**  
**GENERALLY ACCEPTED STANDARDS**



## CHAPTER G GENERALLY ACCEPTED STANDARDS

## PART 1250 LIST OF GENERALLY ACCEPTED STANDARDS

**1250.1 Applicability.**

**1250.1a** A generally accepted standard is defined in Part 606 as a specification, code, rule, guide or procedure in the field of construction, or related thereto, recognized and accepted as authoritative. As set forth in Part 653, compliance with the applicable provisions of a Generally Accepted Standard shall constitute compliance with the Code.

**1250.1b** The standards are identified herein by initials representing the name of the issuing or sponsoring organization or the general category or publications, the title of the standard, and its identification number, the last figure of which frequently indicate the year of issue.

**1250.2 Issuing Organizations.** The names of the organizations, the abbreviations of their names, and the addresses where copies of the standards may be obtained, are listed herein:

AA	The Aluminum Association, Inc. 818 Connecticut Ave., N.W. Washington, D.C. 20006
ACI	American Concrete Institute P.O. Box 19150, Redford Station Detroit, Michigan 48219
ACIL	American Council of Independent Laboratories, Inc. 1725 K Street, N.W. Washington, D.C. 20006
AGA	American Gas Association Laboratories 8501 East Pleasant Valley Road Cleveland, Ohio 44131
AISC	American Institute of Steel Construction, Inc. 400 North Michigan Avenue Chicago, Illinois 60611
AISI	American Iron and Steel Institute 1000 16th Street, N.W. Washington, D.C. 20036

**GENERALLY ACCEPTED STANDARDS**

- AITC American Institute of Timber Construction  
333 West Hampden Avenue  
Englewood, Colorado 80110
- ANSI American National Standards Institute, Inc.  
1430 Broadway  
New York, New York 10018
- APA American Plywood Association  
P.O. Box 11700  
Tacoma, Washington 98411
- API American Petroleum Institute  
2101 L Street, N.W.  
Washington, D.C. 20037
- ARI American Refrigeration Institute  
1815 North Fort Myer Drive  
Arlington, VA 22209
- ASCE American Society of Civil Engineers  
345 East 47th Street  
New York, New York 10017
- ASHRAE American Society of Heating, Refrigerating and  
Air-Conditioning Engineers, Inc.  
1791 Tullie Circle, N.E.  
Atlanta, GA 30329
- ASME American Society of Mechanical Engineers  
345 East 47th Street  
New York, New York 10017
- ASTM American Society for Testing and Materials  
1916 Race Street  
Philadelphia, Pennsylvania 19103
- AWPA American Wood Preservers' Association  
7735 Old Georgetown Road  
Suite 444  
Bethesda, Maryland 20014
- AWPB American Wood Preservers' Bureau  
P.O. Box 6085  
2772 S. Randolph Street  
Arlington, Virginia 22206

**GENERALLY ACCEPTED STANDARDS****483**

- AWS** American Welding Society, Inc.  
550 N.W. LeJeune Road  
Miami, Florida 33126
- AWWA** American Water Works Association  
6666 West Quincy Avenue  
Denver, Colorado 80235
- CISPI** Cast Iron Soil Pipe Institute  
1499 Chain Bridge Road  
Suite 203  
McLean, VA 22101
- DA** U.S. Department of Agriculture  
1776 F Street, N.W.  
Washington, D.C. 20437
- DEC** Department of Environmental Conservation  
50 Wolf Road  
Albany, NY 12205
- DH** Department of Health, State of New York  
Empire State Plaza  
Albany, NY 12237
- DL** Department of Labor  
State of New York  
Business Administration Office  
Two World Trade Center  
New York, NY 10047
- or
- Department of Labor  
State of New York  
Office of Administrative Director  
Building 12, State Campus  
Albany, NY 12201
- ETL** ETL Testing Laboratories, Inc.  
Industrial Park  
Cortland, NY 13045
- FCC** U.S. Government Printing Office  
Superintendent of Documents  
Washington, D.C. 20402

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**GENERALLY ACCEPTED STANDARDS**

- FMS            Factory Mutual System  
Factory Mutual Engineering & Research Corporation  
1151 Boston-Providence Turnpike  
P.O. Box 688  
Norwood, MA 02062
- FS             General Services Administration  
National Capital Region  
Specification Section  
Room 6039  
Seventh and D Streets, S.W.  
Washington, D.C. 20407
- IFAI            Industrial Fabrics Association International  
350 Endicott Building  
St. Paul, Minnesota 55101
- I-SANTA        Industrial Stapling and Nailing Technical Association  
435 North Michigan Avenue  
Suite 1717  
Chicago, Illinois 60611
- MET            MET Electrical Testing Company, Inc.  
916 West Patapsco Avenue  
Baltimore, Maryland 21230
- MIL            The Naval Publications and Forms Center  
5801 Tabor Avenue  
Philadelphia, Pennsylvania 19120
- NAPHCC        National Association of Plumbing, Heating,  
                          Cooling Contractors  
1016 20th Street, N.W.  
Washington, D.C. 20036
- NCMA           National Concrete Masonry Association  
P.O. Box 781  
Herndon, Virginia 22070
- NCRP           National Council on Radiation Protection and  
                          Measurements  
NCRP Publications  
P.O. Box 30175  
Washington, D.C. 20014

**GENERALLY ACCEPTED STANDARDS****485**

NFPA	National Fire Protection Association Batterymarch Park Quincy, MA 02269
NFor.PA	National Forest Products Association 1619 Massachusetts Avenue, NW Washington, D.C. 20036
NSF	National Sanitation Foundation 3475 Plymouth Road P.O. Box 1468 Ann Arbor, Michigan 48106
PDI	Plumbing Drainage Institute 5342 Boulevard Place Indianapolis, Indiana 46208
PCA	Portland Cement Association 5420 Old Orchard Road Skokie, Illinois 60077
PS	U.S. Department of Commerce National Bureau of Standards Office of Product Standards Washington, D.C. 20234
RCRBSJ	Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation 345 East 47th Street New York, NY 10017
RCSHSB	Red Cedar Shingle & Handsplit Shake Bureau 515 116th Avenue N.E. Suite 275 Bellevue, Washington 98004
SJI	Steel Joist Institute 1703 Parham Road Suite 204 Richmond, Virginia 23229
TPI	Truss Plate Institute 100 West Church Street Frederick, MD 21701

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## GENERALLY ACCEPTED STANDARDS

UL Underwriters' Laboratories, Inc.  
333 Pfingsten Road  
Northbrook, Illinois 60062

or

1285 Walt Whitman Road  
Melville, NY 11747

ULC Underwriters' Laboratories of Canada  
7 Crouse Road  
Scarborough, Ontario  
Canada M1R3A9

WHPS Warnock Hersey Professional Services Ltd.  
3210 American Drive  
Mississauga, Ontario  
Canada L4V1B3

### 1250.3 Standards Applicable to Uniform Code, Chapter A — General Provisions

#### Safety During Construction and Demolition

DL Protection in Construction, Demolition and Excavation Operations, Industrial Code Rule No. 23 (12NYCRR 23) as amended effective February 1, 1975.

NFPA Safeguarding Building Construction and Demolition Operations, No. 241-1980.

#### Temporary Heat During Construction

ANSI Safety Requirements for Temporary and Portable Space Heating Devices and Equipment Used in the Construction Industry, A10.10-1970.

### 1250.4 Standards Applicable to Uniform Code, Chapter B — Building Construction.

**Article 1 General Provisions****Testing Laboratories**

ASTM	Directory of Testing Laboratories, Sixth Edition (1982) STP 333E
ACIL	Directory, 1982

**Article 2 Occupancy and Construction Classification and Building Limits****FIRE-RESISTANCE RATINGS**

ASTM	Methods of Fire Tests of Building Construction and Materials, E119-81 (NFPA No. 251-1979) (ULC-S101-M1980)
ASTM	Methods of Fire Tests of Door Assemblies, E152-80 (NFPA No. 252-1979)
NFPA	Standard for Fire Tests of Window Assemblies, No. 257-1980 (ASTM E163-80)
NFPA	Fire Doors and Windows, No. 80-1981
NFPA	Methods of Fire Tests of Roof Covering, No. 256-1982
NFPA	Roof Coverings, 203M-1980
UL	Building Materials Directory, 1983 including Supplement
UL	Fire Resistance Directory, 1983, including Supplement
FMS	Factory Mutual System Approval Guide, 1982
FMS	Factory Mutual System Specification Tested Building Materials Guide, 1982
ULC	List of Equipment and Materials, Volume II, Building Construction, September 1980, Fire Rated Assemblies, pages 112-458, including Supplement
WHPS	List of Materials and Equipment January, 1983.

