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NATIONAL FIRE PROTECTION ASSOCIATION, INC.
Batterymarch Park, Quincy, MA 02269

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NOTICE

All questions or other communications relating to this document should be sent only to NFPA Headquarters, addressed to the attention of the Committee responsible for the document.

For information on obtaining Formal Interpretations of the document, proposing Tentative Interim Amendments, proposing amendments for Committee consideration, and appeals on matters relating to the content of the document, write to the Vice President and Chief Engineer, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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Code for Safety to Life

from Fire in Buildings and Structures

NFPA *101*® —1981

The 1981 Edition of the *Life Safety Code*®

This 1981 edition of the *Life Safety Code* was adopted by the National Fire Protection Association, Inc. on November 18, 1980 at its 1980 Fall Meeting in San Diego, California and was released by the Standards Council on January 29, 1981. This 1981 edition supersedes the 1976 edition and all other previous editions.

Major changes from the 1976 edition include: restructuring of internal chapter organization to a standard format; new requirements for Atriums, Detention and Correctional Facilities, Ambulatory Health Care Facilities and Apartments for the Elderly; significant changes in the requirements contained in Chapters 5, 6, and 7; and the splitting into separate chapters the requirements for New and Existing Buildings. All significant changes in requirements have been identified by a vertical line in the margin. A cross reference index to the 1973 and 1976 editions has been included to assist the user.

NOTICE

Following release of this edition of the *Life Safety Code* by the NFPA Standards Council, an appeal was filed with the Board of Directors. The appeal requests that those portions of Chapters 18 and 19 pertaining to housing for the elderly be returned to Committee for further study. NFPA will announce the disposition of the appeal when it has been determined. Anyone wishing to receive automatically the disposition of the appeal should notify the Secretary, Standards Council, NFPA Headquarters.

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This list represents the membership at the time the Committee was balloted on the text of this edition. Since that time, changes in the membership may have occurred.

Note: Membership on a Committee shall not in and of itself constitute an endorsement of the Association or of any document developed by the Committee on which the member serves.

Origin and Development of *101*

The *Life Safety Code* had its origin in the work of the Committee on Safety to Life of the National Fire Protection Association which was appointed in 1913. For the first few years of its existence the Committee devoted its attention to a study of the notable fires involving loss of life and in analyzing the causes of this loss of life. This work led to the preparation of standards for the construction of stairways, fire escapes, etc., for fire drills in various occupancies and for the construction and arrangement of exit facilities for factories, schools, etc., which form the basis of the present *Code*. These reports were adopted by the National Fire Protection Association and published in pamphlet form as "Outside Stairs for Fire Exits" (1916) and "Safeguarding Factory Workers from Fire" (1918). A pamphlet, "Exit Drills in Factories, Schools, Department Stores and Theatres," published in 1912 following its presentation by the late Committee member Mr. R. H. Newbern at the 1911 Annual Meeting of the Association, although antedating the organization of the Committee, is considered as having the status of a Committee publication and had been used with the other pamphlets as a groundwork for the present *Code*. These pamphlets were widely circulated and put into quite general use.

In 1921 the Committee was enlarged to include representation of certain interested groups not previously participating, and work was started on the further development and integration of previous Committee publications to provide a comprehensive guide to exits and related features of life safety from fire in all classes of occupancy, to be known as the *Building Exits Code*. Various drafts were published, circulated and discussed over a period of years and the first edition of the *Building Exits Code* was published by the National Fire Protection Association in 1927. Thereafter the Committee continued its deliberations, adding new material on features not originally covered, and revising various details in the light of fire experience and practical experience in the use of the *Code*. New editions were published in 1929, 1934, 1936, 1938, 1939, 1942, and 1946 to incorporate the amendments adopted by the National Fire Protection Association.

The Cocoanut Grove Night Club fire in Boston in 1942 in which 492 lives were lost focused national attention upon the importance of adequate exits and related fire safety features. Public attention to exit matters was further stimulated by the series of hotel fires in 1946 (LaSalle, Chicago — 61 dead; Canfield, Dubuque — 19 dead; and the Winecoff, Atlanta — 119 dead). The *Building Exits Code* thereafter was used to an increasing extent

for legal regulatory purposes. However, the *Code* was not in suitable form for adoption into law, as it had been drafted as a reference document containing many advisory provisions useful to designers of buildings, but not appropriate for legal use. This led to a decision by the Committee to re-edit the entire *Code* limiting the body of the text to requirements suitable for mandatory application and placing advisory and explanatory material in notes. The re-editing also involved adding to the *Code* provisions on many features in order to produce a complete document. Preliminary work was carried on concurrently with development of the 1948, 1949, 1951 and 1952 editions. The results were incorporated in the 1956 edition, and further refined in subsequent editions dated 1957, 1958, 1959, 1960, 1961 and 1963.

In 1955 separate documents, NFPA 101B and NFPA 101C, were published on nursing homes and interior finish, respectively. NFPA 101C was revised in 1956. These publications have since been withdrawn.

In 1963 the Safety to Life Committee was reconstructed. The Committee was decreased in size to include only those having very broad knowledge in fire matters and representing all interested factions. The Committee served as a review and correlating committee for seven Sectional Committees whose personnel included members having a special knowledge and interest in various portions of the *Code*.

Under the revised structure, the Sectional Committees through the Safety to Life Committee prepared the 1966 edition of the *Code* which was a complete revision of the 1963 edition. The *Code* title was changed from *Building Exits Code* to the *Code for Life Safety from Fire in Buildings and Structures*, the text was put in "code language" and all explanatory notes were placed in an appendix. The contents of the *Code* were arranged in the same general order as contents of model building codes because the *Code* is used primarily as a supplement to building codes.

The *Code* was placed on a three-year revision schedule, with new editions adopted in 1967, 1970, 1973, and 1976.

In 1977 the Committee on Safety to Life was reorganized as a Technical Committee with an Executive Committee and eleven standing subcommittees responsible for various chapters and sections. The 1981 edition contains major editorial changes including reorganization within the occupancy chapters to make them parallel to each other and the splitting of requirements for new and existing buildings into separate chapters. New chapters on Detention and Correctional Facilities were added as well as new requirements for Atriums, Apartments for the Elderly, and Ambulatory Health Care Centers.

In all of the work in developing the various sections of the *Code* the groups particularly concerned have been consulted. All public proposals have been reviewed and these proposals along with Committee proposals and the Committee's response to all proposals have been published by the NFPA for review by all concerned and any comments received have been discussed and many have been adopted by the Committee or at meetings of the NFPA. Records of the discussions and action taken by the NFPA will be found in the *Technical Committee Reports* and the *Technical Committee Documentation.*

The Committee welcomes comments and suggestions on the *Life Safety Code.* Any reader may file a request for consideration of changes. Such requests should be filed in writing, giving specific proposals and supporting data.

Interpretations

Those who after diligent study of the *Life Safety Code* are in doubt as t the meaning or intent of some specifically identified section or paragraph of this *Code* may write to the Secretary of the Committee for an interpretation.

Appropriate excerpts from the NFPA "Regulations Governing Technical Committees" and giving details on the procedures to be followed in submitting requests for interpretations are given below.

Since the NFPA "Regulations Governing Technical Committees" require that all Official Interpretations rendered be published by the Association, all information shall be submitted in writing. Plans and sketches may be submitted as supplementary material but shall not be necessary for a complete understanding of the question requiring interpretation or the interpretation itself. No judgments will be rendered by the Interpretations Committee regarding the degree of compliance with the *Code* of a set of drawings.

Extracts from NFPA "Regulations Governing Technical Committees," Section 16. Formal Interpretations.

16-2. Nature of Formal Interpretations. Two general forms of Formal Interpretations are recognized:

(a) Those making an interpretation of the literal text.

(b) Those making an interpretation of the intent of the Technical Committee when the particular text was issued.

16-3. Editions to Be Interpreted. Interpretations shall be rendered on the text of the latest adopted Document and any text of earlier editions which is identical to the text in the latest Document. Interpretations may be rendered to the requester on text of an outdated Document where such has been revised in or deleted from later editions. If possible, the requester should be informed why the text was revised or deleted.

16-4. Method of Requesting Formal Interpretations. A request for a Formal Interpretation shall be directed to the Council Secretary, at the National Fire Protection Association Headquarters. The request shall include a statement in which shall appear specific references to a single problem and identifying the portion (article, section, paragraph, etc.) of the Document and edition of the Document on which an Interpretation is requested. Such a request shall be in writing and shall indicate the business interest of the requester. A request involving an actual field situation shall so state and all parties involved shall be named and notified.

Contents

Code for Safety to Life from Fire in Buildings and Structures

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CHAPTER 1 ADMINISTRATION

NOTICE: An asterisk (*) following the number or letter designating a paragraph indicates explanatory material on that paragraph in Appendix A.

SECTION 1-1 TITLE

1-1.1 This *Code* shall be known as the *Life Safety Code*, may be cited as such, and is referred to herein as "this *Code*" or "the *Code*."

SECTION 1-2 PURPOSE

1-2.1 The purpose of this *Code* is to establish minimum requirements that will provide a reasonable degree of safety from fire in buildings and structures.

1-2.2 The *Code* endeavors to avoid requirements that might involve unreasonable hardships or unnecessary inconvenience or interference with the normal use and occupancy of a building but insists upon compliance with a minimum standard for fire safety consistent with the public interest.

SECTION 1-3 SCOPE

1-3.1* This *Code* addresses life safety from fire and similar emergencies.

1-3.2 The *Code* addresses those construction, protection, and occupancy features necessary to minimize danger to life from fire, smoke, fumes, or panic.

1-3.3 The *Code* identifies the minimum criteria for the design of egress facilities so as to permit prompt escape of occupants from buildings or, where desirable, into safe areas within the building.

1-3.4 The *Code* recognizes that life safety is more than a matter of egress and, accordingly, deals with other considerations that are essential to life safety.

1-3.5 Vehicles, vessels, or other mobile structures shall be treated as buildings in regard to means-of-egress requirements when in fixed locations and occupied as buildings.

1-3.6 The *Code* does not attempt to address those general fire prevention or building construction features that are normally a function of fire prevention and building codes.

1-3.7 The prevention of accidental personal injuries during the course of normal occupancy of buildings, personal injuries incurred by an individual due to his own negligence, and the preservation of property from loss by fire have not been considered as the basis for any of the provisions of this *Code*.

SECTION 1-4 APPLICATION

1-4.1 The *Code* applies to both new construction and existing buildings. In various chapters there are specific provisions for existing buildings which may differ from those for new construction.

1-4.2 Where specific requirements contained in Chapters 8 through 30 differ from similar requirements contained in Chapters 1 through 7, the requirements of Chapters 8 through 30 shall govern.

1-4.3* Alterations shall not diminish the level of life safety below that which exists prior to the alteration. Life safety features which do not meet the requirements for new buildings but exceed the requirements for existing buildings shall not be further diminished. Life safety features in excess of those required for new construction are not required to be maintained. In no case shall the resulting life safety be less than that required for existing buildings.

1-4.4 Additions shall conform to the provisions for new construction.

1-4.5 Where two or more classes of occupancy occur in the same building or structure, and are so intermingled that separate safeguards are impracticable, means of egress facilities, construction, protection, and other safeguards shall comply with the most restrictive life safety requirements of the occupancies involved.

Exception: As otherwise specified in Chapters 8 through 30.

1-4.6* The authority having jurisdiction shall determine the adequacy of means of egress and other measures for life safety from fire in accordance with the provisions of this *Code*. In existing buildings the authority having jurisdiction may grant exceptions from this *Code*, but only when it is clearly evident that reasonable safety is provided.

1-4.7 Provisions in Excess of Code Requirements. Nothing in this *Code* shall be construed to prohibit a better type of building construction, more exits, or otherwise safer conditions than the minimum requirements specified in this *Code*.

SECTION 1-5 EQUIVALENCY CONCEPTS

1-5.1 Nothing in this *Code* is intended to prevent the use of systems, methods, or devices of equivalent or superior quality, strength, fire resistance, effectiveness, durability, and safety to those prescribed by this *Code*, providing technical documentation is submitted to the authority having jurisdiction to demonstrate equivalency and the system, method, or device is approved for the intended purpose.

1-5.2 The specific requirements of this *Code* for existing buildings may be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life from fire as practical, but in no case shall the modification afford less safety to life than compliance with the corresponding provisions contained in this *Code* for existing buildings. (*See also 1-5.1.*)

SECTION 1-6 OCCUPANCY (*See also Section 30-1.*)

1-6.1 No new construction or existing building shall be occupied in whole or in part in violation of the provisions of this *Code*.

1-6.2 Existing buildings that are occupied at the time of adoption of the *Code* may be continued in use provided:

(a) The occupancy classification remains the same.

(b) No serious life safety hazard exists that would constitute an imminent threat.

(c) Only those requirements whose application would be clearly impractical in the judgment of the authority having jurisdiction shall be modified.

1-6.3* Buildings or portions of buildings may be occupied during construction, repair, alterations, or additions only if all means of egress and all fire protection features are in place and continuously maintained for the part occupied.

1-6.4 Changes of Occupancy. A change from one occupancy classification to another in any building or structure whether necessitating a physical alteration or not may be made only if such building or structure conforms with the requirements of this *Code* applying to new construction of the proposed new use.

CHAPTER 2 FUNDAMENTAL REQUIREMENTS

2-1 Every building or structure, new or old, designed for human occupancy shall be provided with exits sufficient to permit the prompt escape of occupants in case of fire or other emergency. The design of exits and other safeguards shall be such that reliance for safety to life in case of fire or other emergency will not depend solely on any single safeguard; additional safeguards shall be provided for life safety in case any single safeguard is ineffective due to some human or mechanical failure.

2-2 Every building or structure shall be so constructed, arranged, equipped, maintained and operated as to avoid undue danger to the lives and safety of its occupants from fire, smoke, fumes, or resulting panic during the period of time reasonably necessary for escape from the building or structure in case of fire or other emergency.

2-3 Every building or structure shall be provided with exits of kinds, numbers, location, and capacity appropriate to the individual building or structure, with due regard to the character of the occupancy, the number of persons exposed, the fire protection available, and the height and type of construction of the building or structure, to afford all occupants convenient facilities for escape.

2-4 In every building or structure, exits shall be so arranged and maintained as to provide free and unobstructed egress from all parts of the building or structure at all times when it is occupied. No lock or fastening shall be installed to prevent free escape from the inside of any building.

Exception: Locks shall be permitted in mental health, detention, or corrective institutions where supervisory personnel are continually on duty and effective provisions are made to remove occupants in case of fire or other emergency.

2-5 Every exit shall be clearly visible or the route to reach it shall be conspicuously indicated in such a manner that every occupant of every building or structure who is physically and mentally capable will readily know the direction of escape from any point. Each means of egress, in its entirety, shall be so arranged or marked that the way to a place of safety is indicated in a clear manner. Any doorway or passageway that is not an exit or a way to reach an exit, but is capable of being confused with an exit shall be so arranged or marked to prevent occupant confusion with acceptable exits. Every effort shall be taken to avoid occupants mistakenly traveling into dead end spaces in a fire emergency.

2-6 When artificial illumination is required in a building or structure, exit facilities will be included in the lighting design in an adequate and reliable manner.

2-7 Fire alarm facilities shall be provided, where necessary, to warn occupants of the existence of fire in every building or structure of such size, arrangement, or occupancy that a fire may not itself provide adequate occupant warning. Fire alarms will alert occupants to initiate escape. Fire alarms facilitate the orderly conduct of fire exit drills.

2-8 Two means of egress, as a minimum, shall be provided in every building or structure, section, or area where the size, occupancy, and arrangement endangers occupants attempting to use a single means of egress which is blocked by fire or smoke. The two means of egress shall be arranged to minimize the possibility that both may be impassable by the same fire or emergency condition.

2-9 Every vertical way of exit and other vertical opening between floors of a building shall be suitably enclosed or protected, as necessary, to afford reasonable safety to occupants while using exits and to prevent spread of fire, smoke, or fumes through vertical openings from floor to floor before occupants have entered exits.

2-10* Compliance with this *Code* shall not be construed as eliminating or reducing the necessity for other provisions for safety of persons using a structure under normal occupancy conditions. Also no provision of the *Code* shall be construed as requiring or permitting any condition that may be hazardous under normal occupancy conditions.

CHAPTER 3 DEFINITIONS

SECTION 3-1 GENERAL

3-1.1 The following terms, for the purposes of this *Code*, shall have the meanings given in this chapter, if not otherwise modified for a specific occupancy.

3-1.2 Words used in the present tense include the future; words used in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural the singular.

3-1.3 Where terms are not defined in this chapter, they shall have their ordinarily accepted meanings or such as the context may imply.

SECTION 3-2 DEFINITIONS

Addition. An extension or increase in floor area or height of a building or structure.

Apartment Building. (*See Section 18-1 or 19-1.*)

Approved.* Means "acceptable to the authority having jurisdiction."

Area. See Floor Area.

Arena Stage. A stage or platform open on at least three sides to audience seating. It may be with or without overhead scene handling facilities.

Atrium. A floor opening or series of floor openings connecting two or more stories that is covered at the top of the series of openings and is used for purposes other than an enclosed stairway; elevator hoistway; or utility shaft used for plumbing, electrical, air conditioning, or communication facilities.

Authority Having Jurisdiction.* The "authority having jurisdiction" is the organization, office, or individual responsible for "approving" equipment, an installation, or a procedure.

Automatic. Providing a function without the necessity of human intervention.

Building. Any structure used or intended for supporting or sheltering any use or occupancy. The term building shall be construed as if followed by the words "or portions thereof." (*See Structure.*)

Building, Existing. Any structure erected prior to the adoption of this *Code* or for which a permit for construction has been issued.

Business Occupancy. (*See Section 4-1.*)

Child Day-Care Centers. (*See Section 10-7 or 11-7.*)

Combustible. Capable of undergoing combustion.

Combustion. A chemical process that involves oxidation sufficient to produce light or heat.

Common Atmosphere (Educational Occupancies). (*See Section 10-1 or 11-1.*)

Correctional Occupancies. (*See Section 4-1.*)

Court. An open, uncovered, unoccupied space, unobstructed to the sky, bounded on three or more sides by exterior building walls.

Court, Enclosed. A court bounded on all sides by the exterior walls of a building or exterior walls and lot lines on which walls are allowable.

Critical Radiant Flux. The level of incident radiant heat energy on a floor covering system at the most distant flameout point as determined by the test procedure of *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, NFPA 253 (*see Appendix B*). The unit of measurement of critical radiant flux is watts per square centimeter (watts/cm^2).

Detention Occupancies. (*See Section 4-1.*)

Dormitories. (*See Section 16-1 or 17-1.*)

Educational Occupancies. (*See Section 10-1 or 11-1.*)

Existing. That which is already in existence at the date when this *Code* goes into effect, as existing buildings, structures, or exit facilities.

Exit. That portion of a means of egress that is separated from all other spaces of the building or structure by construction or equipment as required in 5-1.3.1 to provide a protected way of travel to the exit discharge.

Exit Access. That portion of a means of egress which leads to an entrance to an exit.

Exit Discharge. That portion of a means of egress between the termination of an exit and a public way.

Family Day-Care Home. (*See Section 10-9 or 11-9.*)

Fire Barrier. A fire barrier is a continuous membrane, either vertical or horizontal, such as a wall or floor assembly, that is designed and constructed with a specified fire resistance rating to limit the spread of fire and which will also restrict the movement of smoke. Such barriers may have protected openings. (*See 6-2.2.*)

Fire Compartment.* A fire compartment is a space within a building that is enclosed by fire barriers on all sides, including the top and bottom. (*See 6-2.2.*)

Fire Resistance Rating. The time, in minutes or hours, that materials or assemblies have withstood a fire exposure as established in accordance with the test procedures of *Standard Methods of Fire Tests of Building Construction and Materials*, NFPA 251 (*see Appendix B*).

Fire Window. A window assembly, including frame, wired glass, and hardware that under the *Standard for Fire Tests of Window Assemblies*, NFPA 257 (*see Appendix B*) meets the fire protective requirements for the location in which it is to be used.

Flame Spread. The propagation of flame over a surface. (*See Section 6-5.*)

Flexible Plan Educational Buildings. (*See Section 10-1 or 11-1.*)

Floor Area, Gross. Gross floor area shall be the floor area within the inside perimeter of the outside walls of the building under consideration with no deduction for hallways, stairs, closets, thickness of interior walls, columns, or other features. Where the term area is used elsewhere in this *Code*, it shall be understood to be gross area unless otherwise specified.

Floor Area, Net. Net floor area shall be the actual occupied area, not including accessory unoccupied areas or thickness of walls.

General Industrial Occupancies. (*See Section 28-1.*)

Group Day-Care Homes. (*See Section 10-8 or 11-8.*)

Guard. A vertical protective barrier erected along exposed edges of stairways, balconies, etc.

Handrail. A bar, pipe, or similar member designed to furnish persons with a handhold. (A handrail, if of suitable design, may also serve as part of a guard.)

Hazardous Areas. Areas of structures, buildings, or parts thereof used for purposes that involve highly combustible, highly flammable, or explosive products or materials that are likely to burn with extreme rapidity or that may produce poisonous fumes or gases, including highly toxic or noxious alkalies, acids, or other liquids or chemicals that involve flame, fume, explosive, poisonous or irritant hazards; also uses that cause division of material into fine particles or dust subject to explosion or spontaneous combustion, and uses that constitute a high fire hazard because of the form, character, or volume of the material used.

Health Care Occupancies. (*See Section 4-1.*)

High Hazard Industrial Occupancy. (*See Section 28-1.*)

Horizontal Exit. (*See 5-1.2.5.*)

Hospital. (*See Section 12-1 or 13-1.*)

Hotel. (*See Section 16-1 or 17-1.*)

Industrial Occupancy. (*See Section 4-1.*)

Interior Finish. (*See Section 6-5.*)

Interior Floor Finish. (*See Section 6-5.*)

Interior Room (Educational Occupancies). (*See Section 10-1 or 11-1.*)

Limited-Combustible. As applied to a building construction material, means a material, not complying with the definition of noncombustible material, that, in the form in which it is used, has a potential heat value not exceeding 3500 Btu per lb (8.14×10^6 J/Kg),[1] and complies with one of the following paragraphs (a) or (b).

Materials subject to increase in combustibility or flame spread rating beyond the limits herein established through the effects of age, moisture, or other atmospheric condition shall be considered combustible.

(a) Materials having a structural base of noncombustible material with a surfacing not exceeding a thickness of ⅛ in. (3.175 mm) that has a flame spread rating not greater than 50.

(b) Materials, in the form and thickness used, other than as described in (a), having neither a flame spread rating greater than 25 nor evidence of continued progressive combustion and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread rating greater than 25 nor evidence of continued progressive combustion.

Load, Live. The weight superimposed by the use and occupancy of the building, not including the wind load, earthquake load, or dead load.

Lodging Homes. (*See Section 20-1.*)

Means of Egress. (*See Section 5-1.*)

Means of Escape. A way out of a building or structure that does not conform to the strict definition of means of egress but does provide an alternate way out.

Mercantile Occupancies. (*See Section 4-1.*)

Noncombustible. A material which in the form in which it is used and under the conditions anticipated will not aid combustion or add appreciable heat to an ambient fire. Materials, when tested in accordance with *Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C*, ASTM E136 (*see Appendix B*) and conforming to the criteria contained in Section 6 of the referenced standard shall be considered as noncombustible.

Nursing Homes. (*See Section 12-1 or 13-1.*)

Occupancy. The purpose for which a building or portion thereof is used or intended to be used.

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[1]See *Standard Test Method for Potential Heat of Building Materials*, NFPA 259, and *Standard Types of Building Construction*, NFPA 220 (*see Appendix B*).

Occupant Load. The total number of persons that may occupy a building or portion thereof at any one time.

One- and Two- (1-2-) Family Dwellings. (*See Section 22-1.*)

Open Industrial Structures. (*See Section 28-1.*)

Open Plan Educational Buildings. (*See Section 10-1 or 11-1.*)

Outpatient (Ambulatory) Clinics. (*See Section 12-1 or 13-1.*)

Outside Stairs. Outside stairs include stairs in which at least one side is open to the outer air. (*See 5-2.5.*)

Penal Occupancies. (*See Section 4-1.*)

Place of Assembly. (*See Section 4-1.*)

Platform, Enclosed (Stage). (*See Section 8-1 or 9-1.*)

Plenum. An air compartment or chamber to which one or more ducts are connected and which forms part of an air distribution system.

Proscenium Wall. (*See Section 8-1 or 9-1.*)

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 (304.8 cm).

Ramp. An inclined floor surface. (*See 5-2.6.*)

Residential Occupancies. (*See Section 4-1.*)

Residential-Custodial Care Facility. (*See Section 12-1 or 13-1.*)

Room (Educational Occupancies). (*See Section 10-1 or 11-1.*)

Rooming House. (*See Section 20-1.*)

Self-closing. Equipped with an approved device which will ensure closing after having been opened.

Separate Atmosphere (Educational Occupancies). (*See Section 10-1 or 11-1.*)

Separate Means of Egress (Educational Occupancies). (*See Section 10-1 or 11-1.*)

Smoke Barrier. A smoke barrier is a continuous membrane, either vertical or horizontal, such as a wall, floor, or ceiling assembly, that is designed and constructed to restrict the movement of smoke. A smoke barrier may or may not have a fire resistance rating. Such barriers may have protected openings. (*See Section 6-3.*)

Smoke Compartment.* A smoke compartment is a space within a building enclosed by smoke barriers or fire barriers on all sides, including the top and bottom. (*See Section 6-3.*)

Smoke Detector. A device which senses visible or invisible particles of combustion.

Special Purpose Industrial Occupancies. (*See Section 28-1.*)

Stage. (*See Section 8-1 or 9-1.*)

Storage Occupancy. (*See Section 4-1.*)

Stores. (*See Section 24-1 or 25-1.*)

Story. That portion of a building included between the upper surface of a floor and the upper surface of the floor or roof next above.

Street. Any public thoroughfare (street, avenue, boulevard) 30 ft (914.4 cm) or more in width that has been dedicated or deeded to the public for public use and is accessible for use by the fire department in fighting fire. Enclosed spaces and tunnels, even though used for vehicular and pedestrian traffic, are not considered as streets for the purposes of the *Code*.

Street Floor. Any story or floor level accessible from the street or from outside the building at ground level with floor level at main entrance not more than three risers above or below ground level at these points, and so arranged and utilized as to qualify as the main floor. Where, due to differences in street levels, there are two or more stories accessible from the street, each is a street floor for the purposes of the *Code*. Where there is no floor level within the specified limits for a street floor above or below ground level, the building shall be considered as having no street floor.

Structure. That which is built or constructed. The term structure shall be construed as if followed by the words "or portion thereof." (*See Building.*)

Thrust Stage. (*See Section 8-1 or 9-1.*)

Unit of Exit Width. (*See Section 5-3.*)

Vertical Opening. An opening through a floor or roof.

Yard. An open, unoccupied space other than a court, unobstructed from the ground to the sky, except where specifically provided by the *Code*, on the lot on which a building is situated.

CHAPTER 4 CLASSIFICATION OF OCCUPANCY AND HAZARD OF CONTENTS

SECTION 4-1 CLASSIFICATION OF OCCUPANCY

4-1.1* A building or structure shall be classified as follows, subject to the ruling of the authority having jurisdiction in case of question as to proper classification in any individual case.

4-1.2* **Assembly** (*for requirements see Chapters 8 and 9*). Places of assembly include, but are not limited to, all buildings or portions of buildings used for gathering together 50 or more persons for such purposes as deliberation, worship, entertainment, amusement, or awaiting transportation. Assembly occupancies include:

Theaters
Motion picture theaters
Assemply halls
Auditoriums
Exhibition halls
Museums
Libraries
Skating rinks
Gymnasiums
Bowling lanes
Pool rooms
Armories
Restaurants
Churches
Dance halls
Club rooms
Passenger stations and terminals of air, surface, underground, and marine public transportation facilities
Recreation piers
Courtrooms
Conference rooms
Drinking establishments
Mortuary chapels
College and university classrooms, 50 persons and over

Occupancy of any room or space for assembly purposes by less than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classed as part of the other occupancy and subject to the provisions applicable thereto.

4-1.3* **Educational** (*for requirements see Chapters 10 and 11*). Educational occupancies include all buildings used for the gathering of groups of 6 or more persons for purposes of instruction. Educational occupancies include:

Schools
Academies
Nursery schools
Kindergartens
Child day-care facilities

Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*.

Exception: Licensed day-care facilities shall include those of any capacity.

In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

4-1.4 Health Care (*for requirements see Chapters 12 and 13*). Health care occupancies are those used for purposes such as medical or other treatment or care of persons suffering from physical or mental illness, disease or infirmity; and for the care of infants, convalescents, or infirm aged persons. Health care occupancies provide sleeping facilities for the occupants or are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

Health care occupancies are treated in this *Code* in the following groups.

(a) Health care facilities
    Hospitals
    Nursing homes
(b) Residential-custodial care
    Nurseries
    Homes for the infirm aged
    Mentally retarded care institutions
(c) Supervisory care facilities
(d) Ambulatory care facilities

4-1.5 Detention and Correctional Occupancies (*for requirements see Chapters 14 and 15*). Detention and correctional occupancies (also known as Residential-Restrained Care Institutions) are those used to house occupants under some degree of restraint or security. Detention and correctional occupancies are occupied by persons who are mostly incapable of self-preservation because of security measures not under the occupants' control.

Detention and correctional occupancies include:

Residential-restrained care	Jails
Penal institutions	Detention centers
Reformatories	Correctional centers

4-1.6 Residential (*for requirements see Chapters 16 through 23*). Residential occupancies are those occupancies in which sleeping accommodations are provided for normal residential purposes and include all buildings designed to provide sleeping accommodations.

Exception: Those classified under Health Care or Detention and Correctional Occupancies.

Residential occupancies are treated separately in this *Code* in the following groups:

(a) Hotels (*Chapters 16 and 17*)
Motels
(b) Apartments (*Chapters 18 and 19*)
Apartments for the Elderly
(c) Dormitories (*Chapters 16 and 17*)
Orphanages for age 6 years and older
(d) Lodging or rooming houses (*Chapter 20*)
(e) One- and two-family dwellings (*Chapter 22*)

4-1.7* Mercantile (*for requirements see Chapters 24 and 25*). Mercantile occupancies include stores, markets, and other rooms, buildings, or structures for the display and sale of merchandise. Included in this occupancy group are:

Supermarkets
Department stores
Shopping centers
Drugstores
Auction rooms

Minor merchandising operations in buildings predominantly of other occupancies, such as a newsstand in an office building, shall be subject to the exit requirements of the predominant occupancy.

4-1.8* Business (*for requirements see Chapters 26 and 27*). Business occupancies are those used for the transaction of business (other than that covered under Mercantile), for the keeping of accounts and records, and similar purposes. Included in this occupancy group are:

Doctors' offices
Dentists' offices
City halls
General offices
Town halls
Courthouses
Outpatient clinics, ambulatory
College and university — instructional buildings, classrooms under 50 persons, and instructional laboratories

Minor office occupancy incidental to operations in another occupancy shall be considered as a part of the predominating occupancy and shall be subject to the provisions of this *Code* applying to the predominating occupancy.

4-1.9 Industrial (*for requirements see Chapter 28*). Industrial occupancies include factories making products of all kinds and properties devoted to operations such as processing, assembling, mixing, packaging, finishing or decorating, and repairing, including, among others, the following:

Factories of all kinds
Laboratories
Dry cleaning plants
Power plants
Pumping stations
Smokehouses
Laundries
Creameries
Gas plants
Refineries
Sawmills
College and university non-instructional laboratories

4-1.10* Storage (*for requirements see Chapter 29*). Storage includes all buildings or structures utilized primarily for the storage or sheltering of goods, merchandise, products, vehicles, or animals. Included in this occupancy group are:

Warehouses	Parking garages
Cold storage	Hangars
Freight terminals	Grain elevators
Truck and marine terminals	Barns
Bulk oil storage	Stables

Minor storage incidental to another occupancy shall be treated as part of the other occupancy.

4-1.11 Unusual Structures. Occupancies in unusual structures include any building or structure which cannot be properly classified in any of the preceding occupancy groups, either by reason of some function not encompassed or some unusual combination of functions necessary to the purpose of the building or structure. Such miscellaneous buildings and structures shall conform to the fundamental principles stated in Chapter 2 of this *Code* and to any specific provisions applicable thereto in Chapter 30.

4-1.12 Mixed Occupancies (*see 1-4.5*).

SECTION 4-2 HAZARD OF CONTENTS

4-2.1 General.

4-2.1.1 The hazard of contents, for the purpose of this *Code*, shall be the relative danger of the start and spread of fire, the danger of smoke or gases generated, and the danger of explosion or other occurrence potentially endangering the lives and safety of the occupants of the building or structure.

4-2.1.2* Hazard of contents shall be determined by the authority having jurisdiction on the basis of the character of the contents and the processes or operations conducted in the building or structure.

Exception: Where the flame spread rating of the interior finish or other features of the building or structure are such as to involve a hazard greater than the hazard of contents, the greater degree of hazard shall govern.

4-2.1.3* Where different degrees of hazard of contents exist in different parts of a building or structure, the most hazardous shall govern the classification for the purpose of this *Code*.

Exception: Where hazardous areas are segregated or protected, as specifed in Section 6-4 and the applicable sections of Chapters 8 through 30.

4-2.2 Classification of Hazard of Contents.

4-2.2.1* The hazard of contents of any building or structure shall be classified as low, ordinary, or high in accordance with 4-2.2.2, 4-2.2.3 and 4-2.2.4.

4-2.2.2* **Low hazard contents** shall be classified as those of such low combustibility that no self-propagating fire therein can occur and that, consequently, the only probable danger requiring the use of emergency exits will be from panic, fumes, smoke, or fire from some external source.

4-2.2.3* **Ordinary hazard contents** shall be classified as those which are liable to burn with moderate rapidity or to give off a considerable volume of smoke but from which neither poisonous fumes nor explosions are to be feared in case of fire.

4-2.2.4* **High hazard contents** shall be classified as those which are liable to burn with extreme rapidity or from which poisonous fumes or explosions are to be feared in the event of fire. (*For means of egress requirements see Section 5-11.*)

CHAPTER 5 MEANS OF EGRESS

SECTION 5-1 GENERAL

5-1.1 Application.

5-1.1.1* Means of egress for both new and existing buildings shall comply with this chapter.

Exception: As otherwise provided for in Chapters 8 through 30.

5-1.1.2 Any alteration or addition that would reduce means of egress below the requirements of this *Code* is prohibited.

5-1.1.3 Any change of occupancy that would result in means of egress below the requirements of this *Code* is prohibited.

5-1.2* Definitions.

5-1.2.1 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.

5-1.2.2 **Exit access** is that portion of a means of egress which leads to an entrance to an exit.

5-1.2.3 **Exit** is that portion of a means of egress which is separated from all other spaces of the building or structure by construction or equipment as required in 5-1.3.1 to provide a protected way of travel to the exit discharge.

5-1.2.4 **Exit discharge** is that portion of a means of egress between the termination of an exit and a public way.

5-1.2.5* A **horizontal exit** is a way of passage from one building to an area of refuge in another building on approximately the same level or a way of passage through or around a wall or partition to an area of refuge on approximately the same level in the same building that affords safety from fire or smoke from the area of incidence and areas communicating therewith (*see 5-2.4*).

5-1.3 Separation of Means of Egress (*see also Section 6-2*).

5-1.3.1 When an exit is required to be protected by separation from other parts of the building by some requirement of this *Code*, the separating construction shall meet the requirements of Section 6-2 and the following requirements:

(a) The separation shall have at least a 1-hour fire resistance rating when the exit connects three stories or less. This applies whether the stories connected are above or below the story at which exit discharge begins.

(b) The separation shall have at least a 2-hour fire resistance rating when the exit connects four or more stories, whether above or below the level of exit discharge. It shall be constructed of an assembly of noncombustible or limited-combustible materials and shall be supported by construction having at least a 2-hour fire resistance rating.

(c) Any opening therein shall be protected by an approved self-closing fire door (*also see 5-2.1.2.3*).

Exception: Fire doors which have been specifically approved as a pair not requiring an astragal at the meeting edges.

(d) Openings in exit enclosures shall be limited to those necessary for access to the enclosure from normally occupied spaces and for egress from the enclosure.

5-1.3.2 Interior Finish in Exits. The flame spread of interior finish on walls and ceilings shall be limited to Class A or Class B in exit enclosures. Chapters 8 through 30 governing individual occupancies may impose further limitations.

5-1.3.3 No exit enclosure shall be used for any purpose which would interfere with its use as an exit, such as for storage or similar purposes. (*Also see 5-2.2.2.2.*)

5-1.3.4 Corridors used as exit access and serving an area having an occupant load of more than 30 shall be separated from other parts of the building by construction having at least a 1-hour fire resistance rating. Openings in such separations shall be protected by an approved fire door assembly having a fire protection rating of at least 20 minutes when tested in accordance with *Standard Methods of Fire Tests of Door Assemblies*, NFPA 252 (*see Appendix B*) without the hose stream test.

Exception No. 1: Existing buildings.

Exception No. 2: Where requirements differ in Chapters 8 through 30.

5-1.4* Headroom. Means of egress shall be so designed and maintained as to provide adequate headroom as provided in other sections of this *Code* (*see 5-2.2.1.2*) but in no case shall the ceiling height be less than 7 ft 6 in. (228.6 cm) nor any projection from the ceiling be less than 6 ft 8 in. (203.2 cm) from the floor.

5-1.5 Changes in Elevation. Changes in elevation in areas constituting part of a means of egress shall be by stairs or by ramps.

Exception: Changes in elevation that do not exceed 21 in. (53.34 cm) shall be by ramps.

5-1.6 Workmanship, Impediments to Egress.

5-1.6.1 Doors, stairs, ramps, passageways, signs, and all other components of means of egress shall be of substantial, reliable construction and shall be built or installed in a workmanlike manner.

5-1.6.2 Any device or alarm installed to restrict the improper use of a means of egress shall be so designed and installed that it cannot, even in case of failure, impede or prevent emergency use of such means of egress.

Exception: As provided in Chapters 14 and 15.

5-1.6.3* Means of egress shall be free of obstructions which would prevent its use.

SECTION 5-2 TYPES OF EXIT COMPONENTS

5-2.1 Doors.

5-2.1.1 General.

5-2.1.1.1 Application.

5-2.1.1.1.1 A door assembly, including the doorway, frame, door, and necessary hardware, may be used as a component in a means of egress when it conforms to the general requirements of Section 5-1 and to the special requirements of this section. As such, the assembly is designated as a door.

5-2.1.1.1.2 Every door and every principal entrance that is required to serve as an exit shall be so designed and constructed that the way of exit travel is obvious and direct. Windows that, because of their physical configuration or design and the materials used in their construction, could be mistaken for doors shall be made inaccessible to the occupants by barriers or railings conforming to the requirements of 5-2.2.3.

5-2.1.1.2 Units of Exit Width.

5-2.1.1.2.1* In determining the units of exit width for a doorway, only the clear width of the doorway when the door is in the full open position shall be measured. Clear width shall be the net, unobstructed width of the door opening without projections into such width.

Exception: In existing buildings, projections into the door opening by stops or by the hinge stile shall be permitted.

5-2.1.1.2.2 Where a doorway is divided by mullions, the allowable units of exit width for the entire doorway shall be the sum of the units of exit width calculated separately for each individual door in the opening.

5-2.1.1.3 Width and Floor Level.

5-2.1.1.3.1* No door opening in the means of egress shall be less than 32 in. (81.28 cm) in clear width.

Exception No. 1: In existing buildings no single door in a doorway shall be less than 28 in. (71.12 cm) wide.

Exception No. 2: As provided in Chapters 14 and 15.

5-2.1.1.3.2 No single door in a doorway shall exceed 48 in. (121.92 cm) in width.

5-2.1.1.3.3 The floor on both sides of a door shall be substantially level and shall have the same elevation on both sides of the door, for a distance on each side at least equal to the width of the widest single door.

Exception: In existing buildings when the door discharges to the outside or to an exterior balcony, exterior exit, or exterior exit access, the floor level outside the door may be one step lower than the inside but not more than 8 in. (20.32 cm) lower.

5-2.1.1.4 Swing and Force to Open.

5-2.1.1.4.1* Any door in a means of egress shall be of the side-hinged, swinging type. Doors shall swing in the direction of exit travel:

(a) When used in an exit, or

(b) When serving a high hazard area, or

(c) When serving an occupant load of 50 or more.

Exception No. 1: As provided in Chapters 14, 15, and 22.

Exception No. 2: Where permitted by Chapters 8 through 30, horizontal or vertical security grills or doors, that are a part of the required means of egress shall conform to the following:

(a) They must remain secured in the full open position during the period of occupancy by the general public.

(b) There shall be a readily visible, durable sign on or adjacent to the door stating "THIS DOOR TO REMAIN OPEN WHEN THE BUILDING IS OCCUPIED." The sign shall be in letters not less than 1 in. (2.54 cm) high on a contrasting background.

(c) Doors or grills shall not be brought to the closed position when the space is occupied.

(d) The doors or grills shall be openable from within the space without the use of any special knowledge or effort.

(e) When two or more means of egress are required, not more than half of the means of egress may be equipped with horizontal sliding or vertical rolling grills or doors.

5-2.1.1.4.2 During its swing, any door in a means of egress shall not reduce the effective width of an aisle, passageway, stair or stair landing to less than one-half its required width. When fully open, the door shall not project more than 3½ in. (8.89 cm) into the required width of a stair or stair landing nor more than 7 in. (17.78 cm) into the required width of an aisle or passageway.

Exception: In existing buildings, a door giving access to a stairway shall neither reduce the effective width of a stair or landing to less than one unit of exit width nor, when open, interfere with the full use of the stairs.

5-2.1.1.4.3 The force required to fully open any door in the means of egress shall not exceed 50 lb (222 N) applied to the latch stile.

5-2.1.1.4.4* Screen and Storm Doors. No screen door or storm door in connection with any required exit shall swing against the direction of exit travel in any case where doors are required to swing with the exit travel.

5-2.1.2 Hardware for Doors in Means of Egress.

5-2.1.2.1 Locks, Latches, Alarm Devices.

5-2.1.2.1.1* A door shall be so arranged as to be readily opened from the side from which egress is to be made at all times when the building served thereby is occupied.

For the purpose of this section, a building is occupied at any time it is open to or accessible to the public or at any other time it is occupied by more than 10 persons, unless otherwise provided by Chapters 8 through 30 for specific occupancies. Locks, if provided, shall not require the use of a key for operation from the inside of the building.

Exception No. 1: As provided in Chapters 12 through 15.

Exception No. 2: Exterior doors may have key operated locks from the egress side provided:

(a) There is a readily visible, durable sign on the egress side on or adjacent to the door stating, "THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED." The sign shall be in letters not less than 1 in. (2.54 cm) high on a contrasting background, and

(b) The locking device is of a type that is readily distinguishable as locked, and

(c) This Exception is specifically permitted by Chapters 8 through 30 for the specific occupancy.

(d) This Exception may be revoked by the authority having jurisdiction for cause.

5-2.1.2.1.2* A latch or other fastening device on a door shall be provided with a knob, handle, panic bar, or other simple type of releasing device, the method of operation of which is obvious, even in darkness.

5-2.1.2.1.3 Where pairs of doors are required in a means of egress, each leaf of the pair shall be provided with its own releasing device. Devices which depend upon the releasing of one door before the other shall not be used.

Exception: When exit doors are used in pairs and approved automatic flush bolts are used, the door leaf having the automatic flush bolts shall have no door knob or surface-mounted hardware. The unlatching of any leaf shall not require more than one operation.

5-2.1.2.1.4 No lock, padlock, hasp, bar, chain, or other device, or combination thereof shall be installed or maintained at any time on or in connection with any door on which panic hardware is required by this *Code* if such device prevents or is intended to prevent the free use of the door for purposes of egress.

5-2.1.2.1.5 Special Locking Arrangements.

5-2.1.2.1.5.1 In buildings protected throughout by an approved supervised automatic fire alarm or automatic sprinkler system and when permitted by Chapters 8 through 30, doors in low and ordinary hazard areas, as defined by 4-2.2, may be equipped with approved, listed, locking devices which shall:

(a) Unlock upon actuation of an approved supervised automatic fire alarm system or fire extinguishing system installed in accordance with Section 7-6 or 7-7, and

(b) Unlock upon loss of power controlling the locking device, and

(c) Initiate an irreversible process which will free the latch within 15 seconds whenever a force of not more than 15 lb (66.72 N) is applied to the release device required in 5-2.1.2.1.2 and not relock until the door has been opened. Operation of the release device shall activate a signal in the vicinity of the door for assuring those attempting to exit that the system is functional.

Exception: The authority having jurisdiction may approve a delay not to exceed 30 seconds provided that reasonable life safety is assured.

5-2.1.2.1.5.2* Signs shall be provided on the door adjacent to the release device which read:

"KEEP PUSHING. THIS DOOR WILL OPEN IN 15 SECONDS. ALARM WILL SOUND."

Sign letters shall be at least 1 in. (2.54 cm) high.

5-2.1.2.1.5.3 Emergency lighting in accordance with Section 5-9 shall be provided at the door.

5-2.1.2.2 Panic Hardware.

5-2.1.2.2.1 Panic hardware consists of a door latching assembly incorporating a device which releases the latch upon the application of a force in the direction of exit travel.

5-2.1.2.2.2 When a door is required to be equipped with panic hardware by some other provision of this *Code* such releasing device shall:

(a) Consist of bars or panels, the actuating portion of which shall extend across not less than one-half of the width of the door leaf, not less than 30 in. (76.2 cm) nor more than 44 in. (111.76 cm) above the floor, and

(b) Cause the door latch to release when a force not to exceed 15 lb (66.72 N) is applied.

5-2.1.2.2.3 Only approved panic hardware shall be used.

5-2.1.2.2.4 Required panic hardware shall not be equipped with any locking or dogging device, set screw, or other arrangement which can be used to prevent the release of the latch when pressure is applied to the bar.

Exception: As permitted in Chapters 14 and 15.

5-2.1.2.3 Self-Closing Devices. A door designed to be kept normally closed in a means of egress, such as a door to a stair enclosure or horizontal exit, shall be a self-closing door and shall not at any time be secured in the open position. (*Also see 5-10.4.2.2.*)

Exception: In any building of low or ordinary hazard contents, as defined in 4-2.2.2 and 4-2.2.3, where permitted by Chapters 8 through 30, or where the authority having jurisdiction approves the installation and finds that the circumstances are such that reasonable life safety from fire and smoke is not endangered thereby, stairway doors, doors in smoke partitions, and doors on horizontal exits may be automatic closing, where

(a) Upon release, the door becomes self-closing, and

(b) An approved release device is provided, so arranged that any interruption of the hold-open feature will cause the door to be released, and

(c) The release device is so designed that the door may be instantly released manually and upon release become self-closing or the door may be closed by some simple or readily obvious operation, and

(d) The automatic releasing mechanism or medium will be activated by (1) the operation of an approved automatic sprinkler system which protects the entire building, including both sides of any horizontal exit, the door of which is held open by any release so controlled, or (2) the operation of an approved automatic fire detection system installed to protect the entire building, so designed and installed as to provide for actuation of the system so promptly as to preclude the generation of heat or smoke sufficient to interfere with egress before the system operates, or (3) the operation of approved smoke detectors installed in such a way as to detect smoke on either side of the door opening, as detailed in Standard on Automatic Fire Detectors, NFPA 72E, Section 8-2 (see Appendix B), and

(e) Any sprinkler or fire detection system or smoke detector is provided with such supervision and safeguards as are necessary to assure complete reliability of operation in case of fire. (See also Section 7-6.)

5-2.1.3 Special Doors, Devices in Means of Egress.

5-2.1.3.1 Powered-Operated Doors.

5-2.1.3.1.1 Where required doors are operated by power, such as doors with photoelectric-actuated mechanism to open the door upon the approach of a person or doors with power-assisted manual operation, the design shall be such that in event of power failure the door may be opened manually to permit exit travel or closed where necessary to safeguard means of egress.

5-2.1.3.1.2 If a power-operated door is to be accepted as a required exit, it shall also swing with the exit travel by manual means.

Exception: As provided in Chapters 14 and 15.

5-2.1.3.2 Revolving Doors.

5-2.1.3.2.1 A revolving door shall not be used in a means of egress.

Exception: Where specifically permitted by an occupancy chapter of this Code for an exit from the level of exit discharge directly to the outside, in which case:

(a) Such door(s) shall not be used at the foot or at the top of stairs at the level of exit discharge.

(b) Such door(s) shall not be given credit for more than 50 percent of the required units of exit width.

(c) Such revolving door(s) shall be of approved type(s).

5-2.1.3.2.2* Each allowed revolving door may receive credit as constituting one-half unit of exit width.

5-2.1.3.2.3 The number of revolving doors used as exit doors shall not exceed the number of swinging doors used as exit doors within 20 ft (609.6 cm) thereof.

Exception: Revolving doors may serve as exits without adjacent swinging doors for street floor elevator lobbies if no stairways or doors from other parts of the building discharge through the lobby and the lobby has no occupancy other than as a means of travel between elevators and street.

5-2.1.3.2.4* Revolving doors shall be equipped with means to prevent their rotation at too rapid a rate to permit orderly egress.

5-2.1.3.3 Turnstiles.

5-2.1.3.3.1* No turnstile or similar device to restrict travel to one direction or to collect fares or admission charges shall be so placed as to obstruct any required means of egress.

Exception: Approved turnstiles not over 3 ft (91.44 cm) high, which turn freely in the direction of exit travel, shall be permitted in any occupancy where revolving doors are permitted.

5-2.1.3.3.2 Turnstiles over 3 ft (91.44 cm) high shall be subject to the requirements for revolving doors.

5-2.1.3.3.3 Turnstiles in or furnishing access to required exits shall be of such design as to provide 22 in. (55.88 cm) clear width as the turnstile rotates.

5-2.1.3.3.4 No turnstile shall be placed in any required means of egress.

5-2.1.3.3.5 Turnstiles shall be rated the same as revolving doors as regards units of exit width and rates of travel.

5-2.1.3.4 Doors in Folding Partitions. When permanently mounted folding or movable partitions are used to divide a room into smaller spaces, a

swinging door or open doorway shall be provided as a way of exit access from each such space.

Exception: Under the following conditions the swinging door may be omitted and the partition may be used to enclose the space completely.

(a) The subdivided space shall not be used by more than 20 persons at any time.

(b) The use of the space shall be under adult supervision.

(c) The partitions shall be so arranged that they do not extend across any aisle or corridor used as a way of access to the required exits from the floor.

(d) The partitions shall conform to the interior finish and other applicable requirements of this Code.

(e) The partitions shall be an approved type, shall have a simple method of release, and shall be capable of being opened quickly and easily by inexperienced persons in case of emergency.

5-2.2 Interior Stairs.

5-2.2.1 General.

5-2.2.1.1 All stairs serving as required means of egress shall be of permanent fixed construction.

5-2.2.1.2* Classification of Stairs. Stairs shall be in accordance with the following table:

	New Stairs
Minimum width clear of all obstructions, except handrails which may project not more than 3½ in. (8.89 cm) on each side and stringers which may project not more than 1½ in. (3.81 cm) on each side	44 in. (111.76 cm) 36 in. (91.44 cm), where total occupant load of all floors served by stairways is less than 50.
Maximum height of risers	7 in. (17.78 cm)
Minimum height of risers	4 in. (10.16 cm)
Minimum tread depth	11 in. (27.94 cm)
Winders	See 5-2.2.2.4.
Minimum headroom	6 ft 8 in. (203.2 cm)
Maximum height between landings	12 ft (365.76 cm)
Minimum dimension of landings in direction of travel	See 5-2.2.2.5.
Doors opening immediately on stairs, without landing at least width of door	No

Exception: Existing stairs in existing buildings may remain in use or be rebuilt if they meet the requirements shown in the table for existing stairs.

	Existing Stairs Class A	Class B
Minimum width clear of all obstructions, except handrails which may project not more than 3½ in. (8.89 cm) on each side and stringers which may project not more than 1½ in. (3.81 cm) on each side	44 in. (111.76 cm)	44 in. (111.76 cm) 36 in. (91.44 cm) where total occupant load of all floors served by stairways is less than 50.
Maximum height of risers	7½ in. (19.05 cm)	8 in. (20.32 cm)
Minimum tread depth	10 in. (24.4 cm)	9 in. (22.86 cm)
Winders	See 5-2.2.2.4.	See 5-2.2.2.4.
Minimum headroom	6 ft 8 in. (203.2 cm)	6 ft 8 in. (203.2 cm)
Maximum height between landings	12 ft (365.76 cm)	12 ft (365.76 cm)
Minimum dimension of landings in direction of travel	44 in. (111.76 cm)	44 in. (111.76 cm)
Doors opening immediately on stairs without landing at least width of door	No	No

5-2.2.1.3 Enclosures. All interior stairs shall be enclosed in accordance with the provisions of Section 5-1 of this *Code*.

Exception: Open stairs permitted by 6-2.2.

5-2.2.1.4 Monumental Stairs. Monumental stairs, either inside or outside, shall be accepted as required exits if all requirements for exit stairs are complied with, including required enclosures and minimum depth of treads.

5-2.2.1.5 Curved Stairs. Curved stairs may be used in means of egress provided the minimum depth of tread is 10 in. (25.4 cm) and the smallest radius is not less than twice the stair width.

5-2.2.1.6 Spiral Stairs. Where permitted for individual occupancies by Chapters 8 through 30 spiral stairs may be used in a means of egress provided:

(a) The clear width of the stairs is not less than 26 in. (66.04 cm).

(b) The height of riser shall not exceed 9½ in. (24.13 cm).

(c) Headroom shall be not less than 6 ft 6 in. (198.12 cm).

(d) Treads shall have a minimum depth of 7½ in. (19.05 cm) at a point 12 in. (30.48 cm) from the narrowest edge.

(e) All treads shall be identical.

(f) The occupant load served is not more than 5.

5-2.2.2 Stair Details.

5-2.2.2.1 Each new stair and platform, landing, etc., used in conjunction therewith in buildings more than three stories in height and in new buildings required by this *Code* to be of fire-resistive construction, shall be of noncombustible material throughout.

Exception: Handrails are exempted from this requirement.

5-2.2.2.2 There shall be no enclosed usable space within an exit enclosure, including under stairs, nor shall any open space within the enclosure, including stairs, and on landings be used for any purpose such as storage or similar use which could interfere with egress. Where there is enclosed usable space under stairs the walls and soffits of the enclosed space shall be protected the same as the stair enclosure.

5-2.2.2.3 Each stair, platform, landing, balcony, and stair hallway floor shall be designed to carry a live load of 100 lb/sq ft (488.24 kg/sq m), or a concentrated load of 300 lb (136.08 kg), so located as to produce maximum stress conditions.

5-2.2.2.4 Winders are permitted in stairs where allowed by Chapters 8 through 30. Such winders shall have a minimum depth of tread of 6 in. (15.24 cm), and a minimum depth of tread of 9 in. (22.86 cm) at a point 12 in. (30.48 cm) from the narrowest edge.

5-2.2.2.5 Stairways and intermediate landings shall continue with no decrease in width along the direction of exit travel. In new buildings every landing shall have a dimension, measured in direction of travel, equal to the width of the stair. Such dimension need not exceed 4 ft (121.92 cm) when the stair has a straight run.

5-2.2.2.6* Stair treads shall be uniform slip resistant and shall be free of projections or lips that could trip stair users.

5-2.2.2.7 The minimum number of risers in any one flight of stairs shall be three.

5-2.2.2.8 Treads of stairs and landing floors shall be solid.