**Article 3, 4 and 5 Space and Fire Safety Requirements, One- and Two-Family Dwellings, Multiple Dwellings, General Building Construction**

ANSI	Fixed Ladders, Safety Code for, A14.3-1974
ANSI	Performance Specifications and Methods of Test for Transparent Safety Glazing Material Used in Buildings, Z97.1-1975, including Supplement Z97.1a-1977.
NFPA	Tents, Grandstands and Air-Supported Structures Used For Places of Assembly, No. 102-1978
IFAI	Air Structures Design And Standards Manual, ASI 1977

DL	Rules Relating to Sanitation, Industrial Code Rule No. 9, effective October 1, 1947
NFPA	Aircraft Hangars, No. 409-1979

### Flame-Resistant Materials

ASTM	Test Method For Noncombustibility of Elementary Materials, E-136-79
NFPA	Methods of Fire Tests for Flame-Resistant Textiles and Films, No. 701-1977
NFPA	Fire Retardant Treatments of Building Materials, No. 703-1979
AWPA	Fire Retardant Treatment, C20-1974, (Lumber), C27-1974, (Plywood)

### Flame Spread

ASTM	Test Method for Surface Burning Characteristics of Building Materials, E84-81a (NFPA No. 255-1979)
ASTM	Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position, D635-81
ASTM	Standard Method for Measuring the Density of Smoke from the Burning or Decomposition of Plastics, D2843-77
NFPA	Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source, No. 253-1978

### Fire Protection Systems

See Fire Protection Equipment

## Article 7 Structural Requirements

### Adhesives

APA	Performance Specification for Adhesives for Field-Gluing Plywood to Wood Framing, AFG-01, 1974
FS	Adhesive, Casein-Type, Water and Mold Resistant, MMM-A-125C, 1969
FS	Adhesive, Urea-Resin-Type (Liquid and Powder), MMM-A-188C, 1975
MIL	Adhesive, Phenol and Resorcinol Resin Base (For Marine Service Use) MIL-A-22397, 1960 with 1964 amendment

**Air-Supported Structures**

IFAI Air Structures Design And Standards Manual, ASI 1977

**Aluminum**

AA Aluminum Construction Manual, Specifications for Aluminum Structures, April, 1976

**Concrete and Concrete Units**

ACI Building Code Requirements for Concrete Masonry Structures, ACI 531-79 (Revised 1981)  
 ACI Building Code Requirements for Reinforced Concrete, ACI 318-63 or ACI 318-77 with 1980 Supplement  
 ACI Recommended Practice for Shotcreting, ACI-506-66, Re-affirmed 1978  
 PCA Design Manuals and Publications

**Flood Protection****Flood Protection for Flood Prone Areas**

"Flood Proofing Regulations" — EP-1165 2 314 — June 1972  
 Office of the Chief of Engineers, U.S. Army, Washington, D.C.

**Flood Protection for Identified Flood Hazard Areas**

Code of Federal Regulations, Volume 44, (44 CFR) Section 60.3, "Flood Plain Management Criteria for Flood Prone Areas," effective October 26, 1976

**Foundations and Piles**

ANSI American Standard Building Code Requirements for Excavations and Foundations, A56.1-1952, excluding Sections 5-6.1 and 5-1.3(f), footnotes 1-5 inclusive  
 ASCE Pile Foundations and Pile Structures, Manual of Engineering Practice, No 27, 1946  
 ASTM Specification for Round Timber Piles, D25-79  
 ASTM Specification for Welded and Seamless Steel Piles, A 252-80  
 AWPA Standards C1, 1981, C3, 1980, C9, 1977  
 NFPA Construction and Protection of Piers and Wharves, No. 87, 1980

**Masonry Materials**

ANSI	Building Code Requirements for Masonry, A41.1-1954 (Reaffirmed 1970)
ANSI	Building Code Requirements for Reinforced Masonry, A41.2-1960 (Reaffirmed 1970)
ANSI	Specifications for Gypsum Plastering, A42.1-1964
ANSI	Specifications for Portland Cement-Lime Plastering, Exterior (Stucco) and Interior, A 42.2-1971
ANSI	Specifications for Lathing and Furring for Portland Cement and Portland Cement-Lime Plastering (Stucco), and Interior, A42.3-1971
ANSI/ASTM	Specification for Application of Gypsum Plaster, C842-1979
ANSI	Specifications for Reinforced Gypsum Concrete, A59.1-1968 (R1972)
ASTM	Specification for Quicklime for Structural Purposes, C5-79
ASTM	Specification for Natural Cement, C10-76
ASTM	Specification for Gypsum, C22-77
ASTM	Specification for Concrete Aggregates, C33-1981
ASTM	Specification for Clay Load-Bearing Wall Tile, C34-62 (1975)
ASTM	Specification for Gypsum Partition Tile or Block, C52-54 (1981)
ASTM	Specification for Concrete Building Brick, C55-75 (1980)
ASTM	Specification for Structural Clay Non-Load Bearing Tile, C56-71 (1976)
ASTM	Specification for Building Brick (Solid Masonry Units Made from Clay or Shale), C62-81
ASTM	Specification for Calcium Silicate Face Brick (Sand-Lime Brick), C73-75
ASTM	Specification for Hollow Load-Bearing Concrete Masonry Units, C90-78 (1981)
ASTM	Specification for Masonry Cement, C91-78
ASTM	Specification for Ready-Mixed Concrete, C94-81
ASTM	Specification for Hollow Non-Load Bearing Concrete Masonry Units, C129-75 (1980)
ASTM	Specification for Hydraulic Hydrated Lime for Structural Purposes, C141-67 (1978)
ASTM	Specification for Aggregate for Masonry Mortar, C144-81
ASTM	Specification for Solid Load-Bearing Concrete Masonry Units, C145-75 (1981)
ASTM	Specification for Portland Cement, C150-81
ASTM	Specification for Blended Hydraulic Cements, C595-81a
ASTM	Specification for Hydrated Lime for Masonry Purposes, C207-79
ASTM	Specification for Mortar for Unit Masonry, C270-80a

ASTM	Specification for Lightweight Aggregates for Structural Concrete, C330-80
ASTM	Specification for Packaged, Dry, Combined Materials for Surface Bonding Mortar, C887-79a
ASTM	Standard Practice for Construction of Dry-Stacked, Surface-Bonded Walls, C946-81
NCMA	A Manual of Facts on Concrete Masonry — TEK Information Series

### Sheathing

ASTM	Specification for the Application and Finishing of Gypsum Board, C840-79
ASTM	Specification for Gypsum Sheathing Board, C79-78
ASTM	Specification for Gypsum Wallboard, C36-80
FS	Insulation Board, Thermal Cellulosic Fiber, LLL-I-535B, 1977

### Snow Loads, Increases

ANSI	American National Standard Building Code Requirements for Minimum Design Loads in Buildings and Other Structures, A58.1-1972, Figures 5, 6 and 7
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### Steel and Iron

#### Design of Steel Structural Members

AISI	Specification for the Design of Cold-Formed Steel Structural Members, 1980
AISI	Stainless Steel Cold-Formed Design Manual, 1974
AISI	Manual for Structural Application of Steel Cables for Buildings, 1973
AISC	Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, November 1, 1978
SJI	Standard Specification For Joist Girders, May 15, 1978
SJI	Standard Specifications and Load Tables for Longspan Steel Joists, LH-Series, Deep Longspan Steel Joists, DLH-Series, February 15, 1978
SJI	Standard Specifications and Load Tables for Open Web Steel Joists, H-Series, February 15, 1978
AWS	Structural Welding Code — Steel, AWS D1.1-82
RCRBSJ	Specifications for Structural Joints using ASTM A325 or A490 Bolts, Approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation, August 14, 1980

**Steel Material and Product Specifications**

ASTM	Specifications for Gray Iron Castings, A48-76
ASTM	Specification for Welded and Seamless Steel Pipe, A53-81

**Wood**

AITC	Inspection Manual, AITC 200-73, 201-73 and 202-73
AITC	Standard Specification for Structural Glued Laminated Timber, AITC 117-79
APA	Plywood Design Specifications and Supplements 1 through 4, 1980
APA	APA Design/Construction Guide, Residential and Commercial, 1982
ASTM	Methods for Establishing Structural Grades and Related Allowable Properties for Visually Graded Lumber, D 245-74
ASTM	Methods of Conducting Strength Tests of Panels for Building Construction, E72-80
RCSHSB	Grading Rules for Certi-Split Red Cedar Shakes, 1975
RCSHSB	Grading Rules for Certigroove Machine-Grooved Shakes and Certigrade Rebutted-Rejoined Shingles, 1962
RCSHSB	Grading Rules for Certigrade Red Cedar Shingles, 1975
NFor.PA	National Design Specification for Wood Construction, 1982
NFor.PA	Design Values for Wood Construction, 1982
NFor.PA	Manual for Housing Framing, Wood Construction Data No. 1, 1970
NFor.PA	Plank-and-Beam Framing for Residential Buildings, Wood Construction Data No. 4, 1970
NFor.PA	Heavy Timber Construction Details, Wood Construction Data No. 5, 1974
NFor.PA	Design of Wood Structures for Permanence, Wood Construction Data No. 6, 1980
NFor.PA	Span Tables for Joists and Rafters, 1977
NFor.PA	Wood Structural Design Data, 1978
NFor.PA	Design Values for Joists and Rafters, 1981
PS	American Softwood Lumber Standard, PS 20-70
PS	Construction and Industrial Plywood, PS 1-74
PS	Hardwood and Decorative Plywood, PS 51-71
PS	Structural Glued Laminated Timber, PS 56-73
TPI	Design Specifications for Metal Plate Connected Wood Trusses, TPI-78
I-SANTA	Application and Fastening Schedule — Power Driven, Mechanically Driven and Manually Driven Fasteners, HUD-FHA Bulletin No. UM-25d

**Wood Treatment**

AWPA	Standards for Pressure Treating Wood
DA	Subterranean Termites, Their Prevention and Control in Buildings, Home and Garden Bulletin No. 64, revised January 1972
FS	Primer, Coating, Exterior (Undercoat for Wood, Ready-Mixed, White and Tints), TT-P-25E(2)-1977
FS	Wood Preservation: Treating Practices, TT-W-5711(2) 1972 (AWPA specifications and instructions are referenced)

**WOOD FOUNDATION**

NFor.PA	All Weather Wood Foundation Technical Report No. 7, 1982
NFor.PA	All Weather Wood Foundation Design, Fabrication, Installation, (abbreviated DFI) Manual, 1982
AWPB	American Wood Preservers' Bureau Standard — Quality Control Program for Softwood Lumber, Timber and Plywood Pressure Treated with Water-Borne Preservatives for Ground Contact Use in Residential and Light Commercial Foundations — FDN-80

**Article 9 — Plumbing Requirements**

**PLUMBING** (see pages G-14 thru G-20, Standards for Plumbing Materials)

**General Design and Installation**

NAPHCC	National Standard Plumbing Code, 1980, Chapter 1 through 15, and Appendices A and B inclusive
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**Drinking Water Supplies**

DH	10 NYCRR, Part 5 — Drinking Water Supplies (State Sanitary Code June 30, 1979)
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**Swimming Pools**

DH	Swimming Pools and Bathing Beaches, Bulletin 27
DH	10 NYCRR, Part 6 — Swimming Pools and Bathing Beaches (State Sanitary Code June 30, 1978)

## GENERALLY ACCEPTED STANDARDS

### **Sewage Disposal Systems**

- DH                    10 NYCRR, Appendix 75-A, Individual Household Systems,  
Waste Treatment Handbook, August 31, 1978

### **Equipment for Hospitals, Nursing Homes and Other Medical Care Facilities**

- DH                    10 NYCRR, Chapter V (Medical Facilities), August 31, 1979

### **Tanks, Water Supply**

- AWWA                Standard for Steel Tanks — Standpipes, Reservoirs, and  
Elevated Tanks for Water Storage D100-79
- NFPA                 Water Tanks for Private Fire Protection, No 22-1981

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
 (This table is cited in section 904.3 of the STATE BUILDING CONSTRUCTION CODE APPLICABLE TO PLUMBING and presents the latest edition of applicable generally accepted standards for plumbing materials)

Materials	ANSI	ASTM	FS	Other Standards
Plumbing fixtures:				
Drinking fountains and self-contained, mechanically refrigerated drinking-water coolers .....	None	None	None	ARI 1010-82
Enameled cast-iron plumbing fixtures .....	A112.19.1-1979	None	None	None
Finished and rough brass plumbing fixture fittings .....	A112.18.1-1979	None	None	None
Formed metal porcelain enameled sanitary ware .....	A112.19.4-1977	None	None	None
Plastic bathtub units .....	Z124.1-1980	None	None	None
Gel-coated glass-fiber reinforced polyester resin shower receptor and shower stall units .....	Z124.2-1980	None	None	None
Stainless steel plumbing fixtures for residential use .....	A112.19.3-1976	None	None	None
Vitreous china plumbing fixtures .....	A112.19.2-1982	None	None	None
Stills, water; portable (without heating device) for U.S.P. "distilled water" .....	None	None	RR-S-726-1973	
Support for off-the-floor plumbing fixtures for public use .....	A112.6.1-1979	None	None	None

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
(Continued from page 495)

Materials	ANSI	ASTM	FS	Other Standards
<b>Ferrous pipe and fittings:</b>				
Cast-iron soil pipe and fittings, extra heavy and service weight .....	See ASTM	A74-81	None	None
Cast-iron water pipe cast in metal molds .....	See AWWA	None	None	AWWA C106-75
Cast-iron water pipe fittings .....	A21.10-1977	None	None	AWWA C110-77
Cast-iron (threaded) pipe .....	A40.5-1943	None	None	None
Cast-iron (threaded) fittings .....	B16.4-1977	None	None	None
Cast-iron (threaded) drainage fittings .....	B16.12-1977	None	None	None
Hubless cast-iron sanitary system with				
No-Hub pipe and fittings .....	None	None	None	CISPI 301-78
Malleable iron fittings (threaded), 150 lb. ....	B16.3-1977	None	None	None
Nipples, pipe, threaded .....	None	None	WW-N-351C-1977	None
Pipe fittings — bushings, locknuts and plugs, iron and steel (threaded), 125-150 lb. ....	None	None	WW-P-471B-1970	None
Steel pipe (seamless and welded, black and zinc coated) (galvanized) .....	See ASTM	A120-80	None	None
Unions, pipe, steel or malleable iron .....	None	None	WW-U-531E-1976	None
Valves, gate, cast-iron, threaded and flanged, 125-250 lb. ....	None	None	WW-V-58F-1977	None

**TABLE III-904.3 — STANDARDS FOR PLUMBING MATERIALS**  
(Continued from page 496)

Materials	ANSI	ASTM	FS	Other Standards
<b>Nonferrous metallic pipe and fittings:</b>				
Brass pipe .....	See ASTM	B43-80	None	None
Brass tube .....	See ASTM	B135-81	None	None
Bronze flanges and flanged fittings, 150 & 300 lb. ....	B16.24-1979	None	None	None
Cast bronze fittings for flared copper tube .....	B16.26-1975	None	None	None
Cast bronze screwed fittings, 125 & 250 lb. ....	B16.15-1978	None	None	None
Cast bronze solder-joint drainage fittings, DWV .....	B16.23-1976	None	None	None
Cast bronze solder-joint pressure fittings .....	B16.18-1978	None	None	None
Welded copper-alloy UNS No. 21000 water tube .....	See ASTM	B642-81	None	None
½" size — 0.018" wall; ¾" size — 0.021" wall; 1" size — 0.023" wall; 1¼" size — 0.028" wall; 1½" size — 0.033" wall.				
Copper-alloy No. 260 DWV tube, welded, hard temper .....	See ASTM	B587-80	None	None
1½" size — 0.031" wall; 2" size — 0.033" wall; 3" size — 0.035" wall.				
Copper-alloy No. 260 DWV tube, seamless, hard temper .....	See ASTM	B135-81	None	None
4" size — 0.043" wall thickness.				
Copper drainage tube, type DWV .....	See ASTM	B306-81	None	None
Copper pipe, standard sizes .....	See ASTM	B42-81	None	None
Copper pipe, threadless .....	See ASTM	B302-81	None	None
Copper water tube, types K, L & M .....	See ASTM B88-81	None	None	
Copper-plated stainless steel, water tube, .....	See ASTM	B651-79		
type TP 430; Not to be used with chloride bearing fluxes. ....	See ASTM	B254-79	None	None