5-2.2.2.9 There shall be no variation exceeding 3/16 in. (.48 cm) in the depth of adjacent treads or in the height of adjacent risers and the tolerance between the largest and smallest riser or between the largest and smallest tread shall not exceed 3/8 in. (.95 cm) in any flight.

Exception: Where the bottom riser adjoins a sloping public way, walk or driveway having an established grade and serving as a landing, a variation in height of the bottom riser of not more than 3 in. (7.62 cm) in every 3 ft (91.44 cm) of stairway width is permitted.*

5-2.2.2.10* Tread depth shall be measured horizontally between the vertical planes of the foremost projection of adjacent treads and at a right angle to the tread's leading edge.

Exception: Approved existing stairs.

5-2.2.2.11 Stairs and other exits shall be so arranged as to make clear the direction of egress to the street. Exit stairs that continue beyond the floor of discharge shall be interrupted at the floor of discharge by partitions, doors, or other effective means.

Exception: Exit stairs that continue one-half story beyond the level of exit discharge need not be interrupted by physical barriers where the exit discharge is clearly obvious.

5-2.2.3 Guards and Handrails.

5-2.2.3.1* Means of egress such as landings, balconies, corridors, passageways, floor or roof openings, ramps, aisles, porches, or mezzanines that are more than 30 in. (76.2 cm) above the floor or grade below shall be provided with guards to prevent falls over the open side. Stairs that are provided with handrails as specified in 5-2.2.3.4 need not be provided with guards. Each new stair and new ramp shall have handrails on both sides. (*See also 5-2.2.3.4.*)

5-2.2.3.2 Required guards and handrails shall continue for the full length of each flight of stairs. At turns of stairs inside handrails shall be continuous between flights at landings.

Exception: On existing stairs the handrails are not required to be continuous between flights of stairs at landings.

5-2.2.3.3 The design of guards and handrails and the hardware for attaching handrails to guards, balusters, or masonry walls shall be such that there are no projecting lugs on attachment devices or nonprojecting corners or members of grills or panels which may engage loose clothing. Openings in guards shall be designed to prevent loose clothing from becoming wedged in such openings.

5-2.2.3.4* Handrail Details.

(a) New handrails on stairs shall be not less than 30 in. (76.2 cm) nor more than 34 in. (86.36 cm) above the upper surface of the tread, measured vertically to the top of the rail from the tread at the leading edge.

Exception: Additional handrails may be provided lower or higher than the main handrail.

(b)* Handrails shall provide a clearance of at least 1½ in. (3.81 cm) between handrail and wall to which fastened.

(c) Handrails shall be of such design and so supported as to withstand a load of not less than 200 lb (889.6 N) applied at any point, downward or horizontally.

(d)* New handrails shall be so designed as to be continuously graspable along the entire length.

(e) New handrail ends shall be returned to the wall or floor or shall terminate at newel posts.

(f)* New handrails that are not continuous between flights shall be extended horizontally a minimum of 12 in. (30.48 cm) at the required height at the top and bottom landings where a guard or wall exists.

(g)* Every stairway required to be more than 88 in. (223.52 cm) in width shall have not less than one intermediate handrail for each 88 in. (223.52 cm) in required width. (*See also 5-2.2.3.1.*)

(h) New handrails on open sides of stairs shall have intermediate rails or an ornamental pattern such that a sphere, 6 in. (15.24 cm) in diameter, cannot pass through any openings in such handrail.

Exception: As provided in Chapters 14 and 15.

5-2.2.3.5 Guard Details.

(a) The height of guards required by 5-2.2.3.1 shall be measured vertically to the top of the guard from the surface adjacent thereto.

(b) Guards shall be not less than 42 in. (106.68 cm) high.

Exception: Guards within dwelling units may be 36 in. (91.44 cm) high.

(c) Open guards shall have intermediate rails or ornamental pattern such that a sphere, 6 in. (15.24 cm) in diameter, cannot pass through any opening.

Exception No. 1: As provided in Chapters 14 and 15.

Exception No. 2: Approved existing open guards.

(d) Enclosure walls and guards consisting of masonry, railings, or other construction either shall be designed for loads transmitted by attached handrails or shall be designed to resist a horizontal force of 50 lb/ft (729.7 N/m) applied at the top of the guard, whichever condition produces maximum stresses. For walls or guards higher than minimum height the specified force shall be applied at a height of 42 in. (106.68 cm) above the floor or tread.

(e) Intermediate rails, balusters, and panel fillers shall be designed for a uniform load of not less than 25 lb/sq ft (1197 Pa) over the gross area of the guard (including the area of any openings in the guard) of which they are a part. Reactions due to this loading need not be added to the loading

specified by 5-2.2.3.5(d) in designing the main supporting members of guards.

5-2.3 Smokeproof Towers.

5-2.3.1* A smokeproof tower shall be a stairway enclosure so designed that the movement into the smokeproof tower of products of combustion produced by a fire occurring in any part of the building shall be limited.

5-2.3.2 The appropriate design method shall be any system which meets the performance level stipulated in 5-2.3.1, above, or that given in 5-2.3.3 through 5-2.3.8, below.

5-2.3.3 A smokeproof tower, as herein specified, shall be a continuous, fire-resistive enclosure protecting a stairway from fire or smoke in the building served, with communication between the buildings and the tower by means of balconies directly open to the outer air.

5-2.3.4 Stairs, enclosure walls, vestibules, balconies, and other components of smokeproof towers shall be of noncombustible materials, and all other requirements specified in 5-2.2 for inside stairs shall apply to stairs in smokeproof towers.

5-2.3.5 Stairways shall be completely enclosed by walls having a 2-hour fire resistance rating and comprised of noncombustible material. There shall be no openings in walls separating the enclosure from the interior of the building. Fixed or automatic fire windows are permitted in an exterior wall of the stair enclosure not subject to severe fire exposure hazard as defined in the *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, NFPA 80A (*see Appendix B*), from the same or nearby buildings.

5-2.3.6 Access to the smokeproof tower shall be provided from every story through vestibules open to the outside on an exterior wall or from balconies overhanging an exterior wall but not subject to severe fire exposure hazard as defined in the *Recommended Practice for Protection of Buildings from Exterior Fire Exposures*, NFPA 80A. (*See Appendix B.*) Every such vestibule, balcony, or landing shall have an unobstructed length and width not less than the required width of exit doors serving same, and exit discharge shall open directly to a street or alley or yard or to an enclosed court that is open at the top and not less than 20 ft (609.6 cm) in width and 1000 sq ft (92.93 sq m) in area. Balconies or vestibules shall have guards not less than 42 in. (106.68 cm) high conforming with 5-2.2.3.5(c). Wall openings exposing balconies or vestibules shall be protected in accordance with 5-2.5.1.3.1.

5-2.3.7* Access from a building to vestibules or balconies shall be through doorways not less than 40 in. (101.6 cm) wide for new and 36 in. (91.44 cm) wide for existing towers. These openings and the entrances to the towers shall be provided with approved, self-closing fire doors swinging with the exit travel. Clear wired glass not exceeding 1296 sq in. (.84 sq m) shall be provided in all doors giving access to the enclosure.

5-2.3.8 Balconies or vestibules to which doors lead shall be approximately level with the floor of the building.

Exception: In existing buildings in climates where balconies may be subject to the accumulation of snow or ice, one step, not to exceed 8 in. (20.32 cm), may be permitted below the level of the inside floor.

5-2.4 Horizontal Exits.

5-2.4.1 General.

5-2.4.1.1* Application. Horizontal exits may be substituted for other exits to an extent that the total exit capacity of the other exits (stairs, ramps, doors leading outside the building) will not be reduced below half that required for the entire area of the building or connected buildings if there were no horizontal exits.

5-2.4.1.2 Egress from Area of Refuge.

5-2.4.1.2.1 Every fire compartment for which credit is allowed in connection with a horizontal exit shall have in addition to the horizontal exit or exits at least one stairway or doorway leading outside or other exit which is not a horizontal exit. Any fire compartment not having a stairway or doorway leading outside shall be considered as part of an adjoining compartment with stairway.

Exception: As provided in Chapters 14 and 15.

5-2.4.1.2.2* Every horizontal exit for which credit is given shall be so arranged that there are continuously available paths of travel leading from each side of the exit to stairways or other standard means of egress leading to outside the building.

5-2.4.1.2.3 Whenever either side of the horizontal exit is occupied, the doors used in connection with the horizontal exit shall be unlocked.

Exception: As provided in Chapters 12 through 15.

5-2.4.1.2.4 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-sq ft (.28-sq m) clear floor area per person.

Exception: Special floor area requirements as provided in Chapters 12, 13, 14, and 15.

5-2.4.2 Walls for Horizontal Exits.

5-2.4.2.1 Walls or partitions separating buildings or areas between which there are horizontal exits shall be an assembly of noncombustible material having a 2-hour fire resistance rating. They shall provide a separation continuous to ground. (*See also 6-2.2.*)

Exception No. 1: Such walls or partitions may be omitted on the street floor when they are supported on other construction having at least a 2-hour fire resistance rating continuous to the ground and meet all the conditions in the following Exception No. 2.

Exception No. 2: Where a fire partition is used to provide a horizontal exit in any story of a building, such partition may be omitted in any lower story under the following conditions:

(a) The open fire area story from which the fire partition is omitted shall be separated from the stories above by construction having at least a 2-hour fire resistance rating.

(b) Required exits from the stories above the open fire area story shall be separated therefrom by construction having a 2-hour fire resistance rating and shall discharge outside without travel through the open fire area story.

(c) Vertical openings between the open fire area story and the stories above shall be enclosed with construction having a 2-hour fire resistance rating. Other details shall be in accordance with the applicable provisions of 6-2.2.

Exception No. 3: Where a fire partition is used to provide a horizontal exit for any story below the discharge level, such partition may be omitted at the level of exit discharge under the following conditions:

(a) The open fire area story from which the fire partition is omitted shall be separated from the stories below by construction having at least a 2-hour fire resistance rating.

(b) Required exits from stories below the open fire area story shall be separated from the open fire area story by construction having a 2-hour fire resistance rating and shall discharge directly outside without travel through the open fire area story.

(c) Vertical openings between the open fire area story and the floors below shall be enclosed with construction having a 2-hour fire resistance rating. Other details shall be in accordance with the applicable provisions of 6-2.2.

5-2.4.2.2* Any opening in such walls, whether or not such opening serves as an exit, shall be adequately protected in an approved manner against the passage of fire or smoke.

5-2.4.2.3* Swinging fire doors on horizontal exits shall swing with the exit travel. Where a horizontal exit serves areas on both sides of a wall, there shall be adjacent openings with swinging doors at each, opening in opposite directions, with signs on each side of the wall or partition indicating as the exit the door which swings with the travel from that side, or other approved arrangements providing doors always swinging with any possible exit travel.

5-2.4.2.4* Sliding fire doors shall not be used on a horizontal exit.

Exception No. 1: Where the doorway is protected by a fire door on each side of the wall in which it occurs, one fire door shall be of the swinging type as provided in 5-2.4.2.3, and the other may be an automatic sliding fire door that shall be kept open whenever the building is occupied.

Exception No. 2: As provided in Chapters 14 and 15.

5-2.4.3 Bridges and Balconies.

5-2.4.3.1 Each bridge or balcony utilized in conjunction with horizontal exits shall comply with the structural requirements for outside stairs and shall have guards and handrails in general conformity with the requirements of 5-2.2 for stairs and 5-2.3 for smokeproof towers.

5-2.4.3.2 Every bridge or balcony shall be at least as wide as the door leading to it and not less than 44 in. (111.76 cm) for new construction.

5-2.4.3.3 Every door leading to a bridge or balcony serving as a horizontal exit from a fire area shall swing with the exit travel out of the fire area.

5-2.4.3.4 Where the bridge or balcony serves as a horizontal exit in one direction, only the door from the bridge or balcony into the area of refuge shall swing in.

5-2.4.3.5 Where the bridge or balcony serves as a horizontal exit in both directions, doors shall be provided in pairs swinging in opposite directions. Only the door swinging with the exit travel shall be counted in determination of exit width.

Exception No. 1: If the bridge or balcony has sufficient floor area to accommodate the occupant load of either connected building or fire area on the basis of 3 sq ft (.28 sq m) per person.

Exception No. 2: In existing buildings by specific permission of the authority having jurisdiction, doors on both ends of the bridge or balcony may swing out from the building.

5-2.4.3.6 The bridge or balcony floor shall be approximately level with the building floor and in climates subject to the accumulation of snow and ice shall be protected to prevent the accumulation of snow and ice.

Exception: In existing buildings in climates where balconies may be subject to the accumulation of snow or ice, one step, not to exceed 8 in. (20.32 cm), may be permitted below the level of the inside floor.

5-2.4.3.7* Ramps shall be employed where there is a difference in level between connected buildings or floor areas. Steps may be used where the difference in elevation is greater than 21 in. (53.34 cm). Ramps and stairs shall be in accordance with the sections of this *Code* pertaining to ramps, stairs, and outside stairs.

5-2.4.3.8 All wall openings, in both of the connected buildings or fire areas, any part of which is within 10 ft (304.8 cm) of any bridge or balcony as measured horizontally or below, shall be protected with fire doors or fixed metal-frame, wired glass windows.

Exception: Where bridges have solid sides not less than 6 ft (182.88 cm) in height such protection of wall openings may be omitted.

5-2.5 Outside Stairs.

5-2.5.1 General.

5-2.5.1.1 Any permanently installed stair outside of the building served is acceptable in a means of egress under the same condition as an inside stair provided that such stairs comply with all the requirements for inside stairs. (*See 5-2.2.*)

Exception: As modified by the following paragraphs of this subsection.

5-2.5.1.2 Subject to the approval of the authority having jurisdiction, outside stairs may be accepted where leading to roofs of other sections of the building or adjoining building, where the construction is fire resistive, where there is a continuous and safe means of exit from the roof, and where all other reasonable requirements for life safety are maintained.

5-2.5.1.3 Separation and Protection.

5-2.5.1.3.1* Under all conditions where enclosure of inside stairways is required, outside stairs shall be separated from the interior of the building by fire-resistive walls the same as required for inside stairway enclosures with fire doors or fixed wired glass windows protecting any openings therein. When an exterior stairway serves more than two stories all openings below and all openings within a 10-ft (304.8-cm) horizontal projection of the stair and its landings shall be protected by a fixed or self-closing fire assembly having a ¾-hour fire protection rating.

5-2.5.1.3.2 All openings below an outside stair shall be protected:

(a) When located in a court the least dimension of which is less than one-third its height, or

(b) When located in an alcove having a width less than one-third its height and a depth greater than one-fourth its height.

5-2.5.1.3.3* Visual Enclosure. Outside stairs shall be so arranged as to avoid any handicap to the use of the stairs by persons having a fear of high places. For stairs more than three stories in height any arrangement intended to meet this requirement shall be at least 4 ft (121.92 cm) in height.

5-2.5.2 Balconies. Balconies to which access doors lead shall be approximately level with the floor of the building.

Exception: In existing buildings in climates where balconies may be subject to accumulation of snow or ice, one step, not to exceed 8 in. (20.32 cm), may be permitted below the level of the inside floor.

5-2.5.3 Stair Details (*see 5-2.5.1.1*).

5-2.5.3.1 Treads shall be solid.

5-2.5.3.2 Risers shall be solid.

Exception: The skirt type, having a 1-in. (2.54-cm) space for drainage, shall be permitted.

5-2.5.3.3 No structural metal member shall be employed the entire surface of which is not capable of being inspected and painted.

Exception: Where embedded in masonry or concrete or where a suitable fire-resistive and waterproof covering is provided.

5-2.5.3.4 All supporting members for balconies and stairs which are in tension and are fastened directly to the building shall pass through the wall and be securely fastened on the opposite side, or they shall be securely fastened to the framework of the building. Metal members shall be protected effectively against corrosion where they pass through walls.

5-2.5.3.5 Balcony and stair railings shall be designed to withstand both a vertical or horizontal force of 50 lb/linear ft (729.7 N/m) applied separately at the top of the railing. Where enclosures are used in place of railings, the horizontal load shall be considered to be applied at a height of 42 in. (106.68 cm) above the stair tread or balcony floor.

5-2.6 Ramps.

5-2.6.1 Inside Ramps.

5-2.6.1.1 General. A ramp shall be permitted as a component in a means of egress when it conforms to the general requirements of Section 5-1 and to the special requirements of this subsection.

5-2.6.1.2 Classification. A ramp shall be designated as Class A or Class B in accordance with the following table:

	Class A	Class B
Minimum width	44 in. (111.76 cm)	30 in. (76.2 cm)
Maximum slope	1 in 10	1 in 8
Maximum height between landings	No limit	12 ft (365.76 cm)
Capacity in persons per unit of exit width (except as modified by Chapters 8 through 30)		
Down	100	100
Up	100	60

Exception: Existing Class A ramps with slopes of 1 to 1 3/16 in 12 and Existing Class B ramps with slopes of 1 3/16 to 2 in 12 are permitted subject to the approval of the authority having jurisdiction.

5-2.6.1.3 Enclosure.

5-2.6.1.3.1 When a ramp inside a building is used as a part of an exit it shall be protected by separation from other parts of the building, as specified in 5-1.3.

5-2.6.1.3.2 Fixed wired glass panels in steel sash may be installed in such a separation in a fully sprinklered building.

5-2.6.1.3.3* There shall be no enclosed usable space under ramps within an exit enclosure nor shall the open space under such ramps be used for any purpose. Where there is enclosed usable space under ramps the walls and soffits of the enclosed space shall be protected the same as the ramp enclosure.

5-2.6.1.4 Other Details.

5-2.6.1.4.1 A ramp and the platforms and landings associated therewith shall be designed for not less than 100-lb/sq ft (488.24-kg/m^2) live load.

5-2.6.1.4.2 The slope of a ramp shall not vary between landings. Landings shall be level and changes in direction of travel, if any, shall be made only at landings.

5-2.6.1.4.3 A ramp used as a means of egress in a building more than three stories in height or in a building of any height of noncombustible or fire-resistive construction shall be of an assembly of noncombustible or limited-combustible material. The ramp floor and landings shall be solid and without perforations.

5-2.6.1.4.4 A ramp shall have a slip-resistant surface.

5-2.6.1.4.5 Guards and handrails complying with 5-2.2.3 shall be provided in comparable situations for ramps.

5-2.6.2 Outside Ramps.

5-2.6.2.1 General. Any ramp permanently installed on the outside of the building served shall be accepted as a component in a means of egress under the same conditions as an inside ramp, provided it complies with all requirements for inside ramps as modified by the following provisions of 5-2.6.2.

5-2.6.2.2 Separation and Protection.

5-2.6.2.2.1* Under all conditions where enclosure of inside ramps is required, outside ramps serving as exits shall be separated from the interior of the building by wall construction that has a fire resistance rating equal to that required for such enclosure. When an exterior ramp serves more than two stories, all openings below and all openings within a 10-ft (304.8-cm) horizontal projection of the ramp and its landings shall be protected by a fixed or self-closing fire assembly having a ¾-hour fire protection rating.

5-2.6.2.2.2 All openings below an outside ramp shall be protected:

(a) When in a court, the least dimension of which is less than one-third of its height, or

(b) When in an alcove having a width less than one-third of its height and a depth greater than one-fourth of its height.

5-2.6.2.2.3* Visual Protection. Outside ramps shall be so arranged as to avoid any handicap to their use by persons having a fear of high places. For ramps more than three stories in height, any arrangement intended to meet this requirement shall be at least 4 ft (121.92 cm) in height.

5-2.6.2.2.4 Balconies or landings to which doors lead shall be approximately level with the floor of the building.

Exception: In existing building in climates where balconies or landings may be subject to accumulation of snow or ice, one step, not to exceed 8 in. (20.32 cm), may be permitted below the level of the inside floor.

5-2.6.2.3 Ramp Details.

5-2.6.2.3.1 Structural metal members, where used, shall be capable of inspection over their entire length.

Exception: Where embedded in masonry or concrete, where a suitable fire-resistive and waterproof covering is provided, or where corrosion-resistive metals are used.

5-2.6.2.3.2 All supporting members for balconies and ramps that are in tension and are fastened directly to the building shall pass through the wall and be securely fastened on the opposite side or shall be securely fastened to the framework of the building. Metal members shall be protected effectively against corrosion where they pass through walls.

5-2.6.2.3.3 Balcony and ramp railings shall be designed to withstand both a vertical and horizontal force of 50 lb per linear ft (729.7 N/m) applied separately at the top of the railing. Where enclosures are used in place of railings, the horizontal load shall be considered to be applied at a height of 42 in. (106.68 cm) above the stair tread or balcony floor.

5-2.7* Exit Passageways.

5-2.7.1 General. Any hallway, corridor, passage, tunnel, underfloor passageway, or overhead passageway shall be permitted as an exit passageway and as an exit or exit component when conforming to all other requirements of Section 5-1 as modified by the provisions of this section.

5-2.7.2 Enclosure. An exit passageway shall be protected by separation from other parts of the building as specified in 5-1.3.

Exception: Fixed wired glass panels in steel sash may be installed in such a separation in a fully sprinklered building.

5-2.7.3 Width. The width of an exit passageway shall be adequate to accommodate the aggregate capacity of all exits discharging through it.

5-2.7.4 Floor. The floor shall be solid and without perforations.

5-2.8 Escalators and Moving Walks.

5-2.8.1 General.

5-2.8.1.1* An escalator or moving walk may be accepted as a component in a means of egress where permitted by Chapters 8 through 30 when it conforms to the general requirements of Section 5-1 and to the special requirements of this subsection.

5-2.8.1.2 Enclosure (*see 6-2.2*).

5-2.8.2 Escalators.

5-2.8.2.1* An escalator shall comply with the applicable requirements for stairs in 5-2.2.

Exception: As modified in 5-2.8.2.2 through 5-2.8.2.7.

5-2.8.2.2 Escalators constituting a means of egress shall operate only in the direction of egress.

5-2.8.2.3 An escalator shall be of the horizontal tread type and shall be of noncombustible construction throughout.

Exception: Step tread surfaces, handrails, and step wheels.

5-2.8.2.4 A single escalator 32 in. (81.28 cm) wide shall be given credit for one unit of exit width. An escalator 48 in. (121.92 cm) wide shall be given credit for two units of exit width.

5-2.8.2.5 There shall be an unobstructed space of at least 4 in. (10.16 cm) outside the handrail and above the handrail for the full length of the escalator.

5-2.8.2.6 No single escalator shall have an uninterrupted vertical travel of more than one story.

5-2.8.2.7 Escalators shall be designed, installed, and operated in accordance with the *Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks*, ANSI A17.1 (*see Appendix B*).

5-2.8.3 Moving Walks.

5-2.8.3.1 An inclined moving walk shall comply with the applicable requirements of 5-2.6 for ramps, and a level moving walk shall comply with the applicable requirements of 5-2.7 for exit passageways.

Exception: As modified in 5-2.8.3.2 through 5-2.8.3.3.

5-2.8.3.2 No moving walk capable of being operated in the direction contrary to normal exit travel shall be used in a means of egress.

5-2.8.3.3 Moving walks shall be designed, installed, and operated in accordance with the *Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks*, ANSI A17.1 (*see Appendix B*).

5-2.9 Fire Escape Stairs.

5-2.9.1 General.

5-2.9.1.1 Application.

5-2.9.1.1.1* Fire escape stairs may be used in required means of egress only in existing buildings, subject to the provisions of the applicable occupancy chapter.

5-2.9.1.1.2 Fire escape stairs shall not constitute more than 50 percent of the required exit capacity in any case.

5-2.9.1.1.3 Fire escape stairs shall not be accepted as constituting any part of the required means of egress for new buildings.

5-2.9.1.2 Fire escape stairs shall provide a continuous unobstructed safe path of travel to the ground or other safe area of refuge to which they lead. Where the fire escape is not continuous, as in cases where stairs lead to an adjoining roof that must be crossed before continuing downward travel, the direction of travel shall be clearly indicated and suitable walkways with handrails shall be provided where necessary. Where a single means of egress consists of a combination of inside stairs and fire escape stairs, each shall comply with the applicable provisions of this *Code*, and the two shall be so arranged and connected as to provide a continuous safe path of travel.

5-2.9.1.3 Types. The following types of fire escape stairs are recognized by this *Code*:

(a) Return platform type, superimposed runs.

(b) Straight run type with platforms continuing in the same direction.

Either of the above types may be parallel to or at right angles to the building. They may be attached to buildings or erected independently of them and connected by bridges. (*See also 5-2.9.7 for swinging stairs.*)

5-2.9.2 Protection of Openings.

5-2.9.2.1 Fire escape stairs shall be so arranged that they will be exposed by the smallest possible number of window and door openings. There shall be no transoms over doors. Every opening any portion of which is in the limits specified below shall be completely protected by approved fire doors or metal-frame, wired glass windows as follows:

(a) *Horizontally.* If within 15 ft (457.2 cm) of any balcony, platform, or stairway constituting a part of the escape proper.

Exception No. 1: This provision does not apply to a platform or walkway leading from the same floor to the escape proper.

Exception No. 2: Protection need not extend around a right angle corner (outside angle 270 degrees) of the building where stairs are remote from such corner.

(b) *Below.* If within three stories or 35 ft (10.67 m) of any balcony, platform, walkway, or stairway constituting a part of the escape proper or within two stories or 20 ft (609.6 cm) of a platform or walkway leading from any story to the escape proper.

(c) *Above.* If within 10 ft (304.8 cm) of any balcony, platform, or walkway as measured vertically or of any stair treads as measured vertically from the face of the outside riser.

(d) *Top Story.* Protection for wall openings shall not be required where stairs do not lead to the roof.

5-2.9.2.2 All openings below a fire escape stair shall be protected:

(a) When in a court, the least dimension of which is less than one-third of its height, or

(b) When in an alcove having a width less than one-third of its height and depth greater than one-fourth of its height.

Exception: The provisions of 5-2.9.2 may be modified by the authority having jurisdiction in consideration of automatic sprinkler protection, low hazard occupancy, or other special conditions.

5-2.9.3 Access.

5-2.9.3.1 Access to fire escape stairs shall be provided in accordance with 5-2.9.4 and the general provisions of 5-4.1.2.

5-2.9.3.2* Where access is by way of double hung windows, such windows shall be so counterbalanced and maintained that they can be readily opened with a minimum of physical effort. Insect screens, if any, on any type of opening giving access to fire escape stairs shall be of types that may be readily opened or pushed out. No storm sash shall be used on any window providing access to fire escape stairs.

5-2.9.3.3 Fire escape stairs shall extend to the roof in all cases where the roof is subject to occupancy or is constructed and arranged to provide an area of refuge from fire. In all cases where stairs do not extend to the roof, access thereto shall be provided by a ladder in accordance with 5-2.10.

Exception: Such ladders are not required in the case of roofs with pitch steeper than 2 in. to 1 ft (1 m to 6 m).

5-2.9.3.4 Balconies to which access doors lead shall be approximately level with the floor of the building or, in climates where balconies may be subject to accumulation of snow or ice, one step no more than 8 in. (20.32 cm) below the level of the inside floor shall be allowed.

5-2.9.3.5 Balconies to which access is secured through windows with sills above the inside floor level shall be not more than 18 in. (45.72 cm) below the sill. In no case shall the balcony level be above the sill.

5-2.9.4* Stair Details. Fire escape stairs, depending upon the requirements of Chapters 8 through 30 of this *Code*, shall be in accordance with Table 5-2.9.4 and subsequent paragraphs.

Table 5–2.9.4

	Existing Stairs	Existing Stairs Serving 10 or less occupants (very small buildings)
Minimum widths	22 in. (55.88 cm) clear between rails	18 in. (45.72 cm) clear between rails
Minimum horizontal dimension any landing or platform	22 in. (55.88 cm)	18 in. (45.72 cm)
Maximum rise	9 in. (22.86 cm)	12 in. (30.48 cm)
Minimum tread, exclusive of nosing	9 in. (22.86 cm)	6 in. (15.24 cm)
Minimum nosing or projection	1 in. (2.54 cm)	No requirement
Tread construction	Solid, ½-in. (1.27-cm) diameter perforations permitted	Flat metal bars on edge or sq bars secured against turning, spaced 1¼ in. (3.18 cm) max. on centers
Winders (spiral)	None	Permitted subject to capacity penalty
Risers	None	No requirement
Maximum height between landings	12 ft (365.76 cm)	No requirement
Headroom, minimum	6 ft 8 in. (203.2 cm)	6 ft 8 in. (203.2 cm)
Access to escape	Door or casement windows 24 in. × 6 ft 6 in. (60.96 cm × 198.12 cm) or double-hung windows 30 in. × 36 in. (76.2 cm × 91.44 cm) clear opening	Windows
Level of access opening	Not over 12 in. (30.48 cm) above floor; steps if higher	Same
Discharge to ground	Swinging stair section permitted	Swinging stair, or ladder if approved
Capacity, number of persons	45 per unit,* if access by door; 20 if access by climbing over windowsill	10; if winders or ladder from bottom balcony, 5; if both, 1

*See 5-2.1.1.3 for counting fractions of a unit for stairs more than one unit wide.

5-2.9.5 Guards and Handrails.

5-2.9.5.1 All fire escapes shall have walls or guards on both sides in accordance with 5-2.2.3.

5-2.9.5.2 All fire escapes shall have handrails on both sides, not less than 30 in. (76.2 cm) nor more than 42 in. (106.68 cm) high measured vertically from a point on the stair tread 1 in. (2.54 cm) back from the leading edge, all in general conformity to the requirements for stair handrails in 5-2.2.3.

5-2.9.5.3 Handrails and guards shall be so constructed as to withstand a force of 200 lb (889.6 N) applied downward or horizontally at any point.

5-2.9.6 Materials and Strength.

5-2.9.6.1 Iron, steel, or concrete, or other approved noncombustible materials shall be used for the construction of fire escape stairs, balconies, railings, and other features appurtenant thereto.

5-2.9.6.2 Balconies and stairs shall be designed to carry a live load of 100 lb/sq ft (488.24 kg/sq m) or a concentrated load of 300 lb (136.08 kg) so located as to produce maximum stress conditions.

5-2.9.6.3 Structural metal members, where used, shall be capable of inspection over their entire length.

Exception: Where embedded in masonry or concrete, where a suitable fire-resistive and waterproof covering is provided, or where corrosion-resistive metals are used.

5-2.9.6.4 All supporting members for balconies and stairs that are in tension and are fastened directly to the buildings shall pass through the wall and be securely fastened on the opposite side or they shall be securely fastened to the framework of the building. Where metal members pass through walls, they shall be protected effectively against corrosion.

5-2.9.6.5 Balcony and stair railings shall be designed to withstand both a vertical and horizontal force of 50 lb per linear ft (729.7 N/m) separately applied at the top of the railing. Where enclosures are used in place of railings, the horizontal load shall be considered to be applied at a height of 42 in. (106.68 cm) above the stair tread or balcony floor.

Exception: As provided in 5-2.9.6.6

5-2.9.6.6 Notwithstanding the provisions of 5-2.9.6.2 and 5-2.9.6.5, the authority having jurisdiction may approve any existing fire escape stair for a very small building when it has been shown by load test or other satisfactory evidence to have adequate strength.

5-2.9.7 Swinging Stairs.

5-2.9.7.1 Swinging stair sections shall not be used for fire escape stairs.

Exception: Where termination over sidewalks, alleys, or driveways makes it impracticable to build stairs permanently to the ground. Where used, swinging stairs shall comply with 5-2.9.7.2 through 5-2.9.7.9.

5-2.9.7.2 Swinging sections of stairs shall not be located over doors, over the path of travel from any other exit, or in any location where there are or are likely to be obstructions.

5-2.9.7.3 Width of swinging sections of stairs shall be at least equal to that of the stairs above.

5-2.9.7.4 The pitch of swinging sections of stairs shall not be steeper than that of the stairs above.

5-2.9.7.5 Railings shall be provided similar in height and construction to those required for the stairs above. Railings shall be designed to prevent any possibility of injury to persons at the head of the stairs or on balconies when stairs swing downward. Minimum clearance between moving sections where hands might be caught shall be 4 in. (10.16 cm).

5-2.9.7.6 If the distance from the lowest platform to ground exceeds 12 ft (365.76 cm), an intermediate balcony not more than 12 ft (365.76 cm) from the ground or less than 7 ft (213.36 cm) in the clear underneath shall be provided with width not less than that of the stairs and length not less than 4 ft (121.92 cm).

5-2.9.7.7 Counterweight shall be provided for swinging stairs and this shall be of a type balancing about a pivot; no cables shall be used. Counterweight shall be securely bolted in place, but sliding ball weights or their equivalent may be used to hold stairs up and to help lower them. Counterbalancing shall be such that a weight of 150 lb (68.04 kg) one step from the pivot shall not start the swinging section downward, and a weight of 150 lb (68.04 kg) one quarter of the length of the swinging stairs from the pivot will positively cause the stairs to swing down.

5-2.9.7.8 The pivot for swinging stairs shall either have a corrosion-resistant assembly or shall have sufficient clearance to prevent sticking due to corrosion.

5-2.9.7.9* No device to lock the swinging stair section in up position shall be installed.

5-2.10 Fire Escape Ladders.

5-2.10.1* General. No form of ladder shall be used as a fire escape under the provisions of this *Code*.

Exception No 1: Ladders conforming to the following specifications may be used:

(a) To provide access to unoccupied roof spaces as permitted by 5-2.9.3.3.

(b) To provide a means of escape from boiler rooms, grain elevators, and towers, as permitted by Chapters 29 and 30, and elevated platforms around machinery or similar spaces subject to occupancy only by able-bodied adults, not more than 3 in number.

Exception No. 2: Existing ladders may be accepted to provide access to the street from the lowest balcony of fire escape stairs for very small buildings if approved by the authority having jurisdiction subject to the limitations in capacity specified in 5-2.9.4.

5-2.10.2 Installation.

5-2.10.2.1* All ladders shall be permanently installed in a fixed position supported by rigid connection to the building or structure at intervals not exceeding 10 ft (304.8 cm).

5-2.10.2.2 Where ladders provide access to roofs or elevated platforms, rails shall extend not less than 45 in. (114.3 cm) above the roofline or platform floor or 45 in. (114.3 cm) above the coping or parapet, if there is one. Extension of side rails to roof shall be carried over the coping or parapet to afford a handhold.

5-2.10.2.3 Ladders shall be arranged parallel to buildings or structures with travel either between the ladder and building, in which case minimum clearance between center of rungs and building shall be 27 in. (68.58 cm), or outside of the ladder, in which case minimum clearance between center of rungs and building shall be 6½ in. (165.1 cm).

5-2.10.2.4 Ladders shall be vertical or positively inclined. No negative incline (i.e., ladder sloping out over head of person using it) shall be permitted.

5-2.10.3 Construction.

5-2.10.3.1 Ladders shall be constructed of iron, of steel, or of other metal in design having equivalent strength and resistance to corrosion.

5-2.10.3.2 Rails of iron or steel ladders shall be not less than ½ in. × 2 in. (1.27 cm × 5.08 cm) in section, and not less than 16 in. (40.64 cm) apart.

5-2.10.3.3 Rungs shall be not less than ⅞ in. (2.22 cm) in diameter and shall be riveted or welded in position not less than 10 in. (25.4 cm) nor more than 12 in. (30.48 cm) on centers.

5-2.10.3.4 The lowest rung of any ladder shall be not more than 12 in. (30.48 cm) above the level of the ground or balcony floor beneath it.

5-2.11 Slide Escapes.

5-2.11.1 General.

5-2.11.1.1 A slide escape may be used as a component in a means of egress where specifically authorized by Chapters 8 through 30.

5-2.11.1.2 Each slide escape shall be of an approved type.

5-2.11.1.3 Slide escapes used as exits shall comply with the applicable requirements of Chapter 5 for other types of exits subject to the approval of the authority having jurisdiction.

5-2.11.2 Capacity.

5-2.11.2.1 Slide escapes, where permitted as required exits, shall be rated at one exit unit per slide, with rated travel capacity of 60 persons.

5-2.11.2.2 Slide escapes shall not constitute more than 25 percent of the required number of units of exit width from any building or structure or any individual story or floor thereof.

Exception: As permitted for high hazard manufacturing buildings or structures.

SECTION 5-3 CAPACITY OF MEANS OF EGRESS

5-3.1 Occupant Load.

5-3.1.1* The capacity of means of egress for any floor, balcony, tier, or other occupied space shall be sufficient for the occupant load thereof.

5-3.1.2 The occupant load permitted in any building or portion thereof shall not be assumed to be less than the number determined by dividing the floor area assigned to that use by the occupant load factor as specified in Chapters 8 through 30 for individual occupancies. Where both gross and net area figures are given for the same occupancy, calculations shall be made applying the gross area figure to the building as a whole and the net area figure to the net area of the specific use.

5-3.1.3 The occupant load permitted in any building or portion thereof may be increased from that number established for the given use as specified in 5-3.1.2 when all other requirements of this *Code* are also met based on such modified number. The authority having jurisdiction may require an approved aisle, seating, or fixed equipment diagram to substantiate any increase in occupant load and may require that such diagram be posted in an approved location.

5-3.1.4 Where exits serve more than one floor, only the occupant load of each floor considered individually need be used in computing the capacity of the exits at that floor, provided that exit capacity shall not be decreased in the direction of exit travel.

5-3.1.5 When means of egress from floors above and below converge at an intermediate floor, the capacity of the means of egress from the point of convergence shall be not less than the sum of the two.

5-3.2 Units of Exit Width.

5-3.2.1 Means of egress shall be measured in units of exit width of 22 in. (55.88 cm). Fractions of a unit less than 12 in. (30.48 cm) shall not be counted. Fractions of a unit comprising 12 in. (30.48 cm) or more, added to one or more full units, shall be counted as ½ unit of exit width.

5-3.2.2* Width of means of egress shall be measured in the clear at the narrowest point of the exit component under consideration.

Exception No 1: A handrail may project inside the measured width on each side not more than 3½ in. (8.89 cm).

Exception No. 2: A stringer may project inside the measured width on each side not more than 1½ in. (3.81 cm).

5-3.3 Capacity per Unit of Width. The capacity in number of persons per unit of width for approved components of means of egress shall be as follows:

(a) Level egress components, and Class A ramps — 100 for travel in either direction.

(b) Class B ramps — 60 for travel in the up direction, 100 for travel in the down direction.

(c) Stairways — 60 for travel in either direction.

5-3.4 Minimum Width.

5-3.4.1 The minimum width of any way of exit access shall be as specified for individual occupancies by Chapters 8 through 30, but in no case shall such width be less than 36 in. (91.44 cm).

Exception No. 1: Doors as provided for in 5-2.1.1.3.1.

Exception No. 2: In existing buildings the minimum width shall not be less than 28 in. (71.12 cm).

5-3.4.2 Where a single way of exit access leads to an exit, its capacity in terms of width shall be at least equal to the required capacity of the exit to which it leads. Where more than one way of exit access leads to an exit, each shall have a width adequate for the number of persons it must accommodate.

SECTION 5-4 NUMBER OF EXITS

5-4.1 General.

5-4.1.1 Number of exits shall be as specified for the particular occupancy in Chapters 8 through 30.

5-4.1.2 Exits shall be so located and exit access shall be so arranged that exits are readily accessible at all times (*see 5-5.1.1*). Where exits are not immediately accessible from an open floor area, safe and continuous passageways, aisles, or corridors shall be maintained leading directly to every exit and shall be so arranged as to provide convenient access for each occupant to at least two exits by separate ways of travel.

Exception: Where a single exit or limited dead ends are permitted by other provisions of the Code.

SECTION 5-5 ARRANGEMENT OF MEANS OF EGRESS

5-5.1 General.

5-5.1.1 Exits shall be so located and exit access shall be so arranged that exits are readily accessible at all times.

5-5.1.2* When more than one exit is required from a story, at least two of the exits shall be remote from each other and so arranged and constructed as to minimize any possibility that both may be blocked by any one fire or other emergency condition.

5-5.1.3* Means of egress shall be so arranged that there are no dead end pockets, hallways, corridors, passageways, or courts whose depth exceeds the limits specified for individual occupancies by Chapters 8 through 30.

5-5.1.4 Exit access shall be so arranged that it will not be necessary to pass through any area identified under "Protection from Hazards" in Chapters 8 through 30.

5-5.2 Impediments to Egress (*see also 5-1.6 and 5-2.1.2*).

5-5.2.1 In no case shall access to an exit be through kitchens, storerooms, restrooms, workrooms, closets, bedrooms or similar spaces or other rooms subject to locking.

Exception No. 1: Where the exit is required to serve only the bedroom or other room subject to locking, or adjoining rooms constituting part of the same dwelling or apartment used for single family occupancy.

Exception No. 2: Exit access may pass through rooms or spaces subject to locking as provided in Chapters 14 and 15.

5-5.2.2* Ways of exit access and the doors to exits to which they lead shall be so designed and arranged as to be clearly recognizable. Hangings or draperies shall not be placed over exit doors or otherwise located so as to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

5-5.3 Exterior Ways of Exit Access.

5-5.3.1 Access to exit may be by means of any exterior balcony, porch, gallery, or roof that conforms to the requirements of this chapter.

5-5.3.2 A permanent, reasonably straight path of travel shall be maintained over the required exterior way of exit access.

5-5.3.3 There shall be no obstruction by railings, barriers, or gates that divide the open space into sections appurtenant to individual rooms, apartments, or other subdivisions.

5-5.3.4 An exterior way of exit access shall be so arranged that there are no dead ends in excess of 20 ft (609.6 cm).

5-5.3.5 Any gallery, balcony, bridge, porch or other exterior exit access that projects beyond the outside wall of the building shall comply with the requirements of this chapter as to width and arrangement.

5-5.3.6 Exterior ways of exit access shall have smooth, solid, substantially level floors, and shall have guards on the unenclosed sides at least equivalent to those specified in 5-2.2.3.

5-5.3.7 Where accumulation of snow or ice is likely because of the climate, the exterior way of exit access shall be protected by a roof.

5-5.3.8 The materials of construction shall be as permitted for the building served.

SECTION 5-6 MEASUREMENT OF TRAVEL DISTANCE TO EXITS

5-6.1* The maximum travel distance in any occupied space to at least one exit, measured in accordance with the following requirements, shall not exceed the limits specified for individual occupancies by Chapters 8 through 30.

5-6.2* The travel distance to an exit shall be measured on the floor or other walking surface along the center line of the natural path of travel starting 1 ft (30.48 cm) from the most remote point, curving around any corners or obstructions with a 1-ft (30.48-cm) clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, the measurement shall be taken in the plane of the tread nosing.

5-6.3 In the case of open areas, distance to exits shall be measured from the most remote point subject to occupancy.

5-6.4 In the case of individual rooms subject to occupancy by not more than 6 persons, distance to exits shall be measured from the doors of such rooms provided the path of travel from any point in the room to the room door does not exceed 50 ft (15.24 m).

5-6.5 Where open stairways or ramps are permitted as a path of travel to required exits, such as between mezzanines or balconies and the floor below, the distance shall include the travel on the stairway or ramp and the travel from the end of the stairway or ramp to reach an outside door or other exit in addition to the distance to reach the stairway or ramp.

5-6.6 Where any part of an exterior way of exit access is within 15 ft (457.2 cm) horizontal distance of any unprotected building opening, as permitted by 5-2.5.1.3.1 for outside stairs, the distance to the exit shall include the length of travel to ground level.

SECTION 5-7 DISCHARGE FROM EXITS

5-7.1* All exits shall terminate directly at a public way or at an exit discharge. Yards, courts, open spaces, or other portions of the exit discharge shall be of required width and size to provide all occupants with a safe access to a public way.

Exception No. 1: As permitted by 5-7.2 and 5-7.5.

Exception No. 2: Means of egress may terminate in an exterior area of refuge as provided in Chapters 14 and 15.

5-7.2 Where permitted for individual occupancies by Chapters 8 through 30, a maximum of 50 percent of the exits may discharge through areas on the level of discharge provided all of the following are met:

(a) Such exits discharge to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of discharge from the exit.

(b) The entire area on the level of discharge is separated from areas below by construction having a minimum of 2-hour fire resistance rating.

(c) The level of discharge is protected throughout by an approved automatic sprinkler system and any other portion of the level of discharge with access to the discharge area is protected throughout by an approved automatic sprinkler system or separated from it in accordance with the requirements for the enclosure of exits (*see 5-1.3*).

Exception: The requirements of 5-7.2(c) may be waived if the discharge area is a vestibule or foyer meeting all of the following and where allowed in Chapters 8 through 30:

(a) The depth from the exterior of the building is not greater than 10 ft (304.8 cm) and the length is not greater than 20 ft (609.6 cm).

(b) The foyer is separated from the remainder of the level of discharge by construction providing protection at least the equivalent of wired glass in steel frames.

(c) The foyer serves only for means of egress including exits directly to the outside.

5-7.3 The exit discharge shall be so arranged and marked as to make clear the direction of egress to a public way. Exit stairs that continue beyond the level of discharge shall be interrupted at the level of discharge by partitions, doors, or other physical barriers.

Exception: Exit stairs that continue one-half story beyond the level of exit discharge need not be interrupted by physical barriers where the exit discharge is clearly obvious.

5-7.4 Stairs, ramps, bridges, balconies, escalators, moving walks, and other components of an exit discharge shall comply with the detailed requirements of this chapter for such components.

5-7.5 Subject to the approval of the authority having jurisdiction, exits may be accepted where:

(a) They discharge to the roof or other sections of the building or adjoining buildings, and

(b) The roof has a fire resistance rating at least the equivalent of that required for the exit enclosure, and

(c) There is a continuous and safe means of egress from the roof, and

(d) All other reasonable requirements for life safety are maintained.

SECTION 5-8 ILLUMINATION OF MEANS OF EGRESS

5-8.1 General.

5-8.1.1* Illumination of means of egress shall be provided in accordance with this section for every building and structure when required in Chapters 8 through 30. For the purposes of this requirement, exit access shall include only designated stairs, aisles, corridors, ramps, escalators, and passageways leading to an exit.

5-8.1.2 Illumination of means of egress shall be continuous during the time that the conditions of occupancy require that the means of egress be available for use. Artificial lighting shall be employed at such places and for such periods of time as required to maintain the illumination to the minimum footcandle [Lux (lx)] values herein specified.

5-8.1.3* The floors of means of egress shall be illuminated at all points including angles and intersections of corridors and passageways, stairways, landings of stairs, and exit doors to values of not less than 1 footcandle (10.76 lx) measured at the floor.

Exception: In auditoriums, theatres, concert or opera halls, and other places of assembly, the illumination of the floors of exit access may be reduced during such periods of the performances to values not less than one-fifth footcandle (2.15 lx).

5-8.1.4 Any required illumination shall be so arranged that the failure of any single lighting unit, such as the burning out of an electric bulb, will not leave any area in darkness.

5-8.1.5 The same equipment or units installed to meet the requirements of Section 5-10 may also serve the function of illumination of means of egress, provided that all applicable requirements of this section for such illumination are also met.

5-8.2 Sources of Illumination.

5-8.2.1 Illumination of means of egress shall be from a source of reasonably assured reliability, such as public utility electric service.

5-8.2.2* Where electricity is used as a source of illumination of means of egress, the installation shall be properly made in accordance with the *National Electrical Code®*, NFPA 70. (*See Appendix B.*)

5-8.2.3 No battery operated electric light nor any type of portable lamp or lantern shall be used for primary illumination of means of egress but may be used as an emergency source to the extent permitted under Emergency Lighting, Section 5-9.

SECTION 5-9 EMERGENCY LIGHTING

5-9.1 General.

5-9.1.1 Emergency lighting facilities for means of egress shall be provided for every building or structure in accordance with this section when required in Chapters 8 through 30.

5-9.1.2 Where maintenance of illumination depends upon changing from one energy source to another, there shall be no appreciable interruption of illumination during the changeover. Where emergency lighting is provided by a prime mover-operated electric generator, a delay of not more than 10 seconds shall be permitted.

5-9.2 Performance of System.

5-9.2.1 Emergency lighting facilities shall be arranged to maintain the specified degree of illumination throughout the means of egress, but not less than 1 footcandle (10.76 lx), for a period of 1½ hours in the event of failure of the normal lighting. (*See also 5-8.1.3.*)

5-9.2.2* Battery operated emergency lights shall use only reliable types of rechargeable batteries provided with suitable facilities for maintaining them in properly charged condition. Batteries used in such lights or units shall be approved for their intended use and shall comply with the *National Electrical Code*, NFPA 70. (*See Appendix B.*)

5-9.2.3* An emergency lighting system shall be so arranged as to provide the required illumination automatically in the event of any interruption of normal lighting, such as any failure of public utility or other outside electrical power supply, opening of a circuit breaker or fuse, or any manual act(s), including accidental opening of a switch controlling normal lighting facilities.

5-9.2.4 An emergency lighting system shall be either continuously in operation or capable of repeated automatic operation without manual intervention.

SECTION 5-10 EXIT MARKING

5-10.1 General.

5-10.1.1* Where required by the provisions of Chapters 8 through 30, exits shall be marked by an approved sign readily visible from any direction of exit access.

5-10.1.2 Access to exits shall be marked by readily visible signs in all cases where the exit or way to reach it is not immediately visible to the occupants. Sign placement shall be such that no point in the exit access is more than 100 ft (30.48 m) from the nearest visible sign.

Exception: Signs in existing buildings need not meet the 100 ft (30.48 m) distance requirement.

5-10.1.3* Every required sign designating an exit or way of exit access shall be so located and of such size, distinctive color, and design as to be readily visible and shall provide contrast with decorations, interior finish, or other signs. No decorations, furnishings, or equipment which impair visibility of an exit sign shall be permitted, nor shall there be any brightly illuminated sign (for other than exit purposes), display, or object in or near the line of vision to the required exit sign of such a character as to so detract attention from the exit sign.

5-10.2 Size of Signs. Every "EXIT", directional "EXIT", and "NOT AN EXIT" sign required by Section 5-10 shall have the appropriate wording in plainly legible letters not less than 6 in. (15.24 cm) high with the principal strokes of letters not less than ¾ in. (1.91 cm) wide.

Exception: Existing signs having the required wording in plainly legible letters not less than 4½ in. (11.43 cm) high may be continued in use.

5-10.3 Illumination of Signs.

5-10.3.1* Every exit sign shall be suitably illuminated by a reliable light source. Externally and internally illuminated signs shall be visible in both the normal and emergency lighting mode.

5-10.3.2* Externally illuminated signs shall be illuminated by not less than 5 footcandles (53.82 lx) and shall employ a contrast ratio of not less than 0.5.

5-10.3.3* In an internally illuminated sign with translucent letters and an opaque background the average luminance due to the internal source only of the letters shall be a minimum of 2 footlamberts (6.85 cd/sq m) and a maximum of 3 footlamberts (10.28 cd/sq m). The letters shall be illuminated such that the brightest spot is not more than four times as bright as the darkest spot.

Exception No. 1: Approved existing signs.

Exception No. 2: Approved self-luminous signs which provide evenly illuminated letters may have a minimum luminance of .06 footlamberts (.21 cd/sq m).

5-10.3.4 In an internally illuminated sign with translucent background and opaque letters the average luminance of the background shall be a minimum of 3 footlamberts (10.28 cd/sq m). The background shall be illuminated such that the brightest spot is not more than four times as bright as the darkest spot. The contrast ratio between letters and background shall be at least 0.5.

Exception: Approved existing signs.

5-10.3.5* In an internally illuminated sign with translucent background and translucent letters the average luminance of the brighter portion shall be a minimum of 6 footlamberts (20.56 cd/sq m) due to internal sources only. The background shall be illuminated such that the brightest spot is not more than four times as bright as the darkest spot. The contrast ratio between letters and background shall be at least 0.5.

Exception: Approved existing signs.

5-10.3.6* Illumination of exit signs shall be continuous as required under the provisions of Section 5-8.

Exception: Illumination for exit signs may flash on and off upon activation of the fire alarm system.

5-10.3.7 Where emergency lighting facilities are required by the applicable provisions of Chapters 8 through 30 for individual occupancies, the exit signs, except approved self-luminous signs, shall be illuminated by the emergency lighting facilities. The level of illumination of the exit sign shall be at the levels provided in accordance with 5-10.3.2, 5-10.3.3, 5-10.3.4 or 5-10.3.5 for the required emergency lighting time duration as specified in 5-9.2.1 but may decline to 60 percent of the illumination level at the end of the emergency lighting time duration.

5-10.4 Specific Requirements.

5-10.4.1 Directional Signs.

5-10.4.1.1 A sign reading "EXIT", or similar designation with an arrow indicating the direction shall be placed in every location where the direction of travel to reach the nearest exit is not immediately apparent.

5-10.4.1.2 Escalators, Moving Walks. A sign complying with 5-10.2 indicating the direction of the nearest approved exit shall be placed at the point of entrance to any escalator or moving walk that is not in a means of egress.

5-10.4.2 Special Signs.

5-10.4.2.1* Any door, passage, or stairway that is neither an exit nor a way of exit access and that is so located or arranged that it is likely to be mistaken for an exit shall be identified by a sign reading "NOT AN EXIT".

5-10.4.2.2 A door designed to be kept normally closed shall bear a sign, visible only in the direction of exit travel, reading substantially as follows:

FIRE EXIT
Keep Door Closed

SECTION 5-11 SPECIAL PROVISIONS FOR OCCUPANCIES WITH HIGH HAZARD CONTENTS (*See Section 4-2.*)

5-11.1* In all cases where the contents are classified as high hazard, exits shall be provided of such types and numbers and so arranged as to permit all occupants to escape from the building or structure or from the hazardous area thereof to the outside or to a place of safety with a travel distance of not over 75 ft (22.86 m), measured as specified in 5-6.2.

5-11.2 Capacity of exits provided in accordance with 5-11.1 shall be as specified in the applicable section of Chapters 8 through 30 but not less than such as to provide one unit for each 30 persons where exit is by inside or outside stairs or one unit for each 50 persons where exit is by doors at grade level, by horizontal exits, or by Class A ramps.

5-11.3 At least two exits shall be provided from each building or hazardous area thereof.

5-11.4 Means of egress shall be so arranged that there are no dead end pockets, hallways, corridors, passageways, or courts.

CHAPTER 6 FEATURES OF FIRE PROTECTION

SECTION 6-1 GENERAL

6-1.1 Application.

6-1.1.1 Features of fire protection related to the construction of a building, its subdivision, and interior finishes as detailed in this chapter apply to both new and existing buildings.

Exception: Where specific requirements contained in Chapters 8 through 30 differ from similar requirements contained in this chapter, the requirements of Chapters 8 through 30 shall govern.

SECTION 6-2 CONSTRUCTION AND COMPARTMENTATION

6-2.1 Construction. Buildings or structures occupied or used according to the individual occupancy chapters (*Chapters 8 through 30*), shall meet the minimum construction requirements of those Chapters. The *Standard on Types of Building Construction*, NFPA 220 (*see Appendix B*), shall be used to determine the requirements for the construction classification.

6-2.2 Compartmentation.

6-2.2.1 When required by Chapters 8 through 30, every building shall be divided into compartments to limit the spread of fire and restrict the movement of smoke.

6-2.2.2 Fire compartments shall be formed with fire barriers which are continuous from outside wall to outside wall, from another fire barrier to a fire barrier, or a combination thereof; including continuity through all concealed spaces such as those found above a ceiling, including interstitial spaces.

Exception: Fire barriers are not required in interstitial spaces when such spaces are designed and constructed with ceilings that can provide equivalent resistance to the passage of fire to that provided by fire barriers.

6-2.2.3 Floor Openings.