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
(Continued from page 497)

Materials	ANSI	ASTM	FS	Other Standards
<b>Nonferrous metallic pipe and fittings: (continued)</b>				
Lead pipe, bends and traps .....	None	None	WW-P-325B-1976	None
Unions, pipe; brass or bronze, 250 lb. ....	None	None	WW-U-516B-1974	None
Valves, ball .....	None	None	WW-V-35B-1975	None
Valves, bronze; gate .....	None	None	WW-V-54D-1977	None
Valves, bronze; angle, check and globe; screwed, flanges, solder; 125, 150 & 200 lb....	None	None	WW-V-51F-1977	None
Wrought copper and bronze solder-joint pressure fittings .....	B16.22-1980	None	None	None
Wrought copper and wrought copper alloy solder joint drainage fittings .....	B16.29-1980	None	None	None
<b>Nonmetallic pipe and fittings (Other than plastics):</b>				
Asbestos-cement pipe, nonpressure (sewer) ...	See ASTM	C644-80	None	None
Asbestos-cement pipe, pressure (water) .....	See AWWA	None	None	AWWA C400-80
Asbestos-cement pipe, perforated .....	See ASTM	C508-78a	None	None
Bituminized-fiber pipe, homogeneous (sewer) .....	See ASTM	D1861-77	None	None
Bituminized-fiber pipe, homogeneous, perforated .....	See ASTM	D2311-77	None	None
Bituminized-fiber pipe, laminated-wall (sewer) .....	See ASTM	D1862-77	None	None
Bituminized-fiber pipe, laminated-wall, perforated .....	See ASTM	D2313-77	None	None
Concrete pipe, nonreinforced (sewer) .....	See ASTM	C14-80	None	None
<b>Plastic pipe, fittings and solvent cements:</b>				
Acrylonitrile-butadiene-styrene (ABS) plastic pipe, schedules 40 and 80 .....	See ASTM	D1527-77	None	NSF 14

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
(Continued from page 498)

Materials	ANSI	ASTM	FS	Other Standards
Plastic pipe, fittings and solvent cements: (continued)				
Acrylonitrile-butadiene-styrene (ABS) plastic pipe fittings, socket-type, schedule 40 .....	See ASTM	D2468-80	None	NSF 14
Acrylonitrile-butadiene-styrene (ABS) plastic pipe fittings, socket-type, schedule 80 .....	See ASTM	D2469-76	None	NSF 14
Acrylonitrile-butadiene-styrene (ABS) plastic pipe fittings, threaded, schedule 80 .....	See ASTM	D2465-73	None	NSF 14
Acrylonitrile-butadiene-styrene (ABS) plastic pipe, (SDR-P and Class T) .....	See ASTM	D2282-77	None	NSF 14
Acrylonitrile-butadiene-styrene (ABS) plastic drain, waste and vent pipe and fittings .....	See ASTM	D2661-81	None	NSF 14
Plastic insert fittings for polyethylene plastic pipe .....	None	D2609-74	None	NSF 14
Polyethylene (PE) plastic pipe, schedules 40 and 80 based on outside diameter .....	See ASTM	D2447-74	None	NSF 14
Polyethylene (PE) plastic pipe (SDR-PR) .....	See ASTM	D2239-74	None	NSF 14
Polyvinyl chloride (PVC) plastic pipe, schedules 40, 80 and 120 .....	See ASTM	D1785-76	None	NSf 14
Polyvinyl chloride (PVC) plastic pipe fittings, socket-type, schedule 40 .....	See ASTM	D2466-78	None	NSf 14
Polyvinyl chloride (PVC) plastic pipe fittings, socket-type, schedule 80 .....	See ASTM	D2467-76a	None	NSF 14
Polyvinyl chloride (PVC) plastic pipe fittings, threaded, schedule 80 .....	See ASTM	D2464-76	None	NSF 14
Polyvinyl chloride (PVC) plastic pipe, (SDR-PR and Class T) .....	See ASTM	D2241-80	None	NSF 14
Polyvinyl chloride (PVC) plastic drain, waste and vent pipe and fittings .....	See ASTM	D2665-78	None	NSF 14

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
 (Continued from page 499)

Materials	ANSI	ASTM	FS	Other Standards
Plastic pipe, fittings and solvent cements: (continued)				
Solvent cement for acrylonitrile-butadiene-styrene (ABS) plastic pipe and fittings .....	See ASTM	D2235-80	None	NSF 14
Solvent cements for polyvinyl chloride (PVC) plastic pipe and fittings .....	See ASTM	D2564-80	None	NSF 14
Miscellaneous materials:				
Air gap standards .....	A112.1.2-1942	None	None	None
Anti-siphon vacuum breakers, pipe-applied atmospheric type .....	A112.1.1-1971	None	None	(ASSE 1001-1970)
Brass cleanout plugs .....	See ASTM	A74-81	None	None
Caulking lead, type 1 .....	None	None	QQ-C-40(2)-1970	None
Cement lining for cast iron pipe and fittings for water .....	See AWWA	None	None	AWWA C104-80
Coal-tar enamel, protective coating for steel water pipe .....	See AWWA	None	None	AWWA C203-78
Compression joints for vitrified clay bell and spigot pipe .....	See ASTM	C425-77	None	None
Floor drains .....	A112.21.1-1974	None	None	None
Grease interceptors .....	None	None	None	PDI G101
Hangars and supports, pipe .....	None	None	WW-H-171D-1978	None
Hose Clamps .....	None	None	WW-C440B(2)-1973	None
Plumbing fixture setting compound .....	None	None	TT-P-1536A-1975	None
Relief valves and automatic gas shutoff devices for hot water supply systems .....	Z21.22-1979	None	None	None
addenda .....	Z21.22a-1972	None	None	None
Roof drains .....	A112.21.2-1971	None	None	None
Rubber gaskets for cast iron soil pipe and fittings .....	None	C564-70	None	None

**TABLE III-904 — STANDARDS FOR PLUMBING MATERIALS**  
(Continued from page 500)

Materials	ANSI	ASTM	FS	Other Standards
Miscellaneous materials (continued)				
Rubber gaskets (concrete sewer pipe) .....	None	C443-79	None	None
Rubber rings for asbestos-cement pipe .....	See ASTM	D1869-78	None	None
Sheet copper .....	See ASTM	B152-81	None	None
Sheet lead, grade A .....	None	None	QQ-L-201F(2)-1970	None
Soft solder .....	None	B32-76	QQ-S-571E-1975	None
Water hammer arresters .....	A112.26.1-1969	None	None	None
Water heaters, automatic storage type .....	Z21.10.1-1981	None	None	None
Water heaters, automatic storage type, addenda .....	A21.10.1a,b-1978,9	None	None	None
Water heaters, instantaneous .....	A21.10.3-1981	None	WW-H-191B-1970	None
Water meters, cold, displacement type .....	See AWWA	None	None	AWWA C700-77
Water meters, cold current type .....	See AWWA	None	None	AWWA C701-78
Water meters, cold, compound type .....	See AWWA	None	None	AWWA C702-78

**Article 10 Heating, Ventilating and Air Conditioning Requirements****Air Pollution**

DEC 6 NYCRR, Chapter III, Air Resources, Excluding parts 215, 217 and 218 (Revised 1981)

**Chimneys, Fireplaces and Gas Vents**

ANSI Sizes of Clay Flue Linings, A62.4-1947  
 NFPA Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances, No. 211-1980 (ANSI A52.1)

**Flammable Liquids (See also Oil-Fired Equipment)**

NFPA Flammable and Combustible Liquids Code, No. 30-1981 (ANSI Z288.1)  
 NFPA Drycleaning Plants, No. 32-1979 (ANSI Z8.2)  
 NFPA Spray Application Using Flammable and Combustible Materials, No. 33-1982 (ANSI Z79.1)  
 NFPA Dipping and Coating Processes Using Flammable or Combustible Liquids, No. 34-1982  
 NFPA Storage of Flammable and Combustible Liquids on Farms and Isolated Construction Projects, No. 395-1980

**Tanks for Flammable Liquids**

API Recommended Rules for Design and Construction of Large, Welded Low-Pressure Storage Tanks, STD 620, Sixth Edition, 1978  
 API Specification for Bolted Tanks, Spec. 12B, Twelfth Edition, January, 1977  
 API Specification for Shop Welded Tanks, Spec. 12F, Seventh Edition, January, 1982  
 API Welded Steel Tanks for Oil Storage, Spec. 650, Seventh Edition, 1980  
 UL Gas and Oil Equipment Directory, September, 1982, including Supplement

**GASES****Liquified Flammable Gas**

ASME Boiler and Pressure Vessel Code, 1980; Section VIII-Pressure Vessels, Division 1 and 2

- NFPA Storage and Handling of Liquefied Petroleum Gases, No. 58-1983
- NFPA Storage and Handling of Liquefied Petroleum Gases at Utility Gas Plants, No. 59-1979 (ANSI Z106.2)
- NFPA Production, Storage and Handling of Liquefied Natural Gas, No. 59A-1979 (ANSI Z225.1)

### Other Hazardous Gases

- NFPA Bulk Oxygen Systems at Consumer Sites, No. 50-1979 (ANSI Z292.1)
- NFPA Inhalation Anesthetics (Flammable and Non-Flammable) No. 56A-1978
- NFPA Non-Flammable Medical Gas System, No. 56F-1983 (ANSI MD 4.1)
- NFPA Hyperbaric Facilities, No. 56D-1982
- NFPA Hyporbaric Facilities, No. 56E-1982

### Heating, Ventilating, Refrigeration and Air Conditioning

- ASHRAE Safety Code for Mechanical Refrigeration, No. 15-1978 (ANSI B9.1)
- ASHRAE Handbook and Product Directory, Fundamentals - 1981
- ASHRAE Handbook and Product Directory, Equipment - 1979
- ASHRAE Handbook and Product Directory, Systems - 1980
- ASHRAE Handbook and Product Directory, Applications 1982, excluding Section III, IV and V
- NFPA Parking Structures, No. 88A - 1979
- NFPA Repair Garages, No. 88B - 1979
- NFPA Installation of Air Conditioning and Ventilating Systems, No. 90A-1981 (ANSI B144.2)
- NFPA Installation of Warm Air Heating and Air Conditioning Systems, No. 90B-1980 (ANSI B144.3)
- NFPA Vapor Removal from Commercial Cooking Equipment, No. 96-1980
- NFPA Blower and Exhaust Systems, No. 91-1973
- UL Gas and Oil Equipment Directory, September, 1982, including Supplement

### Boilers, Furnaces and Central Systems

- ANSI Gas-Fired Room Heaters, Vol. 1, Z21.11.1-1981
- ANSI Gas-Fired Room Heaters, Vol. II, Z21.11.2-1978 with addenda, Z21.11.2a-1979 and Z21.11.2b-1982
- ANSI Gas Fired Low-Pressure Steam and Hot Water Boilers, Z21.13a-1979

- ANSI Gas-Fired Duct Furnaces, Z21.34-1971 with addenda Z21.34a-1973 and Z21.34b-1974
- ANSI Gas-Fired Central Furnaces, Z21.47-1978
- ANSI Gas-Fired Gravity and Fan Type Floor Furnaces, Z21.48-1979
- ANSI Gas-Fired Gravity and Fan Type Vented Wall Furnaces, Z21.49-1979
- ANSI Vented Decorative Gas Appliances, Z21.50-1979
- ASME Boiler and Pressure Vessel Code, 1980  
 Section I, Power Boilers  
 Section IV, Heating Boilers  
 Section VIII, Pressure Vessels, Division 1 and 2  
 Section X, Fiberglass Reinforced Plastic Pressure Vessels
- DL Boilers, Industrial Code Rule No. 4 (12 NYCRR 4) Effective March 31, 1965
- DL Construction, Installation, Inspection and Maintenance of Steam Boilers, Industrial Code Rule No. 14 (12 NYCRR 14) as amended, effective June 22, 1981
- UL Gas and Oil Equipment Directory, September, 1982, including Supplement

### **Gas-Fired Equipment (See also Piping Equipment and Systems)**

- AGA Directory of Certified Appliances and Accessories, July 1, 1982 (including monthly supplemental directories)
- ANSI Automatic Vent Damper Devices (Z21.66, Z21.57, Z21.68)
- ANSI Gas Utilization Equipment in Large Boilers, Z83.3-1971 with addendum Z83.3a-1972 and Z83.3b-1976
- NFPA National Fuel Gas Code, No. 54-1980 (ANSI Z223.1)

### **Miscellaneous Heating Equipment**

- NFPA Ovens and Furnaces, Design, Location and Equipment, No. 86A-1977

### **Oil-Fired Equipment**

- ANSI Performance Requirements for Oil-Powered Central Furnaces, Z91.1-1972
- ANSI Automatic Pressure Atomizing Oil Burners of Mechanical Draft Type, Performance Requirements for, Z91.2-1976
- NFPA Installation of Oil Burning Equipment, No. 31-1983 (ANSI Z95.1)
- UL Gas and Oil Equipment Directory, September, 1982 including Supplement

- UL Safety Standard for Oil-Fired Central Furnaces, No. 727-1980 (ANSI Z96.1)

## Article 11 Electrical Requirements

### Electrical Wiring and Equipment

- ANSI Essential Electrical Systems in Health Care Facilities, ANSI/NFPA No. 76A-1977
- ANSI National Electrical Code, ANSI/NFPA No. 70-1984
- ANSI National Electrical Safety Code, American National Standard C2, 1981
- UL Electrical Appliance and Utilization Equipment Directory, 1983
- UL Hazardous Location Equipment Directory, 1983, including Supplement
- UL Electrical Construction Materials Directory, 1983, including Supplement
- DH 10 NYCRR Chapter V, Subchapter C (State Hospital Code), Article 2, December 31, 1979
- ETL Directory of ETL Listed Products, Section 1, Electrical Products, January, 1983
- MET MET Listed Product Directory, October, 1979

### Lighting

- ANSI Code for Safety to Life from Fire in Buildings and Structures, (A9.1) ANSI/NFPA No. 101-1981
- UL Mechanical Equipment Directory, September 1982

## Article 12 Equipment Requirements

### EXPLOSION & HEAT VENTS

- NFPA Guide for Explosion Venting, No. 68 — 1978
- NFPA Guide for Smoke and Heat Venting, No. 204M-1982

### Hazardous Processes In Building

- ANSI Prevention of Fire and Dust Explosion in Feed Mills, Z12.3-1974 (NFPA No. 61C-1973)
- NFPA Prevention of Fire and Dust Explosions in the Chemical, Dye, Pharmaceutical and Plastics Industries, No. 654-1982

- DL Manufacturing, Handling and Storage of Military Pyrotechnics, Industrial Code Rule No. 37 (12 NYCRR 37), effective June 1, 1943
- NFPA Storage of Pyroxylin Plastic No. 40E-1980
- NFPA Storage, Handling and Processing of Magnesium, No. 48-1982
- NFPA Production, Processing, Handling and Storage of Titanium, No. 481-1982

See also Part 5, page 15, Flammable Liquids

### **Smoke-Detecting Alarm Devices**

Single-station, photoelectric or ionization type

- NFPA Household Fire Warning Equipment, No. 74-1980
- FMS Factory Mutual System Approval Guide, 1982
- UL Fire Protection Equipment Directory, January, 1983

### **Conveyors and Lifts**

#### **Automotive Lifts**

- ANSI Safety Requirements for Construction, Care and Use of Automotive Lifts, B 153.1-1981
- FS Lifts, Motor Vehicle, 00-L-360C, 1978

#### **Conveyors**

- ANSI Safety Standards for Conveyors and Related Equipment, B20.1-1976

#### **Cranes, Derricks and Hoists**

- ANSI Safety Code for Overhead and Gantry Cranes, B30.2.0-1976

#### **Industrial Lifts**

- ANSI Dockboards (Ramp), Industrial Loading, MH14.1-1978

#### **Manlifts**

- ANSI Safety Standard for Manlifts, A90.1-1976

**Elevators, Dumbwaiters and Escalators**

- ANSI Safety Code for Elevators and Escalators, ANSI/ASME A17.1-1981 including Supplement ANSI/ASME A17.1a-1982
- NFPA Fire Doors and Windows, No. 80-1981