6-2.2.3.1 When required by Chapters 8 through 30, floor openings, such as stairways and shaftways used for elevators, light, ventilation, or building services, shall be enclosed with fire barriers (vertical) such as wall or partition assemblies. Such enclosures shall be continuous from floor to floor. Openings shall be protected as appropriate for the fire resistance rating of the fire barrier.

Exception No. 1: Where permitted by Chapters 8 through 30, unenclosed openings comprising a portion of the total area of the building are permitted for the purpose of communicating between three floor levels, providing the following conditions are met:

(a) The communicating area has a low hazard occupancy, or ordinary hazard occupancy protected throughout by an approved automatic sprinkler system.

(b) The lowest or next to the lowest level of the portion so designated is a street floor.

(c) The entire portion so designated is open and unobstructed in a manner such that it may be assumed that a fire in any part of the space will be readily obvious to the occupants.

(d) Exit capacity is sufficient to provide simultaneously for all the occupants of all levels to egress the portion so designated by considering it to be a single floor area for the determination of required exit capacity.

(e) Each floor level, considered separately, has at least one-half of its individual required exit capacity provided by an exit or exits leading directly out of that level without occupants having to traverse another communicating floor level or be exposed to the smoke or fire spreading from another communicating floor level.

Exception No. 2: Where permitted by Chapters 8 through 30, an atrium may be utilized providing the following conditions are met:*

(a) No horizontal dimension between opposite edges of the floor opening is less than 20 ft (609.6 cm) and the opening is a minimum of 1,000 sq ft (92.9 sq m).*

(b) The exits are separately enclosed from the atrium in accordance with 6-2.2.3.2. Access to exits may be within the atrium.

(c) The occupancy within the space meets the specifications for classification as low or ordinary hazard contents (see 4-2.2.).

(d) The entire portion so designated is open and unobstructed in a manner such that it may be assumed that a fire in any part of the space will be readily obvious to the occupants prior to the time it becomes a hazard to them.

(e) The entire building is protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception to (e): When the ceiling of the atrium is more than 55 ft (16.76 m) above the floor the authority having jurisdiction may permit the omission of sprinklers at the top of the atrium.

(f) In new construction, an engineered smoke control system acceptable to the authority having jurisdiction shall be provided. Factors such as means of egress and smoke control of adjacent spaces shall be considered.*

Exception to (f): In lieu of an engineered smoke control system, a smoke removal system acceptable to the authority having jurisdiction may be considered.

(g) In new construction the required engineered smoke control system or smoke removal system shall be activated by all of the following:*

1. Approved smoke detectors located at the top of the atrium, and adjacent to each return air intake from the atrium, and

2. The required automatic sprinkler system, and

3. The required fire alarm system, and

4. Manual controls which are readily accessible to the fire department.

(h) Enclosure of Atriums. In new construction atriums shall be separated from the adjacent spaces by fire barriers with at least a 1-hour fire resistance rating.

Exception No. 1 to (h): Any three levels of the building may open directly to the atrium without enclosure.

Exception No. 2 to (h): Glass walls may be used in lieu of the fire barriers where automatic sprinklers are spaced 6 ft (182.88 cm) apart or less along both sides of the glass wall, not more than 1 ft (30.48 cm) from the glass, and with the automatic sprinklers located so that the surface of the glass is wet upon operation of the sprinklers. The glass shall be float glass held in place by a gasket system which permits the glass framing system to deflect without loading the glass before the sprinklers operate. Automatic sprinklers are not required on the atrium side of the glass wall when there is no walkway or other floor area on the atrium side above the main floor level.

6-2.2.3.2* The minimum fire resistance rating for the enclosure of floor openings shall be as follows: (*See 5-1.3.1 for enclosure of exits.*)

(a) Enclosures connecting four stories or more in new construction — 2-hour fire barriers.

(b) Other enclosures in new construction — 1-hour fire barriers.

(c) Enclosures in existing buildings — ½-hour fire barriers.

6-2.2.3.3 Any escalators or moving walks serving as a required exit shall be enclosed in the same manner as exit stairways.

6-2.2.3.4* Escalators or moving walks not constituting an exit shall have their floor openings enclosed or protected as required for other vertical openings.

Exception No. 1: In lieu of such protection, in buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, escalator or moving walk openings may be protected by one of the methods described in Appendix A or in accordance with the method detailed with Standard for the Installation of Sprinkler Systems, NFPA

13 (see Appendix B), or in accordance with a method as approved by the authority having jurisdiction.

Exception No. 2: Escalators in large open areas such as atriums and enclosed shopping malls.

6-2.2.4 Fire barriers used to provide enclosure of floor openings or used for subdivision of stories shall be classified in accordance with their fire resistance rating as follows:

(a) 2-hour fire resistance rating.

(b) 1-hour fire resistance rating.

(c) ¾-hour fire resistance rating.

(d) ½-hour fire resistance rating.

(e) 20-minute fire resistance rating.

6-2.2.5* Every opening in a fire barrier shall be protected to limit the spread of fire and restrict the movement of smoke from one side of the fire barrier to the other. The fire protection rating for opening protectives shall be as follows:

(a) 2-hour fire barrier — 1½-hour fire protection rating.

(b) 1-hour fire barrier — 1-hour fire protection rating when used for vertical openings or ¾-hour fire protection rating when used for other than vertical openings.

Exception No. 1: When a lesser fire protection rating is specified by Chapter 5 or Chapters 8 through 30.

Exception No. 2: Where the fire barrier is provided as a result of a requirement that corridor walls be of 1-hour fire-resistive construction, the opening protectives shall have a fire protection rating of not less than 20 minutes when tested in accordance with Standard Methods of Fire Tests of Door Assemblies, NFPA 252 (see Appendix B) without the hose stream test.

Exception No. 3: Where special requirements for doors in 1-hour fire rated corridor walls and 1-hour fire rated smoke barriers are specified in Chapters 12 and 13.

(c) ¾-hour fire barrier — 20-minute fire protection rating.

(d) ½-hour fire barrier — 20-minute fire protection rating.

(e) 20-minute fire barrier — 20-minute fire protection rating.

6-2.2.6 Fire door assemblies in fire barriers shall comply with the provisions of 5-2.1.

6-2.2.7 Openings in fire barriers for air handling ductwork or air movement shall be protected in accordance with the *Standard for the Installation of Air Conditioning and Ventilating Systems*, NFPA 90A (*see Appendix B*). When a fire barrier also serves as a smoke barrier, an approved damper designed to resist the passage of smoke shall be provided in accordance with 6-3.5.

Exception: This requirement need not apply for ductwork which is part of an engineered smoke control system.*

6-2.2.8 Passages of pipes, conduits, buss ducts, cables, wires, air ducts, pneumatic ducts, and similar building service equipment through fire barriers shall be protected as follows:

(a) The space between the penetrating item and the fire barrier shall:

1. be filled with a material capable of maintaining the fire resistance of the fire barrier, or

2. be protected by an approved device designed for the specific purpose.

(b) Where the penetrating item uses a sleeve to penetrate the fire barrier, the sleeve shall be solidly set in the fire barrier and the space between the item and the sleeve shall be:

1. filled with a material capable of maintaining the fire resistance of the fire barrier, or

2. be protected by an approved device designed for the specific purpose.

(c) Where designs take transmission of vibration into consideration, any vibration isolation:

1. shall be made on either side of the fire barrier, or

2. shall be by an approved device designed for the specific purpose.

6-2.2.9 The enclosing walls (fire barriers) of floor openings serving stairways or ramps that are required exits shall be so arranged as to provide a continuous path of escape, including landings and passageways, in accordance with 5-2.2, providing protection for persons using the stairway or ramp against fire, or smoke therefrom, in other parts of the building.

6-2.2.10 Floor-ceiling assemblies; and bearing and nonbearing wall or partition assemblies, used as fire barriers to form fire compartments; and columns, beams, girders, or trusses supporting such assemblies shall be of a design which has been tested to meet the conditions of acceptance of *Standard Methods of Fire Tests of Building Construction and Materials*, NFPA 251 (*see Appendix B*).

6-2.2.11 Door or window assemblies in fire barriers shall be of an approved type with appropriate rating for the location in which installed. Fire doors and windows shall be installed in accordance with the *Standard for Fire Doors and Windows*, NFPA 80 (*see Appendix B*). Fire doors shall be of a design that has been tested to meet the conditions of acceptance of *Standard Methods of Fire Tests of Door Assemblies*, NFPA 252 (*see Appendix B*). Fire windows shall be of a design which has been tested to meet the conditions of acceptance of *Standard for Fire Tests of Window Assemblies*, NFPA 257 (*see Appendix B*).

6-2.3 Concealed Spaces.

6-2.3.1 In new construction, any concealed space in which materials having a flame-spread rating greater than Class A, as defined in Section 6-5, are exposed shall be effectively firestopped with approved materials, as provided below:

Exception: If the space is protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

(a) Every exterior and interior wall and partition shall be firestopped at each floor level, at the top story ceiling level, and at the level of support for roofs.

(b) Every unoccupied attic space shall be subdivided by firestops into areas not to exceed 3,000 sq ft (279 sq m).

(c)* Any concealed space between the ceiling and the floor or roof above shall be firestopped for the full depth of the space along the line of support for the floor or roof structural members and, if necessary, at other locations to form areas not to exceed 1,000 sq ft (93 sq m) for any space between the ceiling and floor and 3,000 sq ft (279 sq m) for any space between the ceiling and roof.

6-2.3.2 In every existing building, firestopping shall be provided as required by the provisions of Chapters 8 through 30.

SECTION 6-3 SMOKE BARRIERS

6-3.1* Where required by Chapters 8 through 30, smoke barriers shall be provided to subdivide building spaces for the purpose of restricting the movement of smoke.

6-3.2 Smoke barriers required by this *Code* shall be continuous from outside wall to outside wall, from a fire barrier to a fire barrier, from a floor to a floor, from a smoke barrier to a smoke barrier, or a combination thereof; including continuity through all concealed spaces such as those found above a ceiling, including interstitial spaces.

Exception: Smoke barriers are not required in interstitial spaces when such spaces are designed and constructed with ceilings that can provide resistance to the passage of smoke equivalent to that provided by smoke barriers.

6-3.3* Doors in smoke barriers shall be of a swinging type that close the opening with only a minimum clearance necessary for proper operation and shall be without undercuts, louvers, or grills. When a fire resistance rating is specified elsewhere in the *Code* for smoke barriers, the doors in the smoke barriers shall have a fire protection rating of at least twenty minutes. If vision panels are used in the doors, such glass shall be approved transparent wired glass.

Exception No. 1: If a different fire protection rating for smoke barrier doors is specified by Chapters 8 through 30.

Exception No. 2: Latching hardware is not required when so indicated by Chapters 8 through 30.

6-3.4 Door assemblies in smoke barriers shall comply with the provisions of 5-2.1.

6-3.5 An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a required smoke barrier. The damper shall close upon detection of smoke by an approved smoke detector located within the duct.

Exception No. 1: Ductwork which is part of an engineered smoke control system.

Exception No. 2: Dampers are not required in ducts where the air continues to move and the air handling system to which the ducts are connected is arranged to prevent recirculation of exhaust or return air upon detection of smoke in the system.

6-3.6 Passages of pipes, conduits, buss ducts, cables, wires, air ducts, pneumatic ducts, and similar building service equipment through smoke barriers shall be protected as follows:

(a) The space between the penetrating item and the smoke barrier shall:

1. be filled with a material capable of maintaining the smoke resistance of the smoke barrier, or

2. be protected by an approved device designed for the specific purpose.

(b) Where the penetrating item uses a sleeve to penetrate the smoke barrier, the sleeve shall be solidly set in the smoke barrier and the space between the item and the sleeve shall be:

1. filled with a material capable of maintaining the smoke resistance of the smoke barrier, or

2. be protected by an approved device designed for the specific purpose.

(c) Where designs take transmission of vibration into consideration, any vibration isolation:

1. shall be made on either side of the smoke barrier, or

2. shall be by an approved device designed for the specific purpose.

SECTION 6-4 SPECIAL HAZARD PROTECTION

6-4.1 Protection shall be provided from any area having a degree of hazard greater than that normal to the general occupancy of the building or structure, such as storage of combustibles or flammables, heat producing appliances, or maintenance purposes, as follows:

(a) Enclosure with construction in accordance with Section 6-2 with a fire resistance rating as specified by Chapters 8 through 30, but not less than 1 hour, or

(b) Protection with automatic extinguishing systems in accordance with Section 7-7 as required by Chapters 8 through 30, or

(c) Both (a) and (b) above when specified by Chapters 8 through 30.

Exception: In existing buildings or structures, as permitted by Chapters 8 through 30, an automatic fire or smoke detection system in accordance with Section 7-6 may be substituted for the automatic extinguishing system if the enclosure above is achieved.

6-4.2* Where hazardous processes or storage are of such a character as to introduce an explosion potential, explosion venting or an explosion suppression system specifically designed for the hazard involved shall be provided.

6-4.3 A hazardous operation or process may be conducted in a detached structure sufficiently remote from other buildings to avoid any danger to occupants of other buildings. Protection for the safety of any occupants of the detached structure shall be provided.

SECTION 6-5 INTERIOR FINISH

6-5.1 General.

6-5.1.1* Interior finish means the exposed interior surfaces of buildings including, but not limited to, fixed or movable walls and partitions, columns, and ceilings. For requirements on decorations and furnishings see 31-1.2 and 31-1.4.

6-5.1.2* Interior floor finish means the exposed floor surfaces of buildings including coverings which may be applied over a normal finished floor. A finished floor or floor covering on floors shall be exempt from requirements of this section as interior finish provided, however, that (1) in any case where the authority having jurisdiction finds a floor surface of unusual hazard; or (2) where floor finish requirements are specified elsewhere in this *Code* for specific occupancies, the floor surface shall be regulated in accordance with the interior floor finish requirements of this section. (*See Chapters 8 through 30 for specific occupancy requirements.*)

6-5.1.3* Cellular or foamed plastic materials shall not be used as interior finish.

Exception No. 1: Cellular or foamed plastic materials may be permitted on the basis of fire tests that substantiate on a reasonable basis their combustibility characteristics, for the use intended, in actual fire conditions.

Exception No. 2: Cellular or foamed plastic may be used for trim, not in excess of 10 percent of the wall or ceiling area, provided it is not less than 20 lb/cu ft (320 kg/m³) in density, is limited to ½ in. (1.27 cm) in thickness, 4 in. (10.16 cm) in width and complies with the requirements for Class A or B interior finish; however, the smoke rating is not limited.

6-5.1.4 The classification of interior finish materials specified in 6-5.1.5 shall be that of the basic material used by itself or in combination with other materials.

Exception No. 1: Subsequently applied paint or wall covering not exceeding 1/28 in. (.09 cm) in thickness.

Exception No. 2: The authority having jurisdiction shall include such finishes in the determination of classification in any case where in the opinion of the authority having jurisdiction they are of such character or thickness or so applied as to affect materially the flame spread or smoke development characteristics.

6-5.1.5* Interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke development:

Class A Interior Finish. Flame spread 0-25, smoke developed 0-450. Includes any material classified at 25 or less on the flame spread test scale and 450 or less on the smoke test scale described in 6-5.1.6. Any element thereof when so tested shall not continue to propagate fire.

Class B Interior Finish. Flame spread 26-75, smoke developed 0-450. Includes any material classified at more than 25 but not more than 75 on the flame spread test scale and 450 or less on the smoke test scale described in 6-5.1.6.

Class C Interior Finish. Flame spread 76-200, smoke developed 0-450. Includes any material classified at more than 75 but not more than 200 on the flame spread test scale and 450 or less on the smoke test scale described in 6-5.1.6.

Exception: Existing interior finishes complying with the above flame spread ratings only may be continued in use.

6-5.1.6* Interior finish materials as specified in 6-5.1.5 shall be classified in accordance with *Method of Test of Surface Burning Characteristics of Building Materials*, NFPA 255 (*see Appendix B*).

6-5.1.7* Any interior finish material shown by test to present an unreasonable life hazard due to the character of the products of decomposition shall be used only with the approval of the authority having jurisdiction.

6-5.1.8 Classification of interior finish materials shall be in accordance with tests made under conditions simulating actual installations, provided that the authority having jurisdiction may by rule establish the classification of any material on which a rating by standard test is not available.

6-5.2 Interior Floor Finish.

6-5.2.1 Interior floor finishes shall be grouped in the following Classes, in accordance with the critical radiant flux ratings:

Class I Interior Floor Finish. Critical radiant flux, minimum of 0.45 watts per square centimeter as determined by the test described in 6-5.2.2.

Class II Interior Floor Finish. Critical radiant flux, minimum of 0.22 watts per square centimeter as determined by the test described in 6-5.2.2.

6-5.2.2.* Critical radiant flux test ratings, as specified in 6-5.2.1, shall be classified in accordance with *Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source*, NFPA 253 (*see Appendix B*).

6-5.3 Fire Retardant Paints.

6-5.3.1 The required flame spread or smoke developed classification of surfaces may be secured by applying approved fire retardant paints or solutions to surfaces having a higher flame spread rating than permitted. Such treatments shall conform to the requirements of *Standard for Fire Retardant Treatments of Building Materials*, NFPA 703 (*see Appendix B*).

6-5.3.2 Fire retardant paints or solutions shall be renewed at such intervals as necessary to maintain the necessary fire retardant properties.

6-5.4 Automatic Sprinklers.

6-5.4.1 Where a complete standard system of automatic sprinklers is installed, Class C interior finish materials may be used in any location where Class B is normally specified, and Class B interior finish materials may be used in any location where Class A is normally specified.

Exception: Unless specifically prohibited elsewhere in this Code.

6-5.4.2 Where a complete standard system of automatic sprinklers is installed, Class II interior floor finish may be used in any location where Class I interior floor finish is normally specified, and where Class II is normally specified, no critical radiant flux rating is required.

6-5.5 Trim and Incidental Finish. Interior finish not in excess of 10 percent of the aggregate wall and ceiling areas of any room or space may be Class C materials in occupancies where interior finish of Class A or Class B is required.

6-5.6* Use of Interior Finishes.

6-5.6.1 Interior finish material shall be used in accordance with requirements for individual classes of occupancy specified elsewhere in the *Code*. Wherever the use of Class C interior finish material is specified, Class A or

B shall be permitted; where Class B interior finish is specified, Class A shall be permitted; and similarly, where Class II floor finish is specified, Class I materials shall be permitted.

6-5.6.2 Materials such as carpeting having a napped, tufted, looped, or similar surface, when applied on walls or ceilings, shall meet the requirements of Class A interior finish.

CHAPTER 7 BUILDING SERVICE AND FIRE PROTECTION EQUIPMENT

SECTION 7-1 UTILITIES

7-1.1 Equipment utilizing gas and related gas piping shall be installed in accordance with the *National Fuel Gas Code*, NFPA 54, or the *Standard for Storage and Handiing of Liquefied Petroleum Gases*, NFPA 58 (*see Appendix B*).

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

7-1.2 Electrical wiring and equipment installed shall be in accordance with the *National Electrical Code*, NFPA 70 (*see Appendix B*).

Exception: Existing installations may be continued in service subject to approval by the authority having jurisdiction.

SECTION 7-2 HEATING, VENTILATING, AND AIR CONDITIONING

7-2.1 Air conditioning, heating, ventilating ductwork, and related equipment shall be installed in accordance with the *Standard for the Installation of Air Conditioning and Ventilating Systems*, NFPA 90A, or *Standard for the Installation of Warm Air Heating and Air Conditioning Systems*, NFPA 90B (*see Appendix B*), as applicable.

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

7-2.2 Ventilating or heat producing equipment shall be installed in accordance with: *Standard for the Installation of Blower and Exhaust Systems*, NFPA 91; *Standard for Chimneys, Fireplaces, and Vents*, NFPA 211; *Standard for Oil Burning Equipment*, NFPA 31; *National Fuel Gas Code*, NFPA 54; *National Electrical Code*, NFPA 70 (*see Appendix B*), as applicable.

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

7-2.3 Commercial cooking equipment for use in occupancies shall be installed in accordance with the *Standard for the Installation of Equipment for the Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment*, NFPA 96 (*see Appendix B*).

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

SECTION 7-3 SMOKE CONTROL

7-3.1* In accordance with the provisions of Chapters 8 through 30, smoke control systems may be designed and installed in lieu of other specific requirements.

Exception: Where occupancies necessitate alternative smoke control provisions, the designers shall furnish information fully supporting the system to the authority having jurisdiction.

SECTION 7-4 ELEVATORS, DUMBWAITERS, AND VERTICAL CONVEYORS

7-4.1* Elevators shall not be considered an exit component.

7-4.2 Elevators shall be installed in accordance with the *Safety Code for Elevators, Dumbwaiters, Escalators, and Moving Walks*, ANSI A17.1 (*see Appendix B*).

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

7-4.3 Vertical conveyors, including dumbwaiters and pneumatic conveyors serving various stories in a building, shall be separately enclosed by walls or partitions in accordance with the provisions of Section 6-2. Service openings shall not open to an exit. Service openings, when required to be open on several stories at the same time for purposes of operation of the conveyor, shall be provided with closing devices that will close all service doors upon activation of smoke detectors that are located inside and outside the shaft enclosure in locations acceptable to the authority having jurisdiction.

SECTION 7-5 RUBBISH CHUTES, INCINERATORS, AND LAUNDRY CHUTES

7-5.1 Each rubbish chute shall be separately enclosed by walls or partitions in accordance with the provisions of Section 6-2. Inlet openings serving chutes shall be protected in accordance with Section 6-2. Doors for such chutes shall open only to a separate room which is designed exclusively for that purpose. The room shall be separated from other spaces in accordance with Section 6-4.

Exception: Existing installations with properly enclosed service chutes and with properly installed and maintained service openings may open to a corridor or normally occupied room, subject to approval by the authority having jurisdiction.

7-5.2 Rubbish chutes, laundry chutes, and incinerators shall be installed and maintained in accordance with the *Standard on Incinerators, Waste and Linen Handling Systems and Equipment*, NFPA 82 (*see Appendix B*).

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

7-5.3 Laundry chutes shall be enclosed and any opening protected as specified for rubbish chutes in 7-5.1.

Exception: Existing installations may be continued in service, subject to approval by the authority having jurisdiction.

SECTION 7-6 DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS

7-6.1 General.

7-6.1.1 The provisions of this section cover the basic functions of a complete protective signaling and control system including fire alarm. These systems are primarily intended to provide the indication and warning of abnormal conditions, the summoning of appropriate aid, and the control of occupancy facilities to enhance protection of life.

7-6.1.2 All occupancies shall, when required by Chapters 8 through 30, provide a fire alarm system for life safety that shall be installed, tested and maintained in accordance with applicable requirements of the following: *Standard for the Installation, Maintenance and Use of Central Station Signaling Systems*, NFPA 71; *Standard for the Installation, Maintenance and Use of Local Protective Signaling Systems for Watchman, Fire Alarm and Signaling Service*, NFPA 72A; *Standard for the Installation, Maintenance and Use of Auxiliary Protective Signaling Systems for Fire Alarm Service*, NFPA 72B; *Standard for the Installation, Maintenance and Use of Remote Station Protective Signaling Systems*, NFPA 72C; *Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems for Guard, Fire Alarm and Supervisory Service*, NFPA 72D; *Standard on Automatic Fire Detectors*, NFPA 72E; *Household Fire Warning Equipment*, NFPA 74; and *Public Fire Service Communications*, NFPA 1221. (*See Appendix B.*)

Exception: Existing installations may be continued in use, subject to the approval of the authority having jurisdiction.

7-6.1.3 All systems and components shall be approved for the purpose for which installed.

7-6.1.4 For the purposes of this *Code* a protective signaling and control system is used for initiation, notification and control.

(a) *Initiation.* The initiation function provides the input signal to the system.

(b) *Notification.* The notification function is the means by which the system advises that human action is required in response to a particular condition.

(c) *Control.* The control function provides outputs to control building facilities to enhance protection of life.

7-6.2 Signal Initiation.

7-6.2.1 As required in Chapters 8 through 30, actuation of the protective system shall occur by any or all of the following means of initiation but not limited thereto:

(a) Manual fire alarm initiation

(b) Automatic heat detection

(c) Automatic smoke detection

(d) Extinguishing system operation

(e) Automatic detection of hazardous condition which could cause fire or explosion.

7-6.2.2 Manual fire alarm stations shall be used only for fire protective signaling purposes.

7-6.2.3 A manual fire alarm station shall be provided in the natural path of escape near each required exit from an area unless modified by Chapters 8 through 30.

7-6.2.4 Additional fire alarm stations shall be so located that, from any part of the building, not more than 200 ft (60.96 m) horizontal distance on the same floor shall be traversed in order to reach a fire alarm station.

7-6.2.5 Each manual fire alarm station on a system must be accessible, unobstructed, visible, and of the same general type.

7-6.2.6 Where a sprinkler system provides automatic detection and alarm system initiation it shall be provided with an approved alarm initiation device that will operate when the flow of water is equal to or greater than that from a single automatic sprinkler.

7-6.3 Signal Notification.

7-6.3.1 As required in Chapters 8 through 30, actuation of the system shall provide signal notification of fire or other emergency as required by the authority having jurisdiction.

(a) Alert occupants

(b) Notify local fire brigade

(c) Notify fire departments.

7-6.3.2* Signal notification shall be a presignal or general audible alarm-type system as required by the authority having jurisdiction. When permitted by the authority having jurisdiction, notification may also be by visual signals or permanently recorded printout.

Exception: Presignal systems are not permitted where prohibited by Chapters 8 through 30.

7-6.3.3 Notification of Occupants.

7-6.3.3.1 Notification signals for occupants to evacuate shall be by audible signals and, where deemed necessary by the authority having jurisdiction, shall also be by visual signals.

7-6.3.3.2 The general evacuation alarm signal shall operate throughout the entire building.

Exception No. 1: Where a building is divided by: (1) 2-hour fire barriers into separate fire compartments, or (2) by other means with adequate safeguards against the spread of fire or smoke from one compartment to another, each compartment may be considered a separate building.

Exception No. 2: When total evacuation of occupants is not practical due to building configuration, only the occupants in the affected zones shall be initially notified. Provisions shall be made to selectively notify occupants in other zones to afford orderly evacuation of the entire building.

Exception No. 3: Where occupants are incapable of evacuating themselves because of age, physical/mental disabilities, or physical restraint, only the attendants and other personnel required to evacuate occupants from a zone, area, floor, or building are required to be notified. This notification shall include means to readily identify the zone, area, floor, or building in need of evacuation.

7-6.3.3.3 Audible alarm indicating devices shall be of such character and so distributed as to be effectively heard above the ambient noise level obtained under normal conditions of occupancy.

7-6.3.3.4* Audible alarm indicating devices shall produce signals that are distinctive from audible signals used for other purposes in the same building.

7-6.3.3.5 Pre-recorded or live voice evacuation instructions to occupants shall be permitted. Pre-recorded instructions shall be preceded by not less than 5 seconds or more than 10 seconds of a continuous alerting signal. Upon completion or failure of pre-recorded instructions, the fire alarm evacuation signal shall sound. Pre-recorded instructions shall be repeated two or more times. Live voice instructions shall be permitted to interrupt the pre-recorded message or the fire alarm evacuation signal.

7-6.3.3.6 Audible and visual fire alarm devices required by Chapters 8 through 30 shall be used only for fire alarm system or other emergency purposes.

Exception No. 1: When a system has a continuously manned central control room with trained operators, selective paging is permitted.

Exception No. 2: Where otherwise permitted by Chapters 8 through 30.

7-6.3.3.7 Alarm notification signals shall take precedence over all other signals.

7-6.3.4 Notification of Fire Department.

7-6.3.4.1* When required by Chapters 8 through 30, a system shall be arranged to automatically transmit an alarm directly to the municipal fire department or, if such service is not available, to such other outside service as may be available.

7-6.4 Emergency Control.

7-6.4.1 A signaling system shall, where required by Chapters 8 through 30, be arranged to automatically actuate control functions necessary to make the protected premises safer for building occupants.

7-6.4.2 When required by Chapters 8 through 30, the following functions shall be permitted to be actuated by the fire alarm system:

(a) Elevator capture and control
(b) Release of automatic door closers
(c) Stairwell pressurization
(d) Control of building environmental systems to provide smoke control
(e) Control of fire and smoke dampers
(f) Initiation of automatic fire extinguishing equipment
(g) Emergency lighting control
(h) Unlocking of doors
(i) Emergency shut off of gas and fuel supplies that may be hazardous providing the continuation of service is not essential to the preservation of life.

7-6.4.3 The performance of emergency control functions shall not, in any way, impair the effective response of all required alarm notification functions.

7-6.5 Location of Controls.

7-6.5.1 Operator controls, visual alarm annunciators, and manual communications capability shall be installed in a control center at a convenient location. Controls used by the fire department shall be located adjacent to an entrance as designated by the authority having jurisdiction.

SECTION 7-7 AUTOMATIC SPRINKLERS AND OTHER EXTINGUISHING EQUIPMENT

7-7.1 Automatic Sprinklers.

7-7.1.1* Each automatic sprinkler system shall be installed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), where specified by the requirements of this *Code*.

7-7.1.2* In areas protected by automatic sprinklers, automatic heat detection devices required by other sections of this *Code* may be deleted.

7-7.1.3* Where automatic sprinkler protection is provided, other requirements of this *Code* may be modified to such extent as permitted by the provisions of this *Code*.

7-7.2 Supervision.

7-7.2.1* When supervised automatic sprinkler protection is specified in this *Code*, a distinct supervisory signal shall be provided to indicate a condition that will impair the satisfactory operation of the sprinkler system. This shall include but not be limited to monitoring of control valves, fire pump power supplies and running conditions, water tank levels and temperatures, pressure of pressure tanks, and air pressure on dry-pipe valves.

7-7.2.2 Supervisory signals for sprinkler systems shall terminate in a location within the protected building or premises which is constantly attended by qualified personnel in the employ of the owner or shall terminate in an approved remote receiving facility.

7-7.2.3 When supervised automatic sprinkler protection is specified in this *Code*, waterflow alarms shall be transmitted to an approved proprietary alarm receiving facility, remote station, central station, or the fire department. Such connections shall be installed in accordance with appropriate NFPA standards listed in Appendix B (NFPA 71 and 72 series).

7-7.3* Other Automatic Extinguishing Equipment. In any occupancy where the character of the potential fuel for fire is such that extinguishment or control of fire may be more effectively accomplished by a type of automatic extinguishing system other than an automatic sprinkler system such as carbon dioxide, dry chemical, foam, Halon 1301, or water spray, a standard extinguishing system of other type may be installed in lieu of an automatic sprinkler system. Such systems shall be installed in accordance with appropriate NFPA standards. (*See Appendix B.*)

7-7.4 Manual Extinguishing Equipment.

7-7.4.1* When required by the provisions of Chapters 8 through 30, portable fire extinguishers shall be installed in accordance with *Standard for the Installation of Portable Fire Extinguishers*, NFPA 10 (*see Appendix B*).

7-7.4.2* When required by the provisions of Chapters 8 through 30, standpipe and hose systems shall be provided in accordance with *Standard for the Installation of Standpipe and Hose Systems*, NFPA 14 (*see Appendix B*).

CHAPTER 8 NEW PLACES OF ASSEMBLY

(See also Chapter 31.)

SECTION 8-1 GENERAL REQUIREMENTS

8-1.1 Application. The requirements of this chapter apply to new places of assembly. *(See 8-1.3 for definition.)*

8-1.2 Mixed Occupancies.

8-1.2.1* Any place of assembly and its access to exits in buildings of other occupancy, such as ballrooms in hotels, restaurants in stores, rooftop places of assembly, or assembly rooms in schools, shall be so located, separated, or protected as to avoid any undue danger to the occupants of the place of assembly from a fire originating in the other occupancy or smoke therefrom.

8-1.2.2 Occupancy of any room or space for assembly purposes by less than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classed as part of the other occupancy and subject to the provisions applicable thereto.

8-1.2.3 Places of assembly in buildings of other occupancy may use exits common to the place of assembly and the other occupancy provided that the assembly area and the other occupancy considered separately each have exits sufficient to meet the requirements of this *Code*.

8-1.2.4* Exits shall be sufficient for simultaneous occupancy of both the place of assembly and other parts of the building.

Exception: Where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur, such as in certain schools as specified in Chapter 10.

8-1.3* Special Definitions.

Arena Stage. A stage or platform open on at least three sides to audience seating. It may be with or without overhead scene- handling facilities.

Places of Assembly. Include, but are not limited to, all buildings or portions of buildings used for gathering together 50 or more persons for such purposes as deliberation, worship, entertainment, dining, amusement, or awaiting transportation.

Platform, Enclosed. A partially enclosed portion of an assembly room, the ceiling of which is not more than 5 ft (152.4 cm) above the proscenium opening, that is designed or used for the presentation of plays, demonstra-

tions, or other entertainment wherein scenery, drops, decorations, or other effects may be installed or used.

Proscenium Wall. A fire-resistive wall that separates a stage or enclosed platform from the public or spectators' area of an auditorium or theater.

Stage. A partially enclosed portion of an assembly building that is designed or used for the presentation of plays, demonstrations, or other entertainment wherein scenery, drops, or other effects may be installed or used and where the distance between the top of the proscenium opening and the ceiling above the stage is more than 5 ft (152.4 cm).

Thrust Stage. That portion of a stage that projects into the audience on the audience side of a proscenium wall or opening.

8-1.4 Classification of Occupancy. (*See 4-1.2.*)

8-1.4.1 Classification of Places of Assembly. Each place of assembly shall be classified according to its capacity, as follows: Class A, capacity 1000 persons or more; Class B, capacity 300 to 1000 persons; Class C, capacity 50 to 300 persons.

8-1.5 Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 4-2.

8-1.6* Location of Places of Assembly. The location of a place of assembly shall be limited as follows:

Type of Construction	Below LED	LED	Number of Levels Above LED			
			1	2	3	4 & Above
I (443) I (332) II (222)	A†B†C† Any Number of Levels	ABC	ABC	ABC	ABC	A†B†C
II (111)	A†B†C† One Level Below LED	ABC	ABC	A†BC	B†C†	N.P.
III (211) IV (2HH) V (111)	A†B†C† One Level Below LED	ABC	ABC	A†B†C	B†C†	N.P.
II (000) III (200) V (000)	B†C† One Level Below LED	BC	C†	N.P.	N.P.	N.P.

†Allowed if the level of the place of assembly and any story intervening between that level and the level of exit discharge are protected throughout

by an approved automatic sprinkler system. If there are any openings between the level of exit discharge and the exits serving the place of assembly, the level of exit discharge shall also be protected throughout by an approved automatic sprinkler system (*see Section 7-7*).

N.P. — Not Permitted
LED — Level of Exit Discharge

8-1.7 Occupant Load.

8-1.7.1 The occupant load permitted in any assembly building, structure, or portion thereof shall be determined by dividing the net floor area or space assigned to that use by the square foot (square meter) per occupant as follows:

(a) An assembly area of concentrated use without fixed seats such as an auditorium, church, chapel, dance floor, or lodge room — 7 sq ft (.65 sq m) per person.

(b) An assembly area of less concentrated use such as a conference room, dining room, drinking establishment, exhibit room, gymnasium, or lounge — 15 sq ft (1.39 sq m) per person.

(c) Standing room or waiting space — 3 sq ft (.28 sq m) per person.

(d) Bleachers, pews, and similar bench-type seating — 18 linear in. (45.72 linear cm) per person.

(e) Fixed seating. The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

(f) Libraries. In stack areas — 100 sq ft (9.3 sq m) per person; in reading rooms — 50 sq ft (4.7 sq m) per person.

8-1.7.2 The occupant load permitted in a building or portion thereof may be increased above that specified in 8-1.7.1 if the necessary aisles and exits are provided. To increase the occupant load, a diagram indicating placement of equipment, aisles, exits, and seating shall be provided to and approved by the authority having jurisdiction prior to any increase in occupant load.

8-1.7.3 Waiting Spaces. In theaters and similar places of public assembly where persons are admitted to the building at times when seats are not available for them and are allowed to wait in a lobby or similar space until seats are available, such use of lobby or similar space shall not encroach upon the required clear width of exits. Such waiting shall be restricted to areas other than the required means of egress. Exits shall be provided for such waiting spaces on the basis of one person for each 3 sq ft (.28 sq m) of waiting space area. Such exits shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

SECTION 8-2 MEANS OF EGRESS REQUIREMENTS

8-2.1 General. (*See 8-1.2, Mixed Occupancies.*)

8-2.2* Types of Exits.

8-2.2.1 Exits of the specified number and width shall be of one or more of the following types, in accordance with the provisions of Chapter 5 of this *Code*:

(a) Doors of the swinging type leading directly outside or to a lobby or passageway leading to the outside of the building (*see 5-2.1*)

(b) Horizontal exits (*see 5-2.4*)

(c) Smokeproof towers (*see 5-2.3*)

(d) Interior stairs (*see 5-2.2*)

(e) Outside stairs. Same requirements as for interior stairs, including intermediate handrails on monumental stairs serving main entrance doors (*see 5-2.5*)

(f) Ramps. Class A for Class A places of assembly; Class B for Class B and Class C places of assembly (*see 5-2.6*)

(g) Escalators (*see 5-2.8*)

(h) Exit passageways (*see 5-2.7*).

8-2.2.2 Turnstiles. No turnstiles, revolving doors, or other devices to restrict the movement of persons shall be installed in any place of assembly in such a manner as to interfere in any way with required exit facilities.

8-2.3 Capacity of Means of Egress.

8-2.3.1* Every place of assembly, every tier or balcony, and every individual room used as a place of assembly shall have exits sufficient to provide for the total capacity thereof as determined in accordance with 8-1.7 and as follows:

(a) No individual unit of exit width shall serve more than 100 persons.

(b) Doors leading outside the building at grade level or not more than three risers above or below grade, Class A ramps, or horizontal exits — 100 persons per exit unit adjusted according to location of exits as required in 8-2.3.2 and 8-2.3.3.

(c) Stairs or other type of exit not specified in (b) above — 75 persons per exit unit.

8-2.3.2 Main Exit. Every assembly occupancy shall be provided with a main exit. The main exit shall be of sufficient width to accommodate one-half of the total occupant load but shall be not less than the total required width of all aisles, exit passageways, and stairways leading thereto and shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

Exception No. 1: A bowling establishment shall have a main exit of

sufficient capacity to accommodate 50 percent of the total occupant load without regard to the number of aisles which it serves.

Exception No. 2: In assembly occupancies such as stadiums, sports arenas, and passenger stations, exits may be distributed around the perimeter of the building provided the total exit width provides 116⅔ percent of the width needed to accommodate the permitted occupant load.

8-2.3.3 Other Exits. Each level of an assembly occupancy shall have access to the main exit *and* shall be provided with exits of sufficient width to accommodate two-thirds of the total occupant load served by that level. Such exits shall discharge directly to a street or into an exit court, enclosed stairway, outside stairway, or exit passageway leading to a street. Such exits shall be located as far apart as practicable and as far from the main exit as practicable. Such exits shall be accessible from a cross aisle or a side aisle. (*See 8-2.3.2.*)

Exception: Where only two exits are required, each exit shall be of sufficient width to accommodate not less than half the total occupant load.

8-2.4 Number of Exits.

8-2.4.1 Every Class A place of assembly (capacity over 1,000 persons or more) shall have at least four separate exits as remote from each other as practicable.

8-2.4.2 Every Class B place of assembly (capacity over 300 to 1,000 persons) shall have at least two separate exits as remote from each other as practicable and, if of a capacity of over 600, at least three separate exits, each not less than two exit units wide.

8-2.4.3* Every Class C place of assembly (capacity 50 to 300 persons) shall have at least two means of egress consisting of separate exits or doors leading to a corridor or other spaces giving access to two separate and independent exits in different directions.

8-2.5 Arrangement of Means of Egress.

8-2.5.1 Exits shall be remote from each other and shall be arranged to minimize the possibility that they may be blocked by any emergency.

Exception: A common path of travel may be permitted for the first 20 ft (609.6 cm) from any point.

8-2.5.2 Means of egress shall not be permitted through kitchens, storerooms, restrooms, closets, or hazardous areas as described in 8-3.2.

8-2.5.3 Seating.

(a) The spacing of rows of seats shall provide a space of not less than 12 in. (30.48 cm) from the back of one seat to the front of the most forward projection of the seat immediately behind it, when the seat is in the down position, as measured horizontally between vertical planes.

(b) Rows of seats between aisles shall have not more than 14 seats.

(c) Rows of seats opening onto an aisle at one end only shall have not more than seven seats.

(d) Seats without dividing arms shall have their capacity determined by allowing 18 in. (45.72 cm) per person.

(e) Where bleacher or grandstand seating without backs is used indoors, rows of seats shall be spaced not less than 22 in. (55.88 cm) nor more than 30 in. (76.2 cm) back to back. Vertical aisles shall be provided when such seating is more than eleven rows high. Vertical aisles, where provided, shall not have a dead end in excess of sixteen rows. The rise per row shall not exceed 12 in. (30.48 cm).

Exception: Folding or telescopic seating shall comply with Standard for Tents, Grandstands and Air-Supported Structures Used for Places of Assembly, NFPA 102 (see Appendix B) with a limit of dead ends in vertical aisles of sixteen rows.

(f) Continental seating.

1. With continental seating, the spacing of rows of unoccupied seats shall provide a clear width between rows measured horizontally as follows (automatic or self-rising seats shall be measured in the seat-up position; other seats shall be measured in the seat-down position): 18-in. (45.72-cm) clear width between rows of 18 seats or less; 20-in. (50.8-cm) clear width between rows of 35 seats or less; 21-in. (53.34-cm) clear width between rows of 45 seats or less; 22-in. (55.88-cm) clear width between rows of 46 seats or more, and

2. There shall be not more than 100 seats in a row between aisles at both sides of the seating area, and

3. Exit doors shall be provided along each side aisle of the row of seats at the rate of one pair of exit doors for each five rows of seats. There shall be not more than five seat rows between pairs of doors. Such exit doors shall provide a minimum clear width of 66 in. (167.64 cm) discharging into a foyer, lobby, or to the exterior of the building.

8-2.5.4 Aisles. Every portion of any assembly building that contains seats, tables, displays, equipment, or other materials shall be provided with aisles leading to exits as follows:

(a) When serving more than 60 seats, every aisle shall be not less than 3 ft (91.44 cm) wide when serving seats on one side only, and not less than 3 ft 6 in. (106.68 cm) wide when serving seats on both sides. Such minimum width shall be measured at the point farthest from an exit, cross aisle, or foyer and shall be increased in width by 1½ in. (3.81 cm) for each 5 ft (152.4 cm) in length toward the exit, cross aisle, or foyer.

(b) When serving 60 seats or less, aisles shall be not less than 30 in. (76.2 cm) wide.

(c) Aisles shall terminate in a cross aisle, foyer, or exit. The width of such cross aisle, foyer, or exit shall be not less than the sum of the required

width of the widest aisle plus 50 percent of the total required width of the remaining aisles that it serves.

(d) No dead-end aisle shall be greater than 20 ft (609.6 cm) in length. In arena or thrust stage theaters, dead-end aisles at the stage shall not exceed five rows beyond a cross aisle.

(e) With continental seating as set forth in 8-2.5.3(f), side aisles shall be not less than 44 in. (111.76 cm) in width.

(f) Steps shall not be placed in aisles to overcome differences in level unless the gradient exceeds 1 ft (1 m) of rise in 8 ft (8 m) of run. Steps in aisles shall conform to the requirements for stairs as to rise and run.

Exception: In balconies and galleries, rise and run shall be as for stairs, but one tread in each seat platform width may have a greater width to accommodate access to seats. Seating platforms shall be of uniform width.

(g) The gradient of sloping aisles shall not exceed 1 ft (1 m) of rise in 8 ft (8 m) of run.

8-2.6 Measurement of Travel Distance to Exits. Exits shall be so arranged that the total length of travel from any point to reach an exit will not exceed 150 ft (45.72 m) in any place of assembly.

Exception: The travel distance may be increased to 200 ft (60.96 m) in assembly occupancies protected throughout by an approved automatic sprinkler system.

8-2.7 Discharge from Exits.

8-2.7.1 The level of exit discharge shall be measured at the point of principal entrance to the building.

8-2.7.2 Where the principal entrance to a place of assembly is via a depressed terrace, the terrace shall be at least as wide as the exit that it serves, but not less than 5 ft (152.4 cm) wide, and it shall be increased in width by 50 percent of any other exits tributary thereto. The level of the terrace shall be considered the level of exit discharge for the purpose of 8-1.6 above.

8-2.7.3 A maximum of 50 percent of the exits may discharge through areas on the level of exit discharge in accordance with 5-7.2

8-2.8 Illumination of Means of Egress.

8-2.8.1 Illumination of means of egress in places of assembly shall be provided in accordance with Section 5-8.

8-2.8.2 In every auditorium or other place of assembly where pictures, motion pictures, or other projections are made by means of directed light, the illumination of the floors of exit access may be reduced during such period of projection to values of not less than 1/5 footcandle (2.15 lx).

8-2.9 Emergency Lighting. All places of assembly and their means of egress shall be provided with emergency lighting in accordance with Section 5-9.

Exception: Churches that are Class C places of assembly, used exclusively for religious worship, shall not be required to have emergency lighting.

8-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

8-2.11 Special Features.

8-2.11.1 Panic Hardware. An exit door from a place of assembly having an occupant load of 100 or more persons may be provided with a latch or lock only if it is panic hardware.

Exception No. 1: In places of assembly having an occupant load of less than 600, panic hardware may be omitted from the main exit when the main exit consists of a single door or a pair of doors. Any locking device on this door(s) shall meet the requirements of Exception No. 2 to 5-2.1.2.1.1.

Exception No. 2: Special locking arrangements complying with 5-2.1.2.1.5 are permitted on doors other than main exit doors.

8-2.11.2 Class C places of assembly in covered malls (*see 24-4.3.1 Exception*) may have horizontal or vertical security grills or doors on the main entrance/exits in accordance with the provisions of Exception No. 2 to 5-2.1.1.4.1.

8-2.11.3 Railings.

(a) The fasciae of boxes, balconies, and galleries shall not be less than 26 in. (66.04 cm) high above the adjacent floor or have substantial railings not less than 26 in. (66.04 cm) high above the adjacent floor.

(b) The height of the rail above footrests on the adjacent floor immediately in front of a row of seats shall be no less than 26 in. (66.04 cm). Railings at the ends of aisles shall not be less than 36 in. (91.44 cm) high for the full width of the aisle and shall be not less than 42 in. (106.68 cm) high for the width of the aisle where steps occur.

(c) Cross aisles shall be provided with railings not less than 26 in. (66.04 cm) high above the adjacent floor.

Exception: Where the backs of seats on the front of the aisle project 24 in. (60.96 cm) or more above the adjacent floor of the aisle.

SECTION 8-3 PROTECTION

8-3.1 Protection of Vertical Openings. All interior stairways and other vertical openings shall be enclosed and protected as provided in Section 6-2.

Exception No. 1: Unprotected openings connecting not more than three floors may be permitted provided that they comply with the requirements of 6-2.2.3.1 Exception No. 1.

Exception No. 2: Stairs may be open between balconies and main assembly floors in theaters, churches, or auditoriums where the travel distance is within the allowable limits (see 8-2.6).

8-3.2 Protection from Hazards.

8-3.2.1 Stage and Enclosed Platform. (*See 8-1.3.*)

8-3.2.1.1 Every stage equipped with fly galleries, gridirons, and rigging for movable theater-type scenery and every enclosed platform larger than 500 sq ft (46.45 sq m) in area shall have a system of automatic sprinklers at the ceiling, under the gridiron, in usable spaces under the stage or platform, and in auxiliary spaces and dressing rooms, storerooms, and workshops. Where the distance from the back of the stage to the proscenium wall is less than 30 ft (914.4 cm), in lieu of sprinklers under the entire gridiron area, complete peripheral sidewall sprinklers with baffle plates may be substituted. Such sidewall sprinklers shall be not more than 30 in. (76.2 cm) below the gridiron or 6 in. (15.24 cm) below the baffle plates.

When openings are provided in the stage floor for stage lifts, trap doors, or stairs, sprinklers spaced 5 ft (152.4 cm) on centers shall be provided around the opening at the ceiling below the stage, and baffles at least 12 in. (30.48 cm) in depth shall be installed around the perimeter of the opening.

8-3.2.1.2 Every stage and every enclosed platform larger than 500 sq ft (46.45 sq m) shall have a ventilator or ventilators in or above it, operable from the stage floor by hand and also opening by fusible links or other approved automatic heat actuated device, or heat and smoke actuated device, to give a free opening equal to at least five percent of the area of the floor of the stage or enclosed platform.

Where mechanical ventilation is provided it shall be so arranged that natural ventilation, at least equal to the above, will be available. Makeup air for mechanical ventilation shall not be obtained from the audience (seating) areas.

8-3.2.1.3 The proscenium opening of every stage shall be provided with a curtain constructed and mounted so as to intercept hot gases, flames, and smoke and to prevent glow from a severe fire on the stage showing on the auditorium side within a 5-minute period. The curtain shall be automatic closing without the use of applied power.

Exception: In lieu of the protection required herein, all the following may be provided:

(a) A noncombustible opaque fabric curtain so arranged that it will close automatically, and

(b) An automatic dry-pipe system of spray heads on both sides of the curtain. Discharge and spacing shall be such that the entire curtain will be wet. Water supply shall be controlled by a deluge valve and shall be sufficient to keep the curtain completely wet for 30 minutes or until valve is closed by fire department personnel, and

(c) Curtain, spray heads, stage sprinklers, and vents shall be automatically operated in case of fire, by rate-of-rise and fixed temperature detectors. Spacing, number, and location of detectors shall be as required by the devices used, with maximum center-to-center distance of 10 ft (304.8 cm). Detectors shall completely cover the periphery of the sprinklered and protected area, and

(d) Operation of a sprinkler or spray head deluge valve shall automatically activate the emergency ventilating system and close the curtain.

8-3.2.1.4 Auxiliary stage spaces such as understage areas, dressing rooms, workshops, and similar spaces associated with the functioning of a stage shall comply with the following:

(a) No point within any auxiliary space shall be more than 50 ft (15.24 m) from a door providing access to an exit.

(b) There shall be at least two exits available from every auxiliary stage space, one of which shall be available within a travel distance of 75 ft (22.86 m). A common path of travel of 20 ft (609.6 cm) to the two exits shall be permitted.

(c) Auxiliary stage spaces shall be equipped with automatic sprinklers when required by the provisions of 8-3.2.1.1.

(d) No workshop involving the use of combustible or flammable paint, liquids, or gases, or their storage shall open directly upon a stage.

8-3.2.1.5 Where automatic sprinkler protection is not provided, the proscenium wall of every theater using movable scenary or decorations shall not have more than two openings entering the stage, exclusive of the proscenium opening. Such openings shall not exceed 21 sq ft (1.95 sq m) each and shall be fitted with self-closing fire doors.

8-3.2.1.6 Each stage shall be equipped with a standpipe located on each side of the stage, equipped with a 2½-in. (6.35-cm) fire department connection, and a 1½-in. (3.8-cm) hose for occupant use, installed in accordance with *Standard for the Installation of Standpipes and Hose Systems*, NFPA 14 (*see Appendix B*).

8-3.2.2 Projection Booth.

8-3.2.2.1 Every place of assembly where an electric arc, Xenon, or other light source that generates hazardous gases, dust, or radiation is used shall have a projection room that complies with 8-3.2.2.2, from which the projection shall be made. Where cellulose nitrate film is used, the projection room shall comply with *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*, NFPA 40 (*see Appendix B*). (*See also Chapter 31.*)

8-3.2.2.2 Projection Rooms for Safety Film.

8-3.2.2.2.1 Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings need not be protected. The room shall have a floor area of not less than 80 sq ft (7.43 sq m) for a single machine and at least 40 sq ft (3.72 sq m) for each additional machine. Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space of not less than 30 in. (76.2 cm) on each side and at its rear, but only one such space shall be required between adjacent projectors.

The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than 7 ft 6 in. (228.6 cm).

8-3.2.2.2.2 Each projection room shall have at least one out-swinging, self-closing door not less than 2 ft 6 in. (76.2 cm) wide by 6 ft 8 in. (203.2 cm) high.

8-3.2.2.2.3 The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium.

All openings shall be provided with glass or other approved material so as to completely close the opening.

8-3.2.2.2.4 Projection booth room ventilation shall be not less than the following:

(a) *Supply Air.* Each projection room shall be provided with two or more separate fresh air inlet ducts with screened openings terminating within 12 in. (30.48 cm) of the floor and located at opposite ends of the room. Such air inlets shall be of sufficient size to permit an air change every 3 minutes. Fresh air may be supplied from the general building air conditioning system, providing it is so arranged that the projection booth will continue to receive one change of air every 3 minutes when no other air is supplied by the general air conditioning system.

(b) *Exhaust Air.* Each projection room shall be provided with one or more exhaust air outlets that may be manifolded into a single duct outside the booth. Such outlets shall be so located as to ensure circulation throughout the room. Projection room exhaust air systems shall be independent of any other air systems in the buildings. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into the supply air system. The exhaust system shall be mechanically operated and of such a capacity as to provide a minimum of one change of air every 3 minutes. The blower motor shall be outside the duct system.

The projection room ventilation system may also serve appurtenant rooms, such as the generator room and the rewind room.

8-3.2.2.2.5 Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building in such a fashion that it will not be picked up by supply inlets. Such a duct shall be of rigid materials, except for a continuous flexible connector approved for the purpose. The lamp exhaust system shall not be interconnected with any other system.

(a) *Electric Arc Projection Equipment.* The exhaust capacity shall be 200 cfm (.09 cu m/s) for each lamp connected to the lamp exhaust system, or as recommended by the equipment manufacturer. Auxiliary air may be introduced into the system through a screened opening to stabilize the arc.

(b) *Xenon Projection Equipment.* The lamp exhaust system shall exhaust not less than 300 cfm (.14 cu m/s) per lamp, or not less than that exhaust volume required or recommended by the equipment manufacturer, whichever is the greater. The external temperature of the lamp housing shall not exceed 130°F (54.4°C) when operating.

8-3.2.2.2.6 Miscellaneous Equipment and Storage.

(a) Each projection room shall be provided with rewind and film storage facilities.

(b) A maximum of four containers for flammable liquids of not greater than 16 oz (4.7×10^{-4} cu m) capacity and of a nonbreakable type may be permitted in each projection booth.

(c) Appurtenant electrical equipment such as rheostats, transformers, and generators may be located within the booth or in a separate room of equivalent construction.

8-3.2.3 Service Equipment, Hazardous Operations or Processes, and Storage Facilities.

8-3.2.3.1 Rooms containing high-pressure boilers, refrigerating machinery of other than domestic refrigerator type, large transformers, or other service equipment subject to possible explosion shall not be located directly under or adjacent to required exits. All such rooms shall be separated by a 1-hour fire barrier from other parts of the building.

8-3.2.3.2 All openings between the balance of the building and rooms or enclosures for hazardous operations or processes shall be protected by standard self-closing or smoke-actuated fire doors and shall be provided with adequate vents to the outer air, in accordance with Section 6-4 of this *Code*.

8-3.2.3.3 Rooms or spaces for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or

fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having jurisdiction, hazardous materials, or flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder of the building by a smoke barrier.

8-3.2.4 Special Provisions for Food Service Establishments.

8-3.2.4.1 All devices in connection with the preparation of food shall be so installed and operated as to avoid hazard to the safety of occupants.

8-3.2.4.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

8-3.2.4.3 Food preparation facilities shall be protected in accordance with *Vapor Removal Cooking Equipment*, NFPA 96 (*see Appendix B*), and are not required to have openings protected between food preparation areas and dining areas.

8-3.3 Interior Finish.

8-3.3.1 The interior finish requirements of this section shall be in accordance with Section 6-5.

8-3.3.2 Interior finish in all corridors and lobbies shall be Class A or B and in enclosed stairways Class A.

8-3.3.3 Interior finish in general assembly areas shall be Class A, B, or C.

Exception: In any place of assembly, exposed portions of structural members complying with the requirements for Type IV (2HH) construction may be permitted.

8-3.3.4 Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish.

8-3.4 Alarm and Communication Systems.

8-3.4.1 Every Class A or B place of assembly shall be provided with a manual fire alarm system in accordance with 7-6.1.2.

8-3.4.2 The alarm system shall not automatically sound an alarm in the audience or seating portion of the place of assembly but shall sound an alarm in a constantly manned location.

Exception: Places of assembly in educational occupancies.

8-3.4.3 Provisions shall be made for transmitting voice messages by a public address system throughout the assembly area. Reliability of the public address system shall be assured by testing the system prior to allowing occupants into the assembly room.

Exception: Places of assembly in educational occupancies.

8-3.4.4 The public address system shall be provided with an emergency power source.

Exception: Places of assembly in educational occupancies.

8-3.5 Extinguishment Requirements. (*See 8-1.6, 8-2.6, and 8-3.2.*)

8-3.5.1 Fire Suppression Systems. Every Class A and B place of assembly shall be protected throughout by an approved automatic sprinkler system.

Exception No. 1: Auditoriums with fixed seating.

Exception No. 2: Multipurpose educational occupancy auditoriums of less than 12,000 sq ft (1115 sq m) area.

Exception No. 3: Passenger terminals at or above grade.

Exception No. 4: Gymnasiums used for no other purpose.

Exception No. 5: Skating rinks and swimming pools used exclusively for participant sport and no audience facilities for more than 300.

Exception No. 6: Class B places of assembly used as restaurants.

SECTION 8-4 SPECIAL PROVISIONS

8-4.1 Windowless or Subterranean Buildings. The requirements of places of assembly shall be in accordance with this chapter and Section 30-7 of this *Code*.

8-4.2 Outdoor Assembly.

8-4.2.1 All grandstands, tents, and other places of outdoor assembly shall comply with the requirements of *Tents, Grandstands and Air-Supported Structures*, NFPA 102 (*see Appendix B*).

8-4.3 Special Provisions for Exhibition Halls.

8-4.3.1 No display or exhibit shall be so installed or operated as to interfere in any way with access to any required exit or with visibility of any required exit or of any required exit sign nor shall any display block access to fire fighting equipment.

8-4.3.2 All displays or exhibits of combustible material or construction and all booths and temporary construction in connection therewith shall be so limited in combustibility or protected as to avoid any undue hazard of fire that might endanger occupants before they have the opportunity to use available exits, as determined by the authority having jurisdiction.

8-4.3.3 A storage room having an enclosure with a fire resistance rating of at least 2 hours and protected by an automatic fire extinguishing system shall be provided for combustible materials not on display.

SECTION 8-5 BUILDING SERVICES

8-5.1 Utilities shall comply with the provisions of Section 7-1.

8-5.2 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

8-5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

8-5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 9 EXISTING PLACES OF ASSEMBLY

(See also Chapter 31.)

SECTION 9-1 GENERAL REQUIREMENTS

9-1.1 Application. The requirements of this chapter apply to existing places of assembly. *(See 9-1.3 for definition.)*

Exception: An existing building housing an assembly occupancy established prior to the effective date of this Code may have its use continued if it conforms to or is made to conform to the provisions of this Code to the extent that, in the opinion of the authority having jurisdiction, reasonable life safety against the hazards of fire, explosions, and panic is provided and maintained.

9-1.2 Mixed Occupancies.

9-1.2.1* Any place of assembly and its access to exits in buildings of other occupancy, such as ballrooms in hotels, restaurants in stores, rooftop places of assembly, or assembly rooms in schools shall be so located, separated, or protected as to avoid any undue danger to the occupants of the place of assembly from a fire originating in the other occupancy or smoke therefrom.

9-1.2.2 Occupancy of any room or space for assembly purposes by less than 50 persons in a building of other occupancy and incidental to such other occupancy shall be classed as part of the other occupancy and subject to the provisions applicable thereto.

9-1.2.3 Places of assembly in buildings of other occupancy may use exits common to the place of assembly and the other occupancy provided that the assembly area and the other occupancy considered separately each have exits sufficient to meet the requirements of this *Code*.

9-1.2.4* Exits shall be sufficient for simultaneous occupancy of both the place of assembly and other parts of the building.

Exception: Where the authority having jurisdiction determines that the conditions are such that simultaneous occupancy will not occur, such as in certain schools as designated in Chapter 11.

9-1.3* Special Definitions.

Arena Stage. A stage or platform open on at least three sides to audience seating. It may be with or without overhead scene handling facilities.

Places of Assembly. Include but are not limited to all buildings or portions of buildings used for gathering together 50 or more persons for such purpose as deliberation, worship, entertainment, dining, amusement, or awaiting transportation.

Platform, Enclosed. A partially enclosed portion of an assembly room,

the ceiling of which is not more than 5 ft (152.4 cm) above the proscenium opening, that is designed or used for the presentation of plays, demonstrations, or other entertainment wherein scenery, drops, decorations, or other effects may be installed or used.

Proscenium Wall. A fire-resistive wall that separates a stage or enclosed platform from the public or spectators' area of an auditorium or theater.

Stage. A partially enclosed portion of an assembly building that is designed or used for the presentation of plays, demonstrations, or other entertainment wherein scenery, drops, or other effects may be installed or used and where the distance between the top of the proscenium opening and the ceiling above the stage is more than 5 ft (152.4 cm).

Thrust Stage. That portion of a stage that projects into the audience on the audience side of a proscenium wall or opening.

9-1.4 Classification of Occupancy. (*See 4-1.2.*)

9-1.4.1 Classification of Places of Assembly. Each place of assembly shall be classified according to its capacity, as follows: Class A, capacity 1000 persons or more; Class B, capacity 300 to 1000 persons; Class C, capacity 50 to 300 persons.

9-1.5 Classification of Hazard of Contents. Contents of assembly occupancies shall be classified in accordance with the provisions of Section 4-2.

9-1.6* Location of Places of Assembly. The location of a place of assembly shall be limited as follows:

Type of Construction	Below LED	LED	Number of Levels Above LED			
			1	2	3	4 & Above
I (443) I (332) II (222)	A†B†C† Any Number of Levels	ABC	ABC	ABC	ABC	A†BC
II (111)	A†B†C† One Level Below LED	ABC	ABC	A†BC	B†C†	N.P.
III (211) IV (2HH) V (111)	A†B†C† One Level Below LED	ABC	ABC	A†B†C	B†C†	N.P.
II (000) III (200) V (000)	B†C† One Level Below LED	BC	C†	N.P.	N.P.	N.P.

†Allowed if the level of the place of assembly and any story intervening between that level and the level of exit discharge are protected throughout

by an approved automatic sprinkler system. If there are any openings between the level of exit discharge and the exits serving the place of assembly, the level of exit discharge shall also be protected throughout by an approved automatic sprinkler system (*see Section 7-7*).

N.P. — Not Permitted
LED — Level of Exit Discharge

9-1.7 Occupant Load.

9-1.7.1 The occupant load permitted in any assembly building, structure, or portion thereof shall be determined by dividing the net floor area or space assigned to that use by the square foot (square meter) per occupant as follows:

(a) An assembly area of concentrated use without fixed seats such as an auditorium, church, chapel, dance floor, or lodge room — 7 sq ft (.65 sq m) per person.

(b) An assembly area of less concentrated use such as a conference room, dining room, drinking establishment, exhibit room, gymnasium, or lounge — 15 sq ft (1.39 sq m) per person.

(c) Standing room or waiting space — 3 sq ft (.28 sq m) per person.

(d) Bleachers, pews, and similar bench-type seating — 18 linear in. (45.72 linear cm) per person.

(e) Fixed seating. The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

(f) Libraries. In stack areas — 100 sq ft (9.3 sq m) per person; in reading rooms — 50 sq ft (4.7 sq m) per person.

Exception: The authority having jurisdiction may permit occupancy by number of persons not to exceed that for which the existing means of egress are adequate, provided that measures are established to prevent occupancy by any greater number of persons than permitted by room area or by fixed seating.

9-1.7.2 The occupant load permitted in a building or portion thereof may be increased above that specified in 9-1.7.1 if the necessary aisles and exits are provided. To increase the occupant load a diagram indicating placement of equipment, aisles, exits, and seating shall be provided to and approved by the authority having jurisdiction prior to any increase in occupant load.

9-1.7.3 Waiting Spaces. In theaters and similar places of public assembly where persons are admitted to the building at times when seats are not available for them and are allowed to wait in a lobby or similar space until seats are available, such use of lobby or similar space shall not encroach upon the required clear width of exits. Such waiting shall be restricted to areas other than the required means of egress. Exits shall be provided for

such waiting spaces on the basis of one person for each 3 sq ft (.28 sq m) of waiting space area. Such exits shall be in addition to the exits specified for the main auditorium area and shall conform in construction and arrangement to the general rules for exits given in this chapter.

SECTION 9-2 MEANS OF EGRESS REQUIREMENTS

9-2.1 General. (*See 9-1.2, Mixed Occupancies.*)

9-2.2* Types of Exits.

9-2.2.1 Exits of the specified number and width shall be of one or more of the following types, in accordance with the provisions of Chapter 5 of this *Code*:

(a) Doors of the swinging type leading directly outside or to a lobby or passageway leading to the outside of the building (*see 5-2.1*)

(b) Horizontal exits (*see 5-2.4*)

(c) Smokeproof towers (*see 5-2.3*)

(d) Interior stairs, Class A or Class B (*see 5-2.2*)

(e) Outside stairs. Same requirements as for interior stairs, including intermediate handrails on monumental stairs serving main entrance doors (*see 5-2.5*)

(f) Ramps, Class A or Class B (*see 5-2.6*)

(g) Escalators (*see 5-2.8*)

(h) Exit passageways (*see 5-2.7*)

(i) Fire escape stairs (*see 5-2.9*).

9-2.2.2 Turnstiles. No turnstiles, revolving doors, or other devices to restrict the movement of persons shall be installed in any place of assembly in such a manner as to interfere in any way with required exit facilities.

9-2.3 Capacity of Means of Egress.

9-2.3.1* Every place of assembly, every tier or balcony, and every individual room used as a place of assembly shall have exits sufficient to provide for the total capacity thereof as determined in accordance with 9-1.7 and as follows:

(a) No individual unit of exit width shall serve more than 100 persons.

(b) Doors leading outside the building at grade level or not more than three risers above or below grade, Class A ramps, or horizontal exits — 100 persons per exit unit adjusted according to location of exits as required in 9-2.3.2 and 9-2.3.3.

(c) Stairs or other type of exit not specified in (b) above — 75 persons per exit unit.

9-2.3.2 Main Exit. Every assembly occupancy shall be provided with a main exit. The main exit shall be of sufficient width to accommodate one-half of the total occupant load but shall be not less than the total required width of all aisles, exit passageways, and stairways leading thereto and shall be at the level of exit discharge or shall connect to a stairway or ramp leading to a street.

Exception No. 1: A bowling establishment shall have a main exit of sufficient capacity to accommodate 50 percent of the total occupant load without regard to the number of aisles that it serves.

Exception No. 2: In assembly occupancies such as stadiums, sports arenas, and passenger stations, exits may be distributed around the perimeter of the building provided the total exit width provides 116⅔ percent of the width needed to accommodate the permitted occupant load.

9-2.3.3 Other Exits. Each level of an assembly occupancy shall have access to the main exit *and* shall be provided with exits of sufficient width to accommodate two-thirds of the total occupant load served by that level. Such exits shall discharge directly to a street or into an exit court, enclosed stairway, outside stairway, or exit passageway leading to a street. Such exits shall be located as far apart as practicable and as far from the main exit as practicable. Such exits shall be accessible from a cross aisle or a side aisle (*see 9-2.3.2*).

Exception: Where only two exits are required, each exit shall be of sufficient width to accommodate not less than half the total occupant load.

9-2.4 Number of Exits.

9-2.4.1 Every Class A place of assembly (capacity over 1,000 persons or more) shall have at least four separate exits as remote from each other as practicable.

9-2.4.2 Every Class B place of assembly (capacity over 300 to 1,000 persons) shall have at least two separate exits as remote from each other as practicable, and if of a capacity of over 600, at least three separate exits, each not less than two exit units wide.

9-2.4.3* Every Class C place of assembly (capacity 50 to 300 persons) shall have at least two means of egress, consisting of separate exits or doors leading to a corridor or other spaces giving access to two separate and independent exits in different directions.

9-2.5 Arrangement of Means of Egress.

9-2.5.1 Exits shall be remote from each other and shall be arranged to minimize the possibility that they may be blocked by any emergency.

Exception: A common path of travel may be permitted for the first 20 ft (609.6 cm) from any point.

9-2.5.2 Means of egress shall not be permitted through kitchens, storerooms, restrooms, closets, or hazardous areas as described in 9-3.2.

9-2.5.3 Seating.

(a) The spacing of rows of seats shall provide a space of not less than 12 in. (30.48 cm) from the back of one seat to the front of the most forward projection of the seat immediately behind it, when the seat is in the down position as measured horizontally between vertical planes.

(b) Rows of seats between aisles shall have not more than 14 seats.

(c) Rows of seats opening onto an aisle at one end only shall have not more than seven seats.

(d) Seats without dividing arms shall have their capacity determined by allowing 18 in. (45.72 cm) per person.

(e) Where bleacher or grandstand seating without backs is used, indoors rows of seats shall be spaced not less than 22 in. (55.88 cm) nor more than 30 in. (76.2 cm) back to back. Vertical aisles shall be provided when such seating is more than eleven rows high. Vertical aisles, where provided, shall not have a dead end in excess of sixteen rows. The rise per row shall not exceed 12 in. (30.48 cm).

Exception: Folding or telescopic seating shall comply with Standard for Tents, Grandstands and Air-Supported Structures Used for Places of Assembly, NFPA 102 (see Appendix B), with a limit of dead ends in vertical aisles of sixteen rows.

(f) Continental seating.

1. With continental seating, the spacing of rows of unoccupied seats shall provide a clear width between rows measured horizontally as follows (automatic or self-rising seats shall be measured in the seat-up position; other seats shall be measured in the seat-down position); 18-in. (45.72-cm) clear width between rows of 18 seats or less; 20-in. (50.8-cm) clear width between rows of 35 seats or less; 21-in. (53.34-cm) clear width between rows of 45 seats or less; 22-in. (55.88-cm) clear width between rows of 46 seats or more, and

2. There shall be not more than 100 seats in a row between aisles at both sides of the seating areas, and

3. Exit doors shall be provided along each side aisle of the row of seats at the rate of one pair of exit doors for each five rows of seats. There shall be not more than five seat rows between pairs of doors. Such exit doors shall provide a minimum clear width of 66 in. (167.64 cm) discharging into a foyer, lobby, or to the exterior of the building.

9-2.5.4 Aisles. Every portion of any assembly building that contains seats, tables, displays, equipment, or other materials shall be provided with aisles leading to exits as follows:

(a) When serving more than 60 seats, every aisle shall be not less than 3 ft (91.44 cm) wide when serving seats on one side only and not less than 3 ft 6 in. (106.68 cm) wide when serving seats on both sides. Such minimum width shall be measured at the point farthest from an exit, cross aisle, or foyer and shall be increased in width by 1½ in. (3.81 cm) for each 5 ft (152.4 cm) in length toward the exit, cross aisle, or foyer.

(b) When serving 60 seats or less, aisles shall be not less than 30 in. (76.2 cm) wide.

(c) Aisles shall terminate in a cross aisle, foyer, or exit. The width of such cross aisle, foyer, or exit shall be not less than the sum of the required width of the widest aisle plus 50 percent of the total required width of the remaining aisles that it serves.

(d) Existing dead-end aisles greater than 20 ft (609.6 cm) in length may be continued in use subject to the approval of the authority having jurisdiction.

(e) With continental seating as set forth in 9-2.5.3(f), side aisles shall be not less than 44 in. (111.76 cm) in width.

(f) Steps shall not be placed in aisles to overcome differences in level unless the gradient exceeds 1 ft (1 cm) of rise in 8 ft (8 cm) of run. Steps in aisles shall conform to the requirements for Class A stairs as to rise and run.

Exception: In balconies and galleries rise and run shall be as for Class A or Class B stairs, but one tread in each seat platform width may have a greater width to accommodate access to seats. Seating platforms shall be of uniform width.

(g) The gradient of sloping aisles shall not exceed 1 ft (1 cm) of rise in 8 ft (8 cm) of run.

9-2.6 Measurement of Travel Distance to Exits. Exits shall be so arranged that the total length of travel from any point to reach an exit will not exceed 150 ft (45.72 m) in any place of assembly.

Exception: The travel distance may be increased to 200 ft (60.96 m) in assembly occupancies protected throughout by an automatic sprinkler system.

9-2.7 Discharge from Exits.

9-2.7.1 The level of exit discharge shall be measured at the point of principal entrance to the building.

9-2.7.2 Where the principal entrance to a place of assembly is via a depressed terrace, the terrace shall be at least as wide as the exit that it serves but not less than 5 ft (152.4 cm) wide, and it shall be increased in width by 50 percent of any other exits tributary thereto. The level of the terrace shall be considered the level of exit discharge for the purpose of 9-1.6 above.

9-2.7.3 A maximum of 50 percent of the exits may discharge through areas on the level of exit discharge in accordance with 5-7.2.

9-2.8 Illumination of Means of Egress.

9-2.8.1 Illumination of means of egress in places of assembly shall be provided in accordance with Section 5-8.

9-2.8.2 In every auditorium or other place of assembly where pictures, motion pictures, or other projections are made by means of directed light, the illumination of the floors of exit access may be reduced during such period of projection to values of not less than 1/5 footcandle (2.15 lx).

9-2.9 Emergency Lighting. All places of assembly and their means of egress shall be provided with emergency lighting in accordance with Section 5-9.

Exception: Churches that are Class C places of assembly, used exclusively for religious worship, shall not be required to have emergency lighting.

9-2.10 Marking of Means of Egress. Means of egress shall have signs in accordance with Section 5-10.

9-2.11 Special Features.

9-2.11.1 Panic Hardware. An exit door from a place of assembly having an occupant load of 100 or more persons may be provided with a latch or lock only if it is panic hardware.

Exception No. 1: In places of assembly having an occupant load of less than 600, panic hardware may be omitted from the main exit when the main exit consist of a single door or a pair of doors. Any locking device on this door(s) shall meet the requirements of Exception No. 2 to 5-2.1.2.1.1.

Exception No. 2: Special locking arrangements complying with 5-2.1.2.1.5 are permitted on doors other than main exit doors.

9-2.11.2 Class C places of assembly in covered malls (*see 25-4.3.1 Exception*) may have horizontal or vertical security grills or doors on the main entrance/exits in accordance with the provisions of Exception No. 2 to 5-2.1.1.4.1.

9-2.11.3 Railings.

(a) The fasciae of boxes, balconies, and galleries shall not be less than 26 in. (66.04 cm) high above the adjacent floor or have substantial railings not less than 26 in. (66.04 cm) high above the adjacent floor.

(b) The height of the rail above footrests on the adjacent floor immediately in front of a row of seats shall be not less than 26 in. (66.04 cm). Railings at the ends of aisles shall be not less than 36 in. (91.44 cm) high for the full width of the aisle and shall be not less than 42 in. (106.68 cm) high for the width of the aisle where steps occur.

(c) Cross aisles shall be provided with railings not less than 26 in. (66.04 cm) high above the adjacent floor.

Exception No. 1: Where the backs of seats on the front of the aisle project 24 in. (60.96 cm) or more above the adjacent floor of the aisle.

Exception No. 2: Existing railings 36 in. (91.44 cm) high at the ends of aisles where steps occur may continue to be used.

SECTION 9-3 PROTECTION

9-3.1 Protection of Vertical Openings. All interior stairways and other vertical openings shall be enclosed and protected as provided in Section 6-2.

Exception No. 1: Stairs may be open between balconies and main assembly floors in theaters, churches, or auditoriums where the travel distance is within the allowable limits (see 9-2.6).

Exception No. 2: Existing wood lath and plaster, existing ½-in. (1.27-cm) gypsum wallboard, existing installations of ¼-in. (.64-cm) thick wired glass that are, or are rendered, inoperative and fixed in the closed position, or other existing materials having similar fire-resistive capabilities shall be acceptable. All such assemblies shall be in good repair and free of any condition that would diminish their original fire-resistive characteristics.

Exception No. 3: Unprotected openings connecting not more than three floors may be permitted provided that they comply with the requirements of 6-2.2.3.1 Exception No. 1.

9-3.2 Protection from Hazards.

9-3.2.1 Stage and Enclosed Platform. (*See 9-1.3.*)

9-3.2.1.1 Every stage equipped with fly galleries, gridirons, and rigging for movable theater-type scenery, and every enclosed platform larger than 500 sq ft (46.45 sq m) in area shall have a system of automatic sprinklers at the ceiling, under the gridiron, in usable spaces under the stage or platform and in auxiliary spaces and dressing rooms, storerooms, and workshops. Where the distance from the back of the stage to the proscenium wall is less than 30 ft (914.4 cm), in lieu of sprinklers under the entire gridiron area, complete peripheral sidewall sprinklers with baffle plates may be substituted. Such sidewall sprinklers shall be not more than 30 in. (76.2 cm) below the gridiron or 6 in. (15.24 cm) below the baffle plates.

When openings are provided in the stage floor for stage lifts, trap doors, or stairs, sprinklers spaced 5 ft (152.4 cm) on centers shall be provided around the opening at the ceiling below the stage, and baffles at least 12 in. (30.48 cm) in depth shall be installed around the perimeter of the opening.

9-3.2.1.2 Every stage and every enclosed platform larger than 500 sq ft (46.45 sq m) shall have a ventilator or ventilators in or above it, operable from the stage floor by hand and also opening by fusible links or other approved automatic heat actuated device or heat and smoke actuated device to give a free opening equal to at least 5 percent of the area of the floor of the stage or enclosed platform.

Where mechanical ventilation is provided, it shall be so arranged that natural ventilation, at least equal to the above, will be available. Makeup air for mechanical ventilation shall not be obtained from the audience (seating) areas.

9-3.2.1.3 The proscenium opening of every stage shall be provided with a curtain constructed and mounted so as to intercept hot gases, flames, and smoke, and to prevent glow from a severe fire on the stage showing on the auditorium side within a 5-minute period. The curtain shall be automatic closing without the use of applied power.

Exception: In lieu of the protection required herein, all the following may be provided:

(a) A noncombustible opaque fabric curtain so arranged that it will close automatically, and

(b) An automatic dry-pipe system of spray heads on both sides of the curtain. Discharge and spacing shall be such that the entire curtain will be wet. Water supply shall be controlled by a deluge valve and shall be sufficient to keep the curtain completely wet for 30 minutes or until valve is closed by fire department personnel, and

(c) Curtain, spray heads, stage sprinklers, and vents shall be automatically operated in case of fire by rate-of-rise and fixed temperature detectors. Spacing, number, and location of detectors shall be as required by the devices used, with maximum center to center distance of 10 ft (304.8 cm). Detectors shall completely cover the periphery of the sprinklered and protected area, and

(d) Operation of a sprinkler or spray head deluge valve shall automatically activate the emergency ventilating system and close the curtain.

9-3.2.1.4 Auxiliary stage spaces such as understage areas, dressing rooms, workshops, and similar spaces associated with the functioning of a stage shall comply with the following:

(a) No point within any auxiliary space shall be more than 50 ft (15.24 m) from a door providing access to an exit.

(b) There shall be at least two exits available from every auxiliary stage space, one of which shall be available within a travel distance of 75 ft (22.86 m). A common path of travel of 20 ft (609.6 cm) to the two exits shall be permitted.

(c) Auxiliary stage spaces shall be equipped with automatic sprinklers when required by the provisions of 9-3.2.1.1.

(d) No workshop involving the use of a combustible or flammable paint, liquids, or gases, or their storage shall open directly upon a stage.

9-3.2.1.5 Where automatic sprinkler protection is not provided, the proscenium wall of every theater using movable scenery or decorations shall not have more than two openings entering the stage, exclusive of the proscenium opening. Such openings shall not exceed 21 sq ft (1.95 sq m) each and shall be fitted with self-closing fire doors.

9-3.2.1.6 Each stage shall be equipped with a standpipe located on each side of the stage, equipped with a 2½-in. (6.35-cm) fire department connection, and a 1½-in. (3.81-cm) hose for occupant use, installed in accordance with *Standard for the Installation of Standpipe and Hose Systems*, NFPA 14 (*see Appendix B*).

9-3.2.2 Projection Booth.

9-3.2.2.1 Every place of assembly where an electric arc, Xenon, or other light source that generates hazardous gases, dust, or radiation is used shall have a projection room that complies with 9-3.2.2.2 from which the projection shall be made. Where cellulose nitrate film is used, the projection room shall comply with *Standard for the Storage and Handling of Cellulose Nitrate Motion Picture Film*, NFPA 40 (*see Appendix B*). (*See also Chapter 31.*)

9-3.2.2.2 Projection Rooms for Safety Film.

9-3.2.2.2.1 Every projection room shall be of permanent construction consistent with the construction requirements for the type of building in which the projection room is located. Openings need not be protected. The room shall have a floor area of not less than 80 sq ft (7.43 sq m) for a single machine and at least 40 sq ft (3.72 sq m) for each additional machine. Each motion picture projector, floodlight, spotlight, or similar piece of equipment shall have a clear working space not less than 30 in. (76.2 cm) on each side and at the rear thereof, but only one such space shall be required between adjacent projectors.

The projection room and the rooms appurtenant thereto shall have a ceiling height of not less than 7 ft 6 in. (228.6 cm).

9-3.2.2.2.2 Each projection room shall have at least one out-swinging, self-closing door not less than 2 ft 6 in. (76.2 cm) wide by 6 ft 8 in. (203.2 cm) high.

9-3.2.2.2.3 The aggregate of ports and openings for projection equipment shall not exceed 25 percent of the area of the wall between the projection room and the auditorium.

All openings shall be provided with glass or other approved material, so as to completely close the opening.

9-3.2.2.2.4 Projection booth room ventilation shall be not less than the following:

(a) *Supply Air.* Each projection room shall be provided with two or more separate fresh air inlet ducts with screened openings terminating within 12 in. (30.48 cm) of the floor, and located at opposite ends of the room. Such air inlets shall be of sufficient size to permit an air change every three minutes. Fresh air may be supplied from the general building air conditioning system, providing it is so arranged that the projection booth will continue to receive one change of air every three minutes, when no other air is supplied by the general air conditioning system.

(b) *Exhaust Air.* Each projection room shall be provided with one or more exhaust air outlets that may be manifolded into a single duct outside the booth. Such outlets shall be so located as to ensure circulation throughout the room. Projection room exhaust air systems shall be independent of any other air systems in the buildings. Exhaust air ducts shall terminate at the exterior of the building in such a location that the exhaust air cannot be readily recirculated into the supply air system. The exhaust system shall be mechanically operated and of such a capacity as to provide a minimum of one change of air every 3 minutes. The blower motor shall be outside the duct system.

The projection room ventilation system may also serve appurtenant rooms, such as the generator room and the rewind room.

9-3.2.2.2.5 Each projection machine shall be provided with an exhaust duct that will draw air from each lamp and exhaust it directly to the outside of the building in such a fashion that it will not be picked up by supply inlets. Such a duct shall be of rigid materials, except for a continuous flexible connector approved for the purpose. The lamp exhaust system shall not be interconnected with any other system.

(a) *Electric Arc Projection Equipment.* The exhaust capacity shall be 200 cfm (.09 cu m/s) for each lamp connected to the lamp exhaust system, or as recommended by the equipment manufacturer. Auxiliary air may be introduced into the system through a screened opening to stabilize the arc.

(b) *Xenon Projection Equipment.* The lamp exhaust system shall exhaust not less than 300 cfm (.14 cu m/s) per lamp, not less than that exhaust volume required or recommended by the equipment manufacturer, whichever is the greater. The external temperature of the lamp housing shall not exceed 130°F (54.4°C) when operating.

9-3.2.2.2.6 Miscellaneous Equipment and Storage.

(a) Each projection room shall be provided with rewind and film storage facilities.

(b) A maximum of four containers for flammable liquids not greater than 16 oz (4.7×10^{-4} cu m) capacity and of a nonbreakable type may be permitted in each projection booth.

(c) Appurtenant electrical equipment such as rheostats, transformers, and generators may be located within the booth or in a separate room of equivalent construction.

9-3.2.3 Service Equipment, Hazardous Operations or Processes, and Storage Facilities.

9-3.2.3.1 Rooms containing high pressure boilers, refrigerating machinery of other than domestic refrigerator type, large transformers, or other service equipment subject to possible explosion shall not be located directly under or adjacent to required exits. All such rooms shall be separated by a 1-hour fire barrier from other parts of the building.

9-3.2.3.2 All openings between the balance of the building and rooms or enclosures for hazardous operations or processes shall be protected by standard self-closing or smoke-actuated fire doors and shall be provided with adequate vents to the outer air, in accordance with Section 6-4 of this *Code*.

9-3.2.3.3 Rooms or space for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having jurisdiction, hazardous materials, or for flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder of the building by a smoke barrier.

9-3.2.4 Special Provisions for Food Service Establishments.

9-3.2.4.1 All devices in connection with the preparation of food shall be so installed and operated as to avoid hazard to the safety of occupants.

9-3.2.4.2 All devices in connection with the preparation of food shall be of an approved type and shall be installed in an approved manner.

9-3.2.4.3 Food preparation facilities shall be protected in accordance with *Vapor Removal Cooking Equipment*, NFPA 96 (*see Appendix B*), and are not required to have openings protected between food preparation areas and dining areas.

9-3.3 Interior Finish.

9-3.3.1 The interior finish requirements of this section shall be in accordance with Section 6-5.

9-3.3.2 Interior finish in all corridors and lobbies shall be Class A or B and in enclosed stairways Class A.

9-3.3.3 Interior finish in general assembly areas, shall be Class A, B, or C.

Exception: In any place of assembly, exposed portions of structural members complying with the requirements for Type IV (2HH) construction may be permitted.

9-3.3.4 Screens on which pictures are projected shall comply with requirements of Class A or Class B interior finish.

9-3.4 Alarm and Communication Systems.

9-3.4.1 Every Class A or B place of assembly shall be provided with a manual fire alarm system in accordance with 7-6.1.2.

9-3.4.2 The alarm system shall not automatically sound an alarm in the audience or seating portion of the place of assembly but shall sound an alarm in a constantly manned location.

Exception: Places of assembly in educational occupancies.

9-3.4.3 Provisions shall be made for transmitting voice messages by a public address system throughout the assembly area. Reliability of the public address system shall be assured by testing the system prior to allowing occupants into the assembly room.

Exception: Places of assembly in educational occupancies.

9-3.4.4 The public address system shall be provided with an emergency power source.

Exception: Places of assembly in educational occupancies.

9-3.5 Extinguishment Requirements. (*See 9-1.6, 9-2.6, and 9-3.2.*)

9-3.5.1 Fire Suppression Systems. Any place of assembly used or capable of being used for exhibition or display purposes shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7 when the exhibition or display area exceeds 15,000 sq ft (1,394 sq m).

SECTION 9-4 SPECIAL PROVISIONS

9-4.1 Windowless or Subterranean Buildings. The requirements of places of assembly shall be in accordance with this chapter and Section 30-7 of this *Code*.

9-4.2 Outdoor Assembly.

9-4.2.1 All grandstands, tents, and other places of outdoor assembly shall comply with the requirements of *Tents, Grandstands and Air-Supported Structures*, NFPA 102 (*see Appendix B*).

9-4.3 Special Provisions for Exhibition Halls.

9-4.3.1 No display or exhibit shall be so installed or operated as to interfere in any way with access to any required exit or with visibility of any required exit or of any required exit sign, nor shall any display block access to fire fighting equipment.

9-4.3.2 All displays or exhibits of combustible material or construction and all booths and temporary construction in connection therewith shall be so limited in combustibility or protected as to avoid any undue hazard of fire that might endanger occupants before they have the opportunity to use available exits, as determined by the authority having jurisdiction.

9-4.3.3 A storage room having an enclosure with a fire resistance rating of at least 2 hours and protected by an automatic fire extinguishing system shall be provided for combustible materials not on display.

SECTION 9-5 BUILDING SERVICES

9-5.1 Utilities shall comply with the provisions of Section 7-1.

9-5.2 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

9-5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

9-5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 10 NEW EDUCATIONAL OCCUPANCIES

(See also Chapter 31.)

SECTION 10-1 GENERAL REQUIREMENTS

10-1.1 Application.

10-1.1.1 The requirements of this chapter apply to new buildings.

10-1.1.2 Rooms used for preschool, kindergarten, or first-grade pupils shall not be located above or below the level of exit discharge. Rooms used for second-grade pupils shall not be located more than one story above the level of exit discharge.

10-1.1.3* Educational occupancies shall make provisions for the physically handicapped.

10-1.1.4 Educational occupancies housing classes over the twelfth grade need not comply with this chapter, but shall comply with the following requirements:

(a) Instructional Building — Business Occupancy
(b) Classrooms under 50 persons — Business Occupancy
(c) Classrooms 50 persons and over — Place of Assembly
(d) Laboratories, Instructional — Business Occupancy
(e) Laboratories, Non-Instructional — Industrial.

10-1.2 Mixed Occupancies. *(See also 10-1.4.)*

10-1.2.1 General. In case two or more classes of occupancy occur in the same building or structure so intermingled that separate safeguards are impracticable, the means of egress shall be sufficient to meet the requirements for each individual room or section and for the maximum occupant load of the entire building. Construction, protection, and other safeguards shall meet requirements of the most hazardous occupancy.

Exception: As otherwise specified in this chapter.

10-1.2.2 Assembly and Educational. Any auditorium, assembly room, cafeteria, or gymnasium used for assembly purposes such as athletic events with provisions for seating of spectators, or other spaces subject to assembly occupancy, shall comply with Chapter 8, including Special Provisions for Places of Assembly in Buildings of Other Occupancy, which provides that where auditorium and gymnasium exits lead through corridors or stairways

also serving as exits for other parts of the building, the exit capacity shall be sufficient to permit simultaneous exit from auditorium and classroom sections.

Exception: In the case of an auditorium and gymnasium of a type suitable only for use of the school occupant load (and therefore not subject to simultaneous occupancy), the same exit capacity may serve both sections.

10-1.2.3 Dormitory and Classrooms. Any building used for both classroom and dormitory purposes shall comply with the applicable provisions of Chapter 16 in addition to complying with Chapter 10. Where classroom and dormitory sections are not subject to simultaneous occupancy, the same exit capacity may serve both sections.

10-1.2.4 Other Combined Occupancies.

10-1.2.4.1 Any other combinations of occupancy not covered in 10-1.2.2 and 10-1.2.3 shall comply with all applicable chapters of this *Code*, with means of egress adequate to serve all occupancies simultaneously.

10-1.3 Special Definitions.

Common Atmosphere. A common atmosphere exists between rooms, spaces or areas within a building, which are not separated by an approved smoke partition.

Flexible Plan and Open Plan Educational Buildings. Include every building or portion of a building not having corridors which comply with 10-3.6.1 and are designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by use of tables, chairs, desks, bookcases, counters, low-height 5-ft (152.4-cm) partitions, or similar furnishings.

Flexible plan buildings without exit access doors between rooms and corridors shall be classified as open plan buildings.

Interior Room. A room whose only means of egress is through an adjoining or intervening room which is not an exit.

Room. For the purposes of this section, a room is a space or area bounded by any obstructions to egress which at any time enclose more than 80 percent of the perimeter of the space or area. Openings of less than 3 ft (91.44 cm) clear width and less than 6 ft 8 in. (203.2 cm) high shall not be considered in computing the unobstructed perimeter.

Separate Atmosphere. A separate atmosphere exists between rooms, spaces or areas that are separated by an approved smoke partition.

Separate Means of Egress. A means of egress separated in such a manner from other required means of egress as to provide an atmospheric separation which precludes contamination of both means of egress by the same fire. (*See Section 6-3.*)

Smoke Partition. (*See Section 6-3.*) For purposes of this section, smoke partitions shall also include floors and openings therein.

10-1.4 Classification of Occupancy. (*See 4-1.3.*)

10-1.4.1 Educational occupancies shall include all buildings used for educational purposes through the twelfth grade by six or more persons for 4 hours per day or more than 12 hours per week.

10-1.4.2 Educational occupancy includes part-day, nursery schools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age.

10-1.4.3 Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*. (*See Chapters 12, 16, 18, 20, 28, 29, and 30, and 1-4.4.*)

10-1.4.4* In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

10-1.5 Classification of Hazard of Contents. Contents of educational occupancies shall be classified in accordance with the provisions of Section 4-2.

10-1.6 Minumum Construction Required. No Requirements.

10-1.7 Occupant Load.

10-1.7.1 The occupant load of educational buildings or any individual story or section thereof for the purpose of determining exits shall be as determined by the authority having jurisdiction but not less than one person for each 20 sq ft (1.86 sq m) of net classroom area or 50 sq ft (4.65 sq m) of net area of shops, laboratories, and similar vocational rooms. In day nurseries where sleeping facilities are provided, the occupant load shall be not less than one person for each 35 sq ft (3.25 sq m) of net area.

10-1.7.2 The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

10-1.7.3 The capacity of an educational occupancy or a portion thereof may be modified from that specified above if the necessary aisles and exits are provided. An approved aisle or seating diagram shall be required by the authority having jurisdiction to substantiate such a modification.

10-1.7.4 The occupant load for determining exit requirements of individual lecture rooms, gymnasiums, or cafeterias used for assembly purposes of more than 50 persons shall be determined in accordance with 8-1.7 of this *Code*.

SECTION 10-2 MEANS OF EGRESS REQUIREMENTS

10-2.1 General. Every aisle, corridor, balcony, other means of access to exits, and discharge from exits shall be in accordance with Chapter 5.

10-2.2 Types of Exits. Exits of the specified number and width shall be one or more of the following types, in accordance with the provisions of Chapter 5 of this *Code*.

(a) Doors. (*See 5-2.1.*)

(b) Interior Stairs. (*See 5-2.2.*)

(c) Smokeproof Towers. (*See 5-2.3.*)

(d) Outside Stairs. (*See 5-2.5.*)

(e) Horizontal Exits. (*See 5-2.4.*)

(f) Ramps — Class A or Class B. (*See 5-2.6.*)

10-2.3 Capacity of Means of Egress.

10-2.3.1* Every educational building, and every floor, section or room thereof considered separately shall have exits sufficient to provide for the capacity thereof, comprised of one or more types of exits, as follows:

(a) Any door, in accordance with 5-2.1, leading directly outside the building at ground level, or not to exceed three risers above or below the ground — 100 persons per unit of exit width.

(b) Any door leading outside the building but requiring steps of over three risers to reach the ground — 100 persons per unit of exit width; steps must have one-third more units of width than doors to allow for slower travel rate.

(c) Stairs, smokeproof towers or outside stairs, in accordance with 5-2.2, 5-2.3 and 5-2.5 — 60 persons per unit of exit width.

(d) Ramps, in accordance with 5-2.6.

1. Class A — 100 persons per unit of exit width.
2. Class B — 60 persons per unit of exit width.

(e) Horizontal exits, in accordance with 5-2.4 — 100 persons per unit of exit width.

10-2.3.2* The same exit units or fraction thereof required for any individual floor may be counted as simultaneously serving all floors above the first story or floor of exit discharge.

10-2.4 Number of Exits.

10-2.4.1 There shall be at least two exits available from every floor area.

10-2.4.2 Every room or space with a capacity of over 50 persons or over 1,000 sq ft (92.9 sq m) in area shall have at least two doorways as remote from each other as practicable. Such doorways shall provide access to

separate exits, but, where egress is through corridors, may open upon a common corridor leading to separate exits in opposite directions.

10-2.5 Arrangement of Means of Egress.

10-2.5.1* Exits shall be so arranged that at least two separate exits will be available from every floor area. Exits shall be as remote from each other as practicable, so arranged that there will be no pockets or dead ends of appreciable size in which occupants may be trapped, and in no case shall any dead-end corridor extend more than 20 ft (609.6 cm) beyond the stairway of other means of exit therefrom.

10-2.5.2 Every classroom or room used for educational purposes or student occupancy below the floor of exit discharge shall have access to at least one exit which leads directly to the exterior at level of discharge without entering the floor above.

10-2.5.3 Minimum Corridor Width.

10-2.5.3.1 Exit access corridors shall be not less than 6 ft (182.88 cm) wide in the clear.

10-2.5.3.2 Drinking fountains or other equipment, fixed or movable, shall not be so placed as to obstruct the required minimum 6 ft (182.88 cm) corridor width.

10-2.5.3.3 Doors which swing into an exit access corridor shall be recessed to prevent interference with corridor traffic; any doors not so recessed shall open 180 degrees to stop against wall. Doors in any position shall not reduce the required corridor width by more than one half.

10-2.5.4 When there are more than 60 seats, every aisle shall be not less than 3 ft (91.44 cm) wide when serving seats on one side only and not less than 3 ft 6 in. (106.68 cm) when serving seats on both sides. When serving 60 seats or less, aisles shall not be less than 30 in. (76.2 cm) wide. Within a classroom where there are rows of seats with room access to the seats between individual rows, this space does not constitute an aisle. No more than six seats shall intervene between any seat and an aisle.

10-2.5.5 Exterior Corridors or Balconies.

10-2.5.5.1* Where exterior corridors or balconies are provided as means of exit, they shall open to the outside air except for railings or balustrades with stairs or level exits to grade not over the allowable travel distance apart, so located that an exit will be available in either direction from the door to any individual room or space, with dead ends not to exceed 20 ft (609.6 cm). If balconies are enclosed by glass or in any other manner, they shall be treated as interior corridors.

10-2.5.5.2 The floors of balconies (exterior corridors) and stairs shall be solid, without openings, and shall comply with requirements for outside

stairs as regards balustrades or railings, width and pitch of stairs, and other details, but are not required to be shielded from fire within the building by blank walls, wired glass windows or the like where the stairs are located on the side of the balcony or corridor away from the building and are separated from the building by the full required width of the balcony or corridor. Regardless of other provisions, exterior balconies and stairs may be of the same type of construction as the building which they serve.

10-2.6 Measurement of Travel Distance to Exits. Travel distance to an exit shall not exceed 150 ft (45.72 cm) from any point in a building.

Exception No. 1: For travel distance in open plan buildings, see 10-6.2.2.

Exception No. 2: The travel distance may be increased to 200 ft (60.96 m) in educational occupancies protected throughout by an approved automatic sprinkler system.

10-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with the provisions of Section 5-7.

10-2.8 Illumination of Means of Egress. All educational buildings shall have adequate exit illumination in accordance with Section 5-8.

10-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided:

(a) In all interior stairs and corridors

(b) In all normally occupied spaces

Exception to (b):

1. Administrative areas.

2. General classrooms.*

3. Mechanical rooms and storage areas.

(c) In flexible and open plan buildings

(d) In all portions of buildings that are interior or windowless.

10-2.10 Marking of Means of Egress. All educational buildings shall have signs designating the location of exits or the path of travel to reach them, in accordance with Section 5-10.

Exception: Signs are not required in situations where location of exits is otherwise obvious and familiar to all occupants, such as in small elementary school buildings.

10-2.11 Special Features.

10-2.11.1 Door Closure. All exit doors designed to be kept normally closed shall conform with 5-2.1.2.3.

10-2.11.2 Door Swing. If a room or space is subject to occupancy by more than 50 persons, exit doors shall swing out. Only one locking or latching device shall be permitted on a door or a leaf of a pair of doors. (*See also 10-2.5.3.*)

10-2.11.3 Panic Hardware. Any required exit door subject to use by 100 or more persons shall be operated by a panic hardware device, in accordance with 5-2.1.2.2.

10-2.11.4 Special locking arrangements complying with 5-2.1.2.1.5 are permitted.

10-2.11.5* Windows for Rescue and Ventilation. Every room or space used for classroom or other educational purposes or normally subject to student occupancy shall have at least one outside window used for emergency rescue or ventilation. Such window shall be openable from the inside without the use of tools, and provide a clear opening of not less than 20 in. (50.8 cm) in width, 24 in. (60.96 cm) in height and 5.7 sq ft (.5 sq m) in area. The bottom of the opening shall be not more than 44 in. (111.16 cm) above the floor, and any latching device shall be capable of being operated from not more than 54 in. (137.16 cm) above the finished floor.

Exception No. 1: In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

SECTION 10-3 PROTECTION

10-3.1 Protection of Vertical Openings.

10-3.1.1 Any interior stairway and other vertical opening in educational buildings shall be enclosed and protected in accordance with Section 6-2.

Exception: Unprotected vertical openings connecting not more than three floors may be permitted in accordance with 6-2.2.3.1, Exception No. 1.

10-3.1.2 Stairs shall be enclosed in accordance with Section 6-2.

Exception: Stairway enclosure will not be required for a stairway serving only one adjacent floor except a basement and not connected with corridors or stairways serving other floors.

10-3.2 Protection from Hazards.

10-3.2.1 Rooms or spaces for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having juridiction, hazardous materials, or for flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or automatic smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder of the building by a smoke barrier.

10-3.2.2 Food preparation facilities shall be protected in accordance with *Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment*, NFPA 96 (*see Appendix B*), and are not required to have openings protected between food preparation areas and dining areas.

10-3.2.3 Janitor closets shall be protected by an automatic sprinkler system which may be supplied by the domestic water supply system serving no more than six sprinklers and having a water supply sufficient to provide 0.15 gpm per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area. Doors to janitor closets may have ventilating louvers.

10-3.2.4 Laboratories that use chemicals shall comply with *Standard on Fire Protection for Laboratories Using Chemicals*, NFPA 45 (*see Appendix B*).

10-3.3 Interior Finish.

10-3.3.1 Interior finish shall be Class A in stairways and Class A or B in corridors and lobbies and Class A, B or C elsewhere, in accordance with the provisions of Section 6-5.

10-3.3.2 Interior Floor Finish. No Requirements.

10-3.4 Detection, Alarm, and Communication Systems.

10-3.4.1 Approved manually operated fire alarm facilities in accordance with 7-6.1.2 shall be provided in every educational building. When acceptable to the authority having jurisdiction the fire alarm system may be used to designate class change provided the fire alarm is distinctive in signal and overrides all other use.

10-3.4.2 In buildings provided with automatic sprinkler protection, the operation of the sprinkler system shall automatically actuate the fire alarm system.

10-3.5 Extinguishment Requirements. Every portion of educational buildings below the floor of exit discharge shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

10-3.6 Interior Corridors.

10-3.6.1 Every interior corridor shall be of construction having not less than a 1-hour fire resistance rating. Such corridor walls shall extend from floor slab to floor slab or when the ceiling of the entire story is an element of a 1-hour fire-resistive floor or ceiling system, the corridor wall may terminate at the ceiling. All openings shall be protected with doors, frames and hardware, including closers, that shall all have a fire protection rating of at least 20 minutes.

Exception No. 1: Such corridor protection shall not be required when all classrooms served by such corridors have at least one door directly to the outside or to an exterior balcony or corridor as in 10-2.5.4.

Exception No. 2: The corridor protection may be reduced to a ½-hour fire resistance rating providing the building is protected throughout by an approved automatic sprinkler system.

10-3.7 Subdivision of Building Spaces.

10-3.7.1 When the aggregate length of interior corridors, including dead-end corridors and cross corridors, exceeds 300 ft (91.44 m), the corridor shall be divided into reasonably equal sections not exceeding 300 ft (91.44 m) in length by smoke barriers installed in accordance with Section 6-3.

SECTION 10-4 SPECIAL PROVISIONS

10-4.1 Windowless or Subterranean Buildings. Automatic sprinkler protection shall be provided for stories which are in excess of 1500 sq ft (139.4 sq m) and are:

(a) Without windows or other openings directly to the exterior at the rate of 20 sq ft (1.9 sq m) of opening per 50 linear ft (15.24 m) in any two walls or,

(b) Below grade without similar openings.

10-4.2 Flexible plan and open plan buildings shall also comply with the provisions of Section 10-6.

SECTION 10-5 BUILDING SERVICES

10-5.1 Utilities shall comply with the provisions of Section 7-1.

10-5.2 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

10-5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

10-5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 10-6 FLEXIBLE PLAN AND OPEN PLAN BUILDINGS

10-6.1 General Requirements.

10-6.1.1 Flexible or open plan buildings shall not exceed 30,000 sq ft (2,787 sq m) in undivided area. A solid wall or smoke partition (*see Section 6-3*) shall be provided at maximum intervals of 300 ft (91.44 m) and openings in such walls or partitions shall comply with Section 6-3.

10-6.2 Means of Egress Requirements.

10-6.2.1 Arrangement of Means of Egress.

10-6.2.1.1 Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are required, not more than two of them shall enter into the same atmosphere.

10-6.2.1.2 Exit access from interior rooms may pass through an adjoining or an intervening room, provided that the travel distances do not exceed those set forth in 10-6.2.2. Foyers and lobbies constructed as required for corridors shall not be construed as intervening rooms.

10-6.2.1.3 Where the only means of egress from an interior room or rooms is through an adjoining or intervening room, smoke detectors shall be installed in the area of the common atmosphere through which the means of egress must pass. The detectors shall actuate alarms audible in the interior room and shall be connected to the school fire alarm system.

Exception No. 1: Smoke detectors are not required where the aggregate occupant load is less than ten.

Exception No. 2: Interior rooms used exclusively for mechanical and public utility service to the buildings.

Exception No. 3: Where the building is protected throughout by an approved automatic sprinkler system.

10-6.2.1.4 Flexible plan schools may have walls and partitions rearranged periodically, only after revised plans or diagrams have been approved by the authority having jurisdiction.

10-6.2.1.5 Open plan schools shall have furniture, fixtures, or low-height partitions so arranged that exits will be clearly visible and unobstructed, and exit paths are direct, not circuitous. If paths or corridors are established, they shall be at least as wide as required by 10-2.5.3.

10-6.2.2 Travel Distance to Exits. No point in a building shall be more than 150 ft (45.72 m) from an exit, measured in accordance with Section 5-6.

Exception: An increase in the above travel distance to 200 ft (60.96 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7 and Standard for the Installation of Sprinkler Systems, NFPA 13 (see Appendix B).

10-6.3 Protection.

10-6.3.1 Vertical Openings.

10-6.3.1.1 All exit stairs shall be enclosed in accordance with Section 6-2.

10-6.3.1.2 Vertical openings other than exits shall be enclosed as required by Section 6-2. (*See 10-3.1.2 for enclosure of exits.*)

10-6.3.2 Protection from Hazards.

10-6.3.2.1 Stages in places of assembly shall be separated from school areas by construction having at least a 1-hour fire resistance rating and shall comply with 8-3.2. Openings shall be protected by self-closing or smoke-activated fire doors having a fire protection rating of ¾ hours.

10-6.3.2.2 Shops, laboratories, and similar vocational rooms, as well as storage rooms, shall be separated from school areas by construction having at least a 1-hour fire resistance rating. They shall have exits independent from other areas.

10-6.3.3* Interior Finish. Interior finish, in accordance with Section 6-5, in flexible plan and open plan buildings shall be as follows:

(a) Corridors in flexible plan buildings — Class A, on rigid material that will not deform at temperatures below 450°F (232°C).

(b) Other than corridor walls — Class A or Class B.

Exception No. 1: Fixtures and low-height partitions not over 5 ft (152.4 cm) high may be Class C.

Exception No. 2: In one-story buildings the exposed portions of structural members complying with the requirements for Type IV (2HH) construction may be permitted.

10-6.3.4 Reserved.

10-6.3.5 Automatic Fire Extinguishing Systems.

10-6.3.5.1 Any flexible plan building or open plan building in which the travel distance to exits exceeds 150 ft (45.72 m) shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7. Extinguishing systems shall be electrically interconnected with the school fire alarm system.

10-6.3.5.2 Automatic fire extinguishing systems shall be modified to conform with partition changes. Modification plans shall have prior approval of the authority having jurisdiction.

10-6.3.6 Reserved.

10-6.3.7 Reserved.

10-6.3.8 Smoke Control.

10-6.3.8.1 The specific requirements of this section are not intended to prevent the design or use of other systems, equipment or techniques that will effectively prevent the products of combustion from breaching the atmospheric separation.

10-6.3.8.2 The provisions of this subsection shall apply only to the requirements for providing separate atmospheres. The fire resistance requirements shall comply with other provisions of the *Code*.

(a) Walls, partitions and floors forming all of or part of an atmospheric separation shall be of materials consistent with the requirements for the type of construction, but of construction not less effective than a smoke barrier. Glass lights of approved wired glass set in steel frames may be installed in such walls or partitions.

(b) Every door opening therein shall be protected with a fire assembly as required elsewhere in the *Code*, but not less than a self-closing or automatic-closing, tight-fitting smoke assembly having a fire protection rating of not less than 20 minutes.

(c) Ducts penetrating atmospheric separation walls, partitions, or doors shall be equipped with an approved automatic-closing smoke damper when having openings into more than one atmosphere, or the atmospheric separation shall be maintained by an approved method of smoke control.

(d) All automatic-closing fire assemblies installed in the atmospheric separation shall be activated by approved smoke detectors.

(e) Janitor closets and storage rooms shall be enclosed by materials having 1-hour fire resistance. Stages and enclosed platforms shall be constructed in accordance with Chapter 8.

Exception: Doors to janitor closets may have ventilating louvers.

SECTION 10-7 CHILD DAY-CARE CENTERS

(*See also Sections 10-8 and 10-9.*)

10-7.1 General Requirements.

10-7.1.1 Application.

10-7.1.1.1 The requirements detailed in Section 10-7, Child Day-Care Centers (more than 12 children), are based on the minimum staff-to-child ratios which follow:

Staff Ratio	Age
1:3	0 to 2
1:5	2 to 3
1:10	3 to 5
1:12	5 to 7
1:15	7 and over

10-7.1.1.2 This section establishes life safety requirements for child day-care centers in which more than 12 children receive care, maintenance, and supervision for 24 hours or less per day. The provisions of Sections 10-2 through 10-6 shall not apply to this section unless a specific requirement is referenced by this section.

10-7.1.1.3 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

10-7.1.1.4 Centers housing children 6 years of age and older shall conform to the requirements for educational occupancies, except as noted herein.

10-7.1.1.5 Where a facility houses more than one age group, the requirements for the younger children shall apply, unless the area housing the younger children is maintained as a separate fire area.

10-7.1.2 Mixed Occupancies.

(a) Where centers are located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

(b) Centers in apartment buildings.

1. If the two exit accesses from the center enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hour fire resistance rating. The smoke barrier shall be so located that there is an exit on each side of it.

2. The door in the smoke barrier shall be not less than 36 in. (91.44 cm) wide.

3. The door and frame assembly in the smoke barrier shall have a fire protection rating of at least 20 minutes and shall be equipped with a self-closing device, a latch, and an automatic hold-open device activated by a smoke detector. (*See also 5-2.1.2.3.*)

10-7.1.3 Special Definitions. (None.)

10-7.1.4 Classification of Occupancy. For the purposes of this section, children are classified in age groups, as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

10-7.1.5 Classification of Hazard of Contents. (Not specifically classified.)

10-7.1.6 Minimum Construction Standards.

10-7.1.6.1 Centers shall not be located above the heights indicated for the types of construction given in Table 10-7.1.6.1.