**Engines For Emergency Use**

- NFPA Installation and Use of Stationary Combustion Engines and Gas Turbines, No. 37-1979

**Fire Protection Equipment**

- FMS Factory Mutual System Approval Guide, 1981
- NFPA Foam Extinguishing Systems, No. 11-1983 (ANSI Z286.1)
- NFPA Carbon Dioxide Extinguishing Systems, No. 12-1980 (ANSI A54.1)
- NFPA Halogenated Fire Extinguishing Agent Systems-Halon 1301, No. 12A-1980 (ANSI A54.4)
- NFPA Halogenated Fire Extinguishing Agent Systems-Halon 1211, No. 12B-1980 (ANSI A54.5)
- NFPA Sprinkler Systems, No. 13-1983 (ANSI A54.3)
- NFPA Installation of Standpipe and Hose Systems, No. 14-1983 (ANSI Z273.1)
- NFPA Water Spray Fixed Systems for Fire Protection, No. 15-1982 (ANSI A 54.2)
- NFPA Installation of Centrifugal Fire Pumps, No. 20-1983 (ANSI Z277.1)
- NFPA Central Station Protective Signaling System for Guard, Fire Alarm and Supervisory Service, No. 71-1982 (ANSI SE3.2)
- NFPA Local Protective Signaling Systems for Watchman, Fire Alarm and Supervisory Service, No. 72A-1979 (ANSI SE3.3)
- NFPA Auxiliary Protective Signaling Systems for Fire Alarm Service, No. 72B-1979 (ANSI SE3.4)
- NFPA Remote Station Protective Signaling System for Fire Alarm and Supervisory Service, No. 72C-1982 (ANSI SE3.5)
- NFPA Proprietary Protective Signaling Systems for Watchmen, Fire Alarm and Supervisory Service, No. 72D-1979 (ANSI SE3.6)
- NFPA Automatic Fire Detectors, No. 72E-1982 (ANSI SE3.13)
- NFPA Household Fire Warning Equipment, No. 74-1980 (ANSI SE3.14)
- NFPA Private Fire Service Mains and Their Appurtenances, No. 24-1981

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**GENERALLY ACCEPTED STANDARDS**

- UL Fire Protection Equipment Directory, January 1983, including Supplement
- UL Building Materials Directory, January 1983, including Supplement
- UL Fire Resistance Directory, January 1983, including Supplement

**Incinerators**

- NFPA Incinerators, Waste and Linen Handling Systems and Equipment, No. 82-1983

**Lightning Protection**

- ANSI Lightning Protection Code, (C5.1) ANSI/NFPA No. 78-1980

**Piping Equipment and Systems**

- ANSI Power Piping, B31.1-1980
- ANSI Fuel Gas Piping, B31.2-1968
- ANSI Refrigeration Piping, B31.5-1974
- ANSI Gas Transmission and Distribution Piping Systems, B31.8-1975
- NFPA National Fuel Gas Code, No. 54-1980 (ANSI Z223.1)

**Static Electricity**

- NFPA Recommended Practice on Static Electricity, No. 77-1983

**Tanks (See Flammable Liquids and Plumbing)****Venting (Explosion, Smoke and Heat)**

- NFPA Explosion Venting Guide, No. 68-1978
- NFPA Smoke and Heat Venting Guide, No. 204M-1982

**Window Cleaning Equipment**

- ANSI Safety Requirements for Window Cleaning, A39-1969
- DL Protection of Persons Employed at Window Cleaning — Structural Requirements, Equipment and Procedures, Industrial Code Rule No. 21 (21 NYCRR) as amended, effective October 1, 1966

- DL Advisory standards for Construction, Operation and Maintenance of Suspended Scaffolds used for Window Cleaning and Light Maintenance, AS 101, effective May 23, 1973

### **X-Ray and Gamma Ray Radiation**

- DH 10 NYCRR, Chapter I (State Sanitary Code), Part 16, Ionizing Radiation, October 31, 1977
- NCRP Medical X-Ray and Gamma-Ray Protection for Energies Up to 10 MeV — Equipment Design and Use, NCRP Report No. 33 (1968)
- NCRP Dental X-Ray Protection, NCRP Report No. 35 (1970)
- NCRP Radiation Protection in Veterinary Medicine, NCRP Report No. 36 (1970)
- NCRP Protection Against Radiation from Brachytherapy Sources, NCRP Report No. 40 (1972)
- NCRP Structural Shielding Design and Evaluation for Medical Use of X-Rays and Gamma Rays of Energies Up to 10 MeV, NCRP Report No. 49 (1976)
- NCRP Safe Handling of Radioactive Materials, NCRP Report No. 30, 1964
- DL Ionizing Radiation Protection, Industrial Code Rule No. 38 (12 NYCRR 38), as amended, effective July 10, 1978
- ANSI Fire Protection Practice for Facilities Handling Radioactive Materials, (N 693) ANSI/NFPA No. 801-1980
- ANSI General Safety Standard for Installation Using Non-Medical X-Ray and Sealed Gamma-Ray Sources, Energies up to 10 MeV, (N543) ANSI/NSB 114

### **High Frequency Radiation**

- FCC Federal Communications Commission's Rules Governing Industrial, Scientific and Medical Equipment, Volume II, Part 18, August, 1976

### **Article 13 Facilities for the Physically Handicapped**

- ANSI Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People, No. A117.1-1980

**Generally Accepted Standards With Code Reference Sections****Means of Egress**

NFPA Code for Safety to Life from Fire in Buildings and Structures, No. 101, 1981

**Fuel Gas Systems**

NFPA National Fuel Gas Code, No. 54, 1980

NFPA Liquefied Natural Gas, No. 59A, 1979

**Liquefied Petroleum Gas Containers and Tanks**

NFPA Liquefied Petroleum Gases, No 58, 1983

NFPA Liquefied Petroleum Gases at Utility Gas Plants, No. 59, 1979

**Fuel Oil Systems**

NFPA Oil Burning Equipment, No. 31, 1983

**Heating Systems**

NFPA Prevention of Furnace Explosions in Fuel Oil- and Natural Gas-Fired Single Burner Boiler-Furnaces, No. 85A-1982

NFPA Prevention of Furnace Explosions in Natural Gas-Fired Multiple Burner Boiler-Furnaces, No. 85B, 1978

NFPA Prevention of Furnace Explosions in Fuel Oil-Fired Multiple Burner Boiler-Furnaces, No. 85D, 1978

NFPA Prevention of Furnace Explosions in Pulverized Coal-Fired Multiple Boiler-Furnaces, No. 85E, 1980

NFPA Air Conditioning and Ventilating Systems, No. 90A, 1981

NFPA Warm Air Heating and Air Conditioning Systems, No. 90B, 1980

DL Boilers, Industrial Code Rule 4, 1965

DL Construction, Installation, Inspection and Maintenance of Steam Boilers, Industrial Code Rule 14, 1958