Table 10–7.1.6.1 Height and Construction Limits

Type of Construction	Age Group	Number of Stories (Stories are counted starting at floor of exit discharge) 1	2	3	4 and over
I (443) I (332) II (222) II (111)	0 to 3 3 thru 5 6 and older	X X X	X X X	X X X	X X X
III (211) V (111)	0 to 3 3 thru 5 6 and older	X X X	See Note 1 X X	Not Permitted See Note 1 See Note 1	
IV (2HH)	0 to 3 3 thru 5 6 and older	X X X	See Note 1 See Note 1 See Note 1		
II (000)	0 to 3 3 thru 5 6 and older	X X X	See Note 1 See Note 1 See Note 1		
III (200) V (000)	0 thru 3 3 thru 5 6 and older			Not Permitted See Note 2 See Note 2	

NOTE 1: Permitted if entire building is protected throughout by an approved automatic sprinkler system.

NOTE 2: May be permitted for children 3 years of age and older if the children are limited to the first floor and the number of children is limited to 50 and there are two remote exits; or if they are limited to the first floor and the number of children is limited to 100 and each room has an exit directly to the outside.

10-7.1.6.2 Location. The story below the level of exit discharge may be used in buildings of any type other than Type II (000), Type III (200), and Type V (000). (*See 10-7.2.4.2.*)

10-7.1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor but not less than one person for each 35 sq ft (3.25 sq m) of net floor area used by the children.

10-7.2 Means of Egress Requirements.

10-7.2.1 General. (None.)

10-7.2.2 Types of Exits. (*See 10-2.2.*)

10-7.2.2.1 Stairs.

(a) Exit stairs shall be enclosed in accordance with 10-3.1.2.

(b) There shall be no enclosed usable space under stairs in an exit enclosure nor shall the open space within the enclosure either under or adjacent to the stairs be used for any purpose.

10-7.2.2.2 Areas of Refuge. In buildings over five stories above ground level, areas of refuge shall be provided for occupants of child day-care centers, either by smokeproof towers or horizontal exits.

10-7.2.3 Capacity of Means of Egress. (*See 10-2.3.*)

10-7.2.4 Number of Exits.

10-7.2.4.1 Each floor occupied by children shall have not less than two remote exits.

10-7.2.4.2 When the story below the exit discharge is used (*see 10-7.1.6.2*), the following conditions shall be met:

(a) For up to 30 children there shall be two remote exits. One exit shall discharge directly outside and the vertical travel to ground level shall not exceed 8 ft (243.84 cm). There shall be no unprotected opening into the enclosure of the second exit.

(b) For over 30 children a minimum of two exits shall be provided directly outside with one of the two exiting at ground level.

Exception No. 1: The exit directly to ground level is not required if the exits are protected in accordance with 5-1.3. There shall be no openings into the exit other than for ingress and egress. Smoke detectors shall be provided in that story and the story of discharge.

Exception No. 2: The exit directly to ground level is not required if one exit complies with Exception No. 1 and sprinklers are used in that story and the story of exit discharge.

10-7.2.5 Arrangement of Means of Egress. (*When the story below the exit discharge is used, see also 10-7.2.4.2.*)

10-7.2.6 Measurement of Travel Distance to Exits.

10-7.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

10-7.2.6.2 Travel distance (a) between any room door intended as exit access and an exit shall not exceed 100 ft (30.48 m); (b) between any point in a room and an exit shall not exceed 150 ft (45.72 m); (c) between any point in a sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception: The travel distance in (a) and (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

10-7.2.6.3 The travel distance to exits in open plan centers for children 3 years of age and older shall be in accordance with 10-6.2.2 for open plan schools.

10-7.2.7 Discharge from Exits. (*When the story below the exit discharge is used, see also 10-7.2.4.2.*) All such exits shall discharge directly to the outside.

10-7.2.8 Illumination of Means of Egress. If the facility is used after daylight hours, it shall comply with Section 5-8.

10-7.2.9 Emergency Lighting. Means of egress in each day-care center shall be provided with emergency lighting, in accordance with Section 5-9.

10-7.2.10 Marking of Means of Egress. (No additional special requirements.) (*See Section 5-10.*)

10-7.2.11 Special Features.

10-7.2.11.1 Doors in means of egress shall swing in the direction of exit travel and shall meet the requirements of 10-2.11.2.

10-7.2.11.2 Every closet door latch shall be such that children can open the door from inside the closet.

10-7.2.11.3 Every bathroom door lock shall be designed to permit opening of the locked door from the outside in an emergency, and the opening device shall be readily accessible to the staff.

10-7.3 Protection.

10-7.3.1 Protection of Vertical Openings. Any vertical opening in centers shall be enclosed and protected in accordance with Section 6-2.

10-7.3.2 Protection from Hazards. Rooms or spaces for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or

fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having jurisdiction, hazardous materials, or for flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder by a physical barrier of such construction so as to contain the heat or smoke generated by a fire to allow for ready extinguishing system activation.

Exception: Food preparation facilities protected in accordance with Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96 (see Appendix B), are not required to have openings protected between food preparation areas and dining areas. Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities is not required if approved by the authority having jurisdiction.

10-7.3.3 Interior Finish.

10-7.3.3.1 Interior finish for all walls and ceilings shall be Class A or Class B in accordance with Section 6-5. Interior finish in stairways, corridors, and lobbies shall be Class A.

10-7.3.3.2 In all centers, floor coverings within corridors and exitways shall be Class I or Class II in accordance with Section 6-5.

10-7.3.3.3 Decorations and furnishings shall be in accordance with Chapter 31.

10-7.3.4 Detection, Alarm, and Communications.

10-7.3.4.1 There shall be a manually operated fire alarm system in accordance with Section 7-6 on each floor of the center. In centers with more than 100 children, the fire alarm system shall be installed to transmit an alarm by the most direct and reliable method approved by local

regulations to the fire department that is legally committed to serve the area in which the center is located.

Exception: When the child day-care center is housed in one room.

10-7.3.4.2 Smoke detectors shall be installed on the ceiling of each story in front of the doors to the stairways and at no greater than 30 ft (914.4 cm) spacing in the corridors of all floors containing the center. Detectors shall also be installed in lounges and recreation areas in centers. The detectors may be single station units with an integral alarm having a decibel rating of at least 85.

Exception: Detectors are not required in centers housing children 6 years of age and older, if no sleeping facilities are provided.

10-7.3.5 Extinguishment Requirements.

10-7.3.5.1 Portable fire extinguishers suitable for Class B fires shall be installed in kitchens and cooking areas, and extinguishers suitable for Class A fires shall be installed throughout the remainder of the center. (*See Section 7-7.*)

10-7.3.5.2 Standpipes for fire department use shall be installed in all buildings of six stories or more housing child day-care centers.

10-7.3.6 Corridors. (*See 10-7.1.2.*)

10-7.3.7 Subdivision into Compartments.

(a) When sleeping areas in centers housing children under 3 years of age are divided into rooms, room dividers shall have a minimum of 1-hour fire resistance, and glass in wall areas shall not exceed 25 percent of the wall area and shall be glazed with fixed wired glass in steel frames.

(b) When interior room doors are provided between adjacent rooms they shall be not less than 3 ft (91.44 cm) wide. Doors and frames shall have a 20-minute fire protection rating and shall have self-closing devices, latches, and automatic hold-open devices as specified in 5-2.1.2.3.

10-7.4 Special Provisions. (None.)

10-7.5 Building Services.

10-7.5.1 Utilities.

10-7.5.1.1 Utilities shall comply with the provisions of Section 7-1.

10-7.5.1.2* Receptacles and outlets serviced by extension cord-type wiring are prohibited. Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*).

10-7.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in centers for children under 5 years of age.

10-7.5.2 Heating, ventilating, and air conditioning equipment shall be in accordance with Section 7-2.

10-7.5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

10-7.5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 10-8* GROUP DAY-CARE HOMES

10-8.1 General Requirements.

10-8.1.1 Application.

10-8.1.1.1 This section establishes life safety requirements for group day-care homes in which at least seven but not more than twelve children receive care, maintenance, and supervision by other than their parent(s) or legal guardian(s) for 24 hours per day or less (generally within a dwelling unit). The provisions of Sections 10-2 through 10-6 shall not apply to this section unless a specific requirement is referenced by this section.

10-8.1.1.2 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

10-8.1.1.3 Where a facility houses more than one age group, the requirements for the younger age group shall apply, unless the area housing the younger children is maintained as a separate fire area.

10-8.1.2 Mixed Occupancies.

(a) When a group home is located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

(b) Homes in apartment buildings.

1. If the two exit accesses from the home enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hour fire resistance rating. The smoke barrier shall be so located that there is an exit on each side of it.

2. The door in the smoke barrier shall be not less than 36 in. (91.44 cm) wide.

3. The doors and frames in the smoke barrier shall have a fire protection rating of at least 20 minutes and shall be equipped with a self-closing device, a latch, and an automatic hold-open device as specified in 5-2.1.2.3.

10-8.1.3 Special Definitions. (None.)

10-8.1.4 Classification of Occupancy. For purposes of this section, children are classified in age groups as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

10-8.1.5 Classification of Hazard of Contents. (Not specifically classified.)

10-8.1.6* Minimum Construction Standards.

10-8.1.7 Occupant Load. No Special Requirements.

10-8.2 Means of Egress Requirements.

10-8.2.1 General. (None.)

10-8.2.2 Types of Exits. (*See 10-8.2.4.*)

10-8.2.3 Capacity of Means of Egress. (*See 10-2.3.*)

10-8.2.4 Number of Exits.

10-8.2.4.1 Each floor occupied by children shall have not less than two remote means of egress.

10-8.2.4.2 Where spaces on the floor above the floor of exit discharge are used for sleeping purposes by children, at least one exit shall lead directly, or through an enclosed stairway, to the outside.

10-8.2.4.3 Where children are located on a story below the level of exit discharge (basement) at least one exit directly to the outside at ground level shall be provided. No facility shall be located more than one story below the ground. Any stairway to the story above shall be cut off by a fire barrier containing a door of at least a 20-minute fire protection rating, equipped with a self-closing device and a latch.

10-8.2.5 Arrangement of Means of Egress. (*When a story above or below the exit discharge is used, see 10-8.2.4.*)

10-8.2.6 Measurement of Travel Distance to Exits. (*See 10-2.6.*)

10-8.2.7 Discharge from Exits. (*When the story above or below the exit discharge is used, see 10-8.2.4.*)

10-8.2.8 Illumination of Means of Egress. (*See 10-7.2.8.*)

10-8.2.9 Emergency Illumination. No Requirements.

10-8.2.10 Marking of Means of Egress. (*See 10-7.2.10.*)

10-8.2.11 Special Requirements.

10-8.2.11.1 Every closet door latch shall be such that children can open the door from inside the closet.

10-8.2.11.2 Every bathroom door lock shall be designed to permit opening of the locked door from outside in an emergency, and the opening device shall be readily accessible to the staff.

10-8.3 Protection.

10-8.3.1 Protection of Vertical Openings. The doorway between the floor of exit discharge and any floor below shall be equipped with a self-closing

door plus frame and hardware all of at least a 20-minute fire protection rating. Where the floor above the floor of exit discharge is used for sleeping purposes, there shall be a self-closing door plus frame and hardware all of at least a 20-minute fire protection rating at the top or bottom of each stairway.

10-8.3.2 Protection from Hazards. No Requirements.

10-8.3.3 Interior Finish.

10-8.3.3.1 The interior finish in means of egress shall be Class A or B.

10-8.3.3.2 Interior finish in occupied spaces in the home shall be Class A, B or C, in accordance with Section 6-5.

10-8.3.4 Detection Systems. Where the floor above the floor of exit discharge is used for sleeping purposes there shall be a smoke detector at the top of the stairs in a building three stories or less in height or inside the dwelling unit used as a day-care facility in a multiple-dwelling building.

10-8.3.5 Extinguishers. A portable fire extinguisher suitable for Class B fires shall be provided for the kitchens and cooking areas.

10-8.4 Special Provisions. (None.)

10-8.5 Building Services.

10-8.5.1 Electrical Services.

10-8.5.1.1 Electrical wiring in new construction shall be installed in accordance with Section 7-1.

10-8.5.1.2* Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*). Receptacles and outlets serviced by extension cord-type wiring are prohibited.

10-8.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in homes for children under 5 years of age.

10-8.5.2 Heating Equipment.

10-8.5.2.1 Any heaters in spaces occupied by children shall be separated from the space by partitions, screens, or other means.

10-8.5.2.2 If solid partitions are used to provide the separation required in 10-8.5.2.1, provision shall be made to assure adequate air for combustion and ventilation for the heating equipment.

SECTION 10-9* FAMILY CHILD DAY-CARE HOMES

10-9.1 General Requirements.

10-9.1.1 Application.

10-9.1.1.1 This section establishes life safety requirements for licensed family child day-care homes in which fewer than seven children receive

care, maintenance, and supervision by other than their parent(s) or legal guardian(s) for less than 24 hours per day (usually a dwelling unit). The provisions of Sections 10-2 through 10-6 shall not apply to this section unless a specific requirement is referenced by this section.

10-9.1.1.2 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

10-9.1.1.3 Where a facility houses more than one age group, the requirements for the younger children shall apply, unless the area housing the younger children is maintained as a separate fire area.

10-9.1.2 Mixed Occupancies. Where family child day-care homes are located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

10-9.1.3 Special Definitions. (None.)

10-9.1.4 Classification of Occupancies. For the purposes of this section, children are classified in age groups as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

10-9.1.5 Classification of Hazard of Contents. (Not specifically classified.)

10-9.1.6* Minimum Construction Standards.

10-9.1.7 Occupant Load. No Special Requirements.

10-9.2 Means of Egress Requirements.

10-9.2.1 General. (None.)

10-9.2.2 Types of Exits. (*See 10-9.2.4.*)

10-9.2.3 Capacity of Means of Egress. (*See 10-2.3.*)

10-9.2.4 Number of Exits.

10-9.2.4.1 In a one- or two-family dwelling or building of unprotected wood frame construction used for child care purposes, every room used for sleeping, living, or dining purposes shall have at least two means of escape, at least one of which shall be a door or stairway providing a means of unobstructed travel to the outside of the building at street or ground level. No room or space shall be occupied for living or sleeping purposes which is accessible only by a ladder, folding stairs, or through a trap door.

10-9.2.4.2 Where children are located on a floor (basement) below the floor of exit discharge, at least one exit shall be provided directly to the outside at ground level. No facility shall be located more than one story below the ground.

10-9.2.4.3 Stairs. Every stairway shall comply at least with the minimum requirements for stairs as described in 5-2.2 in respect to width, risers, and treads and shall be maintained free of items of storage.

10-9.2.5 Arrangement of Means of Egress. (*See 10-9.2.4.*)

10-9.2.6 Measurement of Travel Distance to Exits. (*See 10-2.6.*)

10-9.2.7 Discharge from Exits. (*See 10-9.2.4.*)

10-9.2.8 Illumination of Means of Egress. (*See 10-7.2.8.*)

10-9.2.9 Emergency Lighting. No Requirements.

10-9.2.10 Marking of Means of Egress. (*See 10-7.2.10.*)

10-9.2.11 Special Features.

10-9.2.11.1 Each door in a means of egress shall not be less than 24 in. (60.96 cm) wide.

10-9.2.11.2 Every closet door latch shall be such that children can open the door from inside the closet.

10-9.2.11.3 Every bathroom door lock shall be designed to permit the opening of the locked door from the outside in an emergency and the opening device shall be readily accessible to the staff.

10-9.3 Protection.

10-9.3.1 Protection of Vertical Openings. (No additional special provisions.)

10-9.3.2 Protection from Hazards. No Requirements.

10-9.3.3 Interior Finish.

10-9.3.3.1 The interior finish in corridors, stairways and lobbies and in rooms into which exits discharge shall be Class A or B.

10-9.3.3.2 Interior finish in occupied spaces in the home shall be Class A, B or C, in accordance with Section 6-5.

10-9.3.4 Detection Systems. Where the floor above the level of exit discharge is used for sleeping purposes there shall be a smoke detector at the top of the stairs in a building three stories or less with open stairways, or inside the dwelling unit used as a day-care facility in a multiple dwelling.

10-9.3.5 Extinguishers. A portable fire extinguisher suitable for Class B fires shall be provided for the kitchens and cooking areas.

10-9.4 Special Provisions. No Requirements.

10-9.5 Building Services.

10-9.5.1 Electrical Services.

10-9.5.1.1 Electrical wiring in new construction shall be installed in accordance with Chapter 7.

10-9.5.1.2* Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*). Receptacles and outlets serviced by extension cord-type wiring are prohibited.

10-9.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in homes for children under 5 years of age.

10-9.5.2 Heating Equipment.

10-9.5.2.1 Unvented room heaters shall not be permitted. Oil- and gas-fired room heaters shall be installed in accordance with the applicable standards listed in Appendix B. A guard shall be provided to protect the children from hot surfaces and open flames.

10-9.5.2.2 No stove or combustion heater shall be so located as to block escape in case of malfunctioning of the stove or heater.

CHAPTER 11 EXISTING EDUCATIONAL OCCUPANCIES

(See also Chapter 31.)

SECTION 11-1 GENERAL REQUIREMENTS

11-1.1 Application.

11-1.1.1* The requirements of this chapter apply to existing buildings.

11-1.1.2 Existing buildings, built and in use prior to the effective date of this *Code*, may have their use continued provided that, in the opinion of the authority having jurisdiction, reasonable life safety against the hazards of fire, explosion, and panic is provided and maintained. The authority having jurisdiction may accept such equivalent alternatives as: reduction of the occupant load, a complete automatic extinguishing system, provide additional exits, install doors from the classroom discharging directly outside, or in lieu of direct exit discharge to the outside from classrooms, communicating doors between classrooms or student-occupied areas that provide access to at least one exit stair without passing through interior corridors, additional stairs, or balconies with stairs.

11-1.1.3 Rooms used for preschool, kindergarten, or first-grade pupils shall not be located above or below the level of exit discharge. Rooms used for second-grade pupils shall not be located more than one story above the level of exit discharge.

11-1.1.4* Educational occupancies shall make provisions for the physically handicapped.

11-1.1.5 Educational occupancies housing classes over the twelfth grade need not comply with this chapter, but shall comply with the following requirements:

(a) Instructional Building — Business Occupancy
(b) Classrooms under 50 persons — Business Occupancy
(c) Classrooms 50 persons and over — Place of Assembly
(d) Laboratories, Instructional — Business Occupancy
(e) Laboratories, Non-Instructional — Industrial.

11-1.2 Mixed Occupancies. *(See also 11-1.4.)*

11-1.2.1 General. In case two or more classes of occupancy occur in the same building or structure so intermingled that separate safeguards are impracticable, the means of egress shall be sufficient to meet the requirements for each individual room or section and for the maximum

occupant load of the entire building. Construction, protection, and other safeguards shall meet requirements of the most hazardous occupancy.

Exception: As otherwise specified in this chapter.

11-1.2.2 Assembly and Educational. Any auditorium, assembly room, cafeteria, or gymnasium used for assembly purposes such as athletic events with provisions for seating of spectators, or other spaces subject to assembly occupancy, shall comply with Chapter 9, including Special Provisions for Places of Assembly in Buildings of Other Occupancy, which provides that where auditorium and gymnasium exits lead through corridors or stairways also serving as exits for other parts of the building, the exit capacity shall be sufficient to permit simultaneous exit from auditorium and classroom sections.

Exception: In the case of an auditorium and gymnasium of a type suitable only for use of the school occupant load (and therefore not subject to simultaneous occupancy), the same exit capacity may serve both sections.

11-1.2.3 Dormitory and Classrooms. Any building used for both classroom and dormitory purposes shall comply with the applicable provisions of Chapter 17 in addition to complying with Chapter 11. Where classroom and dormitory sections are not subject to simultaneous occupancy, the same exit capacity may serve both sections.

11-1.2.4 Other Combined Occupancies.

11-1.2.4.1 Any other combinations of occupancy not covered in 11-1.2.2 and 11-1.2.3 shall comply with all applicable chapters of this *Code*, with means of egress adequate to serve all occupancies simultaneously.

11-1.3 Special Definitions.

Common Atmosphere. A common atmosphere exists between rooms, spaces or areas within a building, which are not separated by an approved smoke partition.

Flexible Plan and Open Plan Educational Buildings. Include every building or portion of a building not having corridors which comply with 11-3.6.1 and are designed for multiple teaching stations.

(a) Flexible plan buildings have movable corridor walls and movable partitions of full-height construction with doors leading from rooms to corridors.

(b) Open plan buildings have rooms and corridors delineated by use of tables chairs, desks, bookcases, counters, low-height 5-ft (152.4-cm) partitions, or similar furnishings.

Flexible plan buildings without exit access doors between rooms and corridors shall be classified as open plan buildings.

Interior Room. A room whose only means of egress is through an adjoining or intervening room which is not an exit.

Room. For the purposes of this section, a room is a space or area bounded by any obstructions to egress which at any time enclose more than 80 percent of the perimeter of the space or area. Openings of less than 3 ft (91.44 cm) clear width and less than 6 ft 8 in. (203.2 cm) high shall not be considered in computing the unobstructed perimeter.

Separate Atmosphere. A separate atmosphere exists between rooms, spaces or areas that are separated by an approved smoke partition.

Separate Means of Egress. A means of egress separated in such a manner from other required means of egress as to provide an atmospheric separation which precludes contamination of both means of egress by the same fire. (*See Section 6-3.*)

Smoke Partition. (*See Section 6-3.*) For purposes of this section, smoke partitions shall also include floors and openings therein.

11-1.4 Classification of Occupancy. (*See 4-1.3.*)

11-1.4.1 Educational occupancies shall include all buildings used for educational purposes through the twelfth grade by six or more persons for 4 hours per day or more than 12 hours per week.

11-1.4.2 Educational occupancy includes part-day, nursery schools, kindergartens, and other schools whose purpose is primarily educational even though the children are of preschool age.

11-1.4.3 Other occupancies associated with educational institutions shall be in accordance with the appropriate parts of this *Code*. (*See Chapters 13, 17, 19, 20, 28, 29, and 30, and 1-4.4.*)

11-1.4.4* In cases where instruction is incidental to some other occupancy, the section of this *Code* governing such other occupancy shall apply.

11-1.5 Classification of Hazard of Contents. Contents of educational occupancies shall be classified in accordance with the provisions of Section 4-2.

11-1.6 Minimum Construction. No Requirements.

11-1.7 Occupant Load.

11-1.7.1 The occupant load of educational buildings or any individual story or section thereof for the purpose of determining exits shall be as determined by the authority having jurisdiction but not less than one person for each 20 sq ft (1.86 sq m) of net classroom area or 50 sq ft (4.65 sq m) of net area of shops, laboratories, and similar vocational rooms. In day nurseries where sleeping facilities are provided, the occupant load shall be not less than one person for each 35 sq ft (3.25 sq m) of net area.

11-1.7.2 The occupant load of an area having fixed seats shall be determined by the number of fixed seats installed. Required aisle space serving the fixed seats shall not be used to increase the occupant load.

11-1.7.3 The capacity of an educational occupancy or a portion thereof may be modified from that specified above if the necessary aisles and exits are provided. An approved aisle or seating diagram shall be required by the authority having jurisdiction to substantiate such a modification.

11-1.7.4 The occupant load for determining exit requirements of individual lecture rooms, gymnasiums, or cafeterias used for assembly purposes of more than 50 persons shall be determined in accordance with 9-1.7 of this *Code*.

SECTION 11-2 MEANS OF EGRESS REQUIREMENTS

11-2.1 General. Every aisle, corridor, balcony, other means of access to exits, and discharge from exits shall be in accordance with Chapter 5.

11-2.2 Types of Exits. Exits of the specified number and width shall be one or more of the following types, in accordance with the provisions of Chapter 5 of this *Code*.

(a) Doors. (*See 5-2.1.*)

(b) Interior Stairs, Class A or Class B. (*See 5-2.2.*)

NOTE: Class B stairs shall not be used for student access.

(c) Smokeproof Towers. (*See 5-2.3.*)

(d) Outside Stairs — Class A. (*See 5-2.5*).

(e) Horizontal Exits. (*See 5-2.4.*)

(f) Ramps — Class A or Class B. (*See 5-2.6.*)

11-2.3 Capacity of Means of Egress.

11-2.3.1* Every educational building, and every floor, section or room thereof considered separately shall have exits sufficient to provide for the capacity thereof, comprised of one or more types of exits, as follows:

(a) Any door, in accordance with 5-2.1, leading directly outside the building at ground level, or not to exceed three risers above or below the ground — 100 persons per unit of exit width.

(b) Any door leading outside the building but requiring steps of over three risers to reach the ground — 100 persons per unit of exit width; steps must have one-third more units of width than doors to allow for slower travel rate.

(c) Stairs, smokeproof towers or outside stairs, in accordance with 5-2.2, 5-2.3 and 5-2.5 — 60 persons per unit of exit width.

(d) Ramps, in accordance with 5-2.6.

1. Class A — 100 persons per unit of exit width.
2. Class B — 60 persons per unit of exit width.

(e) Horizontal exits, in accordance with 5-2.4 — 100 persons per unit of exit width.

11-2.3.2* The same exit units or fraction thereof required for any individual floor may be counted as simultaneously serving all floors above the first story or level of exit discharge.

11-2.4 Number of Exits.

11-2.4.1 There shall be at least two exits available from every floor area.

11-2.4.2 Every room or space with a capacity of over 50 persons or over 1,000 sq ft (92.9 sq m) in area shall have at least two doorways as remote from each other as practicable. Such doorways shall provide access to separate exits, but, where egress is through corridors, may open upon a common corridor leading to separate exits in opposite directions.

11-2.5 Arrangement of Means of Egress.

11-2.5.1* Exits shall be so arranged that at least two separate exits will be available from every floor area. Exits shall be as remote from each other as practicable, so arranged that there will be no pockets or dead ends of appreciable size in which occupants may be trapped, and in no case shall any dead-end corridor extend more than 20 ft (609.6 cm) beyond the stairway or other means of exit therefrom.

11-2.5.2 Every classroom or room used for educational purposes or student occupancy below the floor of exit discharge shall have access to at least one exit which leads directly to the exterior at level of discharge without entering the floor above.

11-2.5.3 Minimum Corridor Width.

11-2.5.3.1 Exit access corridors shall be not less than 6 ft (182.88 cm) wide in the clear.

11-2.5.3.2 Drinking fountains or other equipment, fixed or movable, shall not be so placed as to obstruct the required minimum 6 ft (182.88 cm) corridor width.

11-2.5.3.3 Doors which swing into an exit access corridor shall be recessed to prevent interference with corridor traffic; any doors not so recessed shall open 180 degrees to stop against wall. Doors in any position shall not reduce the required corridor width by more than one-half.

11-2.5.4 When there are more than 60 seats, every aisle shall be not less than 3 ft (91.44 cm) wide when serving seats on one side only and not less than 3 ft 6 in. (106.68 cm) when serving seats on both sides. When serving 60 seats or less, aisles shall not be less than 30 in. (76.2 cm) wide. Within a classroom where there are rows of seats with room access to the seats between individual rows, this space does not constitute an aisle. No more than six seats shall intervene between any seat and an aisle.

11-2.5.5 Exterior Corridors or Balconies.

11-2.5.5.1* Where exterior corridors or balconies are provided as means

of exit, they shall open to the outside air except for railings or balustrades with stairs or level exits to grade not over the allowable travel distance apart, so located that an exit will be available in either direction from the door to any individual room or space, with dead ends not to exceed 20 ft (609.6 cm). If balconies are enclosed by glass or in any other manner, they shall be treated as interior corridors.

11-2.5.5.2 The floors of balconies (exterior corridors) and stairs shall be solid, without openings, and shall comply with requirements for outside stairs as regards balustrades or railings, width and pitch of stairs, and other details, but are not required to be shielded from fire within the building by blank walls, wired glass windows or the like where the stairs are located on the side of the balcony or corridor away from the building and are separated from the building by the full required width of the balcony or corridor. Regardless of other provisions, exterior balconies and stairs may be of the same type of construction as the building which they serve.

11-2.6 Measurement of Travel Distance to Exits. Travel distance to an exit shall not exceed 150 ft (45.72 m) from any point in a building.

Exception No. 1: For travel distance in open plan buildings, see 11-6.2.2.

Exception No. 2: The travel distance may be increased to 200 ft (60.96 m) in educational occupancies protected throughout by an approved automatic sprinkler system.

11-2.7 Discharge from Exits. Discharge from exits shall be arranged in accordance with the provisions of Section 5-7.

11-2.8 Illumination of Means of Egress. All educational buildings shall have adequate exit illumination in accordance with Section 5-8.

11-2.9 Emergency Lighting. Emergency lighting in accordance with Section 5-9 shall be provided:

(a) In all interior stairs and corridors

(b) In all normally occupied spaces

Exception to (b):

1. Administrative areas.

2. General classrooms.*

3. Mechanical rooms and storage areas.

(c) In flexible and open plan buildings

(d) In all portions of buildings that are interior or windowless.

11-2.10 Marking of Means of Egress. All educational buildings shall have signs designating the location of exits or the path of travel to reach them, in accordance with Section 5-10.

Exception: Signs are not required in situations where location of exits is otherwise obvious and familiar to all occupants, such as in small elementary school buildings.

11-2.11 Special Features.

11-2.11.1 Door Closure. All exit doors designed to be kept normally closed shall conform with 5-2.1.2.3.

11-2.11.2 Door Swing. If a room or space is subject to occupancy by more than 50 persons, exit doors shall swing out. Only one locking or latching device shall be permitted on a door or a leaf of a pair of doors. (*See also 11-2.5.3.*)

11-2.11.3 Panic Hardware. Any required exit door subject to use by 100 or more persons shall be operated by a panic hardware device, in accordance with 5-2.1.2.2.

11-2.11.4 Special locking arrangements complying with 5-2.1.2.1.5 are permitted.

11-2.11.5* Windows for Rescue and Ventilation. Every room or space used for classroom or other educational purposes or normally subject to student occupancy shall have at least one outside window used for emergency rescue or ventilation. Such window shall be openable from the inside without the use of tools, and provide a clear opening of not less than 20 in. (50.8 cm) in width, 24 in. (60.96 cm) in height and 5.7 sq ft (.5 sq m) in area. The bottom of the opening shall be not more than 44 in. (111.76 cm) above the floor.

Exception No. 1: In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Where the room or space has a door leading directly to the outside of the building.

SECTION 11-3 PROTECTION

11-3.1 Protection of Vertical Openings.

11-3.1.1 Any interior stairway and other vertical opening in educational buildings shall be enclosed and protected in accordance with Section 6-2.

Exception: Unprotected vertical openings connecting not more than three floors may be permitted in accordance with 6-2.2.3.1, Exception No. 1.

11-3.1.2 Stairs shall be enclosed in accordance with Section 6-2.

Exception: Stairway enclosure will not be required for a stairway serving only one adjacent floor except a basement and not connected with corridors or stairways serving other floors.

11-3.2 Protection from Hazards.

11-3.2.1 Rooms or spaces used for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having jurisdiction, hazardous materials, or for flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder of the building by a smoke barrier.

11-3.2.2 Food preparation facilities shall be protected in accordance with *Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment*, NFPA 96 (*see Appendix B*), and are not required to have openings protected between food preparation areas and dining areas.

11-3.2.3 Janitor closets shall be protected by an automatic sprinkler system, which may be supplied by the domestic water supply system serving no more than six sprinklers and having a water supply sufficient to provide 0.15 gpm per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area. Doors to janitor closets may have ventilating louvers.

11-3.2.4 Laboratories that use chemicals shall comply with *Standard on Fire Protection for Laboratories Using Chemicals*, NFPA 45 (*see Appendix B*).

11-3.3 Interior Finish.

11-3.3.1 Interior finish shall be Class A in stairways and Class A or B in corridors and lobbies and Class A, B or C elsewhere, in accordance with the provisions of Section 6-5.

11-3.3.2 Interior Floor Finish. No Requirements.

11-3.4 Detection, Alarm, and Communication Systems.

11-3.4.1 Approved manually operated fire alarm facilities in accordance with 7-6.1.2 shall be provided in every educational building. When acceptable to the authority having jurisdiction the fire alarm system may be used to designate class change provided the fire alarm is distinctive in signal and overrides all other use.

Exception: In buildings where all normally occupied spaces are provided with a two-way communication system between all normally occupied spaces and a manned location where a general alarm can be sounded, the manual fire pull stations may be omitted except in locations specifically designated by the authority having jurisdiction.

11-3.4.2 In buildings provided with automatic sprinkler protection, the operation of the sprinkler system shall automatically actuate electrical school fire alarm systems.

11-3.4.3 Requirements for fire alarm systems for existing educational buildings shall conform to those for new educational buildings subject to the approval of the authority having jurisdiction.

11-3.5 Extinguishment Requirements. Every portion of educational buildings below the floor of exit discharge shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

11-3.6 Interior Corridors.

11-3.6.1 Every interior corridor shall be of construction having not less than a 1-hour fire resistance rating, and all openings protected with doors, frames and hardware, including closers, that shall all have a fire protection rating of at least 20 minutes.

Exception No. 1: Such corridor protection shall not be required when all classrooms served by such corridors have at least one door directly to the outside or to an exterior balcony or corridor as in 11-2.5.4.

Exception No. 2: The corridor protection may be reduced to a ½-hour fire resistance rating providing the building is protected throughout by an approved automatic sprinkler system.

Exception No. 3: Existing doors may be 1¾-in. (4.45-cm) solid bonded wood core doors or the equivalent.

11-3.7 Subdivision of Building Spacers.

11-3.7.1 When the aggregate length of interior corridors, including dead-end corridors and cross corridors, exceeds 300 ft (91.44 m), the corridor shall be divided into reasonably equal sections not exceeding 300 ft (91.44 m) in length by smoke partitions installed in accordance with Section 6-3.

SECTION 11-4 SPECIAL PROVISIONS

11-4.1 Windowless or Subterranean Buildings. Automatic sprinklers shall be provided for stories which are in excess of 1500 sq ft (139.35 sq m) and are:

(a) Without windows or other openings directly to the exterior at the rate of 20 sq ft (1.86 sq m) of opening per 50 linear ft (15.24 m) in any two walls or,

(b) Below grade without similar openings.

11-4.2 Flexible plan and open plan buildings shall also comply with the provisions of Section 11-6.

SECTION 11-5 BUILDING SERVICES

11-5.1 Utilities shall comply with the provisions of Section 7-1.

11-5.2 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

11-5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

11-5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 11-6 FLEXIBLE PLAN AND OPEN PLAN BUILDINGS

11-6.1 General Requirements.

11-6.1.1 Flexible or open plan buildings shall not exceed 30,000 sq ft (2,787 sq m) in undivided area. A solid wall or smoke partition (*see Section 6-3*) shall be provided at maximum intervals of 300 ft (91.44 m) and openings in such walls or partitions shall comply with Section 6-3.

11-6.2 Means of Egress Requirements.

11-6.2.1 Arrangement of Means of Egress.

11-6.2.1.1 Each room occupied by more than 300 persons shall have two or more means of egress entering into separate atmospheres. Where three or more means of egress are required, not more than two of them shall enter into the same atmosphere.

11-6.2.1.2 Exit access from interior rooms may pass through an adjoining or an intervening room, provided that the travel distances do not exceed those set forth in 11-6.2.2. Foyers and lobbies constructed as required for corridors shall not be construed as intervening rooms.

11-6.2.1.3 Where the only means of egress from an interior room or rooms is through an adjoining or intervening room, smoke detectors shall be installed in the area of the common atmosphere through which the means of egress must pass. The detectors shall actuate alarms audible in the interior room and shall be connected to the school fire alarm system.

Exception No. 1: Smoke detectors are not required where the aggregate occupant load is less than ten.

Exception No. 2: Interior rooms used exclusively for mechanical and public utility service to the buildings.

Exception No. 3: Where the building is protected throughout by an approved automatic sprinkler system.

11-6.2.1.4 Flexible plan schools may have walls and partitions rearranged periodically, only after revised plans or diagrams have been approved by the authority having jurisdiction.

11-6.2.1.5 Open plan schools shall have furniture, fixtures, or low-height partitions so arranged that exits will be clearly visible and unobstructed, and exit paths are direct, not circuitous. If paths or corridors are established, they shall be at least as wide as required by 11-2.5.3.

11-6.2.2 Travel Distance to Exits. No point in a building shall be more than 150 ft (45.72 m) from an exit, measured in accordance with Section 5-6.

Exception: An increase in the above travel distance to 200 ft (60.96 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7 and Standard for the Installation of Sprinkler Systems, NFPA 13 (see Appendix B).

11-6.3 Protection.

11-6.3.1 Vertical Openings.

11-6.3.1.1 All exit stairs shall be enclosed in accordance with Section 6-2.

11-6.3.1.2 Vertical openings other than exits shall be enclosed as required by Section 6-2. (*See 11-3.1.2 for enclosure of exits.*)

11-6.3.2 Protection from Hazards.

11-6.3.2.1 Stages in places of assembly shall be separated from school areas by construction having at least a 1-hour fire resistance rating and shall comply with 9-3.2. Openings shall be protected by self-closing or smoke-activated fire doors having a fire protection rating of ¾ hours.

11-6.3.2.2 Shops, laboratories, and similar vocational rooms, as well as storage rooms, shall be separated from school areas by construction having at least a 1-hour fire resistance rating. They shall have exits independent from other areas.

11-6.3.3* Interior Finish. Interior finish, in accordance with Section 6-5, in flexible plan and open plan buildings shall be as follows:

(a) Corridors in flexible plan buildings — Class A, on rigid material that will not deform at temperatures below 450°F (232°C).

(b) Other than corridor walls — Class A or Class B.

Exception No. 1: Fixtures and low-height partitions not over 5 ft (152.4 cm) high may be Class C.

Exception No. 2: In one-story buildings the exposed portions of structural members complying with the requirements for Type IV (2HH) construction may be permitted.

11-6.3.4 Reserved.

11-6.3.5 Automatic Fire Extinguishing Systems.

11-6.3.5.1 Any flexible plan building or open plan building in which the travel distance to exits exceeds 150 ft (45.72 m) shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7. Extinguishing systems shall be electrically interconnected with the school fire alarm system.

11-6.3.5.2 Automatic fire extinguishing systems shall be modified to conform with partition changes. Modification plans shall have prior approval of the authority having jurisdiction.

11-6.3.6 Reserved.

11-6.3.7 Reserved.

11-6.3.8 Smoke Control.

11-6.3.8.1 The specific requirements of this section are not intended to prevent the design or use of other systems, equipment or techniques that will effectively prevent the products of combustion from breaching the atmospheric separation.

11-6.3.8.2 The provisions of this subsection shall apply only to the requirements for providing separate atmospheres. The fire resistance requirements shall comply with other provisions of the *Code*.

(a) Walls, partitions, and floors forming all of or part of an atmospheric separation shall be of materials consistent with the requirements for the type of construction, but of construction not less effective than a smoke barrier. Glass lights of approved wired glass set in steel frames may be installed in such walls or partitions.

(b) Every door opening therein shall be protected with a fire assembly as required elsewhere in the *Code*, but not less than a self-closing or automatic-closing, tight-fitting smoke assembly having a fire protection rating of not less than 20 minutes.

(c) Ducts penetrating atmospheric separation walls, partitions, or doors shall be equipped with an approved automatic-closing smoke damper when having openings into more than one atmosphere, or the atmospheric separation shall be maintained by an approved method of smoke control.

(d) All automatic-closing fire assemblies installed in the atmospheric separation shall be activated by approved smoke detectors.

(e) Janitor closets and storage rooms shall be enclosed by materials having 1-hour fire resistance. Stages and enclosed platforms shall be constructed in accordance with Chapter 9.

Exception: Doors to janitor closets may have ventilating louvers.

SECTION 11-7 CHILD DAY-CARE CENTERS

(*See also Sections 11-8 and 11-9.*)

11-7.1 General Requirements.

11-7.1.1 Application.

11-7.1.1.1 The requirements detailed in Section 11-7, Child Day-Care Centers (more than 12 children), are based on the minimum staff-to-child ratios given below:

Staff Ratio	Age
1:3	0 to 2
1:5	2 to 3
1:10	3 to 5
1:12	5 to 7
1:15	7 and over

11-7.1.1.2 This section establishes life safety requirements for child day-care centers in which more than 12 children receive care, maintenance, and supervision for 24 hours or less per day. The provisions of Sections 11-2 through 11-6 shall not apply to this section unless a specific requirement is referenced by this section.

11-7.1.1.3 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

11-7.1.1.4 Centers housing children 6 years of age and older shall conform to the requirements for educational occupancies, except as noted herein.

11-7.1.1.5 Where a facility houses more than one age group, the requirements for the younger children shall apply, unless the area housing the younger children is maintained as a separate fire area.

11-7.1.2 Mixed Occupancies.

(a) Where centers are located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

(b) Centers in apartment buildings.

1. If the two exit accesses from the center enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hour fire resistance rating. The smoke barrier shall be so located that there is an exit on each side of it.

2. The door in the smoke barrier shall be not less than 36 in. (91.44 cm) wide.

Exception: Existing doors not less than 32 in. (81.28 cm) wide may be accepted.

3. The door and frame assembly in the smoke barrier shall have a fire protection rating of at least 20 minutes and shall be equipped with a self-closing device, a latch, and an automatic hold-open device activated by a smoke detector. (*See also 5-2.1.2.3.*)

11-7.1.3 Special Definitions. (None.)

11-7.1.4 Classification of Occupancy. For the purposes of this section, children are classified in age groups, as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

11-7.1.5 Classification of Hazard of Contents. (Not specifically classified.)

11-7.1.6 Minimum Construction Standards.

11-7.1.6.1 Centers shall not be located above the heights indicated for the types of construction given in Table 11-7.1.6.1.

11-7.1.6.2 Location. The story below the level of exit discharge may be used in buildings of any type other than Type II (000), Type III (200), and Type V (000). (*See 11-7.2.4.2.*)

11-7.1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor but not less than one person for each 35 sq ft (3.25 sq m) of net floor area used by the children.

11-7.2 Means of Egress Requirements.

11-7.2.1 General. (None.)

11-7.2.2 Types of Exits. (*See 11-2.2.*)

Table 11-7.1.6.1 Height and Construction Limits

Type of Construction	Age Group	Number of Stories (Stories are counted starting at floor of exit discharge) 1	2	3	4 and over
I (443) I (332) II (222) II (111)	0 to 3	X	X	X	X
	3 thru 5	X	X	X	X
	6 and older	X	X	X	X
III (211) V (111)	0 to 3	X	See Note 1	Not Permitted	
	3 thru 5	X	X	See Note 1	
	6 and older	X	X	See Note 1	
IV (2HH)	0 to 3	X	See Note 1		
	3 thru 5	X	See Note 1		
	6 and older	X	See Note 1		
II (000)	0 to 3	X	See Note 1		
	3 thru 5	X	See Note 1		
	6 and older	X	See Note 1		
III (200) V (000)	0 thru 3			Not Permitted	
	3 thru 5			See Note 2	
	6 and older			See Note 2	

NOTE 1: Permitted if entire building is protected throughout by an approved automatic sprinkler system.

NOTE 2: May be permitted for children 3 years of age and older if the children are limited to the first floor and the number of children is limited to 50 and there are two remote exits; or if they are limited to the first floor and the number of children is limited to 100 and each room has an exit directly to the outside.

11-7.2.2.1 Stairs.

(a) Exit stairs shall be enclosed in accordance with 11-3.1.2.

(b) There shall be no enclosed usable space under stairs in an exit enclosure nor shall the open space within the enclosure either under or adjacent to the stairs be used for any purpose.

11-7.2.2.2 Areas of Refuge. In buildings over five stories above ground level, areas of refuge shall be provided for occupants of child day-care centers, either by smokeproof towers or horizontal exits.

11-7.2.3 Capacity of Means of Egress. (*See 11-2.3.*)

11-7.2.4 Number of Exits.

11-7.2.4.1 Each floor occupied by children shall have not less than two remote exits.

11-7.2.4.2 When the story below the exit discharge is used (*see 11-7.1.6.2*), the following conditions shall be met:

(a) For up to 30 children there shall be two remote exits. One exit shall discharge directly outside and the vertical travel to ground level shall not exceed 8 ft (243.84 cm). There shall be no unprotected opening into the enclosure of the second exit.

(b) For over 30 children a minimum of two exits shall be provided directly outside with one of the two exiting at ground level.

Exception No. 1: The exit directly to ground level is not required if the exits are protected in accordance with 5-1.3. There shall be no openings into the exit other than for ingress and egress. Smoke detectors shall be provided in that story and the story of discharge.

Exception No. 2: The exit directly to ground level is not required if one exit complies with Exception No. 1 and sprinklers are used in that story and the story of exit discharge.

11-7.2.5 Arrangement of Means of Egress. (*When the story below the exit discharge is used, see also 11-7.2.4.2.*)

11-7.2.6 Measurement of Travel Distance to Exits.

11-7.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

11-7.2.6.2 Travel distance (a) between any room door intended as exit access and an exit shall not exceed 100 ft (30.48 m); (b) between any point in a room and an exit shall not exceed 150 ft (45.72 m); (c) between any point in a sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception: The travel distance in (a) and (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

11-7.2.6.3 The travel distance to exits in open plan centers for children 3 years of age and older shall be in accordance with 11-6.2.2 for open plan schools.

11-7.2.7 Discharge from Exits. (*When the story below the exit discharge is used, see also 11-7.2.4.2.*) All such exits shall discharge directly to the outside.

11-7.2.8 Illumination of Means of Egress. If the facility is used after daylight hours, it shall comply with Section 5-8.

11-7.2.9 Emergency Lighting. Means of egress in each day care center shall be provided with emergency lighting, in accordance with Section 5-9.

11-7.2.10 Marking of Means of Egress. (No additional special requirements.) (*See Section 5-10.*)

11-7.2.11 Special Features.

11-7.2.11.1 Doors in means of egress shall swing in the direction of exit travel and shall meet the requirements of 11-2.11.2.

Exception: Doors from an existing center to an exit access in apartment buildings.

11-7.2.11.2 Every closet door latch shall be such that children can open the door from inside the closet.

11-7.2.11.3 Every bathroom door lock shall be designed to permit opening of the locked door from the outside in an emergency, and the opening device shall be readily accessible to the staff.

11-7.3 Protection.

11-7.3.1 Protection of Vertical Openings. Any vertical opening in centers shall be enclosed and protected in accordance with Section 6-2.

11-7.3.2 Protection from Hazards. Rooms or spaces for the storage, processing, or use of the materials specified in this section shall be protected in accordance with the following:

(a) Rooms or spaces used for the storage of combustible supplies in quantities deemed hazardous by the authority having jurisdiction, hazardous materials in quantities deemed hazardous by recognized standards, or fuel shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors, or such rooms or spaces may be protected by an automatic extinguishing system as set forth in Section 6-4.

(b) Rooms or spaces used for processing or use of combustible supplies in quantities considered hazardous by the authority having jurisdiction, hazardous materials, or for flammable or combustible liquids in quantities deemed hazardous by recognized standards shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors and shall also be protected by an automatic extinguishing system as set forth in Section 6-4.

(c) Boiler and furnace rooms, laundries, and maintenance shops, including woodworking and painting areas, shall be separated from the remainder of the building by construction having not less than a 1-hour fire-resistive rating with all openings protected by self-closing or smoke-actuated fire doors.

Exception: Rooms enclosing air-handling equipment.

(d) When automatic extinguishing systems are used to meet the requirements of this section, the rooms or spaces shall be separated from the remainder by a physical barrier of such construction so as to contain the heat or smoke generated by a fire to allow for ready extinguishing system activation.

Exception: Food preparation facilities protected in accordance with Removal of Smoke and Grease-Laden Vapors from Commercial Cooking Equipment, NFPA 96 (see Appendix B), are not required to have openings protected between food preparation areas and dining areas. Where domestic cooking equipment is used for food warming or limited cooking, protection or segregation of food preparation facilities is not required if approved by the authority having jurisdiction.

11-7.3.3 Interior Finish.

11-7.3.3.1 Interior finish for all walls and ceilings shall be Class A or Class B in accordance with Section 6-5.

11-7.3.3.2 In all centers, floor coverings within corridors and exitways shall be Class I or Class II in accordance with Section 6-5.

11-7.3.3.3 Decorations and furnishings shall be in accordance with Chapter 31.

11-7.3.4 Detection, Alarm, and Communications.

11-7.3.4.1 There shall be a manually operated fire alarm system in accordance with Section 7-6 on each floor of the center. In centers with more than 100 children, the fire alarm system shall be installed to transmit an alarm by the most direct and reliable method approved by local regulations to the fire department that is legally committed to serve the area in which the center is located.

Exception: When the child day-care center is housed in one room.

11-7.3.4.2 Smoke detectors shall be installed on the ceiling of each story in front of the doors to the stairways and at no greater than 30-ft (914.4-cm) spacing in the corridors of all floors containing the center. Detectors shall also be installed in lounges and recreation areas in centers. The detectors may be single station units with an integral alarm having a decibel rating of at least 85.

Exception: Detectors are not required in centers housing children 6 years of age and older, if no sleeping facilities are provided.

11-7.3.5 Extinguishment Requirements.

11-7.3.5.1 Portable fire extinguishers suitable for Class B fires shall be installed in kitchens and cooking areas, and extinguishers suitable for Class A fires shall be installed throughout the remainder of the center. (*See Section 7-7.*)

11-7.3.5.2 Standpipes for fire department use shall be installed in all buildings of six stories or more housing child day-care centers.

11-7.3.6 Corridors. (*See 10-7.1.2.*)

11-7.3.7 Subdivision into Compartments.

(a) When sleeping areas in centers housing children under 3 years of age are divided into rooms, room dividers shall have a minimum of 1-hour fire resistance, and glass in wall areas shall not exceed 25 percent of the wall area and shall be glazed with fixed wire glass in steel frames.

(b) When interior room doors are provided between adjacent rooms they shall be not less than 32 in. (81.28 cm) wide. Doors and frames shall have a 20-minute fire protection rating and shall have self-closing devices, latches, and automatic hold-open devices as specified in 5-2.1.2.3.

11-7.4 Special Provisions. (None.)

11-7.5 Building Services.

11-7.5.1 Utilities.

11-7.5.1.1 Utilities shall comply with the provisions of Section 7-1.

11-7.5.1.2* In existing buildings, the electrical wiring shall be sized to provide for the load. Receptacles and outlets serviced by extension cord-type wiring are prohibited. Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*).

11-7.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in centers for children under 5 years of age.

11-7.5.2 Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

11-7.5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

11-7.5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 11-8* GROUP DAY-CARE HOMES

11-8.1 General Requirements.

11-8.1.1 Application.

11-8.1.1.1 This section establishes life safety requirements for group day-care homes in which at least seven but not more than twelve children receive care, maintenance, and supervision by other than their parent(s) or legal guardian(s) for 24 hours per day or less (generally within a dwelling unit). The provisions of Sections 11-2 through 11-6 shall not apply to this section unless a specific requirement is referenced by this section.

11-8.1.1.2 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

11-8.1.1.3 Where a facility houses more than one age group, the requirements for the younger age group shall apply, unless the area housing the younger children is maintained as a separate fire area.

11-8.1.2 Mixed Occupancies.

(a) When a group home is located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

(b) Homes in apartment buildings.

1. If the two exit accesses from the home enter the same corridor as the apartment occupancy, the exit accesses shall be separated in the corridor by a smoke barrier having not less than a 1-hour fire resistance rating. The smoke barrier shall be so located that there is an exit on each side of it.

2. The door in the smoke barrier shall be not less than 36 in. (91.44 cm) wide.

Exception: Existing doors not less than 32 in. (81.28 cm) wide may be accepted.

3. The doors and frames in the smoke barrier shall have a fire protection rating of at least 20 minutes and shall be equipped with a self-closing device, a latch, and an automatic hold-open device as specified in 5-2.1.2.3.

11-8.1.3 Special Definitions. (None.)

11-8.1.4 Classification of Occupancy. For purposes of this section, children are classified in age groups as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

11-8.1.5 Classification of Hazard of Contents. (Not specifically classified.)

11-8.1.6* Minimum Construction Standards.

11-8.1.7 Occupant Load. No Special Requirements.

11-8.2 Means of Egress Requirements.

11-8.2.1 General. (None.)

11-8.2.2 Types of Exits. (*See 11-8.2.4.*)

11-8.2.3 Capacity of Means of Egress. (*See 11-2.3.*)

11-8.2.4 Number of Exits.

11-8.2.4.1 Each floor occupied by children shall have not less than two remote means of egress.

11-8.2.4.2 Where spaces on the floor above the floor of exit discharge are used for sleeping purposes by children, at least one exit shall lead directly, or through an enclosed stairway, to the outside.

11-8.2.4.3 Where children are located on a story below the level of exit discharge (basement) at least one exit directly to the outside at ground level shall be provided. No facility shall be located more than one story below the ground. Any stairway to the story above shall be cut off by a fire barrier containing a door of at least a 20-minute fire protection rating, equipped with a self-closing device and a latch.

11-8.2.5 Arrangement of Means of Egress. (*When a story above or below the exit discharge is used, see 11-8.2.4.*)

11-8.2.6 Measurement of Travel Distance to Exits. (*See 11-2.6.*)

11-8.2.7 Discharge from Exits. (*When the story above or below the exit discharge is used, see 11-8.2.4.*)

11-8.2.8 Illumination of Means of Egress. (*See 11-7.2.8.*)

11-8.2.9 Emergency Illumination. No Requirements.

11-8.2.10 Marking of Means of Egress. (*See 11-7.2.10.*)

11-8.2.11 Special Requirements.

11-8.2.11.1 Every closet door latch shall be such that children can open the door from inside the closet.

11-8.2.11.2 Every bathroom door lock shall be designed to permit opening of the locked door from outside in an emergency, and the opening device shall be readily accessible to the staff.

11-8.3 Protection.

11-8.3.1 Protection of Vertical Openings. The doorway between the floor of exit discharge and any floor below shall be equipped with a self-closing door plus frame and hardware all of at least a 20-minute fire protection rating. Where the floor above the floor of exit discharge is used for sleeping purposes, there shall be a self-closing door plus frame and hardware all of at least a 20-minute fire protection rating at the top or bottom of each stairway.

Exception: Existing self-closing 1¾-in. (4.45-cm) solid bonded wood core doors without rated frames may be accepted by the authority having jurisdiction.

11-8.3.2 Protection from Hazards. No Requirements.

11-8.3.3 Interior Finish.

11-8.3.3.1 The interior finish in means of egress shall be Class A or B.

11-8.3.3.2 Interior finish in occupied spaces in the home shall be Class A, B or C, in accordance with Section 6-5.

11-8.3.4 Detection Systems. Where the floor above the floor of exit discharge is used for sleeping purposes there shall be a smoke detector at the top of the stairs in a building three stories or less in height or inside the dwelling unit used as a day-care facility in a multiple-dwelling building.

11-8.3.5 Extinguishers. A portable fire extinguisher suitable for Class B fires shall be provided for the kitchens and cooking areas.

11-8.4 Special Provisions. (None.)

11-8.5 Building Services.

11-8.5.1 Electrical Services.

11-8.5.1.1 Electrical wiring in new construction shall be installed in accordance with Section 7-1.

11-8.5.1.2* In existing buildings the electrical wiring shall be sized to provide for the load. Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*). Receptacles and outlets serviced by extension cord-type wiring are prohibited.

11-8.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in homes for children under 5 years of age.

11-8.5.2 Heating Equipment.

11-8.5.2.1 Any heaters in spaces occupied by children shall be separated from the space by partitions, screens, or other means.

11-8.5.2.2 If solid partitions are used to provide the separation required in 11-8.5.2.1, provision shall be made to assure adequate air for combustion and ventilation for the heating equipment.

SECTION 11-9* FAMILY CHILD DAY-CARE HOMES

11-9.1 General Requirements.

11-9.1.1 Application.

11-9.1.1.1 This section establishes life safety requirements for licensed family child day-care homes in which fewer than seven children receive care, maintenance and supervision by other than their parent(s) or legal guardian(s) for less than 24 hours per day (usually a dwelling unit). The provisions of Sections 11-2 through 11-6 shall not apply to this section unless a specific requirement is referenced by this section.

11-9.1.1.2 The text principally applies to centers in which children 5 years old or less may be sleeping during their time in the facility, but the provisions are for all facilities unless otherwise indicated.

11-9.1.1.3 Where a facility houses more than one age group, the requirements for the younger children shall apply, unless the area housing the younger children is maintained as a separate fire area.

11-9.1.2 Mixed Occupancies. Where family child day-care homes are located in a building containing mixed occupancies, the separation requirements of the locally applicable building code or, if none exists, a nationally recognized model code shall be satisfied.

11-9.1.3 Special Definitions. (None.)

11-9.1.4 Classification of Occupancies. For the purposes of this section, children are classified in age groups as follows: children under 3 years of age, children from 3 through 5 years of age, and children 6 years of age and older.

11-9.1.5 Classification of Hazard of Contents. (Not specifically classified.)

11-9.1.6* Minimum Construction Standards.

11-9.1.7 Occupant Load. No Special Requirements.

11-9.2 Means of Egress Requirements.

11-9.2.1 General. (None.)

11-9.2.2 Types of Exits. (*See 11-9.2.4.*)

11-9.2.3 Capacity of Means of Egress. (*See 11-2.3.*)

11-9.2.4 Number of Exits.

11-9.2.4.1 In a one- or two-family dwelling or building of unprotected wood frame construction used for child care purposes, every room used for sleeping, living, or dining purposes shall have at least two means of escape, at least one of which shall be a door or stairway providing a means of unobstructed travel to the outside of the building at street or ground level. No room or space shall be occupied for living or sleeping purposes which is accessible only by a ladder, folding stairs, or through a trap door.

11-9.2.4.2 Where children are located on a floor (basement) below the floor of exit discharge, at least one exit shall be provided directly to the outside at ground level. No facility shall be located more than one story below the ground.

11-9.2.4.3 Stairs. Every stairway shall comply at least with the minimum requirements for Class B stairs, as described in 5-2.2, in respect to width, risers, and treads and shall be maintained free of items of storage.

11-9.2.5 Arrangement of Means of Egress. (*See 11-9.2.4.*)

11-9.2.6 Measurement of Travel Distance to Exits. (*See 11-2.6.*)

11-9.2.7 Discharge from Exits. (*See 11-9.2.4.*)

11-9.2.8 Illumination of Means of Egress. (*See 11-7.2.8.*)

11-9.2.9 Emergency Lighting. No Requirements.

11-9.2.10 Marking of Means of Egress. (*See 11-7.2.10.*)

11-9.2.11 Special Features.

11-9.2.11.1 Each door in a means of egress shall not be less than 24 in. (60.96 cm) wide.

11-9.2.11.2 Every closet door latch shall be such that children can open the door from inside the closet.

11-9.2.11.3 Every bathroom door lock shall be designed to permit the opening of the locked door from the outside in an emergency and the opening device shall be readily accessible to the staff.

11-9.3 Protection.

11-9.3.1 Protection of Vertical Openings. (No additional special provisions.)

11-9.3.2 Protection from Hazards. No Requirements.

11-9.3.3 Interior Finish.

11-9.3.3.1 The interior finish in corridors, stairways and lobbies and in rooms into which exits discharge shall be Class A or B.

11-9.3.3.2 Interior finish in occupied spaces in the home shall be Class A, B or C, in accordance with Section 6-5.

11-9.3.4 Detection Systems. Where the floor above the level of exit discharge is used for sleeping purposes there shall be a smoke detector at the top of the stairs in a building three stories or less with open stairways, or inside the dwelling unit used as a day-care facility in a multiple dwelling.

11-9.3.5 Extinguishers. A portable fire extinguisher suitable for Class B fires shall be provided for the kitchens and cooking areas.

11-9.4 Special Provisions. No Requirements.

11-9.5 Building Services.

11-9.5.1 Electrical Services.

11-9.5.1.1 Electrical wiring in new construction shall be installed in accordance with Chapter 7.

11-9.5.1.2* In existing buildings, the electrical wiring shall be sized to provide for the load. Electrical appliances shall be grounded in accordance with *National Electrical Code*, NFPA 70 (*see Appendix B*).

Receptacles and outlets serviced by extension cord-type wiring are prohibited.

11-9.5.1.3 Special protective receptacle covers shall be installed in all areas occupied by children in homes for children under 5 years of age.

11-9.5.2 Heating Equipment.

11-9.5.2.1 Unvented room heaters shall not be permitted. Oil- and gas-fired room heaters shall be installed in accordance with the applicable standards listed in Appendix B. A guard shall be provided to protect the children from hot surfaces and open flames.

11-9.5.2.2 No stove or combustion heater shall be so located as to block escape in case of malfunctioning of the stove or heater.

CHAPTER 12 NEW HEALTH CARE OCCUPANCIES

(See also Chapter 31.)

SECTION 12-1 GENERAL REQUIREMENTS

12-1.1 Application.

12-1.1.1 General.

12-1.1.1.1* New health care facilities shall comply with the provisions of this chapter. (*See Chapter 31 for operating features.*)

Exception: Hospitals and nursing homes found to have equivalent safety. One such method for determining this equivalency is given in Appendix C.

12-1.1.1.2 This chapter establishes life safety requirements for the design of all new hospitals, nursing homes, residential-custodial care, and supervisory care facilities. Where requirements vary, the specific occupancy is named in the paragraph pertaining thereto. Section 12-6 establishes life safety requirements for the design of all new ambulatory health care centers.

12-1.1.1.3 Health care occupancies are those used for purposes such as medical or other treatment or care of persons suffering from physical or mental illness, disease or infirmity; for the care of infants, convalescents, or infirm aged persons.

12-1.1.1.4 Health care facilities provide sleeping accommodations for the occupants and are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

12-1.1.1.5 This chapter also covers ambulatory health care centers as defined in 12-1.3(e). See Section 12-6 for requirements.

12-1.1.1.6* Buildings or sections of buildings which house, or in which care is rendered to, mental patients, including the mentally retarded, who are capable of judgment and appropriate physical action for self-preservation under emergency conditions in the opinion of the governing body of the facility and the governmental agency having jurisdiction, may come under other chapters of the *Code* instead of Chapter 12.

12-1.1.1.7 It shall be recognized that, in buildings housing certain types of patients or having detention rooms or a security section, it may be necessary to lock doors and bar windows to confine and protect building inhabitants.

In such instances, the authority having jurisdiction shall make appropriate modifications to those sections of this *Code* which would otherwise require the keeping of exits unlocked.

12-1.1.1.8 It shall be also recognized that some mental health patients are not capable of seeking safety without guidance.

12-1.1.1.9 Buildings or sections of buildings which house older persons and which provide activities that foster continued independence but do not include those services distinctive to residential-custodial care facilities [as defined in 12-1.3(c)] shall be subject to the requirements of other sections of this *Code*, such as Chapter 18.

12-1.1.1.10 Health care occupancies shall include all buildings or parts thereof with occupancy as described in this chapter under Special Definitions, 12-1.3.

12-1.1.2* Objective. The objective of this chapter is to provide a reasonable level of safety by reducing the probability of injury and loss of life from the effects of fire with due consideration for functional requirements. This is accomplished by limiting the development and spread of a fire emergency to the room of fire origin and reducing the need for occupancy evacuation, except from the room of fire origin.

12-1.1.3 Total Concept. All health care facilities shall be so designed, constructed, maintained, and operated as to minimize the possibility of a fire emergency requiring the evacuation of occupants. Because the safety of health care occupants cannot be assured adequately by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate staffing, and careful development of operating and maintenance procedures composed of the following:

(a) Proper design, construction, and compartmentation;

(b) Provision for detection, alarm, and extinguishment; and

(c) Fire prevention and the planning, training, and drilling in programs for the isolation of fire, transfer of occupants to areas of refuge, or evacuation of the building.

12-1.1.4 Additions, Conversions, Modernization, Renovation, and Construction Operations.

12-1.1.4.1 Additions shall be separated from any existing structure not conforming to the provisions within Chapter 13 by a fire barrier having at least a 2-hour fire resistance rating constructed of materials as required for the addition.

12-1.1.4.2 Communicating openings in dividing fire barriers required by 12-1.1.4.1 shall occur only in corridors and shall be protected by approved self-closing fire doors. (*See also Section 6-2.*)

12-1.1.4.3 Doors in barriers required by 12-1.1.4.1 shall normally be kept closed.

Exception: Doors may be held open only if they meet the requirements of 12-2.11.6.

12-1.1.4.4 Conversions. An existing building may be converted to a hospital, nursing home, or residential-custodial care facility only if it complies with all requirements for new health care buildings prior to occupancy as a health care facility.

12-1.1.4.5 Modernization or Renovation. Alterations shall not diminish the level of life safety below that which exists prior to the alterations except that life safety features in excess of those required for new construction are not required to be maintained. In no case shall the resulting life safety be less than that required for existing buildings. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction.

12-1.1.4.6 Construction Operations. See 1-6.3 and Chapter 31 for life safety provisions during construction.

12-1.2 Mixed Occupancies.

12-1.2.1* Sections of health care facilities may be classified as other occupancies if they meet all of the following conditions:

(a) They are not intended to serve health care occupants for purposes of housing, treatment or customary access.

(b) They are adequately separated from areas of health care occupancies by construction having a fire resistance rating of at least 2 hours.

12-1.2.2 Ambulatory care (*see Section 12-6*), medical clinics and similar facilities which are contiguous to health care occupancies but are primarily intended to provide outpatient services may be classified as a business or ambulatory care occupancy provided the facilities are separated from health care occupancies by not less than 2-hour fire-resistive construction.

Exception: When the business occupancy or similar facility is intended to provide:

(a) Services for hospital patients who are litter borne, or,

(b) General anesthesia services,

the section shall meet all requirements for health care facilities.

12-1.2.3 Health care occupancies in buildings housing other occupancies shall be completely separated from them by construction having a fire resistance rating of at least 2 hours as provided for additions in 12-1.1.4.

12-1.2.4 All means of egress from health care occupancies that traverse non-health care spaces shall conform to requirements of this *Code* for health care occupancies.

Exception: It is permissible to exit through a horizontal exit into other contiguous occupancies which do not conform to health care egress provisions but which do comply with requirements set forth in the appropriate occupancy chapter of this Code, as long as the occupancy does not have high hazard contents. The horizontal exit must comply with the requirements of 12-2.2.5.

12-1.2.5* Auditoriums, chapels, staff residential areas or other occupancies provided in connection with health care facilities shall have exits provided in accordance with other applicable sections of the *Code*.

12-1.2.6 Any area with a hazard of contents classified higher than that of the health care occupancy and located in the same building shall be protected as required in 12-3.2.

12-1.2.7 Non-health care related occupancies classified as containing high-hazard contents shall not be permitted in buildings housing health care occupancies.

12-1.3 Special Definitions.

(a) **Hospital.** A building or part thereof used for the medical, psychiatric, obstetrical or surgical care, on a 24-hour basis, of four or more inpatients. Hospital, wherever used in this *Code*, shall include general hospitals, mental hospitals, tuberculosis hospitals, children's hospitals, and any such facilities providing inpatient care.

(b) **Nursing Home.** A building or part thereof used for the lodging, boarding and nursing care, on a 24-hour basis, of four or more persons who, because of mental or physical incapacity, may be unable to provide for their own needs and safety without the assistance of another person. Nursing home, wherever used in this *Code*, shall include nursing and convalescent homes, skilled nursing facilities, intermediate care facilities, and infirmaries in homes for the aged.

(c) **Residential-Custodial Care Facility.** A building, or part thereof, used for the lodging or boarding of four or more persons who are incapable of self-preservation because of age or physical or mental limitation. The following types of facilities, when accommodating persons of the above description, shall be classified as residential-custodial care facilities:

1. Nursery facilities that provide full-time care for children under 6 years of age.

2. Mentally retarded care facilities, including specialized intermediate care facilities for the mentally retarded.

3. Facilities in a home for the aging, that contain a group housing arrangement for older persons, that provide at least two meals per day and such social and personal care services needed by their residents, but that do not provide intermediate or skilled nursing care.

4. Facilities for social rehabilitation, such as those used for the treatment of alcoholism, drug abuse, or mental health problems, that

contain a group housing arrangement, and that provide at least two meals per day and personal care services for their residents, but do not provide intermediate or skilled nursing care.

Facilities housing older persons, or mental patients, including the mentally retarded, who are judged to be capable of self-preservation with minimal staff assistance in an emergency, are covered by other chapters of the *Code*. (*See 12-1.1.1.6 and 12-1.1.1.9.*)

Children's facilities that do not provide lodging or boarding for their occupants are classified as Child Day-Care Centers, Group Day-Care Centers, or Family Child Day-Care Homes.

(d)* **Supervisory Care Facility.** A building or part thereof used for the lodging or boarding of four or more mental health patients who are capable of self-preservation and who require supervison and who are receiving therapy, training or other health related care and who may have imposed upon them security measures not under their control.

(e) **Ambulatory Health Care Centers.** A building or part thereof used to provide services or treatment to four or more patients at the same time and meeting either (1) or (2) below.

1. Those facilities which provide, on an outpatient basis, treatment for patients which would render them incapable of taking action for self-preservation under emergency conditions without assistance from others, such as hemodialysis units or freestanding emergency medical units.

2. Those facilities which provide, on an outpatient basis, surgical treatment requiring general anesthesia.

12-1.4 Classification of Occupancy. See Definitions, 12-1.3.

12-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

12-1.6* Minimum Construction Requirements.

12-1.6.1 For the purpose of 12-1.6, stories shall be counted starting at the primary level of exit discharge and ending at the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor which is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of a building.

12-1.6.2 Health care buildings of one story in height only may be constructed of Type I (443), I (332), II (222), II (111), II (000), III (211), IV (2HH), or V (111) construction. All buildings with more than one level below the level of exit discharge shall have all such lower levels separated from the level of exit discharge by at least Type II (111) construction. (*See 12-3.5 for automatic extinguishment requirements.*)

Exception: Any building of Type I or Type II (222 or 111) construction may include roofing systems involving combustible supports, decking, or

roofing provided: (1) the roof covering meets Class A requirements in accordance with Fire Tests for Roof Coverings, NFPA 256 (see Appendix B), and (2) the roof is separated from all occupied portions of the building by a noncombustible floor assembly having at least a 2-hour fire resistance rating which includes at least 2½ in. (6.35 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved automatic sprinkler system.

12-1.6.3 Health care buildings two stories or more in height shall be of Type I (443), I (332) or II (222) construction.

Exception No. 1: Health care buildings up to and including three stories in height may be of Type II (111) construction if protected throughout by an approved automatic sprinkler system.

Exception No. 2: Any building of Type I or Type II (222 or 111) construction may include roofing systems involving combustible supports, decking, or roofing provided: (1) the roof covering meets Class A requirements in accordance with Fire Tests for Roof Coverings, NFPA 256 (see Appendix B), and (2) the roof is separated from all occupied portions of the building by a noncombustible floor assembly having at least a 2-hour fire resistance rating which includes at least 2½ in. (6.35 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved automatic sprinkler system.

12-1.6.4 For construction requirements of enclosures of vertical openings between floors, see 12-3.1.

12-1.6.5 All interior walls and partitions in buildings of Type I or Type II construction shall be of noncombustible or limited-combustible materials.

12-1.6.6* Openings for the passage of pipes or conduit in walls or partitions that are required to have fire or smoke resisting capability shall be protected in accordance with 6-2.2.8 or 6-3.6.

12-1.6.7 Firestopping. Each exterior wall of Type V construction and interior stud partitions shall be firestopped so as to cut off all concealed draft openings, both horizontal and vertical, between any cellar or basement and the first floor. Such firestopping shall consist of wood at least 2 in. (nominal) (5.1 cm) thick, or of suitable noncombustible material.

12-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.15 sq m) gross floor area in health care sleeping departments and not less than one person for each 240 sq ft (22.30 sq m) of gross floor area of inpatient health care treatment departments. Gross floor areas shall be measured within the exterior building walls with no deductions. (*See Chapter 3.*)

SECTION 12-2 MEANS OF EGRESS REQUIREMENTS

12-2.1 General. Every aisle, passageway, corridor, exit discharge, exit location and access shall be in accordance with Chapter 5.

Exception No. 1: As modified in the following paragraphs.

Exception No. 2: The requirements of Chapter 5 specifying net clear door width do not apply. Projections into the door opening by stops or by hinge stiles shall be permitted.

12-2.2* Types of Exits. Exits shall be restricted to the permissible types described in 12-2.2.1 through 12-2.2.7.

12-2.2.1 Doors Leading Directly Outside the Building. (*See 5-2.1.*)

12-2.2.2 Interior Stairs. (*See 5-2.2.*)

12-2.2.3 Smokeproof Towers. (*See 5-2.3.*)

12-2.2.4 Outside Stairs. (*See 5-2.5.*)

12-2.2.5* Horizontal Exits. A horizontal exit shall be in conformance with 5-2.4, modified as below.

(a) At least 30 net sq ft (2.79 sq m) per patient in a hospital or nursing home or 15 net sq ft (1.39 sq m) per resident in a residential-custodial care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low hazard areas on each side of the horizontal exit. On stories not housing bed or litter patients and in supervisory care facilities at least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the horizontal exit for the total number of occupants in adjoining compartments.

(b) A single door leaf may be used as a horizontal exit if it serves one direction only and is at least 44 in. (111.76 cm) wide.

Exception: A door leaf a minimum of 36 in. (91.44 cm) wide may be provided within residential-custodial care facilities, mental hospitals, and supervisory care facilities.

(c) A horizontal exit in a hospital or nursing home in a corridor 8 ft (243.84 cm) or more in width serving as a means of egress from both sides of the doorway shall have the opening protected by a pair of swinging doors arranged to swing in the opposite direction from the other, with each door leaf being at least 44 in. (111.76 cm) wide.

(d) A horizontal exit in a residential-custodial care facility, mental hospital, or supervisory care facility in a corridor 6 ft (182.88 cm) or more in width serving as a means of egress from both sides of the doorway shall have the opening protected by a pair of swinging doors, arranged to swing in the opposite direction from each other, with each door being at least 32 in. (81.28 cm) wide.

(e) An approved vision panel is required in each horizontal exit door. Center mullions are prohibited.

(f) The total exit capacity of the other exits (stairs, ramps, doors leading

outside the building) shall not be reduced below one-third that required for the entire area of the building.

12-2.2.6 Class A Ramps. (*See 5-2.6.*) Ramps enclosed as exits shall be of sufficient width to provide exit capacity in accordance with 12-2.3.2.

Exception: A Class B ramp may be used where the height of the ramp is 1 ft (30.48 cm) or less.

12-2.2.7 Exit Passageways. (*See 5-2.7.*)

12-2.3 Capacity of Means of Egress. (*See also 12-2.5.2, 12-2.5.3 and 12-2.5.4.*)

12-2.3.1 The capacity of any required means of egress shall be based on its width as defined in Section 5-3.

12-2.3.2* The capacity of means of egress providing travel by means of stairs shall be 22 persons per exit unit; and the capacity of means of egress providing horizontal travel (without stairs) such as doors, ramps, or horizontal exits, shall be 30 persons per exit unit.

Exception: The capacity of means of egress in health care occupancies protected throughout by an approved automatic sprinkler system may be increased to 35 persons per exit unit for travel by means of stairs, and to 45 persons per exit unit for horizontal travel without stairs.

12-2.4 Number of Exits.

12-2.4.1 At least two exits of the types described in 12-2.2.1 through 12-2.2.7, located remotely from each other, shall be provided for each floor or fire section of the building.

12-2.4.2 At least one exit from each floor, fire section or smoke compartment shall be a door leading directly outside the building, interior stair, outside stair, smokeproof tower, ramp or exit passageway. Any fire section, floor or smoke compartment not meeting these requirements shall be considered as part of an adjoining zone. Egress shall not require return through the zone of fire origin.

12-2.5 Arrangement of Means of Egress.

12-2.5.1 Every patient sleeping room shall have an exit access door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at ground level.

Exception No. 2: One adjacent room, such as a sitting or anteroom, may intervene, if all doors along the means of egress are equipped with nonlockable hardware other than provided in 12-2.11, and if the intervening room is not used to serve as an exit access for more than eight patient sleeping beds.

Exception No. 3: Exception No. 2 above shall apply to special nursing suites permitted in 12-2.5.6 and suites in supervisory care facilities without being limited to eight beds or basinettes.

12-2.5.2* Aisles, corridors and ramps required for exit access in a hospital or nursing home shall be at least 8 ft (243.84 cm) in clear and unobstructed width. When ramps are used as exits, see 12-2.2.6.

Exception: Corridors and ramps in adjunct areas not intended for the housing, treatment, or use of patients may be a minimum of 44 in. (111.76 cm) in clear and unobstructed width.

12-2.5.3* Aisles, corridors and ramps required for exit access in a residential-custodial care facility or mental hospital shall be at least 6 ft (182.88 cm) in clear and unobstructed width. When ramps are used as exits, see 12-2.2.6.

Exception: Corridors and ramps in adjunct areas not intended for the housing, treatment, or use of patients may be a minimum of 44 in. (111.76 cm) in clear and unobstructed width.

12-2.5.4 Aisles, corridors, and ramps required for exit access in a supervisory care facility shall be at least 5 ft (152.4 cm) in clear and unobstructed width. When ramps are used as exits, see 12-2.2.6.

12-2.5.5* Any room, and any suite of rooms as permitted in 12-2.5.1, of more than 1,000 sq ft (92.9 sq m) shall have at least two exit access doors remote from each other.

12-2.5.6 Any patient sleeping room which complies with the requirements previously set forth in this section may be subdivided with non-fire-rated, noncombustible or limited-combustible partitions, provided that the arrangement allows for direct and constant visual supervision by nursing personnel. Rooms which are so subdivided shall not exceed 5,000 sq ft (464.5 sq m).

Exception: In supervisory care facilities, such spaces continuously monitored by staff do not require direct visual supervision providing the space is equipped with an electrically supervised smoke detection system.

12-2.5.7 Every corridor shall provide access to at least two approved exits in accordance with Section 5-4. Means of egress shall be in accordance with Section 5-5 without passing through any intervening rooms or spaces other than corridors or lobbies.

12-2.5.8 Every exit or exit access shall be so arranged that no corridor, aisle or passageway has a pocket or dead end exceeding 30 ft (914.4 cm).

12-2.6 Measurement of Travel Distance to Exits.

12-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

12-2.6.2 Travel distance:

(a) Between any room door required as exit access and an exit shall not exceed 100 ft (30.48 m);

(b) Between any point in a room and an exit shall not exceed 150 ft (45.72 m);

(c) Between any point in a health care sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system.

12-2.7 Discharge from Exits. (*See Section 5-7.*)

12-2.7.1 All required exit ramps or stairs shall discharge directly to the outside at grade or be arranged to travel through an exit passageway discharging to the outside at grade.

12-2.8 Illumination of Means of Egress.

12-2.8.1 Each facility as indicated within 12-1.1.1.2 shall be provided with illumination of means of egress in accordance with Section 5-8.

12-2.8.2 Buildings equipped with or requiring the use of life support systems (*see 12-5.1.3*) shall have illumination to the extent prescribed by 5-8.1.3 for the means of egress supplied by the Life Safety Branch of the electrical system described in *Standard for Essential Electrical Systems for Health Care Facilities*, NFPA 76A (*see Appendix B*).

12-2.9 Emergency Lighting.

12-2.9.1 Each facility as indicated within 12-1.1.1.2 shall be provided with emergency lighting in accordance with Section 5-9.

12-2.9.2 Buildings equipped with or requiring the use of life support systems (*see 12-5.1.3*) shall have emergency lighting equipment supplied by the Life Safety Branch of the electrical system described in *Standard for Essential Electrical Systems for Health Care Facilities*, NFPA 76A (*see Appendix B*).

12-2.10 Marking of Means of Egress.

12-2.10.1 Each facility as indicated within 12-1.1.1.2 shall be provided with exit marking in accordance with Section 5-10.

12-2.10.2 Buildings equipped with or requiring the use of life support systems (*see 12-5.1.3*) shall have illumination of the required exit and directional signs supplied by the Life Safety Branch of the electrical system as described in *Standard for Essential Electrical Systems for Health Care Facilities*, NFPA 76A (*see Appendix B*).

12-2.11 Special Features.

12-2.11.1 Locks shall not be permitted on patient sleeping room doors.

Exception No. 1: Key locking devices which restrict access to the room from the corridor may be permitted. Such devices shall not restrict egress from the room.

Exception No. 2: Doors in homes for the aged may be lockable by the occupant, if they can be unlocked from the opposite side and keys are carried by attendants at all times. (See also 5-2.1.2.1.1 and 5-2.1.2.1.2.)

Exception No. 3: Special door locking arrangements are permitted in mental health facilities. (See 12-1.1.1.7 and 12-2.11.4.)

12-2.11.2 Doors leading directly to the outside of the building may be subject to locking from the room side.

12-2.11.3 Doors within the means of egress shall not be equipped with a latch or lock which requires the use of a key from the inside of the building. (*See 5-2.1.2.*)

Exception No. 1: Door locking arrangements are permitted in mental health facilities. (See 12-2.11.4.)

Exception No. 2: Special locking arrangements in accordance with 5-2.1.2.1.5 on exterior doors are permitted.

12-2.11.4 In buildings in which doors are locked, provisions shall be made for the rapid removal of occupants by such reliable means as the remote control of locks or by keying all locks to keys readily available to staff who are in constant attendance.

12-2.11.5 Exit access doors from hospital and nursing home sleeping rooms; diagnostic and treatment areas, such as X-ray, surgery, or physical therapy; all door leaves between these spaces and the required exits; and all exit door leaves serving these spaces shall be at least 44 in. (111.76 cm) wide. Door leaves from residential-custodial sleeping rooms and door leaves from nursery rooms; and door leaves between these spaces and the required exits; and all exit door leaves serving these spaces shall be at least 36 in. (91.44 cm) wide.

Exception No. 1: Exit door leaves which are so located as not to be subject to use by any health care occupant may be not less than 34 in. (86.36 cm) wide.

Exception No. 2: Door leaves in exit stair enclosures shall not be less than 36 in. (91.44 cm) wide.

12-2.11.6* Any door in an exit passageway, horizontal exit, a required enclosure of a hazardous area (except boiler rooms, heater rooms, and mechanical equipment rooms) or smoke barrier may be held open only by an automatic release device which complies with 5-2.1.2.3. Each of the following systems shall be arranged so as to initiate the closing action of all such doors by zone or throughout the entire facility:

(a) The required manual alarm system (*see 12-3.4*),

(b) The required and approved automatic smoke detection system (*see 12-3.4.6*) or a local device designed to detect smoke on either side of the opening, and

(c) A complete automatic fire extinguishing or complete automatic fire detection system, if provided.

SECTION 12-3 PROTECTION

12-3.1 Protection of Vertical Openings.

12-3.1.1* Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute, and other vertical opening between stories shall be enclosed in accordance with 6-2.2 with construction having a 2-hour fire resistance rating.

Exception No. 1: One-hour rated enclosures are permitted in buildings required to be of 1-hour construction.

Exception No. 2: Stairs that do not connect to a corridor, do not connect more than two levels, and do not serve as a means of egress need not comply with these regulations.

Exception No. 3: The fire resistance rating of enclosures in health care occupancies protected throughout by an approved automatic sprinkler system may be reduced to 1 hour in buildings up to, and including, three stories in height.

Exception No. 4: Duct penetrations of floor assemblies which are protected in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B).

Exception No. 5: Floor and ceiling openings for pipes or conduits when the opening around the pipes or conduits is sealed in an approved manner. (See 6-2.2.8.)

12-3.1.2 A door in a stair enclosure shall be self-closing, shall normally be kept in a closed position, and shall be marked in accordance with 5-10.4.2.

12-3.2 Protection from Hazards.

12-3.2.1* Any hazardous area shall be safeguarded by a fire barrier of 1-hour fire resistance rating or provided with an automatic extinguishing system in accordance with 6-4.1. Hazardous areas include, but are not restricted to, the following. Those areas accompanied by a dagger (†) in the list shall have both fire-resistant separation and a complete extinguishment system.

Boiler and heater rooms
Laundries
Kitchens
Repair shops
Handicraft shops
Employee locker rooms
†Soiled linen rooms
†Paint shops
†Trash collection rooms
Gift shops
†Rooms or spaces, including repair shops, used for the storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.
Laboratories employing quantities of flammable, or combustible materials less than that which would be considered severe.

12-3.2.2* Laboratories employing quantities of flammable, combustible, or hazardous materials which are considered as severe hazard shall be protected in accordance with *Laboratories in Health-Related Institutions*, NFPA 56C (*see Appendix B*).

12-3.2.3 Cooking facilities shall be protected in accordance with 7-2.3.

12-3.3 Interior Finish.

12-3.3.1 Interior finish of walls and ceilings throughout shall be Class A in accordance with Section 6-5.

Exception: Walls and ceilings may have Class A or B interior finish in individual rooms of not over four persons in capacity.

12-3.3.2* Interior floor finish in corridors and exitways shall be Class I in accordance with Section 6-5.

12-3.4 Detection, Alarm and Communication Systems.

12-3.4.1 Required fire detection and signaling devices and systems shall be in accordance with Section 7-6.

12-3.4.2 Every building shall have a manually operated fire alarm system in accordance with Section 7-6, and such system shall be electrically supervised.

12-3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish the following:

(a) General alarm indication

(b) Control functions required to be performed by that device.

Zoned, coded systems shall be permitted.

12-3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the health care facility is located, by the most direct and reliable method approved by local regulations.

12-3.4.5 Internal audible alarm devices shall be provided and shall be installed in accordance with Section 7-6.

12-3.4.6 An approved automatic smoke detection system shall be installed in all corridors of new nursing homes, new custodial and new supervisory care facilities. Such systems shall be installed in accordance with Section 7-6 and with the applicable standards listed in Appendix B, but in no case shall smoke detectors be spaced further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall. All automatic smoke detection sytems required by this section shall be electrically interconnected to the fire alarm system.

Exception: Where each patient sleeping room is protected by such an approved detection system and a local detector is provided at the smoke barrier and horizontal exits, such corridor systems will not be required on the patient sleeping room floors.

12-3.4.7 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

12-3.4.8 Any alarm system(s) and any detection system(s) required in any health care occupancy shall be provided with an alternative power supply in accordance with *Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems*, NFPA 72A (*see Appendix B*).

12-3.5 Extinguishment Requirements.

12-3.5.1* All health care facilities shall be protected throughout by an approved automatic sprinkler system. (*See 12-1.6 for construction types permitted.*)

Exception: Buildings of Type I (443), I (332) or II (222) construction of any height or Type II (111) construction not over one story in height.

12-3.5.2 Where exceptions are stated in the provisions of the *Code* for health care occupancies protected throughout by an approved automatic sprinkler system, and where such systems are required, the systems shall be in complete accordance with Section 7-7 for systems in light hazard occupancies and shall be electrically interconnected with the fire alarm system.

12-3.5.3 The main sprinkler control valve(s) shall be electrically supervised so that at least a local alarm will sound at a constantly attended location when the valve is closed.

12-3.5.4 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shut-off valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply. Where more than two sprinklers are installed in a single area, waterflow detection shall be provided to sound the building fire alarm system in the event of sprinkler operation. (*For sprinkler requirements for hazardous areas, see 12-3.2 and for sprinkler requirements for chutes, see 12-5.4.*)

12-3.5.5 Portable fire extinguishers shall be provided in all health care occupancies in accordance with 7-7.4.1.

12-3.6 Construction of Corridor Walls.

12-3.6.1* Corridors shall be separated from all other areas by partitions. Such partitions shall be continuous from the floor slab to the underside of the roof or floor slab above, through any concealed spaces such as those above the suspended ceilings, and through interstitial structural and mechanical spaces, and shall have a fire resistance rating of at least 1 hour.

Exception No. 1: In health care occupancies protected throughout by an approved automatic sprinkler system, a corridor may be separated from all other areas by non-fire-rated partitions, and where suspended ceilings are provided, the partitions may be terminated at the suspended ceiling.

Exception No. 2: Corridor partitions may terminate at ceilings which are not an integral part of a floor construction if there exists 5 ft (152.4 cm) or more of space between the top of the ceiling subsystem and the bottom of the floor or roof above, provided:

(a) The ceiling shall have been tested as a part of a fire-rated assembly in accordance with Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251 (see Appendix B), for a test period of 1 hour or more, and

(b) Corridor partitions form smoketight joints with the ceilings (joint filler, if used, shall be noncombustible) and,

(c) Each compartment of interstitial space which constitutes a separate smoke area is vented, in case of smoke emergency, to the outside by mechanical means having sufficient capacity to provide at least two air changes per hour, but in no case having a capacity less than 5,000 cfm (2.36 cu m/s), and

(d) The interstitial space shall not be used for storage, and

(e) The space shall not be used as a plenum for supply, exhaust or return air except as noted in (c).

Exception No. 3: Waiting areas on a patient sleeping floor may be open to the corridor, provided:

(a) The area does not exceed 250 sq ft (23.23 sq m), and

(b) The area is located to permit direct supervision by the facility staff, and

(c) The area is equipped with an electrically supervised automatic smoke detection system installed in accordance with 12-3.4, and

(d) Not more than one such waiting area is permitted in each smoke compartment, and

(e) The area is arranged not to obstruct access to required exits.

Exception No. 4: Waiting areas on floors other than health care sleeping floors may be open to the corridor, provided:

(a) Each area does not exceed 600 sq ft (55.74 sq m), and

(b) The area is located to permit direct supervision by the facility staff, and

(c) The area is arranged not to obstruct access to required exits, and

(d) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4.

Exception No. 5: Buildings protected throughout by an approved automatic sprinkler system may have spaces which are unlimited in size open to the corridor provided:

(a) The spaces are not used for patient sleeping rooms, treatment rooms or hazardous areas, and

(b) Each space is located to permit direct supervision by the facility staff, and

(c) The space and corridors which the space opens onto in the same smoke compartment are protected by an electrically supervised automatic smoke detection system installed in accordance with 12-3.4, and

(d) The space is arranged not to obstruct access to required exits.

Exception No. 6: Space for doctors' and nurses' charting, communications, and related clerical areas may be open to the corridor.

Exception No. 7: In a supervisory care facility, group meeting or multipurpose therapeutic spaces, other than hazardous areas, under continuous supervision by facility staff may be open to the corridor provided:

(a) Each area does not exceed 1,500 sq ft (139.35 sq m), and

(b) The area is located to permit direct supervision by the facility staff, and

(c) The area is arranged not to obstruct any access to required exits, and

(d) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 12-3.4, and

(e) Not more than one such space is permitted per smoke compartment.

12-3.6.2 Fixed wired glass vision panels shall be permitted in corridor walls provided they do not exceed 1,296 sq in. (.84 sq m) in area and are mounted in steel or other approved metal frames.

Exception: There shall be no restrictions in area and fire resistance of glass and frames in buildings protected throughout by an approved automatic sprinkler system.

12-3.6.3 Doors protecting corridor openings, in other than required enclosures of exits or hazardous areas, shall be substantial doors, such as 1¾-in. (4.45-cm) solid bonded core wood or of construction that will resist fire for at least 20 minutes. Doors shall be provided with latches suitable for keeping the door tightly closed and acceptable to the authority having jurisdiction. Fixed view panels of wired glass in steel frames or other approved construction shown acceptable by fire test, limited to 1,296 sq in. (.84 sq m) in area, may be installed in these doors.

Exception No. 1: In buildings protected throughout by an approved automatic sprinkler system, the door construction requirements noted above are not required but the doors shall be constructed to resist the passage of smoke. Doors shall be provided with latches of a type suitable for keeping the door tightly closed and acceptable to the authority having jurisdiction.

Exception No. 2: In buildings protected throughout by an approved automatic sprinkler system, there is no restriction on the area of vision panels in such doors, the vision panels do not need to be wired glass, and there is no restriction in the type of frames.

Exception No. 3: Door closing devices are not required on doors in corridor wall openings other than those serving exits or required enclosures of hazardous area.

Exception No. 4: Labeled door frames are not required on openings other than those serving exits or required enclosures of hazardous areas, providing the door frames and stops are of steel construction or other approved construction shown acceptable by fire test.

Exception No. 5: Doors to toilet rooms, bathrooms, shower rooms, sink closets, and similar auxiliary spaces which do not contain flammable or combustible materials are exempt from these requirements.

12-3.6.4* Transfer grills, whether or not protected by fusible link operated dampers, shall not be used in these walls or doors.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets and similary auxiliary spaces which do not contain flammable or combustible materials may have ventilating louvers or may be undercut.

12-3.7* Subdivision of Building Spaces.

12-3.7.1 Smoke barriers shall be provided, regardless of building construction type, as follows:

(a) To divide every story used by inpatients for sleeping or treatment, or any story having an occupant load of 50 or more persons, into at least two compartments, and

(b) To limit on any story the length and width of each smoke compartment to no more than 150 ft (45.72 m).

Exception: Protection may be accomplished in conjunction with the provision of horizontal exits.

12-3.7.2 Smoke barriers shall be provided on stories which are usable but unoccupied.

12-3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 except as provided in 12-3.7.9 and shall have a fire resistance rating of at least 1 hour.

12-3.7.4 At least 30 net sq ft (2.79 sq m) per patient in a hospital or nursing home or 15 net sq ft (1.39 sq m) per resident in a residential-custodial care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low hazard areas on each side of the smoke barrier. On stories not housing bed or litter patients or in supervisory care facilities, at least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

12-3.7.5 Doors in smoke barriers shall be substantial doors such as 1¾-in. (4.45-cm) thick solid bonded core wood or construction that will resist fire for at least 20 minutes. Corridor openings in smoke barriers shall be protected by a pair of swinging doors, each door to swing in a direction opposite from the other. The minimum door leaf width shall be as follows:

(a) Hospitals and nursing homes: 44 in. (111.76 cm).

(b) Residential-custodial care institutions: 32 in. (81.28 cm).

12-3.7.6 Doors in smoke barriers shall comply with 6-3.3 and shall be self-closing.

Exception: Doors may be held open only if they meet the requirements of 12-2.11.6.

12-3.7.7 Vision panels of approved transparent wired glass not exceeding 1,296 sq in. (.84 sq m) in approved metal frames shall be provided in each door in a smoke barrier.

12-3.7.8 Rabbets, bevels, or astragals are required at the meeting edges, and stops are required at the head and sides of door frames in smoke barriers. Positive latching hardware is not required. Center mullions are prohibited.

Exception: Protection at the meeting edges of doors and stops at the head and sides of door frames may be omitted in buildings equipped with an approved engineered smoke control system. The engineered smoke control system shall respond automatically, preventing the transfer of smoke across the barrier, and shall be designed in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B).

12-3.7.9 An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 12-3.7.1. The damper shall close upon detection of smoke by an approved smoke detector, located within the duct. (*See also Section 6-3.*)

Exception No. 1: In lieu of an approved smoke detector located within the duct, ducts which penetrate smoke barriers above smoke barrier doors (required by 12-3.7.5) may have the approved damper arranged to close upon detection of smoke by the local device designed to detect smoke on either side of the smoke barrier door opening.

Exception No. 2: Dampers may be omitted in buildings equipped with an approved engineered smoke control system. The smoke control system shall respond automatically, preventing the transfer of smoke across the smoke barrier, and shall be designed in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B).

Exception No. 3: Dampers may be omitted where the openings in ducts are limited to a single smoke compartment and the ducts are of steel construction.

12-3.8 Special Features.

12-3.8.1 Every patient sleeping room shall have an outside window or outside door arranged and located so that it can be opened from the inside to permit the venting of products of combustion and to permit any occupant to have direct access to fresh air in case of emergency. (*See 12-1.1.1.7 for detention screen requirements.*) The maximum allowable sill height shall not exceed 36 in. (91.44 cm) above the floor. Where windows require the use of tools or keys for operation, the tools or keys shall be located on the floor involved at a prominent location accessible to staff.

Exception No. 1: The window sill in special nursing care areas such as those housing ICU, CCU, hemodialysis, and neo-natal patients may be 60 in. (152.4 cm) above the floor.

Exception No. 2: Rooms intended for occupancy of less than 24 hours, such as those housing obstetrical labor beds, recovery beds and observation beds in the emergency department; and newborn nurseries need not comply with this requirement.

Exception No. 3: Buildings designed with an engineered smoke control system in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B), need not comply with this requirement.

SECTION 12-4 SPECIAL PROVISIONS

12-4.1 Windowless Buildings. See Section 30-7 for requirements for windowless buildings.

SECTION 12-5 BUILDING SERVICES

12-5.1 Utilities.

12-5.1.1 Utilities shall comply with the provisions of Section 7-1.

12-5.1.2 Alarms, emergency communication systems and the illumination of generator set locations shall be as described in the Life Safety Branch of the *National Electrical Code*, NFPA 70 (*see Appendix B*).

12-5.1.3 Any health care occupancy as indicated within 12-1.1.1.2 which normally utilizes life support devices shall have electrical systems designed and installed in accordance with *Standard for Essential Electrical Systems for Health Care Facilities*, NFPA 76A (*see Appendix B*).

Exception: This requirement does not apply to a facility that has life support equipment for emergency purposes only.

12-5.2 Heating, Ventilating, and Air Conditioning.

12-5.2.1 Heating, ventilating, and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 12-5.2.2 following.

12-5.2.2* Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception No. 1: Approved suspended unit heaters may be used in locations other than means of egress and patient sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area and provided they are equipped with the safety features called for above.

Exception No. 2.: Fireplaces may be installed and used only in areas other than patient sleeping areas, provided that these areas are separated from patient sleeping spaces by construction having a 1-hour fire resistance rating and they comply with Standard for Chimneys, Fireplaces and Vents, NFPA 211 (see Appendix B). In addition thereto, the fireplace shall be equipped with a hearth that shall be raised at least 4 in. (10.16 cm), and a heat tempered glass, or other approved material, fireplace enclosure guaranteed against breakage up to a temperature of 650°F (343.33°C). If, in the opinion of the authority having jurisdiction, special hazards are present, a lock on the enclosure and other safety precautions may be required.

Exception No. 3: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas when the heating elements of such a device are limited to not more than 212°F (100°C).

12-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

12-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes.

12-5.4.1 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

12-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13. (*See Appendix B and Section 7-5.*)

12-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

12-5.4.4 An incinerator shall not be directly flue-fed nor shall any floor charging chute directly connect with the combustion chamber.

SECTION 12-6 NEW AMBULATORY HEALTH CARE CENTERS

12-6.1 General Requirements.

12-6.1.1 Application.

12-6.1.1.1 Ambulatory health care centers shall comply with the provisions of both Chapter 26 and (this) Section 12-6, as may be more stringent.

12-6.1.1.2 This section establishes life safety requirements, in addition to those required in Chapter 26, for the design of all ambulatory health care centers and outpatient surgical centers which meet the requirements of 12-1.3(e).

12-6.1.2 Reserved.

12-6.1.3 Special Definitions. (*See 12-1.3*)

12-6.1.4 Classification of Occupancy. (*See 12-1.3*)

12-6.1.5 Reserved.

12-6.1.6 Minimum Construction Requirements.

12-6.1.6.1 For purposes of 12-6.1.6, stories shall be counted starting at the primary level of exit discharge and ending at the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor which is level with or above finished grade of this exterior wall line for 50 percent or more of its perimeter.

12-6.1.6.2 Buildings of one story in height housing ambulatory health care centers may be of Type I, II, III, IV or V construction.

12-6.1.6.3 Buildings of two or more stories in height housing ambulatory health care centers may be of Type I (443), I (332), or II (222), Type II (111), Type III (211), Type IV (2HH) or Type V (111) construction.

Exception: Such buildings may be constructed of Type II (000), III (200) or V (000) if equipped throughout with an approved automatic extinguishing system.

12-6.1.6.4 Any level below the level of exit discharge shall be separated from the level of exit discharge by at least Type II (111), Type III (211) or Type V (111) construction.

Exception: Such separation is not required for such levels if they are under the contol of the ambulatory health care center and any hazardous spaces are protected in accordance with Section 6-4.

12-6.1.6.5 When new ambulatory health care centers are located in existing buildings, the authority having jurisdiction may accept construction systems of lesser fire resistance than required above if it can be demonstrated to his satisfaction that in cases of fire, prompt evacuation of the center can be made or that the exposing occupancies and materials of construction present no threat of fire penetration from such occupancy into the ambulatory health care center or collapse of the structure.

12-6.1.7 Occupant Load.

12-6.2 Means of Egress Requirements.

12-6.2.1 General. Every aisle, passageway, corridor, exit discharge, exit location and access shall be in accordance with Chapter 5.

Exception No. 1: As modified in the following paragraphs.

Exception No. 2: The requirements of Chapter 5 specifying net clear door width do not apply. Projections into the door opening by stops or by hinge stiles shall be permitted.

12-6.2.2 Types of Exits. Exits shall be restricted to the permissible types described in 26-2.2.

12-6.2.3 Capacity of Means of Egress.

12-6.2.3.1* The minimum width of any corridor or passageway required for exit access shall be 44 in. (111.76 cm) clear.

12-6.2.3.2 The capacity of any required means of egress shall be determined in accordance with the provisions of 26-2.3 and shall be based on its width as defined in Section 5-3.

12-6.2.4 Number of Exits.

12-6.2.4.1 At least two exits of the types described in 26-2.2 (Business Occupancy) located remote from each other shall be provided for each floor or fire section of the building.

12-6.2.4.2 Any room and any suite of rooms of more than 1,000 sq ft (92.9 sq m) shall have at least two exit access doors located remote from each other.

12-6.2.5 Arrangement of Means of Egress. (*See 26-2.5.*)

12-6.2.6 Measurement of Travel Distance to Exits.

12-6.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

12-6.2.6.2 Travel distance:

(a) Between any room door required as exit access and an exit shall not exceed 100 ft (30.48 m); and

(b) Between any point in a room and an exit shall not exceed 150 ft (45.72 m).

Exception: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system.

12-6.2.7 Discharge from Exits. (*See 26-2.7.*)

12-6.2.8 Illumination of Means of Egress. Each ambulatory health care center shall be provided with illumination of means of egress in accordance with Section 5-8.

12-6.2.9 Emergency Lighting and Essential Electrical Systems.

12-6.2.9.1 Each ambulatory health care center shall be provided with emergency lighting in accordance with Section 5-9.

12-6.2.9.2 Where general anesthesia or life support equipment is used, each ambulatory health care center shall be provided with an essential electrical system in accordance with *Essential Electrical Systems for Health Care Facilities*, NFPA 76A. (*See Appendix B.*)

Exception: Where battery operated equipment is provided, a generator is not required for emergency power.

12-6.2.10 Marking of Means of Egress. Signs designating exits and ways of travel thereto shall be provided in accordance with Section 5-10.

12-6.2.11 Special Features.

12-6.2.11.1 Locks installed on patient treatment, diagnostic, or recovery room doors shall be so arranged that they can be locked only from the corridor side. All such locks shall be arranged to permit exit from the room by a simple operation without the use of a key.

12-6.2.11.2 Doors leading directly to the outside of the buildings may be subject to locking from the room side.

12-6.2.11.3 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted on exterior doors.

12-6.2.11.4* Exit access door leaves from diagnostic or treatment areas, such as X-ray, surgical or physical therapy; all door leaves between these spaces and the required exits; and all exit door leaves serving these spaces shall be at least 34 in. (86.36 cm) wide.

12-6.2.11.5 Any door in an exit passageway, stair enclosure, horizontal exit, a required enclosure of a hazardous area, or a smoke partition may be held open only by an automatic device which complies with 5-2.1.2.3. The device shall be so arranged that the operation of the following will initiate the self-closing action:

(a) The manual alarm system required in 12-6.3.4 and either (b) or (c) below.

(b) A local device designed to detect smoke on either side of the opening, or

(c) A complete automatic fire extinguishing or complete automatic fire detection system.

12-6.2.11.6 Where doors in a stair enclosure are held open by an automatic device as permitted in 12-6.2.11.5, initiation of a door closing action on any level shall cause all doors at all levels in the stair enclosure to close.

12-6.3 Protection.

12-6.3.1 Protection of Vertical Openings. (*See 26-3.1.*)

12-6.3.2 Protection from Hazards. (*See 26-3.2.*)

12-6.3.2.1 Laboratories employing quantities of flammable, combustible, or hazardous materials which are considered as severe hazard shall be protected in accordance with *Laboratories in Health Related Institutions*, NFPA 56C (*see Appendix B*).

12-6.3.2.2 Anesthetizing locations shall be protected in accordance with *Inhalations Anesthetics in Ambulatory Care Facilities*, NFPA 56G (*see Appendix B*).

12-6.3.3 Interior Finish. (*See 26-3.3.*)

12-6.3.4 Detection, Alarm and Communication Systems.

12-6.3.4.1 Other than as noted below, required fire detection and signaling devices or systems shall be in accordance with Section 7-6.

12-6.3.4.2 Every building shall have a manually operated fire alarm system, in accordance with Section 7-6. Pre-signal systems are not allowed within an ambulatory surgical care center.

12-6.3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish general alarm indication and control functons. Zoned, coded systems shall be permitted.

12-6.3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the health care facility is located, by the most direct and reliable method approved by local regulations.

12-6.3.4.5 Internal audible alarm devices shall be provided and shall be installed in accordance with Section 7-6.

12-6.3.4.6 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

12-6.3.5 Extinguishment Requirements. (*See 26-3.5.*)

12-6.3.5.1 The sprinkler piping, serving no more than six sprinklers for any isolated hazardous area, may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shutoff valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply. Where more than two sprinklers are installed in a single area,

waterflow detection shall be provided to sound the building fire alarm system in the event of sprinkler operation. (*For sprinkler requirements for hazardous areas, see 12-6.3.2.*)

12-6.3.5.2 Portable fire extinguishers shall be provided in ambulatory health care occupancies in accordance with 7-7.4.1.

12-6.3.6 Corridors. (*See 26-3.6.*)

12-6.3.7 Subdivision of Building Space.

12-6.3.7.1 Ambulatory health care occupancies shall be separated from other tenants and occupancies by walls having at least a 1-hour fire-resistive construction. Such walls shall extend from the floor slab below to the floor or roof slab above. Doors shall be at least 1¾-in. (4.45-cm) solid bonded wood core or the equivalent and equipped with positive latches. These doors shall be self-closing and normally kept in the closed position except when in use. Any vision panels shall be of fixed wired glass set in approved metal frames and limited in size to 1,296 sq in. (.84 sq m).

12-6.3.7.2 The ambulatory health care facility shall be divided into at least two smoke compartments.

Exception: Facilities less than 2,000 sq ft (185.8 sq m) and protected by an approved automatic smoke detection system need not be divided.

12-6.3.7.3 Walls separating the smoke compartments shall be of at least a 1-hour construction, and shall extend from the floor slab below to the floor or roof slab above.

12-6.3.7.4 Vision panels in the smoke barrier shall be of fixed wired glass set in approved metal frames and shall be limited in size to 1,296 sq in. (.84 sq m).

12-6.3.7.5 Doors in smoke barriers shall be at least 1¾-in. (4.45-cm) solid bonded wood core or the equivalent and shall be self-closing. A vision panel is required.

12-6.3.7.6 Doors in smoke barriers shall normally be kept closed or if held open, they shall be equipped with automatic devices which will release the doors upon activation of:

(a) The fire alarm system, and either

(b) A local smoke detector, or,

(c) A complete automatic fire extinguishing system or complete automatic fire detection system.

12-6.3.7.7 An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 12-6.3.7.1. The damper shall close upon detection of smoke by an approved smoke detector, located within the duct. (*See Section 6-3.*)

Exception No. 1: In lieu of an approved smoke detector located within the duct, ducts which penetrate smoke barriers above smoke barrier doors

(required in 12-6.3.7.5) may have the approved damper arranged to close upon detection of smoke by the local device designed to detect smoke in either side of the smoke barrier door opening.

Exception No. 2: Dampers may be omitted in buildings equipped with an approved engineered smoke control system. The smoke control system shall respond automatically, preventing the transfer of smoke across the barrier, and shall be designed in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A. (See Appendix B.)

12-6.4 Special Provisions. (*See Section 26-4.*)

12-6.5 Building Services.

12-6.5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

12-6.5.2 Heating, Ventilating and Air Conditioning.

12-6.5.2.1 Heating, ventilating and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 12-6.5.2.2 following.

12-6.5.2.2* Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception No. 1: Approved suspended unit heaters may be used in locations other than means of egress and patient treatment areas, provided such heaters are located high enough to be out of the reach of persons using the area and provided they are equipped with the safety features called for above.

Exception No. 2: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas when the heating elements of such a device are limited to not more than 212°F (100°C).

12-6.5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

12-6.5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 13 EXISTING HEALTH CARE OCCUPANCIES

(See also Chapter 31.)

SECTION 13-1 GENERAL REQUIREMENTS

13-1.1 Application.

13-1.1.1 General.

13-1.1.1.1* Existing health care facilities shall comply with the provisions of this chapter. (*See Chapter 31 for operating features.*)

Exception: Hospitals and nursing homes found to have equivalent safety. One such method for determining this equivalency is given in Appendix C.

13-1.1.1.2 This chapter establishes life safety requirements for the design of all existing hospitals, nursing homes, residential-custodial care and supervisory care facilities. Where requirements vary, the specific occupancy is named in the paragraph pertaining thereto. Section 13-6 establishes life safety requirements for the design of all existing ambulatory health care centers.

13-1.1.1.3 Health care occupancies are those used for purposes such as medical or other treatment or care of persons suffering from physical or mental illness, disease or infirmity; for the care of infants, convalescents or infirm aged persons.

13-1.1.1.4 Health care facilities provide sleeping accommodations for the occupants and are occupied by persons who are mostly incapable of self-preservation because of age, physical or mental disability, or because of security measures not under the occupants' control.

13-1.1.1.5 This chapter also covers ambulatory health care centers as defined in 13-1.3(e). See Section 13-6 for requirements.

13-1.1.1.6* Buildings or sections of buildings which house, or in which care is rendered to, mental patients, including the mentally retarded, who are capable of judgment and appropriate physical action for self-preservation under emergency conditions in the opinion of the governing body of the facility and the governmental agency having jurisdiction, may come under other chapters of the *Code* instead of Chapter 13.

13-1.1.1.7 It shall be recognized that, in buildings housing certain types of patients or having detention rooms or a security section, it may be necessary to lock doors and bar windows to confine and protect building inhabitants.

In such instances, the authority having jurisdiction shall make appropriate modifications to those sections of this *Code* which would otherwise require the keeping of exits unlocked.

13-1.1.1.8 It shall be also recognized that some mental health patients are not capable of seeking safety without guidance.

13-1.1.1.9 Buildings or sections of buildings which house older persons and which provide activities that foster continued independence but do not include those services distinctive to residential-custodial care facilities [as defined in 13-1.3(c)] shall be subject to the requirements of other Sections of this *Code*, such as Chapter 19.

13-1.1.1.10 Health care occupancies shall include all buildings or parts thereof with occupancy as described in this chapter under Special Definitions, 13-1.3.

13-1.1.2* Objective. The objective of this chapter is to provide a reasonable level of safety by reducing the probability of injury and loss of life from the effects of fire with due consideration for functional requirements. This is accomplished by limiting the development and spread of a fire emergency to the room of fire origin and reducing the need for occupancy evacuation, except from the room of fire origin.