**Chimneys, Flues and Gasvents**

NFPA Chimneys, Fireplaces and Vents, No. 211, 1980

**Incinerators and Compactors**

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**ERRATA**

**FOR**

**NEW YORK STATE**

**UNIFORM FIRE PREVENTION**

**AND BUILDING CODE**

**JANUARY 1, 1984**



**NEW YORK STATE DIVISION OF**

**HOUSING AND COMMUNITY RENEWAL**

**MARIO M. CUOMO , GOVERNOR**

**YVONNE SCRUGGS-LEFTWICH , COMMISSIONER**

**TWO WORLD TRADE CENTER NEW YORK . N.Y.**

NEW YORK STATE UNIFORM FIRE PREVENTION AND BUILDING CODE  
JANUARY 1, 1984

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iii	Foreword-paragraph 4- line 3	objections	objectives
ix	Part 1195	449	450
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xvii	A108-New No.	606	606, 704.1a, b, c, d, e
xix	B105-New No.	604	651, 701.3e
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xix	B203-New No.	705	705, 1232.1
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xxii	C105-New No. C108-New No.	604, 651, 700.1 606	651 606, 704.1a,b,c,d,e
xxiv	C511-New No.	1060	765.1n, 1060, 1061
4	PART 606	ABBREVIATION	ABBREVIATIONS
5	appropriate. approved. -line 3	Especially 653	Especially 610
6	building.-line 1	partically	partially
8	equipment.-line 2	dub waiters	dumbwaiters
10	fire retardant wood. -line 2 -line 7	fireretardant Part 771	fire retardant Parts 718, 740, 772
11	habitable space.-line 5	public space	area of public assembly
14	lodger.	quest	guest
15	nonhabitable space.- -line 5	public space	area of public assembly
25	650.1-line 1	Chaper	Chapter
27	ARTICLE 2-line 2	BUILDING	FIRE
28	701.3e-line 2	738.8	738.8b,c
30	Classification by Fire Hazard 702.2c-3-line 1	707.2 C.3.	702.2 C3.3
31	703.2-line 5 -add 2 lines	parols --	parlors Greenhouses Launderettes
32	703.4b-line 1	C.3.2	C3.2
35	704.1a-line 4 704.1c-line 9	it resaisance	its resistance
36	704.1e - line 3		, and which the exterior walls of type 5a construction have a fire- resistance rating of not less 3/4 hour.
37	705.1c - new section	--	705.1c A building erected within more than one firelimits shall comply with the requirements of the more restrictive fire limits.
38	705.1g-5-new section	--	705.1g-5 For one- and two- family dwellings, a mezza- nine with a floor area less than one third of the floor area immediately below.
	renumber 705.1g-5 renumber 705.1g-6	705.1g-5 705.1g-6	705.1g-6 705.1g-7
39	705.4a-line 3 705.4d-2-line 2 705.4d-3-line 1	tupe I-771 require	type II-771 required

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42	Table I-704-footnote 1	definition of construction classification, section 606.3	Part 704
43	Table II-704-footnote 1 -footnote 4 -footnote 9	704.2a, b, c 738.2 Article	Part 704 739.2 Part
44	TABLE III-704 -column 1 heading -footnote 6 -footnote 7 -add footnote 10	Structural element 771.4h see ---	Structural element <sup>10</sup> 771.4h-8 see 771.3c, 10. For atrium exceptions see Part 769.
50	Table VI-705-heading line 2 -footnote 4	775.4 775	774.4 774
51	Table VII-705-heading line 2	775.4	774.4
52	Table VIII-705-heading line 2 line 2 -column 10 -footnote 2 line 2 line 3	705.1 and 705.4a 775.4 3,000 <sup>3</sup> 1060.4 771.4-a-6	705.4e 774.4 3,000 <sup>2</sup> 1060.3 771.4a-6
53	Table IX-705-heading line 2	Structure enclosing	Structure) enclosing
77	732.2a-3-line 1 732.2a-4-line 9	kitchens habitable	kitchens shall a habitable
79	733.1a-line 2	area	area may
80	733.1f-line 1 733.3a-line 3	Public through	Assembly or through
83	735.1i-line 3	Groups B3 and B4	group B4
85	735.2d-line 1 -line 2	shall ramps	shall not Ramps
86	735.3a-1-line 3 735.3a-4-line 4	slop terrace	slope terrace
88	Table I-735-Column 4 735.3a-7-line 2	36 in <sup>2</sup> one-half unit shall not	36 in <sup>3</sup> one-half unit shall
90	Table III-735-heading -add heading center column -column 3 line 8	Exits <sup>1</sup> --- stairway <sup>2</sup>	Exits <sup>2</sup> Path of Travel stairway
91	TABLE V-735 -column 2 (Stairs) -line 2 -line 3 -column 3 (Doors) -line 2 -line 3 -column 4 (Stairs) -line 2 -line 3 -column 5 (Doors) -line 2 -line 3	— 40 — 60 — 60 80 80 75 90 90	40 — 60 — 80 60 90 75
95	735.7d-line 9	unintential	unintentional
98	735.10a-2(iv)-line 4	1060.4h-4	1060.4g-4
99	735.10a-8	Public	Assembly
101	737.1i-line 1	100	1000
102	738.2b-1-line 2	738.2b-2	605.1 and 738.2b-2
108	738.8c-3-line 2	an building	a building
110	739.2b-1-line 1 -line 3	tween beat	barrier between at

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155	765.6e-line 3 765.6f-line 5	771.4g 771.4g	771.4h 771.4h
157	765.8a-paragraph Fourth, using...	VII-765	VIII-765
161	766.1a-line 1 766.1c-line 3	bathrub sections 771, 771.4, and 771.5	bathrub Part 772
162	767.1h-line 2 -line 3	770.4j 1000.2n	771.4j 1000.2m
163	767.1j-line 2 767.2a-line 3 767.2b-line 2	406 770.4 770.4j	774 771.4 771.4k
164	768.1c-line 4	769.3a	770.3
165	768.2m-line 2	1060.2a-1	1060.2
166	770.1b-line 2	II-702	III-704
168	770.2c-1-line 5 770.2c-2-line 3 770.2d-1-line 4	Section 769.2b 769.2b 769.2b	770.2b I-770 770.2b
169	Table I-770-column 1 -column 2 -add column 9 under 20	3 or more 0 ---	delete 3 or more np
174	770.6b-2-line 3 770.6c-1-line 2	770.5 II-702	III-770 III-704
176	771.1a-line 2 -line 3 771.1b-line 2 -line 3 771.1c-line 3 771.1e-add line 2	trusses II-702 fire-resistance 771.4a and 771.4b 771.4g ---	trusses III-704 fire-resistant 771.4b and 771.4c 771.4h See 771.41-8.
177	771.3a-line 3	II-702	III-704
178	771.3b-line 4 771.3c-line 5 171.3g-line 3	II-702 II-702 II-702	III-704 III-704 III-704
180	Table II-771-footnote 2 -footnote 2	770.4a 770.4b	771.4b 771.4c
181	771.4b-1(11)-line 6	I-771	II-771
182	771.4d-line 5 771.4f-2-line 4	771.4j-1 II-771	771.4k-1 III-771
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184	771.4h-1-line 1 771.4h-7-line 3 771.4h-8-line 3	fire - resistive 771.4k 771.4k	fire-resistant 771.41 771.41
185	771.4h-10-line 23	1060.9a (poor print)	1060.9a
186	771.4h-13-line 3 771.4f-1-line 5	771.4k 1060.4h	771.41 1060.4g
187	771.41-3-line 1	kitchens	kitchens
188	771.4k-2-line 6	II-702	III-704
189	771.41-1-line 4 -line 5 771.41-4-line 3 -line 4 -line 8	771.4h and 771. 41-2, 771.41-3 771.41-4 or shutters or shutters or shutter	771.4a-2, 771.4h, 771.41-2,-3 771.41-5 delete delete delete
190	771.5a-line 2	construction,	construction and
192	772.2b-7-line 3	inlocations	in locations
194	772.5f-line 3 772.6-line 3	772.4c resistance	772.3b-2 resistant

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111	739.3b-line 4	739.4d and 739.4e	739.3d and 739.3e
115	739.4d-7-line 3 739.4d-8-line 19	enclosed equipped with	enclosed equipped with means for both manual and automatic operation. For
116	739.4e-1-line 4	1060.4h	1060.4g
117	739.4f-4-line 3	least	least
118	739.4f-7-line 1 -line 3	incinerators Part 1005.	incinerators and refuse chutes Parts 1005 and 1065.
119	739.5c-line 3 -line 4 -line 8	or shutters or shutters shutter	delete delete delete
123	add heading 740.4a-line 2 740.5f-line 3	-- of 740.4c	740.4 Interior Trim or 740.3b-2
124	741.1e-1-line 2	740.3f	740.2b-6
125	742.1a-line 1 -line 2 -lines 3 and 4	A fire- and system, or the required...of both.	Except in groups B2 and B4, a fire- and system. delete
126	742.1b-line 2 742.1c-line 1	1060.4h-4 hotels, motels, lodging houses and dormitories	1060.4g  groups B2 and B4
127	742.4a-7-line 2 742.4b-line 2	25000 1060.4h	2,500 1060.4g
128	742.7-line 1 743.2b-line 1	1060.11 wi-h	1060.11 with
132	762.2b-line 7	Public	Assembly
134	763.1f-line 1	Public	Assembly
135	763.4-line 2	public	assembly
136	765.1c-line 1 765.1d-line 2 765.1f-line 2	public 771.4g load	assembly 771.4h lead
138	765.1g-line 4 765.2a-line 10	spiral snall	a spiral shall
140	Table I-765-footnote 1 line 1 -footnote 1 line 2	space pleased	space for more than 100 persons placed
144	765.3a-20-line 5 765.3b-1-line 2	fridiron 765.3a-6	gridiron 765.3b-6
145	765.3b-1-line 2 765.3b-6 - add reference number to paragraph 4	765.3a-2 and 765.3a-3  ---	765.3b-2 and 765.3b-3  (iii) The maximum.....
149	Table IV-765-footnote 1	765.4i	765.1i
150	heading Exterior Stairways 765.4c-3-line 7 765.4c-4-line 2	764.4c II-770 II-770	765.4c IV-765 IV-765
151	765.4d-1-line 4 heading Escalators 765.4e-1-line 6 add section 765.4f	771.4g 765.4 771.4g ---	771.4h 765.4e 771.4h 765.4f Elevators. Elevators shall not be in a common enclosing shaft with a stairway.
152	765.5a-1-line 9	toiler	toilet
154	765.5b-1-line 2 765.6a-line 2	three 771.4g	there 771.4h