13-1.1.3. Total Concept. All health care facilities shall be so designed, constructed, maintained, and operated as to minimize the possibility of a fire emergency requiring the evacuation of occupants. Because the safety of health care occupants cannot be assured adequately by dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate staffing, and careful development of operating and maintenance procedures composed of the following:

(a) Proper design, construction, and compartmentation;

(b) Provision for detection, alarm, and extinguishment; and

(c) Fire prevention and the planning, training, and drilling in programs for the isolation of fire, transfer of occupants to areas of refuge, or evacuation of the building.

13-1.1.4 Additions, Conversions, Modernization, Renovation, and Construction Operations.

13-1.1.4.1 Additions shall be separated from any existing structure not conforming to the provisions within Chapter 13 by a fire barrier having at least a 2-hour fire resistance rating constructed of materials as required for the addition.

13-1.1.4.2 Communicating openings in dividing fire barriers required by 13-1.1.4.1 shall occur only in corridors and shall be protected by approved self-closing fire doors. (*See also Section 6-2.*)

13-1.1.4.3 Doors in barriers required by 13-1.1.4.1 shall normally be kept closed.

Exception: Doors may be held open only if they meet the requirements of 13-2.11.5.

13-1.1.4.4 Conversions. An existing building may be converted to a hospital, nursing home, or residential-custodial care facility only if it complies with all requirements for new health care buildings prior to occupancy as a health care facility. (*See Chapter 12.*)

13-1.1.4.5 Modernization or Renovation. Alterations shall not diminish the level of life safety below that which exists prior to the alterations except that life safety features in excess of those required for new construction are not required to be maintained. In no case shall the resulting life safety be less than that required for existing buildings. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction.

13-1.1.4.6 Construction Operations. See 1-6.3 and Chapter 31 for life safety provisions during construction.

13-1.1.5 Modification of Retroactive Provisions.

13-1.1.5.1 The requirements of this section may be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and if the resulting arrangement could be considered as presenting minimum hazard to the life safety of the occupants. The requirements may be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life from fire as practical; but in no case shall the modification afford less safety than compliance with the corresponding provisions contained in the following part of this *Code*.

13-1.1.5.2* A limited but reasonable time shall be allowed for compliance with any part of this section, commensurate with the magnitude of expenditure and the disruption of services.

13-1.1.5.3 Alternative protection, installed and accepted, shall be considered as conforming for purposes of this *Code*.

13-1.2 Mixed Occupancies.

13-1.2.1* Sections of health care facilities may be classified as other occupancies if they meet all of the following conditions:

(a) They are not intended to serve health care occupants for purposes of housing, treatment or customary access.

(b) They are adequately separated from areas of health care occupancies by construction having a fire resistance rating of at least 2 hours.

13-1.2.2 Ambulatory care (*see Section 13-6*), medical clinics and similar facilities which are contiguous to health care occupancies but are primarily

intended to provide outpatient services may be classified as a business or ambulatory care occupancy provided the facilities are separated from health care occupancies by not less than 2-hour fire-resistive construction.

Exception: When the business occupancy or similar facility is intended to provide:

(a) Services for hospital patients who are litter borne, or,

(b) General anesthesia services,

the section shall meet all requirements for health care facilities.

13-1.2.3 Health care occupancies in buildings housing other occupancies shall be completely separated from them by construction having a fire resistance rating of at least 2 hours; as provided for additions in 13-1.1.4.

13-1.2.4 All means of egress from health care occupancies that traverse non-health care spaces shall conform to requirements of this *Code* for health care occupancies.

Exception: It is permissible to exit through a horizontal exit into other contiguous occupancies which do not conform with health care egress provisions but which do comply with requirements set forth in the appropriate occupancy chapter of this Code, as long as the occupancy does not have high hazard contents. The horizontal exit must comply with the requirements of 13-2.2.5.

13-1.2.5* Auditoriums, chapels, staff residential areas or other occupancies provided in connection with health care facilities shall have exits provided in accordance with other applicable sections of the *Code*.

13-1.2.6 Any area with a hazard of contents classified higher than that of the health care occupancy and located in the same building shall be protected as required in 13-3.2.

13-1.2.7 Non-health care related occupancies classified as containing high hazard contents shall not be permitted in buildings housing health care occupancies.

13-1.3 Special Definitions.

(a) **Hospital.** A building or part thereof used for the medical, psychiatric, obstetrical or surgical care, on a 24-hour basis, of four or more inpatients. Hospital, wherever used in this *Code*, shall include general hospitals, mental hospitals, tuberculosis hospitals, children's hospitals, and any such facilities providing inpatient care.

(b) **Nursing Home.** A building or part thereof used for the lodging, boarding and nursing care, on a 24-hour basis, of four or more persons who, because of mental or physical incapacity, may be unable to provide for their own needs and safety without the assistance of another person. Nursing home, wherever used in this *Code*, shall include nursing and convalescent homes, skilled nursing facilities, intermediate care facilities, and infirmaries in homes for the aged.

(c) **Residential-Custodial Care Facility.** A building, or part thereof, used for the lodging or boarding of four or more persons who are incapable of self-preservation because of age or physical or mental limitation. The following types of facilities, when accommodating persons of the above description, shall be classified as residential-custodial care facilities:

1. Nursery facilities that provide full-time care for children under 6 years of age.

2. Mentally retarded care facilities, including specialized intermediate care facilities for the mentally retarded.

3. Facilities in a home for the aging, that contain a group housing arrangement for older persons, that provide at least two meals per day and such social and personal care services needed by their residents, but that do not provide intermediate or skilled nursing care.

4. Facilities for social rehabilitation, such as those used for the treatment of alcoholism, drug abuse, or mental health problems, that contain a group housing arrangement, and that provide at least two meals per day and personal care services for their residents, but do not provide intermediate or skilled nursing care.

Facilities housing older persons, or mental patients, including the mentally retarded, who are judged to be capable of self-preservation with minimal staff assistance in an emergency, are covered by other chapters of the *Code*. (*See 13-1.1.1.6 and 13-1.1.1.9.*)

Children's facilities that do not provide lodging or boarding for their occupants are classified as Child Day-Care Centers, Group Day-Care Centers, or Family Child Day-Care Homes.

(d)* **Supervisory Care Facility.** A building or part thereof used for the lodging or boarding of four or more mental health patients who are capable of self-preservation and who require supervison and who are receiving therapy, training or other health related care and who may have imposed upon them security measures not under their control.

(e) **Ambulatory Health Care Centers.** A building or part thereof used to provide services or treatment to four or more patients at the same time and meeting either (1) or (2) below.

1. Those facilities which provide, on an outpatient basis, treatment for patients which would render them incapable of taking action for self-preservation under emergency conditions without assistance from others, such as hemodialysis units or freestanding emergency medical units.

2. Those facilities which provide, on an outpatient basis, surgical treatment requiring general anesthesia.

13-1.4 Classification of Occupancy. See Definitions 13-1.3.

13-1.5 Classification of Hazard of Contents. The classification of hazard of contents shall be as defined in Section 4-2.

13-1.6* Minimum Construction Requirements.

13-1.6.1 For the purpose of 13-1.6, stories shall be counted starting at the primary level of exit discharge and ending at the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor which is level with or above finished grade of the exterior wall line for 50 percent or more of its perimeter. Building levels below the primary level shall not be counted as a story in determining the height of a building.

13-1.6.2 Health care buildings of one story in height only may be of any type of construction. (*See 13-3.5 for automatic extinguishment requirements.*)

13-1.6.3 Health care buildings up to and including two stories in height may be constructed of Type I (443), I (332) or II (222) construction, Type II (111) construction, Type III (211) construction, Type V (111) construction, Type IV (2HH) construction, or Type II (000) construction. (*See 13-3.5 for automatic extinguishment requirements.*)

Exception: Any building of Type I or Type II (222 or 111) construction may include roofing systems involving combustible supports, decking, or roofing provided: (1) the roof covering meets Class C requirements in accordance with Fire Tests for Roof Coverings, NFPA 256 (see Appendix B) and (2) the roof is separated from all occupied portions of the building by a noncombustible floor assembly which includes at least 2½ in. (6.35 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved automatic sprinkler system.

13-1.6.4 Health care buildings three stories or more in height shall be of Type I (443), I (332) or II (222) construction.

Exception No. 1: Health care buildings up to and including three stories in height may be of Type II (111) construction if protected throughout by an approved automatic sprinkler system.

Exception No. 2: Any building of Type I or Type II (222 or 111) construction may include roofing systems involving combustible supports, decking, or roofing provided: (1) the roof covering meets Class C requirements in accordance with Fire Tests for Roof Coverings, NFPA 256 (see Appendix B) and (2) the roof is separated from all occupied portions of the building by a noncombustible floor assembly which includes at least 2½ in. (6.35 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved automatic sprinkler system.

13-1.6.5 All interior walls and partitions in buildings of Type I or Type II construction shall be of noncombustible or limited-combustible materials.

Exception: Listed fire retardant treated wood studs may be used within non-load bearing 1-hour fire-rated partitions.

13-1.6.6* Openings for the passage of pipes or conduit in walls or partitions that are required to have fire or smoke resisting capability shall be protected in accordance with 6-2.2.8 or 6-3.6.

13-1.6.7 Firestopping. Each exterior wall of frame construction and interior stud partitions shall be firestopped so as to cut off all concealed draft openings, both horizontal and vertical, between any cellar or basement and the first floor. Such firestopping shall consist of wood at least 2 in. (5.1 cm) (nominal) thick, or of suitable noncombustible material.

13-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.15 sq m) gross floor area in health care sleeping departments and not less than one person for each 240 sq ft (22.3 sq m) of gross floor area of inpatient health care treatment departments. Gross floor areas shall be measured within the exterior building walls with no deductions. (*See Chapter 3.*)

SECTION 13-2 MEANS OF EGRESS REQUIREMENTS

13-2.1 General. Every aisle, passageway, corridor, exit discharge, exit location and access shall be in accordance with Chapter 5.

Exception No. 1: As odified in the following paragraphs.

Exception No. 2: The requirements of Chapter 5 specifying net clear door width do not apply. Projections into the door opening by stops or by hinge stiles shall be permitted.

13-2.2 Types of Exits. Exits shall be restricted to the permissible types described in 13-2.2.1 through 13-2.2.7.

13-2.2.1 Doors Leading Directly Outside the Building. (*See 5-2.1.*)

13-2.2.2 Class A or B Interior Stairs. (*See 5-2.2.*)

Exception: Any existing interior stair not complying with 5-2.2 may be continued in use subject to the approval of the authority having jurisdiction.

13-2.2.3 Smokeproof Towers. (*See 5-2.3.*)

13-2.2.4 Outside Stairs. (*See 5-2.5.*)

13-2.2.5 Horizontal Exits. A horizontal exit shall be in conformance with 5-2.4, modified as below:

(a) At least 30 net sq ft (2.79 sq m) per patient in a hospital or nursing home or 15 net sq ft (1.39 sq m) per resident in a residential-custodial care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low hazard areas on each side of the horizontal exit. On stories not housing bed or litter

patients, or in supervisory care facilities, at least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the horizontal exit for the total number of occupants in adjoining compartments.

(b)* A door in a horizontal exit is not required to swing with exit travel as specified in 5-2.4.2.3.

(c) The total exit capacity of the other exits (stairs, ramps, doors leading outside the building) shall not be reduced below one-third that required for the entire area of the building.

13.2.2.6 Class A or B Ramps. (*See 5-2.6.*) Ramp width shall be as specified in 13-2.5.2.

13-2.2.7 Exit Passageways. (*See 5-2.7.*)

13-2.3 Capacity of Means of Egress. (*See also 13-2.5.2.*)

13-2.3.1 The capacity of any required means of egress shall be based on its width as defined in Section 5-3.

13-2.3.2 The capacity of means of egress providing travel by means of stairs shall be 22 persons per exit unit; and the capacity of means of egress providing horizontal travel (without stairs); such as doors, ramps, or horizontal exits, shall be 30 persons per exit unit.

Exception: The capacity of means of egress in health care occupancies protected throughout by an approved automatic sprinkler system may be increased to 35 persons per exit unit for travel by means of stairs, and to 45 persons per exit unit for horizontal travel without stairs.

13-2.4 Number of Exits.

13-2.4.1 At least two exits of the types described in 13-2.2.1 through 13-2.2.7, located remotely from each other, shall be provided for each floor or fire section of the building.

13-2.4.2 At least one exit from each floor, fire section or smoke compartment shall be a door leading directly outside the building, interior stair, outside stair, smokeproof tower, ramp or exit passageway. Any fire section, floor or smoke compartment not meeting these requirements shall be considered as part of an adjoining zone. Egress shall not require return through the zone of fire origin.

13-2.5 Arrangement of Means of Egress.

13-2.5.1 Every patient sleeping room shall have an exit access door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at ground level.

Exception No. 2: One adjacent room, such as a sitting or anteroom, may intervene, if all doors along the means of egress are equipped with nonlockable hardware other than provided in 13-2.11, and if the

intervening room is not used to serve as an exit access for more than eight patient sleeping beds.

Exception No. 3: Exception No. 2 above shall apply to special nursing suites permitted in 13-2.5.4 and suites in supervisory care facilities without being limited to eight beds or basinettes.

13-2.5.2 Any required aisle, corridor, or ramp shall be not less than 48 in. (121.92 cm) in clear width when serving as means of egress from patient sleeping rooms. It shall be so arranged as to avoid any obstructions to the convenient removal of nonambulatory persons carried on stretchers or on mattresses serving as stretchers.

13-2.5.3* Any room, and any suite of rooms as permitted in 13-2.5.1, of more than 1,000 sq ft (92.9 sq m) shall have at least two exit access doors remote from each other.

13-2.5.4 Any patient sleeping room which complies with the requirements previously set forth in this section may be subdivided with non-fire-rated, noncombustible or limited-combustible partitions, provided that the arrangement allows for direct and constant visual supervision by nursing personnel. Rooms which are so subdivided shall not exceed 5,000 sq ft (464.5 sq m).

Exception: In supervisory care facilities, such spaces continuously monitored by staff do not require direct visual supervision providing the space is equipped with an electrically supervised smoke detection system.

13-2.5.5* Every corridor shall provide access to at least two approved exits in accordance with Sections 5-4 and 5-5 without passing through any intervening rooms or spaces other than corridors or lobbies.

Exception: Existing dead-end corridors may be continued in use if it is not practical and feasible to alter them so that exits will be accessible in at least two different directions from all points in aisles, passageways and corridors.

13-2.6 Measurement of Travel Distance to Exits.

13-2.6.1 Travel distance shall be measured in accordance with Section 5-6.

13-2.6.2 Travel distance:

(a) Between any room door required as exit access and an exit shall not exceed 100 ft (30.48 m);

(b) Between any point in a room and an exit shall not exceed 150 ft (45.72 m);

(c) Between any point in a health care sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system.

13-2.7 Discharge from Exits. (*See Section 5-7.*)

13-2.7.1 The exit discharge shall be arranged and marked to make clear the direction of egress. Required exit stairs that continue beyond the level of discharge shall be interrupted at the level of discharge by partitions, doors, physical barriers, or other effective means.

13-2.7.2 A maximum of 50 percent of the exits may discharge through areas on the floor of exit discharge in accordance with 5-7.2.

13-2.8 Illumination of Means of Egress.

13-2.8.1 Each facility as indicated within 13-1.1.1.2 shall be provided with illumination of means of egress in accordance with Section 5-8.

13-2.9 Emergency Lighting.

13-2.9.1 Each facility as indicated within 13-1.1.1.2 shall be provided with emergency lighting in accordance with Section 5-9.

Exception: Emergency lighting of at least 1-hour duration shall be provided.

13-2.10 Marking of Means of Egress.

13-2.10.1 Each facility as indicated within 13-1.1.1.2 shall be provided with exit marking in accordance with Section 5-10.

Exception: Where the line of exit travel is obvious signs may be omitted in one story buildings with an occupancy of less than 30 persons.

13-2.11 Special Features.

13-2.11.1 Locks shall not be permitted on patient sleeping room doors.

Exception No. 1: Key locking devices which restrict access to the room from the corridor may be permitted. Such devices shall not restrict egress from the room.

Exception No. 2: Doors in homes for the aged may be lockable by the occupant, if they can be unlocked from the opposite side and keys are carried by attendants at all times. (See also 5-2.1.2.1.1 and 5-2.1.2.1.2.)

Exception No. 3: Special door locking arrangements are permitted in mental health facilities. (See 13-1.1.1.7 and 13-2.11.4.)

13-2.11.2 Doors leading directly to the outside of the building may be subject to locking from the room side.

13-2.11.3 Doors within the means of egress shall not be equipped with a latch or lock which requires the use of a key from the inside of the building. (*See 5-2.1.2.*)

Exception No. 1: Door locking arrangements are permitted in mental health facilities. (See 13-1.1.1.7.)

Exception No. 2: Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted on exterior doors.

13-2.11.4* The minimum width for evacuation purposes only for exit access door leaves from hospital, nursing home and residential custodial sleeping rooms, diagnostic and treatment areas, such as X-ray, surgery, or physical therapy; all door leaves between the spaces and the required exits; and all exit door leaves serving these spaces shall be at least 34 in. (86.36 cm) wide.

13-2.11.5 Any door in an exit passageway, stair enclosure, horizontal exit, a required enclosure of a hazardous area, or a smoke barrier may be held open only by an automatic release device which complies with 5-2.1.2.3. The following systems shall be arranged so as to initiate the closing action of all such doors by zone or throughout the entire facility:

(a) The manual alarm system required in 13-3.4 and either (b) or (c) below.

(b) A local device designed to detect smoke on either side of the opening, or

(c) A complete automatic fire extinguishing or complete automatic fire detection system.

13-2.11.6 Where doors in a stair enclosure are held open by an automatic device as permitted in 13-2.11.5, initiation of a door closing action on any level shall cause all doors at all levels in the stair enclosure to close.

SECTION 13-3 PROTECTION

13-3.1 Protection of Vertical Openings.

13-3.1.1* Any stairway, ramp, elevator hoistway, light or ventilation shaft, chute, and other vertical opening between stories shall be enclosed in accordance with Section 6-2.2 with construction having a 1-hour fire resistance rating.

Exception No. 1: Where a full enclosure of a stairway that is not a required exit is impracticable, the required enclosure may be limited to that necessary to prevent a fire originating in any story from spreading to any other story.

Exception No. 2: Stairs that do not connect to a corridor, do not connect more than two levels, and do not serve as a means of egress need not comply with these regulations.

Exception No. 3: Floor and ceiling openings for pipes or conduits when the opening around the pipes or conduits is sealed in an approved manner. (See 6-2.2.8.)

13-3.1.2 A door in a stair enclosure shall be self-closing, shall normally be kept in a closed position and shall be marked in accordance with 5-10.4.2.

Exception: Doors in stair enclosures may be held open under the conditions specified by 13-2.11.5.

13-3.2 Protection from Hazards.

13-3.2.1 Any hazardous areas shall be safeguarded by a fire barrier of 1-hour fire resistance rating or provided with an automatic extinguishing system in accordance with 6-4.1. Hazardous areas include, but are not restricted to, the following:

Boiler and heater rooms
Laundries
Kitchens
Repair shops
Handicraft shops
Employee locker rooms
Soiled linen rooms
Paint shops
Trash collection rooms
Gift shops
Rooms or spaces, including repair shops, used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction
Laboratories employing quantities of flammable or combustible materials less than that which would be considered severe.

13-3.2.2* Laboratories employing quantities of flammable, combustible, or hazardous materials which are considered as severe hazard shall be protected in accordance with *Laboratories in Health-Related Institutions*, NFPA 56C (*see Appendix B*).

13-3.2.3 Cooking facilities shall be protected in accordance with 7-2.3.

13-3.3* Interior Finish.

13-3.3.1 Interior finish on walls and ceilings throughout shall be Class A or Class B, in accordance with Section 6-5.

Exception: In buildings equipped with a complete approved automatic sprinkler system, Class C interior finish may be continued in use on all walls and ceilings within rooms separated in accordance with 13-3.6 from the exit access corridors.

13-3.3.2 Newly installed interior floor finish in corridors and exits shall be Class I in accordance with Section 6-5. No restrictions shall apply to existing interior floor finish.

13-3.4 Detection, Alarm, and Communication Systems.

13-3.4.1 Other than as noted below, required fire detection and signalling devices or systems shall be in accordance with Section 7-6.

13-3.4.2 Every building shall have a manually operated fire alarm system, in accordance with Section 7-6.

13-3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish the following:

(a) General alarm indication

(b) Control functions required to be performed by that device.

Zoned, coded systems shall be permitted.

13-3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the health care facility is located, by the most direct and reliable method approved by local regulations.

13-3.4.5 Internal audible alarm devices shall be provided and shall be installed in accordance with Section 7-6.

Exception: Where visual alarm devices have been installed in patient sleeping areas, they may be accepted by the authority having jurisdiction.

13-3.4.6 An approved automatic smoke detection system shall be installed in all corridors of supervisory care facilities. Such systems shall be installed in accordance with Section 7-6 and with the applicable standards listed in Appendix B, but in no case shall smoke detectors be spaced further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall. All automatic smoke detection systems required by this section shall be electrically interconnected to the fire alarm system.

Exception: Where each patient sleeping room is protected by such an approved detection system and a local detector is provided at the smoke barrier and horizontal exits, such corridor systems will not be required on the patient sleeping room floors.

13-3.4.7 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

13-3.5 Extinguishment Requirements.

13-3.5.1* All health care facilities shall be protected throughout by an approved automatic sprinkler system. (*See 13-1.6 for construction types permitted.*)

Exception: Buildings of Type I (443), I (332) or II (222) construction of any height or Type II (111) construction not over 1 story in height.

13-3.5.2 Where exceptions are stated in the provisions of the *Code* for health care occupancies protected throughout by an approved automatic sprinkler system, and where such systems are required, the systems shall be in complete accordance with Section 7-7 for systems in light hazard occupancies and shall be electrically interconnected with the fire alarm system.

13-3.5.3 The main sprinkler control valve(s) shall be electrically supervised so that at least a local alarm will sound at a constantly attended location when the valve is closed.

13-3.5.4 Sprinkler piping serving not more than six sprinklers for any isolated hazardous area may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shut-off valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water

supply. New installations in existing buildings where more than two sprinklers are installed in a single area, waterflow detection shall be provided to sound the building fire alarm system in the event of sprinkler operation. (*For sprinkler requirements for hazardous areas, see 13-3.2 and for sprinkler requirements for chutes, see 13-5.4.*)

13-3.5.5 Portable fire extinguishers shall be provided in all health care occupancies in accordance with 7-7.4.1.

13-3.6 Construction of Corridor Walls.

13-3.6.1* Corridors shall be separated from all other areas by partitions. Such partitions shall be continuous from the floor slab to the underside of the roof or floor slab above, through any concealed spaces such as those above the suspended ceilings, and through interstitial structural and mechanical spaces, and shall have a fire resistance rating of at least 20 minutes.

Exception No. 1: In health care occupancies protected throughout by an approved automatic sprinkler system, a corridor may be separated from all other areas by non-fire-rated partitions, and where suspended ceilings are provided, the partitions may be terminated at the suspended ceiling.

Exception No. 2: Corridor partitions may terminate at ceilings which are not an integral part of a floor construction if there exists 5 ft (152.4 cm) or more of space between the top of the ceiling subsystem and the bottom of the floor or roof above, provided:

(a) The ceiling shall have been tested as a part of a fire-rated assembly in accordance with Standard Methods of Fire Tests of Building Construction and Materials, NFPA 251 (see Appendix B), for a test period of 1 hour or more, and

(b) Corridor partitions form smoketight joints with the ceilings (joint filler, if used, shall be noncombustible), and

(c) Each compartment of interstitial space which constitutes a separate smoke area is vented, in case of smoke emergency, to the outside by mechanical means having sufficient capacity to provide at least two air changes per hour, but in no case having a capacity less than 5,000 cfm (2.36 cu m/s), and

(d) The interstitial space shall not be used for storage, and

(e) The space shall not be used as a plenum for supply, exhaust or return air except as noted in (c).

Exception No. 3: Waiting areas may be open to the corridor, provided:

(a) Each area does not exceed 600 sq ft (55.74 sq m), and

(b) The area is located to permit direct supervision by the facility staff, and

(c) The area is arranged not to obstruct any access to required exits, and

(d) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4.

Exception No. 4: Spaces other than patient sleeping rooms, treatment rooms and hazardous areas may be open to the corridor and may be unlimited in area provided:

(a) Each space is located to permit direct supervision by the facility staff, and

(b) The space and corridors which the space opens onto in the same smoke compartment are protected by an electrically supervised automatic smoke detection system installed in accordance with 13-3.4, and

(c) Each space is protected by automatic sprinklers or the furnishings and furniture in combination with all other combustibles within the area are of such a minimum quantity and are so arranged that a fully developed fire is unlikely to occur, and

(d) The space is arranged not to obstruct access to required exits.

Exception No. 5: Space for doctors' and nurses' charting, communications, and related clerical areas may be open to the corridor.

Exception No. 6: Corridor partitions may terminate at monolithic ceilings which are designed and constructed to resist the passage of smoke and there is a smoketight joint between the top of the partition and the bottom of the ceiling.

Exception No. 7: In a supervisory care facility, group meeting or multipurpose therapeutic spaces, other than hazardous areas, under continuous supervision by facility staff may be open to the corridor provided:

(a) Each area does not exceed 1,500 sq ft (139.35 sq m), and

(b) The area is located to permit direct supervision by the facility staff, and

(c) The area is arranged not to obstruct any access to required exits, and

(d) The area is equipped with an electrically supervised, automatic smoke detection system installed in accordance with 13-3.4, and

(e) Not more than one such space is permitted per smoke compartment.

13-3.6.2 Fixed wired glass vision panels shall be permitted in corridor walls provided they do not exceed 1,296 sq in. (.84 sq m) in area and are mounted in steel or other approved metal frames.

Exception: There shall be no restrictions in area and fire resistance of glass and frames in buildings protected throughout by an approved automatic sprinkler system.

13-3.6.3 Doors protecting corridor openings, in other than required enclosures of exits or hazardous areas, shall be substantial doors, such as

1¾-in. (4.45-cm) solid bonded core wood or of construction that will resist fire for at least 20 minutes. Doors shall be provided with latches suitable for keeping the door tightly closed and acceptable to the authority having jurisdiction. Fixed view panels of wired glass in approved steel frames, or other approved construction shown acceptable by fire test, limited to 1,296 sq in. (.84 sq m) in area, may be installed in these doors.

Exception No. 1: In buildings protected throughout by an approved automatic sprinkler system, the door construction requirements noted above are not required but the doors shall be constructed to resist the passage of smoke. Doors shall be provided with latches of a type suitable for keeping the door tightly closed and acceptable to the authority having jurisdiction.

Exception No. 2: In buildings protected throughout by an approved automatic sprinkler system, there is no restriction on the area of the vision panels in such doors, and the vision panels do not need to be wired glass, and there is no restriction in the type of frames.

Exception No. 3: Door-closing devices are not required on doors in corridor wall openings other than those serving exits or required enclosure of hazardous areas.

Exception No. 4: Doors to toilet rooms, bathrooms, shower rooms, sink closets and similar auxiliary spaces which do not contain flammable or combustible materials are exempt from these requirements.

13-3.6.4* Transfer grills, whether or not protected by fusible link-operated dampers, shall not be used in these walls or doors.

Exception: Doors to toilet rooms, bathrooms, shower rooms, sink closets and similar auxiliary spaces which do not contain flammable or combustible materials may have ventilating louvers or may be undercut.

13-3.7 Subdivision of Building Spaces.

13-3.7.1 Smoke barriers shall be provided, regardless of building construction, as follows:

(a) To divide every story, used for sleeping rooms for more than 30 health care occupants, into at least two compartments, and

(b) To limit on any story the maximum area of each smoke compartment to no more than 22,500 sq ft (2090 sq m), of which both length and width shall be no more than 150 ft (45.72 m).

Exception: Protection may be accomplished in conjunction with the provision of horizontal exits.

13-3.7.2 Smoke barriers shall be provided on stories which are usable but unoccupied.

13-3.7.3 Any required smoke barrier shall be constructed in accordance with Section 6-3 and shall have a fire resistance rating of at least ½ hour.

13-3.7.4 At least 30 net sq ft (2.79 sq m) per patient in a hospital or nursing home or 15 net sq ft (1.39 sq m) per resident in a residential-custodial care facility shall be provided within the aggregate area of corridors, patient rooms, treatment rooms, lounge or dining areas and other low hazard areas on each side of the smoke barrier. On stories not housing bed or litter patients or in supervisory care facilities at least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

13-3.7.5 Openings in smoke barriers shall be protected by wired glass panels in steel frames, by doors of 20-minute fire protection rating, or by 1¾-in. (4.45-cm) solid bonded wood core doors as a minimum.

Exception: Doors may have wired glass vision panels installed in approved metal frames not exceeding 1,296 sq in. (.84 sq m).

13-3.7.6 Doors in smoke barriers shall comply with Section 6-3 and shall be self-closing. Such doors in smoke barriers shall not be required to swing with exit travel.

Exception: Doors may be held open only if they meet the requirements of 13-2.11.5.

13-3.7.7 An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 13-3.7.1. The damper shall close upon detection of smoke by an approved smoke detector, located within the duct. (*See also Section 6-3.*)

Exception No. 1: In lieu of an approved smoke detector located within the duct, ducts which penetrate smoke barriers above smoke barrier doors (required by 13-3.7.5) may have the approved damper arranged to close upon detection of smoke by the local device designed to detect smoke on either side of the smoke barrier door opening.

Exception No. 2: Dampers may be omitted in buildings equipped with an approved engineered smoke control system. The smoke control system shall respond automatically, preventing the transfer of smoke across the smoke barrier and shall be designed in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B).

Exception No. 3: Dampers may be omitted where openings in ducts are limited to a single smoke compartment and the ducts are of steel construction.

13-3.8 Special Features.

13-3.8.1 Every patient sleeping room shall have an outside window or outside door with light. The maximum allowable sill height shall not exceed 36 in. (91.44 cm) above the floor.

Exception No. 1: The window sill in special nursing care areas such as those housing ICU, CCU, hemodialysis, and neo-natal patients may be 60 in. (152.4 cm) above the floor.

Exception No. 2: Rooms intended for occupancy of less than 24 hours, such as those housing obstetrical labor beds, recovery beds, and observation beds in the emergency department; and newborn nurseries, need not comply with this requirement.

SECTION 13-4 SPECIAL PROVISIONS

13-4.1 Windowless Buildings. See Section 30-7 for requirements for windowless buildings.

SECTION 13-5 BUILDING SERVICES

13-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

13-5.2 Heating, Ventilating and Air Conditioning.

13-5.2.1 Heating, ventilating and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 13-5.2.2 following.

13-5.2.2* Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from the outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception No. 1: Approved suspended unit heaters may be used in locations other than means of egress and patient sleeping areas, provided such heaters are located high enough to be out of the reach of persons using the area and provided they are equipped with the safety features called for above.

Exception No. 2: Fireplaces may be installed and used only in areas other than patient sleeping areas, provided that these areas are separated from patient sleeping spaces by construction having a 1-hour fire resistance rating and they comply with Standard for Chimneys, Fireplaces and Vents, NFPA 211 (see Appendix B). In addition thereto, the fireplace shall be equipped with a heat tempered glass, or other approved material, fireplace enclosure guaranteed against breakage up to a temperature of 650°F (343.33°C). If, in the opinion of the authority having jurisdiction, special hazards are present, a lock on the enclosure and other safety precautions may be required.

Exception No. 3: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas when the heating elements of such a device are limited to not more than 212°F (100°C).

13-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

13-5.4 Rubbish Chutes, Incinerators and Laundry Chutes.

13-5.4.1 Any existing linen and trash chute, including pneumatic rubbish and linen systems, which opens directly onto any corridor shall be sealed by fire-resistive construction to prevent further use or shall be provided with a fire door assembly suitable for a Class B location and having a fire protection rating of 1½ hours. All new chutes shall comply with Section 7-5.

13-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B and Section 7-5*).

13-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

13-5.4.4 Existing flue-fed incinerators shall be sealed by fire-resistive construction to prevent further use.

SECTION 13-6 EXISTING AMBULATORY HEALTH CARE CENTERS

13-6.1 General Requirements.

13-6.1.1 Application.

13-6.1.1.1 Existing ambulatory health care centers shall comply with the provisions of both Chapter 27 and (this) Section 13-6, as may be more stringent.

13-6.1.1.2 This section establishes life safety requirements, in addition to those required in Chapter 27, for the design of all ambulatory health care centers and outpatient surgical centers which meet the requirements of 13-1.3(e).

13-6.1.1.3 Modification of Retroactive Provisions.

13-6.1.1.3.1 The requirements of this section may be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and if the resulting arrangement could be considered as presenting minimum hazard to the life safety of the occupants. The requirements may be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life

from fire as practical; but in no case shall the modification afford less safety than compliance with the corresponding provisions contained in the following part of this *Code*.

13-6.1.1.3.2* A limited but reasonable time shall be allowed for compliance with any part of this section, commensurate with the magnitude of expenditure and the disruption of services.

13-6.1.1.3.3 Alternative protection installed and accepted shall be considered as conforming for the purposes of this *Code*.

13-6.1.2 Reserved.

13-6.1.3 Special Definitions. (*See 13-1.3.*)

13-6.1.4 Classification of Occupancy. (*See 13-1.3.*)

13-6.1.5 Reserved.

13-6.1.6 Minimum Construction Requirements.

13-6.1.6.1 For purposes of 13-6.1.6, stories shall be counted starting at the primary level of exit discharge and ending at the highest occupiable level. For the purposes of this section, the primary level of exit discharge of a building shall be that floor which is level with or above finished grade of this exterior wall line for 50 percent or more of its perimeter.

13-6.1.6.2 Buildings of one story in height housing ambulatory health care centers may be of Type I, II, III, IV or V construction.

13-6.1.6.3 Buildings of two or more stories in height housing ambulatory health care centers may be of Type I (443), I (332), or II (222), Type II (111), Type III (211), Type IV (2HH) or Type V (111) construction.

Exception: Such buildings may be constructed of Type II (000), III (200) or V (000) if equipped throughout with an approved automatic extinguishing system.

13-6.1.6.4 Any level below the level of exit discharge shall be separated from the level of exit discharge by at least Type II (111), Type III (211) or Type V (111) construction.

Exception: Such separation is not required for such levels if they are under the control of the ambulatory health care center and any hazardous spaces are protected in accordance with Section 6-4.

13-6.1.6.5 In existing buildings, the authority having jurisdiction may accept construction systems of lesser fire resistance than required above if it can be demonstrated to his satisfaction that in cases of fire, prompt evacuation of the center can be made or that the exposing occupancies and materials of construction present no threat of fire penetration from such occupancy into the ambulatory health care center or collapse of the structure.

13-6.1.7 Occupant Load.

13-6.2 Means of Egress Requirements.

13-6.2.1 General. Every aisle, passageway, corridor, exit discharge, exit location and access shall be in accordance with Chapter 5.

Exception No. 1: As modified in the following paragraphs.

Exception No. 2: The requirements of Chapter 5 specifying net clear door width do not apply. Projections into the door opening by stops or by hinge stiles shall be permitted.

13-6.2.2 Types of Exits. Exits shall be restricted to the permissible types described in 27-2.2.

13-6.2.3 Capacity of Means of Egress.

13-6.2.3.1* The minimum width of any corridor or passageway required for exit access shall be 44 in. (111.76 cm) clear.

13-6.2.3.2 The capacity of any required means of egress shall be determined in accordance with the provisions of 27-2.3 and shall be based on its width as defined in Section 5-3.

13-6.2.4 Number of Exits.

13-6.2.4.1 At least two exits of the types described in 27-2.2 (Business Occupancy) located remote from each other shall be provided for each floor or fire section of the building.

13-6.2.4.2 Any room and any suite of rooms of more than 1,000 sq ft (92.9 sq m) shall have at least two exit access doors located remote from each other.

13-6.2.5 Arrangement of Means of Egress. (*See 27-2.5.*)

13-6.2.6 Measurement of Travel Distance to Exits.

13-6.2.6.1 Travel distance shall be measured in accordance with Section 5-6.

13-6.2.6.2 Travel distance:

(a) Between any room door required as exit access and an exit shall not exceed 100 ft (30.48 m); and

(b) Between any point in a room and an exit shall not exceed 150 ft (45.72 m).

Exception: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system.

13-6.2.7 Discharge from Exits. (*See 27-2.7.*)

13-6.2.8 Illumination of Means of Egress. Each ambulatory health care center shall be provided with illumination of means of egress in accordance with Section 5-8.

13-6.2.9 Emergency Lighting and Essential Electrical Systems.

13-6.2.9.1 Each ambulatory health care center shall be provided with emergency lighting in accordance with Section 5-9.

13-6.2.9.2 Where general anesthesia or life support equipment is used, each ambulatory health care center shall be provided with an essential electrical system in accordance with *Essential Electrical System for Health Care Facilities*, NFPA 76A (*see Appendix B*).

Exception: Where battery operated equipment is provided, a generator is not required for emergency power.

13-6.2.10 Marking of Means of Egress. Signs designated exits and ways of travel thereto shall be provided in accordance with Section 5-10.

13-6.2.11 Special Features.

13-6.2.11.1 Locks installed on patient treatment, diagnostic, or recovery room doors shall be so arranged that they can be locked only from the corridor side. All such locks shall be arranged to permit exit from the room by a simple operation without the use of a key.

13-6.2.11.2 Doors leading directly to the outside of the buildings may be subject to locking from the room side.

13-6.2.11.3 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted on exterior doors.

13-6.2.11.4* Exit access door leaves from diagnostic or treatment areas, such as X-ray, surgical or physical therapy; all door leaves between these spaces and the required exits; and all exit door leaves serving these spaces shall be at least 34 in. (86.36 cm) wide.

13-6.2.11.5 Any door in an exit passageway, stair enclosure, horizontal exit, a required enclosure of a hazardous area, or a smoke partition may be held open only by an automatic device which complies with 5-2.1.2.3. The device shall be so arranged that the operation of the following will initiate the self-closing action:

(a) The manual alarm system required in 13-6.3.4 and either (b) or (c) below.

(b) A local device designed to detect smoke on either side of the opening, or

(c) A complete automatic fire extinguishing or complete automatic fire detection system.

13-6.2.11.6 Where doors in a stair enclosure are held open by an automatic device as permitted in 13-6.2.11.5, initiation of a door closing action on any level shall cause all doors at all levels in the stair enclosure to close.

13-6.3 Protection.

13-6.3.1 Protection of Vertical Openings. (*See 27-3.1.*)

13-6.3.2 Protection from Hazards. (*See 27-3.2.*)

13-6.3.2.1 Laboratories employing quantities of flammable, combustible, or hazardous materials which are considered as severe hazard shall be protected in accordance with *Laboratories in Health Related Institutions*, NFPA 56C. (*See Appendix B.*)

13-6.3.2.2 Anesthetizing locations shall be protected in accordance with *Inhalation Anesthetics in Ambulatory Care Facilities*, NFPA 56G (*see Appendix B*).

13-6.3.3 Interior Finish. (*See 27-3.3.*)

13-6.3.4 Detection, Alarm and Communication Systems.

13-6.3.4.1 Other than as noted below, required fire detection and signaling devices or systems shall be in accordance with Section 7-6.

13-6.3.4.2 Every building shall have a manually operated fire alarm system, in accordance with Section 7-6. Pre-signal systems are not allowed within an ambulatory surgical care center.

13-6.3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish general alarm indication and control functions. Zoned, coded systems shall be permitted.

13-6.3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the health care facility is located, by the most direct and reliable method approved by local regulations.

13-6.3.4.5 Internal audible alarm devices shall be provided and shall be installed in accordance with Section 7-6.

13-6.3.4.6 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

13-6.3.5 Extinguishment Requirements. (*See 27-3.5.*)

13-6.3.5.1 The sprinkler piping, serving no more than six sprinklers for any isolated hazardous area, may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq foot (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shutoff valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply. Where more than two sprinklers are installed in a single area, waterflow detection shall be provided to sound the building fire alarm system in the event of sprinkler operation. (*For sprinkler requirements for hazardous areas, see 13-6.3.2.*)

13-6.3.5.2 Portable fire extinguishers shall be provided in ambulatory health care occupancies in accordance with 7-7.4.1.

13-6.3.6 Corridors.

13-6.3.7 Subdivision of Building Space.

13-6.3.7.1 Ambulatory health care occupancies shall be separated from other tenants and occupancies by walls having at least a 1-hour fire-resistive construction. Such walls shall extend from the floor slab below to the floor or roof slab above. Doors shall be at least 1¾-in. (4.45-cm) solid bonded wood core or the equivalent and equipped with positive latches. These doors shall be self-closing and normally kept in the closed position except when in use. Any vision panels shall be of fixed wired glass set in approved metal frames and limited in size to 1,296 sq in. (.84 sq m).

13-6.3.7.2 The ambulatory health care facility shall be divided into at least two smoke compartments.

Exception: Facilities less than 2,000 sq ft (185.8 sq m) and protected by an approved automatic smoke detection system need not be divided.

13-6.3.7.3 Walls separating the smoke compartments shall be of at least a 1-hour construction, and shall extend from the floor slab below to the floor or roof slab above.

13-6.3.7.4 Vision panels in the smoke barrier shall be of fixed wired glass set in approved metal frames and shall be limited in size to 1,296 sq in. (.84 sq m).

13-6.3.7.5 Doors in smoke barriers shall be at least 1¾-in. (4.45-cm) solid bonded wood core or the equivalent and shall be self-closing. A vision panel is required.

13-6.3.7.6 Doors in smoke barriers shall normally be kept closed or, if held open, they shall be equipped with automatic devices which will release the doors upon activation of:

(a) The fire alarm system, and either

(b) A local smoke detector, or,

(c) A complete automatic fire extinguishing system or complete automatic fire detection system.

13-6.3.7.7 An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 13-6.3.7.1. The damper shall close upon detection of smoke by an approved smoke detector located within the duct. (*See Section 6-3.*)

Exception No. 1: In lieu of an approved smoke detector located within the duct, ducts which penetrate smoke barriers above smoke barrier doors (required in 13-6.3.7.5) may have the approved damper arranged to close upon detection of smoke by the local device designed to detect smoke in either side of the smoke barrier door opening.

Exception No. 2: Dampers may be omitted in buildings equipped with an approved engineered smoke control system. The smoke control system

shall respond automatically, preventing the transfer of smoke across the barrier, and shall be designed in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B).

13-6.4 Special Provisions. (*See Section 27-4.*)

13-6.5 Building Services.

13-6.5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

13-6.5.2 Heating, Ventilating and Air Conditioning.

13-6.5.2.1 Heating, ventilating and air conditioning shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception: As modified in 13-6.5.2.2 following.

13-6.5.2.2* Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly form the outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. Any heating device shall have safety features to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperature or ignition failure.

Exception No. 1: Approved suspended unit heaters may be used in locations other than means of egress and patient treatment areas, provided such heaters are located high enough to be out of the reach of persons using the area and provided they are equipped with the safety features called for above.

Exception No. 2: Portable space heating devices shall be permitted to be used in nonsleeping staff and employee areas when the heating elements of such a device are limited to not more than 212°F (100°C).

13-6.5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

13-6.5.4 Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 14 NEW DETENTION AND CORRECTIONAL OCCUPANCIES

(See also Chapter 31.)

SECTION 14-1 GENERAL

14-1.1 Application.

14-1.1.1 New detention and correctional facilities shall comply with the provisions of this chapter. They shall also comply with the applicable requirements of Chapter 31.

14-1.1.2 This chapter establishes life safety requirements for the design of all new detention and correctional facilities.

Exception: Use Condition I requirements are those stated in the applicable requirements of Chapters 16, 18, or 20.

14-1.1.3 Detention and correctional occupancies are those used for purposes such as jails, detention centers, correctional institutions, reformatories, houses of correction, pre-release centers, and other residential-restrained care facilities where occupants are confined or housed under some degree of restraint or security.

14-1.1.4 Detention and correctional occupancies provide sleeping facilities for four or more residents and are occupied by persons who are generally prevented from taking self-preservation action because of security measures not under the occupants' control.

14-1.1.5 Total Concept. All detention and correctional facilities shall be so designed, constructed, maintained and operated as to minimize the possibility of a fire emergency. Because the safety of all occupants in all detention and correctional facilities cannot be adequately assured solely by a dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate trained staff, and careful development of operating, security, and maintenance procedures composed of the following:

(a) Proper design, construction and compartmentation,

(b) Provision for detection, alarm and extinguishment,

(c) Fire prevention and planning, training, and drilling in programs for the isolation of fire and transfer of occupants to areas of refuge or evacuation of the building, or protection of the occupants in place,

(d) Provision of security to the degree necessary for the safety of the public and the occupants of the facility.

14-1.1.6 Additions. Additions shall be separated from any existing structure not conforming with the provisions within Chapter 15 by a fire barrier having at least a 2-hour fire resistance rating constructed to the standards of the addition. Doors in these partitions shall normally be kept closed.

Exception: Doors may be held open if they meet the requirements of the exception to 5-2.1.2.3.

14-1.1.7 Modernization or Renovation.

14-1.1.7.1 No construction in either modernization or renovation projects shall diminish the fire safety features of the facility below the level of new construction as described elsewhere in this *Code*. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction.

14-1.1.7.2 See 1-6.3 and Chapter 31 for life safety provisions during construction.

14-1.2* Mixed Occupancies.

14-1.2.1 Egress provisions for areas of detention and correctional facilities which correspond to other occupancies shall meet the corresponding requirements of this *Code* for such occupancies. Where security operations necessitate the locking of required means of egress, necessary staff shall be provided for the supervised release of occupants during all times of use.

14-1.2.2 Sections of detention and correctional facilities may be classified as other occupancies if they meet all of the following conditions:

(a) They are not intended to serve residents for purpose of housing, customary access or means of egress.

(b) They are adequately separated from areas of detention or correctional occupancies by construction having a fire resistance rating of at least 2 hours.

14-1.2.3 Detention and correctional occupancies in buildings housing other occupancies shall be completely separated from the other occupancies by construction having a fire resistance rating of at least 2 hours, as provided for additions in 14-1.1.6.

14-1.2.4 All means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements of this *Code* for detention and correctional occupancies.

14-1.2.5 Any area with a hazard of contents classified higher than that of the detention or correctional occupancy and located in the same building shall be protected, as required in 14-3.2.

14-1.2.6 Non-detention or non-correctional related occupancies classified as containing high hazard contents shall not be permitted in buildings housing detention or correctional occupancies.

14-1.3 Special Definitions.

(a) **Sallyport (Security Vestibule).** A compartment provided with two or more doors where the intended purpose is to prevent the continuous and unobstructed passage by allowing the release of only one door at a time.

(b) **Fire Barrier.** See Chapter 6.

(c) **Fire Compartment.** See Chapter 6.

(d) **Smoke Barrier.** See Chapter 6.

(e) **Smoke Compartment.** See Chapter 6.

14-1.4 Classification of Occupancy.

14-1.4.1* Users and occupants of detention and correctional facilities at various times can be expected to include staff, visitors, and residents. The extent and nature of facility utilization by members of each of these groups will vary according to type of facility, its function and programs. For applications of the life safety requirements which follow, the resident user category is divided into five groups:

Use Condition I — Free Egress

Free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress meeting the requirements of the *Code*.

Use Condition II — Zoned Egress

Free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments.

Use Condition III — Zoned Impeded Egress

Free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity space, with egress impeded by remote control release of means of egress from such smoke compartment to another smoke compartment.

Use Condition IV — Impeded Egress

Free movement is restricted from an occupied space. Remote controlled release is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartment(s).

Use Condition V — Contained

Free movement is restricted from an occupied space. Staff controlled manual release at each door is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartment(s).

14-1.4.2* To classify as Use Condition III or IV the arrangement, accessibility and security of the release mechanism(s) used for emergency egress shall be such that the minimum available staff, at any time, can promptly release the locks.

14-1.4.3 Areas housing occupancies corresponding to Use Condition I — Free Egress shall conform to the requirements of residential occupancies under this *Code*.

14-1.5 The classification of hazard of contents shall be as defined in Section 4-2.

14-1.6 Minimum Construction Requirements.

14-1.6.1 For the purpose of 14-1.6, stories shall be counted starting at the lowest level of exit discharge.

14-1.6.2 Detention and correctional occupancies shall be limited to the following types of building construction:

Type of Construction	Below 1st story	1st story	2nd	3rd	4th & above
I (433) I (332) II (222)	X	X	X	X	X
II (111)	X†	X	X†	N.P.	N.P.
III (211) IV (2HH) V (111)	X†	X	X†	N.P.	N.P.
II (000) III (200) V (000)	A.S.	A.S.	A.S.	N.P.	N.P.

A.S.: Permitted if the entire building is protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.
X: Permitted
N.P.: Not permitted
†: A.S. required in buildings where Use Condition V is used.

14-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.15 sq m) gross floor area.

SECTION 14-2 MEANS OF EGRESS

14-2.1 General. The provisions of Chapter 5 of the *Code* apply to this chapter with the following exceptions:

Exception No. 1: 14-2.11.3.

Exception No. 2: Doors in a means of egress may be of the horizontal sliding type provided the force to slide the door to its fully open position does not exceed 50 lb (222 N) with a perpendicular force against the door of 50 lb (222 N).

Exception No. 3: Horizontal exits may be substituted for other exits provided the maximum exit travel distance specified in 14-2.6 is not exceeded. Horizontal exits may comprise 100 percent of the exits required. Every fire compartment for which credit is allowed in connection with a horizontal exit shall not be required to have a stairway or door leading directly outside, provided the adjoining fire compartments have stairways or doors leading directly outside.

Exception No. 4: Exit access from a cell or room may be through a dayroom.

Exception No. 5: Exit discharge may terminate directly at the building's exterior, or at a horizontal exit, and may discharge into a fenced or walled courtyard, provided that not more than two walls of the courtyard are the building walls from which exit is being made. Enclosed yards or courts shall be of sufficient size to accommodate all occupants, a minimum of 50 ft (15.24 m) from the building with a net area of 15 sq ft (1.39 sq m) per person.

Exception No. 6: The provisions of 5-2.2.3.4(h) and 5-2.2.3.5(c) do not apply.

14-2.2 Types of Exits.

14-2.2.1 Exits of the specified number and width shall be one or more of the following types, in accordance with the provision of Chapter 5.

(a) *Doors.* (*See 5-2.1.*)

(b) *Interior Stairs.* (*See 5-2.2.*)

(c) *Smokeproof Towers.* (*See 5-2.3.*)

(d) *Horizontal Exits.* (*See 5-2.4.*) A horizontal exit shall be in conformance with 5-2.4, modified as below:

1. At least 6 sq ft (.56 sq m) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

(e) *Outside Stairs.* (*See 5-2.5.*)

(f) *Ramps.* (*See 5-2.6.*)

(g) *Exit Passageways.* (*See 5-2.7.*)

14-2.2.2 Slide escapes shall not be used in detention or correctional occupancies.

14-2.3 Capacity of Means of Egress.

14-2.3.1 The capacity of any required means of egress shall be based on its width as defined in Section 5-3.

14-2.4 Number of Exits.

14-2.4.1* At least two exits of the types permitted in 14-2.2, located remote from each other, shall be accessible from each floor, fire compartment, or smoke compartment of the building.

14-2.4.2 At least one approved exit shall be provided from each required smoke compartment into which residents may be moved in a fire emergency. (*Also see A-14-2.4.1.*)

14-2.5 Arrangement of Means of Egress.

14-2.5.1 Every sleeping room shall have a door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at the ground level.

Exception No. 2: One adjacent room, such as a day room or group activity space, may intervene. Where individual occupant sleeping rooms adjoin a day room or group activity space which is utilized for access to an exitway, such sleeping rooms may open directly to the day space and may be separated in elevation by a one-half or full-story height (see 14-3.7).

14-2.5.2 All exits may discharge through the level of exit discharge. The requirements of 5-7.2 may be waived provided that not more than 50 percent of the exits discharge into a single fire compartment.

14-2.5.3 No exit or exit access shall contain a corridor, hallway or aisle having a pocket or dead end exceeding 50 ft (15.24 m) for Use Conditions II, III or IV and 20 ft (6.1 m) for Use Condition V.

14-2.5.4 A sallyport may be permitted in a means of egress where there are provisions for continuous and unobstructed passage through the sallyport during an emergency exit condition.

14-2.5.5 Aisles, corridors, and ramps required for access or exit shall be at least 4 ft (121.92 cm) in width.

14-2.6 Measurement of Travel Distance to Exits.

14-2.6.1 Travel distance:

(a) Between any room door required as exit access and an exit shall not exceed 100 ft (30.48 m);

(b) Between any point in a room and an exit shall not exceed 150 ft (45.72 m); and

(c) Between any point in a sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system or smoke control system.

14-2.7 Discharge from Exits. (*See 14-2.1 and 14-2.5.*)

14-2.8 Illumination of Means of Egress. Illumination shall be in accordance with Section 5-8.

14-2.9 Emergency Lighting. Emergency lighting shall be in accordance with Section 5-9.

14-2.10 Marking of Means of Egress. Exit marking shall be provided in areas accessible to the public in accordance with Section 5-10.

Exception: Exit signs may be omitted in sleeping room areas.

14-2.11 Special Features.

14-2.11.1 Doors within means of egress shall be as required in Chapter 5.

Exception: As provided in 14-2.11.2 through 14-2.11.7.

14-2.11.2* Doors to resident sleeping rooms shall be at least 28 in. (71.12 cm) in clear width.

14-2.11.3 Doors from areas of refuge to the exterior may be locked with key lock in lieu of locking methods described in 14-2.11.4. The keys to unlock such doors shall be maintained and available at the facility at all times and the locks shall be operable from the outside.

14-2.11.4* Any remote release used in a means of egress shall be provided with reliable means of operation, remote from the resident living areas, to release locks on all doors.

Exception: Provisions for remote locking and unlocking may be waived provided not more than ten doors are necessary to be unlocked in order to move all occupants from one smoke compartment to an area of refuge as promptly as required for remote unlocking. The opening of all necessary doors shall be accomplished with no more than two separate keys.

14-2.11.5 All power-operated sliding doors or power-operated locks for swinging doors shall be so constructed that in the event of power interruption or power failure a manual mechanical means operable from a remote location or by key and lock mechanism at the door shall be provided to manually release locks and move sliding doors to a full open position.

14-2.11.6 Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

14-2.11.7 Standby emergency power shall be provided for all electrically power-operated sliding doors and power-operated locks. Power shall be arranged to automatically operate upon failure of normal power within 10 seconds and to maintain the necessary power source for at least 1½ hours.

Exception: This provision is not applicable for facilities with ten locks or less complying with the exception in 14-2.11.4.

14-2.11.8 Spiral stairs meeting the requirements of 5-2.2.1.6 are permitted for access to and between staff locations.

SECTION 14-3 PROTECTION

14-3.1 Protection of Vertical Openings.

14-3.1.1 Any stairway, ramp, elevator, hoistway, light, or ventilation shaft, chute, or other vertical opening between stories shall be enclosed in accordance with Section 6-2 with construction having a 2-hour fire-resistive rating.

Exception No. 1: One-hour rated enclosures are permitted in buildings required to be of Type II (111).

Exception No. 2: Stairs that do not connect a corridor, do not connect more than two levels, and do not serve as a means of egress need not comply with these regulations.

Exception No. 3: The fire resistance rating of enclosures in detention and correctional occupancies protected throughout by an approved automatic sprinkler system may be reduced to 1 hour in buildings up to, and including, three stories in height.