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195	773.1e-1-line 2 773.1g-line 3	772.3i 100	772.2b-9 1000
196	774.1a-line 3	Manually	Manually
197	774.3b line 1	C62	C6.2
198	774.4a-1(vi) 774.a-8-line 1 -add paragraph (ii)	--- Group C6.2, in ---	delete Group C6.2: (i) In (ii) Sprinklers shall be provided in buildings of type 2a construction which exceed one story in height, and in all buildings of type 2b, 3, 4, and 5 construction.
199	774.5b-line 2	775.5c	774.5c
201	791.1-line 4	and	or
204	801.2a-2-line 4	character	character and
206	801.4b-1	inch.	inch, or
209	803.2b-1-line 2	loads	greatest loads
210	Table I-803-column 1 Attics: add line 9 -column 2 insert 10 between 20 and 30	--- ---	Inaccessible (load for emergency access) .. 10
213	Table III-803-column 1 line 20	realign Spaces...	align Spaces... with C6 Institutional
214	Table IV-803-heading -footnote 2	LOADS between	LOADS <sup>1</sup> between those tabulated, compute load by straight-line interpolation.
217	Table VI-803-column 1	501 to 500 <sup>3</sup>	501 to 600 <sup>3</sup>
221	805.5-line 3	units,	units or separate tenancies,
222	807.4-line 3	717.6a	717.6
223	PART 850	PART 850-903.24c-2	delete
227	900.2d	Groups C1 Business, C2 Mercantile and C3 Industrial, Other Than Foundries and C4 Storage	Groups C1-Business, C2-Mercantile, C3-Industrial (Other Than Foundries), and C4-Storage
237	901.6c-line 2	groud	ground
240	901.15a-line 1	stainer	strainer
245	901.18h-lines 3 and 4	See illustration entitled, "Water-tight Floor or Intervening Water-tight Barrier."	delete
246	901.19g-line 7	cleanour	cleanout
252	902.3e-line 2	equipmnt	equipment
253	902.3h-line 3	inche	inch
256	902.6a-line 3	conditions	condition
257	902.7d-line 2	value	valve
262	TABLE IV-902-NOTE:- line 1	leads	loads
271	903.9f-1-line 3	btween	between
272	903.9h-7-line 2	lenght	length
275	903.11-line 2 903.12c-line 2	required lie	require line

PAGE	REFERENCE	CHANGE FROM	CHANGE TO
276	903.14a-line 2	stake	stack
277	903.14b-line 4	attack	stack
278	903.14f-line 3	converged	conveyed
300	TABLE VI-903-footnote 1 line 2	multplying	multiplying
311	907.2c-4-line 3 -line 5	peppermnt peppermnt	peppermint peppermint
312	1000.1b-line 1	fiftheenth	fifteenth
314	1000.2g-1-line 2	which is	which it is
315	1000.2h-4-line 1	intergral	integral
316	1000.2j-1-line 2 1000.2l-1-line 3 -line 5	Part 850 area coil °F	of Part 850 areas coil to 215°F
317	PART 1001	PIPING	PIPING,
318	1001.5a-line 4	pressure	pressures
320	TABLE I-1002-column 4 heading line 4	tanks	tank
322	1003.1b-line 3	I-771	II-771
330	PART 1005	CHIMNEY	CHIMNEYS
331	1005.3a - line 2	provided	provide
333	TABLE II-1005-footnote 1 line 1 1005.7a-line 4 -line 5 1005.7b-line 5	amber chimnye 1005.5 structure	chamber chimney 1005.6 structure
334	1006.1a-line 3	noncombustable	noncombustible
338	1031.1d-line 2	740.3e, 740.3f, 772.3h and 772.3i	740.2b-5,-6 and 772.2b-8,-9
339	1032.3a-line 1 TABLE I-1032-column 1	public C1 to C6	assembly C1 to C4
340	1033.1b-line 2	kep	kept
341	1033.3c-line 1	electric	power for electric
342	1060.1-line 2 1060.2 1060.2a-4-line 4	Part 774 Alarm locationand	Parts 742 and 774 Fire Alarm location and
343	TABLE I-1060-column 1 line 4	realign Others..	align Others...with Group C6...
344	1060.3a-3-line 3	bulding	building
345	1060.3d-lines 3 and 4 1060.4a-4-lines 2 and 3	1061.2c, 1060.2d and 1060.2e. 1060.4g, 1060.4h and 1060.4i.	1060.2c and 1060.2d. 1060.4g and 1060.4h.
347	1060.4c-6-line 2	772.3h and 772.3i	740.2b-5,-6 and 772.2b-8,-9
348	1060.4e-3-line 10	indicat	indicate
354	1061.1g-subsection 7 1061.1j-lines 1 and 2	1061.1a 735.1n, 765.1n and 1061.5.	1061.1g 735.1n and 765.1n.
359	1062.2e-line 4	three-eights	three-eighths
366	1063.6d-line 3	passageay	passageway
376	1101.3d-line 3	1101.1c	1100.1c
377	1101.4c-line 2	1101.1c	1100.1c
378	1101.6-line 3 1101.7-line 3 1102.2b-line 2	1101.1c 1101.1c same (poor print)	1100.1c 1100.1c same

PAGE	REFERENCE	CHANGE FROM	CHANGE TO
379	1102.3b-1-lines 1 and 3 1102.3c-1-line 1 -line 2	Section 1100.1c. bathtubs and showers 1100.1c	Part 900. plumbing fixtures Part 900
385	1153.1a-line 1	imminent	imminent
391	1163.3i-line 2	liquified	liquefied
393	1163.9c-line 1	chimney	chimneys
396	1163.13b-6-line 2 1163.13d	Enforcement Hydrant	Enforcement Hydrant
397	1163.15a-line 2	indicated	indicate
402	1164.5d-line 2	rmoving	removing
405	1164.9e-line 2	enfocement	enforcement
411	1171.3b-3(v)	Occupanies	Occupancies
419	1171.4c	inuse	in use
424	TABLE I-1174-column 1 line 9	Perioxide	Peroxide
429	1175.6c-line 3	accidental	accidental
430	1176.1a-line 4	and 1176.1a-8:	1176.1a-8 and 1176.1a-9:
436	1179.1e-line 2	cubi	cubic
437	1181.1c-line 2 1182.1a-line 3	furnances electostatic	furnaces electrostatic
457	1220.1-line 2	section	sections
464	1232.1b-line 2 1232.2a-line 3 -line 4	1060.4h C3 or use	1060.4g C3 or C4 delete
472	1242.3e	encumberances	encumbrances
473	1242.8a-line 2	or	of
474	1243.3a-line 1	liquidtight	liquid-tight
475	1243.8a-line 2	conditions	condition
481	1250.1a-line 3	653	610
487	Article 2	Building	Fire
493	PLUMBING	(see pages G14 thru G20, stan- dards for Plumbing Materials)	delete
497	TABLE III-904-heading -column 2 line 14 -column 3 line 14	III-904.3 See ASTM B88-81 None	III-904 See ASTM B88-81
505	Hazardous Processes In Building - add	---	(see also Flammable Liquids)
506		see also Part 5, page 15, Flammable Liquids	delete
563	Tests - line 3 - line 7 - line 9 - line 13	653 653 653 653	610 610 610 610



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