14-3.1.2 Two communicating floor levels are permitted without enclosure protection between levels provided all the following conditions are met:

(a) The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed so that it may be assumed that a fire or other dangerous condition in any part will be immediately obvious to the occupants or supervisory personnel in the area.

(b) Exit capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required exit capacity.

(c) Each floor level, considered separately, has at least one-half of its individual required exit capacity accessible by exit access leading directly out of that level without transversing another communicating floor level.

14-3.2 Protection from Hazards.

14-3.2.1 An area used for general storage, boiler or furnace rooms, fuel storage, janitor's closets, maintenance shops including woodworking and painting areas, laundries and kitchens shall be separated from other parts of the building with construction having not less than a 1-hour fire resistance rating and all openings shall be protected with self-closing fire doors, or such area shall be provided with automatic sprinkler protection. Where the hazard is severe, both the fire resistance separation and automatic sprinklers shall be provided.

14-3.2.2 Padded cells are severe hazard areas.

14-3.2.3 Cooking facilities shall be protected in accordance with 7-2.3.

14-3.3 Interior Finish.

14-3.3.1 Interior finish of walls and ceilings in corridors, exits and any space not separated from corridors and exits by a partition capable of retarding the passage of smoke shall be Class A. All other areas shall be Class A, B or C in accordance with Section 6-5.

14-3.3.2 Interior floor finish in corridors and exits and any space not separated from corridors and exits by a partition capable of retarding the passage of smoke shall be Class I in accordance with Section 6-5.

14-3.4 Detection, Alarm and Communication Systems.

14-3.4.1 Required fire detection and signaling devices and systems shall be in accordance with Section 7-6.

Exception: Except as provided in this section.

14-3.4.2* Every building shall have a manually operated fire alarm system in accordance with Section 7-6, and such system shall be electrically supervised.

Exception No. 1: Manual fire alarm boxes may be locked.

Exception No. 2: Manual fire alarm boxes may be located at staff locations in lieu of being located in the sleeping room areas.

14-3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish general alarm indication and control functions. Zoned or coded systems shall be permitted to be used.

14-3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the facility is located by the most direct and reliable method approved by the local regulations.

Exception: Smoke detectors may be arranged to alarm locally and at a constantly attended location only and are not required to be connected to the fire alarm or to the fire department.

14-3.4.5 An approved automatic smoke detection system shall be installed in all sleeping areas and areas not separated from sleeping areas by fire-resistive construction in Use Condition IV and V areas and in sleeping rooms occupied by more than four people in Use Condition III. Such systems shall be installed in accordance with Section 7-6 and with the applicable standards listed in Appendix B, but in no case shall smoke detectors be spaced further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall. All automatic smoke detection systems required by this section shall be electrically interconnected to the fire alarm system.

Exception No. 1: Buildings protected by a complete automatic fire extinguishing system in accordance with 14-3.5 shall install a smoke detection system in all corridors with smoke detectors spaced no further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall.

Exception No. 2: Other arrangements and positioning of smoke detectors may be used to prevent damage or tampering or for other purposes provided the function of detecting any fire is fulfilled and the siting of detectors is such that the speed of detection will be equivalent to that provided by the spacing and arrangements described above. This may include the location of detectors in exhaust ducts from cells, behind grills, or in other locations. The equivalent performance of the design, however, must be acceptable to the authority having jurisdiction in accordance with the Equivalency Concepts specified in Section 1-5 of this Code.

14-3.4.6 An approved automatic smoke detection system shall be installed in all corridors and common spaces of Use Condition II and III detention and correctional facilities. Such systems shall be installed in accordance with Section 7-6 and with the applicable standards listed in Appendix B, but in no case shall smoke detectors be spaced further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall.

Exception: Other arrangements and positioning of smoke detectors may be used to prevent damage or tampering or for other purposes provided the function of detecting any fire is fulfilled and the siting of detectors is such that the speed of detection will be equivalent to that provided by the spacing and arrangements described above. This may include the location of detectors in exhaust ducts from cells, behind grills, or in other locations. The equivalent performance of the design, however, must be acceptable to the authority having jurisdiction in accordance with the Equivalency Concepts specified in Section 1-5 of this Code.

14-3.4.7 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

14-3.4.8 Any alarm system(s) and any detection system(s) required in this section shall be provided with a secondary power supply in accordance with 2-3.4.2 of *Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems*, NFPA 72A (*see Appendix B*).

14-3.5 Extinguishment Requirements.

14-3.5.1 When required by 14-1.6, facilities shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

14-3.5.2 Where exceptions are stated in the provisions of this *Code* (*including those specified in 14-3.8.1*) for detention and correctional occupancies equipped with an approved automatic extinguishing system, and where such systems are required, the systems shall be in complete accordance with Section 7-7 for systems in light hazard occupancies and shall be electrically interconnected with the fire alarm system.

14-3.5.3 The main sprinkler control valve(s) shall be electrically supervised so that at least a local alarm will sound at a constantly attended location when the valve is closed.

14-3.5.4 The sprinkler piping, serving no more than six sprinklers for any isolated hazardous area, may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shutoff valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply. (*For sprinkler requirements for hazardous areas see 14-3.2 and for sprinkler requirements for chutes see 14-5.4.*)

14-3.5.5* Portable fire extinguishers shall be provided in all detention and correctional occupancies in accordance with 7-7.4.1.

Exception No. 1: Access to portable fire extinguishers may be locked.

Exception No. 2: Portable fire extinguishers may be located at staff locations only.

14-3.5.6 Standpipe and hose systems shall be provided in accordance with 7-7.4.2 as follows:

(a) Class III standpipe and hose systems shall be provided for buildings over 75 ft (22.86 m) in height.

(b) Class II or III standpipe and hose systems shall be provided for any unsprinklered building over three stories in height.

Exception No. 1: One-in. (2.54-cm) diameter formed hose in lieu of hose requirements of Standard for the Installation of Standpipes and Hose Systems, NFPA 14 (see Appendix B), may be used.

Exception No. 2: Separate Class I and Class II systems may be used in place of Class III.

14-3.6 Corridors. [*See 14-3.8, Special Features (Subdivision of Resident Housing Spaces).*]

14-3.7 Subdivision of Building Spaces.

14-3.7.1 Smoke barriers shall be provided, regardless of building construction type, as follows:

(a) To divide every story used by residents for sleeping, or any other story having an occupant load of 50 or more persons, into at least two compartments, and

(b) To limit the housing of a maximum of 200 residents in any smoke compartment, and

(c) To limit the travel distance to a door in a smoke barrier:

1. From any room door required as exit access to 100 ft (30.48 m),
2. From any point in a room to 150 ft (45.72 m).

Exception No. 1: Protection may be accomplished with horizontal exits (see 5-2.4).

Exception No. 2: Spaces having direct exit to (a) a public way, (b) a building separated from the resident housing area by 2-hour fire resistance or 50 ft (15.24 m) of open space, or (c) an enclosed area having a holding space 50 ft (15.24 m) from the housing area that provided 6 sq ft (.56 sq m) or more of refuge area per person (resident, staff, visitors, etc.) that may be present at the time of the fire fulfills the requirement for subdivision of such spaces provided the locking arrangement of doors involved meets the requirements for doors at the compartment barrier for the use condition involved.

14-3.7.2* Any required smoke barrier shall be constructed in accordance with Section 6-3. Barriers shall be of substantial construction and shall have structural fire resistance. Fixed wired glass vision panels shall be permitted in such barriers provided they do not individually exceed 1,296 sq in. (.84 sq m) in area and are mounted in approved steel frames. There is no restriction on the total number of such vision panels in any barrier (e.g., a smoke barrier may consist of wire glass panels mounted in a security grill arrangement).

14-3.7.3 At least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

14-3.7.4 Doors in smoke barriers shall swing in the direction of egress. In those applications where egress may be in either direction, a pair of swinging doors shall be provided. The minimum clear width of exit in the direction of exit travel shall be 32 in. (81.28 cm).

Exception: Doors in a means of egress may be of the horizontal sliding type provided the force to slide the door to its fully open position does not exceed 50 lb (222 N) with a perpendicular force against the door of 50 lb (222 N).

14-3.7.5 Doors in smoke barriers shall be self-closing or automatic closing as required in 5-2.1.2.3. Swinging doors shall be self-latching.

14-3.7.6 Doors in smoke barriers shall conform with the requirements for doors in means of egress as specified in Section 14-2 and shall have locking and release arrangements according to the use condition as follows:

(a) For Use Conditions I (Free Egress) and II (Zoned Egress) there shall be no locks or other arrangement to prevent free egress through the doors in the smoke partition.

(b) For Use Conditions III (Zoned Impeded Egress) and IV (Impeded Egress) the doors may be locked to prevent free egress provided there is remote release control conforming with the requirements for such control as specified in 14-2.11.4.

(c) For Use Condition V (Contained) the doors in smoke barriers may be locked with a key provided the keying arrangement meets the requirements specified for locked egress doors in 14-2.11.

14-3.7.7 Vision panels of approved transparent wired glass not exceeding 720 sq in. (.46 sq m) in steel frames shall be provided in each door in a smoke barrier.

14-3.7.8* An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 14-3.7.1. The damper shall close upon detection of smoke. (*Also see Section 6-3.*)

Exception: Buildings designed with an engineered smoke control system in accordance with Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (see Appendix B), need not comply with this requirement.

14-3.8 Special Features. (Subdivision of Resident Housing Spaces.)

14-3.8.1 Any individual cell, dormitory, or other space where residents are housed shall be separated from all other spaces by substantial construction of noncombustible materials in accordance with Table 14-3.8.1.

SECTION 14-4 SPECIAL PROVISIONS

14-4.1 Windowless Buildings.

14-4.1.1 For the purposes of this chapter a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable, or with no windows.

14-4.1.2 Windowless buildings shall be provided with vent openings, smoke shafts, or an engineered smoke control system to provide ventilation (mechanical or natural) for each windowless smoke compartment.

14-4.2 Underground Buildings.

14-4.2.1 See Chapter 30 for requirements for underground buildings.

SECTION 14-5 BUILDING SERVICES

14-5.1 Utilities.

14-5.1.1 Utilities shall comply with the provisions of Section 7-1.

14-5.1.2 Alarms, emergency communication systems and the illumination of generator set locations shall be as described in the Life Safety Branch of the *National Electrical Code*, NFPA 70 (*see Appendix B*).

14-5.2 Heating, Ventilating and Air Conditioning.

14-5.2.1 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2 and shall be installed in accordance with manufacturer's specifications.

Exception: As modified in 14-5.2.2 following.

Table 14-3.8.1

USE CONDITION / Feature	II		III				IV		V	
	NS	AS	NS		AS		NS	AS	NS	AS
Room to Room Separation	NR	NR	NR		NR		ST	NR	FR(½)	ST
Room Face to Corridor Separation	ST	NR	ST		NR		ST	NR	FR	ST
Room Face to Common Space Separation	NR	NR	NR <50 ft* (15.24 m)	ST >50 ft* (15.24 m)	NR <50 ft* (15.24 m)	ST >50 ft* (15.24 m)	ST	NR	FR	ST
Common Space to Corridor Separation	FR	NR	FR		NR		FR	NR	FR	ST
Total Openings in Solid Room Face	120 sq in. (.08 sq m)		120 sq in. (.08 sq m)				120 sq in. (.08 sq m)		120 sq in. (.08 sq m) Closable from inside or 120 sq in. (.08 sq m) w/smoke control	

AS — Protected by automatic sprinklers
NS — Not protected by automatic sprinklers
NR — No requirement
ST — Smoketight
FR — Fire Rated — 1 hour
FR(½) — Fire Rated — ½ hour

*This is the travel distance through the common space to the exit access corridor

NOTE 1: Doors in openings in partitions required to be fire resistive by this chart in other than required enclosures of exits or hazardous areas shall be substantial doors, of construction that will resist fire for at least 20 minutes. Wire glass vision panels are permitted. Latches and door closers are not required on cell doors.

NOTE 2: Doors in openings in partitions required to be smoketight by the chart shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closers are not required on cell doors.

NOTE 3: "Total Openings in Solid Room Face" includes all openings (undercuts, food passes, grills, etc.), the total of which will not exceed 120 sq in. (.08 sq m). All openings shall be 36 in. (91.44 cm) or less above the floor.

NOTE 4: Under Use Condition II, III, or IV, a space housing not more than 16 persons and subdivided by open construction (any combination of grating doors and grating walls or solid walls) may be considered one room. The perimeter walls of such space shall be of smoketight construction. Smoke detection shall be provided in such space. Under Use Condition IV, common walls between sleeping areas within the space shall be smoketight and grating doors and fronts may be used.

14-5.2.2 Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimney or vent connected, shall take air for combustion directly from outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. The heating system shall have safety devices to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception: Approved suspended unit heaters may be used in locations other than means of egress and sleeping areas provided such heaters are located high enough to be out of the reach of persons using the area and provided they are vent connected and equipped with the safety devices called for above.

14-5.2.3 Combustion and ventilation air for boiler, incinerator or heater rooms shall be taken directly from and discharged directly to the outside air.

14-5.3 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

14-5.4 Rubbish Chutes, Incinerators and Laundry Chutes.

14-5.4.1 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

14-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

14-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

14-5.4.4 Any incinerator shall not be directly flue-fed nor shall any floor chute directly connect with the combustion chamber.

CHAPTER 15 EXISTING DETENTION AND CORRECTIONAL OCCUPANCIES

(See also Chapter 31.)

SECTION 15-1 GENERAL

15-1.1 Application.

15-1.1.1 Existing detention and correctional facilities shall comply with the provisions of this chapter. Provisions of Chapter 14 do not apply to existing detention and correctional facilities. Existing facilities shall also comply with the applicable requirements of Chapter 31.

15-1.1.2 This section establishes life safety requirements for all existing detention and correctional facilities.

Exception: Use Condition I requirements are those stated in the applicable requirements for existing buildings of Chapters 17, 19, or 20.

15-1.1.3 Detention and correctional occupancies are those used for purposes such as jails, detention centers, correctional institutions, reformatories, houses of correction, pre-release centers, and other residential-restrained care facilities where occupants are confined or housed under some degree of restraint or security.

15-1.1.4 Detention and correctional occupancies provide sleeping facilities for four or more residents and are occupied by persons who are generally prevented from taking self-preservation action because of security measures not under the occupants' control.

15-1.1.5 Total Concept. All detention and correctional facilities shall be so designed, constructed, maintained and operated as to minimize the possibility of a fire emergency.

Because the safety of all occupants in all detention and correctional facilities cannot be adequately assured solely by a dependence on evacuation of the building, their protection from fire shall be provided by appropriate arrangement of facilities, adequate trained staff, and careful development of operating, security, and maintenance procedures composed of the following:

(a) Proper design, construction and compartmentation,

(b) Provision for detection, alarm and extinguishment,

(c) Fire prevention and planning, training, and drilling in programs for the isolation of fire and transfer of occupants to areas of refuge or evacuation of the building, or protection of the occupants in place,

(d) Provision security to the degree necessary for the safety of the public and the occupants of the facility.

15-1.1.6 Additions. Additions shall be separated from any existing structure not conforming with the provisions within Chapter 15 by a fire barrier having at least a 2-hour fire resistance rating constructed to the standards of the addition. Doors in these partitions shall normally be kept closed.

Exception: Doors may be held open if they meet the requirements of the exception to 5-2.1.2.3.

15-1.1.7 Modernization or Renovation.

15-1.1.7.1 No construction in either modernization or renovation projects shall diminish the fire safety features of the facility below the level of new construction as described elsewhere in this *Code*. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction.

15-1.1.7.2 (*See 1-6.3 and Chapter 31 for life safety provisions during construction.*)

15-1.1.8 Modification of Retroactive Provisions.

15-1.1.8.1 The requirements of this section may be modified if their application clearly would be impractical in the judgment of the authority having jurisdiction and if the resulting arrangement could be considered as presenting minimum hazard to the life safety of the occupants. The requirements may be modified by the authority having jurisdiction to allow alternative arrangements that will secure as nearly equivalent safety to life from fire as practical; but in no case shall the modification afford less safety than compliance with the corresponding provisions contained in the following part of this *Code*.

15-1.1.8.2 A limited but reasonable time shall be allowed for compliance with any part of this section, commensurate with the magnitude of expenditure and the disruption of services.

15-1.1.8.3 Alternative protection installed and accepted in accordance with the provisions of Section 1-5 shall be considered conforming for the purposes of this *Code*.

15-1.2* Mixed Occupancies.

15-1.2.1 Egress provisions for areas of detention and correctional facilities which correspond to other occupancies shall meet the corresponding requirements of this *Code* for such occupancies. Where security operations necessitate the locking of required means of egress, necessary staff shall be provided for the supervised release of occupants during all times of use.

15-1.2.2 Sections of detention and correctional facilities may be classified as other occupancies if they meet all of the following conditions:

(a) They are not intended to serve residents for purpose of housing, customary access or means of egress.

(b) They are adequately separated from areas of detention or correctional occupancies by construction having a fire resistance rating of at least 2 hours.

15-1.2.3 Detention and correctional occupancies in buildings housing other occupancies shall be completely separated from the other occupancies by construction having a fire resistance rating of at least 2 hours as provided for additions in 15-1.1.6.

15-1.2.4 All means of egress from detention and correctional occupancies that traverse other use areas shall, as a minimum, conform to requirements of this *Code* for detention and correctional occupancies.

15-1.2.5 Any area with a hazard of contents classified higher than that of the detention or correctional occupancy and located in the same building shall be protected, as required in 15-3.2.

15-1.2.6 Non-detention or non-correctional related occupancies classified as containing high hazard contents shall not be permitted in buildings housing detention or correctional occupancies.

15-1.3 Special Definitions.

(a) **Sallyport (Security Vestibule).** A compartment provided with two or more doors where the intended purpose is to prevent the continuous and unobstructed passage by allowing the release of only one door at a time.

(b) **Fire Barrier.** See Chapter 6.

(c) **Fire Compartment.** See Chapter 6.

(d) **Smoke Barrier.** See Chapter 6.

(e) **Smoke Compartment.** See Chapter 6.

15-1.4 Classification of Occupancy.

15-1.4.1* Users and occupants of detention and correctional facilities at various times can be expected to include staff, visitors, and residents. The extent and nature of facility utilization by members of each of these groups will vary according to type of facility, its function and programs. For applications of the life safety requirements which follow, the resident user category is divided into five groups:

Use Condition I — Free Egress

Free movement is allowed from sleeping areas, and other spaces where access or occupancy is permitted, to the exterior via means of egress meeting the requirements of the *Code*.

Use Condition II — Zoned Egress

Free movement is allowed from sleeping areas and any other occupied smoke compartment to one or more other smoke compartments.

Use Condition III — Zoned Impeded Egress

Free movement is allowed within individual smoke compartments, such as within a residential unit comprised of individual sleeping rooms and group activity space, with egress impeded by remote control release of means of egress from such smoke compartment to another smoke compartment.

Use Condition IV — Impeded Egress

Free movement is restricted from an occupied space. Remote controlled release is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartment(s).

Use Condition V — Contained

Free movement is restricted from an occupied space. Staff controlled manual release at each door is provided to permit movement from all sleeping rooms, activity spaces and other occupied areas within the smoke compartment to other smoke compartment(s).

15-1.4.2* To classify as Use Condition III or IV the arrangement, accessibility and security of the release mechanism(s) used for emergency egress shall be such that the minimum available staff, at any time, can promptly release the locks.

15-1.4.3 Areas housing occupancies corresponding to Use Condition I Free Egress shall conform to the requirements of residential occupancies under this *Code*.

15-1.5 The classification of hazard of contents shall be as defined in Section 4-2.

15-1.6 Minimum Construction Requirement.

15-1.6.1 For the purpose of 15-1.6, stories shall be counted starting at the lowest level of exit discharge.

15-1.6.2 Detention and correctional occupancies shall be limited to the types of building construction shown on the following page.

Exception No. 1: Any building of Type I or Type II (222 or 111) construction may include roofing systems involving combustible or steel supports, decking or roofing provided:

(a) The roof covering at least meets Class C requirements in accordance with Fire Tests for Roof Coverings, NFPA 256 (see Appendix B) and

(b) The roof is separated from all occupied portions of the building by a noncombustible floor assembly which includes at least 2½ in. (6.35 cm) of concrete or gypsum fill. To qualify for this exception, the attic or other space so developed shall either be unoccupied or protected throughout by an approved automatic sprinkler system.

Exception No. 2: In determining building construction type, exposed steel roof members located 16 ft (487.68 cm) or more above the floor of the highest cell may be disregarded.

Type of Construction	Below 1st story	1st story	2nd	3rd	4th & above
I (443), I (332), II (222)	X	X	X	X	X
II (111)	X†	X	X†	A.S.	A.S.
III (211), IV (2HH), V (111)	X†	X	X†	A.S.	A.S.
II (000), III (200), V (000)	X†	X†	A.S.	A.S.	A.S.

A.S.: Permitted if the entire building is protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.
X: Permitted
N.P.: Not permitted
†: A.S. required in buildings where Use Condition V is used.

15-1.7 Occupant Load. The occupant load for which means of egress shall be provided for any floor shall be the maximum number of persons intended to occupy that floor, but not less than one person for each 120 sq ft (11.15 sq m) gross floor area.

SECTION 15-2 MEANS OF EGRESS

15-2.1 General. The provisions of Chapter 5 of the *Code* apply to this chapter with the following exceptions:

Exception No. 1: 15-2.11.3.

Exception No. 2: Doors in a means of egress may be of the horizontal sliding type provided the force to slide the door to its fully open position does not exceed 50 lb (222 N) with a perpendicular force against the door of 50 lb (222 N).

Exception No. 3: Horizontal exits may be substituted for other exits provided the maximum exit travel distance specified in 15-2.6 is not exceeded. Horizontal exits may comprise 100 percent of the exits required.

Exception No. 4: Exit access from a cell or room may be through a dayroom.

Exception No. 5: Exit discharge may terminate directly at the building's exterior, or at a horizontal exit, and may discharge into a fenced or walled courtyard, provided that not more than two walls of the courtyard are the building walls from which exit is being made. Enclosed yards or courts shall be of sufficient size to accomodate all occupants, a minimum of 50 ft (15.24 m) from the building with a net area of 15 sq ft (1.39 sq m) per person.

Exception No. 6: The provisions of 5-2.2.3.4(h) and 5-2.2.3.5(c) do not apply.

15-2.2 Types of Exits.

15-2.2.1 Exits of the specified number and width shall be one or more of the following types, in accordance with the provisions of Chapter 5.

(a) *Doors.* (*See 5-2.1.*)

(b) *Interior Stairs.* (*See 5-2.2.*)

(c) *Smokeproof Towers.* (*See 5-2.3.*)

(d)* *Horizontal Exits.* A horizontal exit shall be in conformance with 5-2.4 modified as below:

1. At least 6 sq ft (.56 sq m) of accessible space per occupant shall be provided on each side of the horizontal exit for the total number of people in adjoining compartments.

2. A door in a horizontal exit is not required to swing with travel as specified in 5-2.4.2.3.

(e) *Outside Stairs.* (*See 5-2.5.*)

(f) *Ramps.* (*See 5-2.6.*)

(g) *Exit Passageways.* (*See 5-2.7.*)

(h) *Fire Escape Stairs.* (*See Section 5-9.*)

15-2.2.2 Slide escapes shall not be used in detention or correctional occupancies.

15-2.3 Capacity of Means of Egress.

15-2.3.1 The capacity of any required means of egress shall be based on its width as defined in Section 5-3.

15-2.4 Number of Exits.

15-2.4.1* At least two exits of the types permitted in 15-2.2, located remote from each other, shall be accessible from each floor, fire compartment or smoke compartment of the building.

15-2.5 Arrangement of Means of Egress.

15-2.5.1 Every sleeping room shall have a door leading directly to an exit access corridor.

Exception No. 1: If there is an exit door opening directly to the outside from the room at the ground level.

Exception No. 2: One adjacent room, such as a dayroom or group activity space, may intervene, subject to the travel distance limitations in 15-2.6. Where individual occupant sleeping rooms adjoin a dayroom or group activity space which is utilized for access to an exitway, such sleeping room may open directly to the day space and may be separated in elevation by a one-half or full-story height (also see 15-3.7).

15-2.5.2 All exits may discharge through the level of exit discharge. The requirements of 5-7.2 may be waived provided that not more than 50 percent of the exits discharge into a single fire section.

Exception: Where all exits discharge through areas on the level of discharge, a smoke barrier shall be provided to divide that level into at least two compartments with at least one exit discharging into each compartment and each smoke compartment shall have an exit discharge to the building exterior. The level of discharge shall be provided with automatic sprinkler protection and any other portion of the level of discharge area with access to the discharge area shall be provided with automatic sprinkler protection or separated from it in accordance with the requirements for the enclosure of exits (see 5-1.3.1).

15-2.5.3* Existing dead-end corridors are undesirable and shall be altered wherever possible so that exits will be accessible in at least two different directions from all points in aisles, passageways, and corridors.

15-2.5.4 A sallyport may be permitted in a means of egress where there are provisions for continuous and unobstructed travel through the sallyport during an emergency exit condition.

15-2.5.5 Aisles, corridors, and ramps required for access or exit shall be at least 3 ft (91.44 cm) wide.

15-2.6 Measurement of Travel Distance to Exits.

15-2.6.1 Travel distance:

(a) Between any room door required as exit access and an exit or smoke partition shall not exceed 100 ft (30.48 m);

(b) Between any point in a room and an exit or smoke partition shall not exceed 150 ft (45.72 m); and

(c) Between any point in a sleeping room or suite and an exit access door of that room or suite shall not exceed 50 ft (15.24 m).

Exception No. 1: The travel distance in (a) or (b) above may be increased by 50 ft (15.24 m) in buildings protected throughout by an approved automatic sprinkler system or smoke control system.

Exception No. 2: Where travel distance to the exit access door from any point within any sleeping room through the intervening space exceeds 50 ft (15.24 m), at least two exit access doors, remote from each other, shall be provided.

15-2.7 Discharge from Exits. (*See 15-2.1 and 15-2.5.*)

15-2.8 Illumination of Means of Egress. Illumination shall be in accordance with Section 5-8.

15-2.9 Emergency Lighting. Emergency lighting shall be in accordance with Section 5-9.

Exception: Emergency lighting of at least 1-hour duration may be provided.

15-2.10 Marking of Means of Egress. Exit marking shall be provided in areas accessible to the public in accordance with Section 5-10.

Exception: Exit signs may be omitted in sleeping areas.

15-2.11 Special Features.

15-2.11.1 Doors within means of egress shall be as required in Chapter 5 except as noted in 15-2.11.2 through 15-2.11.8.

15-2.11.2* Doors to resident sleeping rooms shall be at least 28 in. (71.12 cm) in clear width.

Exception: Existings doors to resident sleeping rooms housing four or less residents may be 19 in. (48.26 cm) in clear width.

15-2.11.3 Doors from areas of refuge to the exterior may be locked with key lock in lieu of locking methods described in 15-2.11.4. The keys to unlock such doors shall be maintained and available at the facility at all times and the locks shall be operable from the outside.

15-2.11.4* Any remote release used in means of egress shall be provided with a reliable means of operation, remote from the resident living area, to release locks on all doors.

Exception: Requirements for remote locking and unlocking may be waived provided not more than ten doors are necessary to be unlocked in order to move all occupants from one smoke compartment to an area of refuge as promptly as required for remote unlocking. The opening of all necessary doors shall be accomplished with no more than two separate keys.

15-2.11.5 Doors in smoke barriers shall be self-closing or automatic closing as required in 5-2.1.2.3. Swinging doors shall be self-latching.

15-2.11.6 All power-operated sliding doors or power-operated locks for swinging doors shall be so constructed that in the event of power interruption or power failure a manual mechanical means operable from a remote location or by key and lock mechanism at the door shall be provided to manually release locks and move sliding doors to full open position.

15-2.11.7 Doors remotely unlocked under emergency conditions shall not automatically relock when closed unless specific action is taken at the remote location to enable doors to relock.

15-2.11.8 Standby emergency power shall be provided for all electrically power-operated sliding doors and power operated locks. Power shall be arranged to automatically operate upon failure of normal power within 10 seconds and to maintain the necessary power source for at least 1½ hours.

Exception: This provision is not applicable for facilitites with ten locks or less complying with the exception in 15-2.11.4.

15-2.11.9 Spiral stairs meeting the requirements of 5-2.2.1.6 are permitted for access to and between staff locations.

SECTION 15-3 PROTECTION

15-3.1 Protection of Vertical Opening.

15-3.1.1 Any stairway, ramp, elevator, hoistway, light, or ventilation shaft, chute, or other vertical opening between stories shall be enclosed in accordance with Section 6-2 with construction having a 2-hour fire-resistive rating.

Exception No. 1: Stairs that do not connect a corridor, do not connect more than two levels, and do not serve as a means of egress need not comply with these regulations.

Exception No. 2: Where full enclosure is impractical, the required enclosure may be limited to that necessary to prevent a fire originating in any story from spreading to any other story.

Exception No. 3: The fire resistance rating of enclosures in detention and correctional occupancies protected throughout by an approved automatic sprinkler system may be reduced to 1 hour.

15-3.1.2 Two full communicating floor levels are permitted without enclosure protection between levels provided all the following conditions are met:

(a) The entire normally occupied area, including all communicating floor levels, is sufficiently open and unobstructed so that it may be assumed that a fire or other dangerous condition in any part will be immediately obvious to the occupants or supervisory personnel in the area.

(b) Exit capacity is sufficient to provide simultaneously for all the occupants of all communicating levels and areas, all communicating levels in the same fire area being considered as a single floor area for purposes of determination of required exit capacity.

(c) Each floor level, considered separately, has at least one-half of its individual required exit capacity accessible by exit access leading directly out of that level without transversing another communicating floor level.

15-3.1.3* A multitiered open cell block may be considered as a single-story building provided that either:

1. A smoke control system is provided (*see recommended design criteria in A-15-3.1.3*) to maintain the level of smoke filling, from potential cell fires, at least 5 ft (152.4 cm) above the floor level of any occupied tier involving space that is:

(a) Use Condition IV or V.

(b) Use Condition III unless all persons housed in such space can pass through a free access smoke barrier or freely pass below the calculated smoke level with not more than 50 ft (15.24 m) of travel from their cell, or

2. The entire building, including cells, are provided with complete automatic sprinkler protection in accordance with 15-3.5.

15-3.2 Protection from Hazards.

15-3.2.1 An area used for general storage, boiler or furnace rooms, fuel storage, janitor's closets, maintenance shops including woodworking and painting areas, laundries and kitchens shall be separated from other parts of the building with construction having not less than a 1-hour fire resistance rating and all openings shall be protected with self-closing fire doors, or such area shall be provided with automatic sprinkler protection. Where the hazard is severe, both the fire resistance separation and automatic sprinklers shall be provided.

15-3.2.2 Padded cells are severe hazard areas.

15-3.2.3 Cooking facilities shall be protected in accordance with 7-2.3.

15-3.3 Interior Finish.

15-3.3.1 Interior finish of walls and ceilings in corridors and exits and any space not separated from the corridors and exits by a partition capable of retarding the passage of smoke shall be Class A or B. All other areas shall be Class A, B or C, in accordance with Section 6-5.

15-3.3.2 Interior floor finish material in corridors and exits shall be Class II in accordance with Section 6-5.

Exception: Existing floor finish material of Class A or B in nonsprinklered buildings and Class A, B or C in sprinklered buildings, which have been evaluated based upon tests in accordance with Method of Test of Surface Burning Characteristics of Building Materials, NFPA 255 (see Appendix B), may be continued in use.

15-3.4 Detection, Alarm and Communication Systems.

15-3.4.1 Required fire detection and signaling devices and systems shall be in accordance with Section 7-6 except as provided in this section.

15-3.4.2* Every building shall have a manually operated fire alarm system in accordance with Section 7-6, and such system shall be electrically supervised.

Exception No. 1: Manual fire alarm boxes may be locked.

Exception No. 2: Manual fire alarm boxes may be located at guard locations in lieu of being located in the sleeping room areas.

Exception No. 3: Existing nonelectrically supervised systems may be allowed in buildings protected by an automatic extinguishing system.

15-3.4.3 Operation of any fire alarm activating device shall automatically, without delay, accomplish general alarm indication and control functions. Zoned or coded systems shall be permitted to be used.

15-3.4.4* The fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally commmitted to serve the area in which the facility is located by the most direct and reliable method approved by local regulations.

Exception: Smoke detectors may be arranged to alarm locally and at a constantly attended location only and are not required to be connected to the fire alarm system nor the fire department.

15-3.4.5 An approved automatic smoke detection system shall be installed in all sleeping areas and areas not separated from sleeping areas by fire-resistive construction in Use Condition IV and V areas and sleeping rooms occupied by more than four people in Use Condition III facilities. Such systems shall be installed in accordance with Section 7-6 and with the applicable standards listed in Appendix B, but in no case shall smoke detectors be spaced further apart than 30 ft (914.4 cm) on centers or more than 15 ft (457.2 cm) from any wall.

Exception: Buildings protected by a complete automatic fire extinguishing system in accordance with 15-3.5.

15-3.4.6 Any fire detection device or system required by this section shall be electrically interconnected with the fire alarm system.

15-3.4.7 Any alarm system(s) and any detection system(s) required in this section shall be provided with a secondary power supply in accordance with 2-3.4.2 of *Standard for the Installation, Maintenance, and Use of Local Protective Signaling Systems*, NFPA 72A (*see Appendix B*).

15-3.5 Extinguishment Requirements.

15-3.5.1* When required by 15-1.6, facilities shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

15-3.5.2 Where exceptions are stated in the provisions of this *Code* (*including those specified in 15-3.8.1*) for detention and correctional occupancies equipped with an approved automatic extinguishing system, and where such systems are required, the systems shall be in complete accordance with Section 7-7 for systems in light hazard occupancies and shall be electrically interconnected with the fire alarm system.

15-3.5.3 The main sprinkler control valve(s) shall be electrically supervised so that at least a local alarm will sound at a constantly attended location when the valve is closed.

15-3.5.4 The sprinkler piping, serving no more than six sprinklers for any isolated hazardous area, may be connected directly to a domestic water supply system having a capacity sufficient to provide 0.15 gal per minute per sq ft (1.02×10^{-4} cu m/s/sq m) of floor area throughout the entire enclosed area. An indicating shutoff valve shall be installed in an accessible location between the sprinklers and the connection to the domestic water supply. (*For sprinkler requirements for hazardous areas see 15-3.2 and for sprinkler requirements for chutes see 15-5.4.*)

15-3.5.5* Portable fire extinguishers shall be provided in accordance with 7-7.4.1.

Exception No. 1: Access to portable fire extinguishers may be locked.

Exception No. 2: Portable fire extinguishers may be located at staff locations only.

15-3.5.6 Standpipe and hose systems shall be provided in accordance with 7-7.4.2 as follows:

(a) Class III standpipe and hose systems shall be provided for buildings over 75 ft (22.86 m) in height and all combustible buildings over two stories in height.

(b) Class II or III standpipes and hose systems shall be provided for any unsprinklered building over three stories in height.

Exception No. 1: One-in. (2.54-cm) diameter formed hose in lieu of hose requirements of Standard for the Installation of Standpipes and Hose Systems, NFPA 14 (see Appendix B), may be used.

Exception No. 2: Separate Class I and Class II systems may be used in place of Class III.

15-3.6 Corridors. [*See 15-3.8, Special Features (Subdivision of Resident Housing Spaces).*]

15-3.7 Subdivision of Building Spaces.

15-3.7.1* Smoke barriers shall be provided, regardless of building construction type, as follows:

(a)* To divide every story used by residents for sleeping, or any other story having an occupant load of 50 or more persons, into at least two compartments, and

(b)* To limit the travel distance to a door in a smoke barrier:

1. From any room door required as exit access to 200 ft (60.96 m),
2. From any point in a room to 250 ft (76.20 m).

Exception No. 1: Protection may be accomplished with horizontal exits (see 5-2.4).

Exception No. 2: Spaces having direct exit to (a) a public way, (b) a building separated from the resident housing area by 2-hour fire resistance or 50 ft (15.24 m) of open space, or (c) an enclosed area having a holding space 50 ft (15.24 m) from the housing area that provided 6 sq ft (.56 sq m) or more of refuge area per person (resident, staff, visitors, etc.) that may be present at the time of the fire fulfills the requirement for subdivision of such spaces provided the locking arrangement of doors involved meets the requirements for doors at the compartment barrier for the use condition involved.

15-3.7.2* Any required smoke barrier shall be constructed in accordance with Section 6-3. Barriers shall be of substantial construction and shall have a structural fire resistance. Fixed wired glass vision panels shall be permitted in such partitions provided they do not individually exceed 1,296 sq in. (.84 sq m) in area and are mounted in approved steel frames. There is no restriction on the total number of such vision panels in any partition, (e.g., a smoke barrier may consist of wire glass panels mounted in a security grill arrangement).

15-3.7.3 At least 6 net sq ft (.56 sq m) per occupant shall be provided on each side of the smoke barrier for the total number of occupants in adjoining compartments.

15-3.7.4 Doors in smoke barriers shall comply with Section 6-3 and shall be self-closing or automatic closing as required in 5-2.1.2.3. Swinging doors shall be self-latching. Such doors in smoke partitions shall not be required to swing with exit travel. The minimum door width shall be 32 in. (81.28 cm).

Exception No. 1: See 15-2.1.

Exception No. 2: Doors may be held open if they meet the requirements of 5-2.1.2.3.

Exception No. 3: Doors in a means of egress may be of the horizontal sliding type provided the force to slide the door to its fully open position does not exceed 50 lb (222 N) with a perpendicular force against the door of 50 lb (222 N).

15-3.7.5 Doors in smoke barriers shall provide resistance to the passage of smoke.

15-3.7.6 Vision panels of approved transparent wired glass or other material approved by the authority having jurisdiction not exceeding 720 sq in. (.46 sq m) in steel frames shall be provided in each door in a smoke barrier.

15-3.7.7* An approved damper designed to resist the passage of smoke shall be provided at each point a duct penetrates a smoke barrier required by 15-3.7.1. The damper shall close upon detection of smoke.

Exception No. 1: Buildings designed with an engineered smoke control system in accordance with Standard for the Installation of Air Condi-

tioning and Ventilating Systems, NFPA 90A (see Appendix B), need not comply with this requirement.

Exception No. 2: Other arrangements and positioning of smoke detectors may be used to prevent damage or tampering or for other purposes provided the function of detecting any fire is fulfilled and the siting of detectors is such that the speed of detection will be equivalent to that provided by the spacing and arrangements described above. This may include the location of detectors in exhaust ducts from cells, behind grills, or in other locations. The equivalent performance of the design, however, must be acceptable to the authority having jurisdiction in accordance with the Equivalency Concepts specified in Section 1-5 of this Code.

15-3.8 Special Features. (Subdivision of Resident Housing Spaces.)

15-3.8.1 Subdivision of facility spaces shall comply with Table 15-3.8.1.

SECTION 15-4 SPECIAL PROVISIONS

15-4.1 Windowless Buildings.

15-4.1.1 For purposes of this chapter a windowless building or portion of a building is one with nonopenable windows, windows not readily breakable, or with no windows.

15-4.1.2 Windowless buildings shall be provided with vent openings, smoke shafts, or an engineered smoke control system to provide ventilation (mechanical or natural) for each windowless smoke compartment.

15-4.2 Underground Buildings.

15-4.2.1 See Chapter 30 for requirements for underground buildings.

SECTION 15-5 BUILDING SERVICES

15-5.1 Utilities.

15-5.1.1 Utilities shall comply with the provisions of Section 7-1.

15-5.1.2 Alarms, emergency communication systems, emergency illumination and generator set installations shall be as described in accordance with the *National Electrical Code*, NFPA 70 (*see Appendix B*).

Exception: Systems complying with earlier editions of NFPA 70 and not presenting a life safety hazard may be continued in use.

15-5.2 Heating, Ventilating and Air Conditioning.

Table 15-3.8.1

USE CONDITION / Feature	II		III				IV		V	
	NS	AS	NS		AS		NS	AS	NS	AS
Room to Room Separation	NR	NR	NR		NR		ST	NR	ST	ST*
Room Face to Corridor Separation	NR	NR	ST**		NR		ST**	NR	FR**	ST*
Room Face to Common Space Separation	NR	NR	NR <50 ft*** (15.24 m)	ST >50 ft*** (15.24 m)	NR <50 ft*** (15.24 m)	ST >50 ft*** (15.24 m)	ST**	NR	ST**	ST*
Common Space to Corridor Separation	ST	NR	ST		NR		ST	NR	FR	ST*
Total Openings in Solid Room Face	120 sq in. (.08 sq m)		120 sq in. (.08 sq m)				120 sq in. (.08 sq m)		120 sq in. (.08 sq m) Closable from inside or 120 sq in. (.08 sq m) w/smoke control	

AS - Protected by automatic sprinklers
NS - Not protected by automatic sprinklers
NR - No requirement
ST - Smoketight
FR - Fire Rated 1 hour

*May be NR where there is either
(a) an approved automatic smoke detection system installed in all corridors and common spaces, or.
(b) multi-tiered cell blocks meeting the requirements of 15-3.1.3
**May be NR in multi-tiered open cell blocks meeting the requirements of 15-3.1.3
***This is the travel distance through the common space to the exit access corridor

NOTE 1: Doors in openings in partitions required to be fire resistive by this chart in other than required enclosures of exits or hazardous areas shall be substantial doors, of construction that will resist fire for at least 20 minutes. Wire glass vision panels are permitted. Latches and door closers are not required on cell doors.

NOTE 2: Doors in openings in partitions required to be smoketight by the chart shall be substantial doors, of construction that will resist the passage of smoke. Latches and door closers are not required on cell doors.

NOTE 3: "Total Openings in Solid Room Face" includes all openings (undercuts, food passes, grills, etc.), the total of which will not exceed 120 sq in. (.08 sq m).

NOTE 4: Under Use Condition II, III, or IV, a space housing not more than 16 persons and subdivided by open construction (any combination of grating doors and grating walls or solid walls) may be considered one room. The perimeter walls of such space shall be of smoketight construction. Smoke detection shall be provided in such space. Under Use Condition IV, common walls between sleeping areas within the space shall be smoketight and grating doors and fronts may be used.

15-5.2.1 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2 and shall be installed in accordance with the manufacturer's specifications.

Exception No. 1: As modified in 15-5.2.2 following.

Exception No. 2: Systems complying with earlier editions of the applicable codes and not presenting a life safety hazard may be continued in use.

15-5.2.2 Portable space heating devices are prohibited. Any heating device other than a central heating plant shall be so designed and installed that combustible material will not be ignited by it or its appurtenances. If fuel-fired, such heating devices shall be chimmney or vent connected, shall take air for combustion directly form outside, and shall be so designed and installed to provide for complete separation of the combustion system from the atmosphere of the occupied area. The heating system shall have safety devices to immediately stop the flow of fuel and shut down the equipment in case of either excessive temperatures or ignition failure.

Exception: Approved suspended unit heaters may be used in locations other than means of egress and sleeping areas, provided such heaters are located high enough to be out of reach of persons using the area and provided they are vent connected and equipped with the safety devices called for above.

15-5.2.3 Combustion and ventilation air for boiler, incinerator or heater rooms shall be taken directly from and discharged directly to the outside air.

15-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

15-5.4 Rubbish Chutes, Incinerators and Laundry Chutes.

15-5.4.1 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

15-5.4.2 Any rubbish chute or linen chute, including pneumatic rubbish and linen systems, shall be provided with automatic extinguishing protection installed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

15-5.4.3 Any trash chute shall discharge into a trash collecting room used for no other purpose and protected in accordance with Section 6-4.

15-5.4.4 Any incinerator shall not be directly flue-fed nor shall any floor chute directly connect with the combustion chamber.

CHAPTER 16 NEW HOTEL OCCUPANCIES

(See also Chapter 31.)

SECTION 16-1 GENERAL REQUIREMENTS

16-1.1 Application.

16-1.1.1 This *Code* has differing requirements for the several types of residential occupancies; thus, the *Code* has several residential occupancy chapters, Chapters 16 through 23.

16-1.1.2 This chapter establishes life safety requirements for all new hotels, and for modified buildings according to the provisions of Section 1-4. Section 16-6 contains special provisions for new dormitories. (*See Chapter 31 for operating features.*)

16-1.2 Mixed Occupancies.

16-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.5 of this *Code* shall be applicable.

16-1.2.2 For requirements on mixed mercantile and residential occupancies, see 24-1.2.

16-1.2.3 Any ballroom, assembly or exhibition hall, and other space used for purposes of public assembly shall be in accordance with Chapter 8. Dining areas having a capacity of 50 or more persons shall be treated as places of assembly.

16-1.3 Definitions.

16-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

Dormitories. Includes buildings or spaces in buildings where group sleeping accommodations are provided for persons not members of the same family group in one room or in a series of closely associated rooms under joint occupancy and single management, as in college dormitories, fraternity houses, military barracks; with or without meals, but without individual cooking facilities.

Hotels. Includes buildings or groups of buildings under the same management in which there are more than 15 sleeping accommodations for hire, primarily used by transients who are lodged with or without meals, whether designated as a hotel, inn, club, motel, or by any other name. So-called apartment hotels shall be classified as hotels because they are potentially subject to transient occupancy like that of hotels.

Mezzanine. An intermediate level between the floor and ceiling of any story and covering not more than one-third of the floor area of the room in which it is located.

16-1.4 Classification of Occupancy. (*See 16-1.3.*)

16-1.5 Classification of Hazard of Contents.

16-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13, shall apply. (*See Appendix B.*)

16-1.6 Minimum Construction Requirements. No special requirements.

16-1.7 Occupant Load.

16-1.7.1* The occupant load in numbers of persons for whom exits are to be provided shall be determined on the basis of one person per 200 sq ft (18.58 sq m) gross floor area, or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining exit capacity.

SECTION 16-2 MEANS OF EGRESS REQUIREMENTS

16-2.1 General.

16-2.1.1 Any floor below the level of exit discharge occupied for public purposes shall have exits arranged in accordance with 16-2.4.1 and 16-2.6.1.

16-2.1.2 Any floor below the level of exit discharge not open to the public and used only for mechanical equipment, storage, and service operations (other than kitchens which are considered part of the hotel occupancy) shall have exits appropriate to its actual occupancy in accordance with other applicable sections of the *Code*.

16-2.1.3* The same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress from more than one floor, unless it conforms with 6-2.2.3.1, Exception No. 1.

16-2.2 Types of Exits.

16-2.2.1 Exits, or exit components, arranged in accordance with Chapter 5, shall be of one or more of the following types:

(a) Doors to outside at ground level, as per 5-2.1.

(b) Revolving doors, as per 5-2.1 (not at foot of stairs).

(c) Doors to subways, only if the subway meets the requirements of exit passageways or tunnels as specified in 5-2.7.

(d) Interior stairs, in accordance with 5-2.2.

(e) Outside stairs, in accordance with 5-2.5.

(f) Smokeproof towers, in accordance with 5-2.3.

(g) Ramps, Class A or Class B, in accordance with 5-2.6.

(h) Escalators, in accordance with 5-2.8.

(i) Horizontal exits, in accordance with 5-2.4.

(j) Exit passageways, in accordance with 5-2.7.

16-2.3 Capacity of Means of Egress.

16-2.3.1 Exits, arranged as specified elsewhere in this section of the *Code*, shall be sufficient to provide for the occupant load in numbers of persons as determined in accordance with 16-1.7, on the following basis:

(a) Doors, including those three risers or 24 in. (60.96 cm) above or below ground level, Class A ramps and horizontal exits—100 persons per unit of exit width.

(b) Stairs and other types of exits not included in (a) above—75 persons per unit of exit width.

16-2.3.2* Street-floor exits shall provide units of exit width, as follows, occupant load being determined in accordance with 16-1.7.

(a) One unit for each 100 persons street floor capacity for doors and other level exits, including those 24 in. (60.96 cm) or three risers above or below ground level.

(b) One unit for each 75 persons street-floor capacity for stair or other exit requiring descent to ground level.

(c) One and one-half units for each two-unit required stair from upper floors discharging through the street floor.

(d) One and one-half exit units for each two-unit required stair from floors below the street floor discharging through the street floor.

16-2.3.3 Every floor below the level of exit discharge shall have exits sufficient to provide for the occupant load of that floor as determined in accordance with 16-1.7 on the basis of 100 persons per exit unit for travel on the same level, 75 persons for upward travel, as up stairs.

16-2.3.4 Upper-floor exits shall provide numbers of units of exit width sufficient to meet the requirements of 16-2.3.1

16-2.4 Number of Exits.

16-2.4.1 Not less than two exits shall be accessible from every floor, including floors below the level of exit discharge and occupied for public purposes.

16-2.4.2 Any room having a capacity of less than 50 persons with an outside door at street or ground level may have such outside door as a single exit provided that no part of the room or area is more than 50 ft (15.24 m) from the door measured along the natural path of travel.

16-2.5 Arrangement of Exits.

16-2.5.1 Access to all required exits shall be in accordance with Section 5-5, shall be unobstructed, and shall not be blocked from open view by ornamentation, curtain, or other appurtenance.

16-2.5.2 Exits shall be so arranged that, from any corridor room door, exits will be accessible in at least two different directions.

Exception: Up to the first 35 ft (10.67 m) of exit travel from a corridor room door may be along a corridor with exit access only in one direction (dead end).

16-2.6 Measurement of Travel Distance to Exits.

16-2.6.1 Any exit as indicated in 16-2.4.1 shall be such that it will not be necessary to travel more than 100 ft (30.48 m) from the door of any room to reach the nearest exit. Travel distance to exits shall be measured in accordance with Section 5-6.

Exception No. 1: Travel distance to exits may be increased to 200 ft (60.96 m) for exterior ways of exit access arranged in accordance with 5-5.3.

Exception No. 2: Travel distance to exits may be increased to 150 ft (45.72 m) if the exit access and any portion of the building which is tributary to the exit access are protected throughout by an approved automatic sprinkler system. In addition, the portion of the building in which the 150-ft (45.72-m) travel distance is permitted shall be separated from the remainder of the building by construction having a fire resistance rating of not less than 1 hour for buildings up to four stories in height, and 2 hours for buildings four or more stories in height.

16-2.6.2 Travel distance from the door of a room in a suite or living unit to a corridor door shall not exceed 50 ft (15.24 m).

Exception: One-hundred-ft (30.48-m) travel distance is allowed in buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, or an approved single station smoke detector in each habitable area in the suite or living unit.

16-2.7 Discharge from Exits.

16-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

16-2.7.2 A maximum of 50 percent of the exits may discharge through areas on the floor of exit discharge in accordance with 5-7.2.

16-2.8 Illumination of Means of Egress.

16-2.8.1 Each public space, hallway, stairway, or other means of egress shall have illumination in accordance with Section 5-8. Access to exits shall be continuously illuminated at all times.

16-2.9 Emergency Lighting.

16-2.9.1 Any hotel with 26 or more rooms shall have emergency lighting in accordance with Section 5-9.

Exception: Where each guest room has a direct exit to the outside of the building at ground level (as in motels), no emergency lighting shall be required.

16-2.10 Marking of Means of Egress.

16-2.10.1 Every exit access door from public hallways or from corridors on floors with sleeping accommodations shall have an illuminated sign in accordance with Section 5-10. Where exits are not visible in a hallway or corridor, illuminated directional signs shall be provided to indicate the direction to exits.

16-2.11 Special Features.

16-2.11.1* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2*).

SECTION 16-3 PROTECTION

16-3.1 Protection of Vertical Openings.

16-3.1.1 Every stairway, elevator shaft and other vertical opening shall be enclosed or protected in accordance with 6-2.2.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for hotel occupancy only may be permitted in accordance with the conditions of 6-2.2.3.1, Exception No. 1.

Exception No. 2: An atrium may be utilized in accordance with 6-2.2.3.1, Exception No. 2.

Exception No. 3: Stairway enclosures shall not be required where a one-story stair connects two levels within a single dwelling unit, guest room or suite located above the level of exit discharge.

16-3.1.2* Any required exit stair which is so located that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to the lobby level, or to a mezzanine within the lobby (*see 16-2.7*).

16-3.1.3 No floor below the level of exit discharge, used only for storage, heating equipment, or other purposes other than hotel occupancy open to guests or the public, shall have unprotected openings to floors used for hotel purposes.

16-3.2 Protection from Hazards.

16-3.2.1 Any room containing high-pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or directly adjacent to exits. All such rooms shall be effectively cut off from other parts of the building as specified in Section 6-4.

16-3.2.2 Every hazardous area shall be separated from other parts of the building by construction having a fire resistance rating of at least 1 hour and communicating openings shall be protected by approved self-closing fire doors, or such area shall be equipped with automatic fire extinguishing system. Hazardous areas include, but are not limited to:

Boiler and heater rooms
Laundries
Repair shops
Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

16-3.3 Interior Finish.

16-3.3.1 Interior finish on walls and ceilings, in accordance with Section 6-5 and subject to the limitations and modifications therein specified, shall be as follows:

(a) Vertical exits [*see 5-1.2.1(b)*] — Class A.
(b) Exit access [*see 5-1.2.1(a)*] — Class A or B.
(c) Lobbies, corridors that are not exit access — Class A or B.
(d) Places of assembly (*see 8-3.3*).
(e) Individual guest rooms and other rooms — Class A, B, or C.

16-3.3.2 Interior floor finish in corridors and exitways shall be Class I or Class II in accordance with Section 6-5.

16-3.4 Detection, Alarm and Communication Systems.

16-3.4.1 An alarm system, in accordance with Section 7-6, shall be provided for any hotel having accommodations for 15 or more guests.

Exception: Where each guest room has a direct exit to the outside of the building and the building is three or less stories in height.

16-3.4.2 Every sounding device shall be of such character and so located as to alert all occupants of the building or section thereof endangered by fire.

16-3.4.3 Buildings shall have a corridor smoke detection system (*see Section 7-6*) connected to the alarm initiation system.

Exception No. 1: Where each guest room has direct exit to the outside of the building and the building is not over three stories in height.

Exception No. 2: Buildings protected throughout by an approved automatic sprinkler system.

16-3.4.4 A manual fire alarm station shall be provided at the hotel desk or other convenient central control point under continuous supervision of responsible employees. Additional manual alarms (*as specified in Section 7-6*) may be waived where there are other effective means (such as complete automatic sprinkler or automatic fire detection systems) for notification of fire as required in 16-3.4.2.

16-3.4.5 Buildings seven or more stories in height shall have an annunciator panel connected with the alarm system to visually indicate the floor of fire involvement. The location of the annunciator panel shall be approved by the authority having jurisdiction.

16-3.4.6 Provisions shall be made for the immediate notification of the public fire department by either telephone or other means in case of fire. Where there is no public fire department this notification shall go to the private fire brigade.

16-3.4.7 In buildings seven or more stories in height, in addition to a manual fire alarm system, an approved means of voice communication between an accessible central point approved by the authority having jurisdiction and the corridors, elevators, elevator lobbies and exits shall be provided.

16-3.5 Extinguishment Requirements.

16-3.5.1 Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be in accordance with the requirements of *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

Exception: Sprinkler installation may be omitted in small compartmented areas such as closets not over 24 sq ft (2.23 sq m) and bathrooms not over 55 sq ft (5.11 sq m).

16-3.5.2 Hand portable fire extinguishers shall be provided in hazardous areas. When provided, hand portable fire extinguishers shall be installed and maintained as specified in *Standard for Portable Fire Extinguishers*, NFPA 10 (*see Appendix B*). (*See Section 31-6.*)

16-3.6 Minimum Fire Resistance Requirements for Protection of Guest Rooms (Corridors).

16-3.6.1 Every interior corridor shall be separated from guest rooms by partitions having at least a 1-hour fire resistance rating.

Exception: Buildings protected throughout by an approved automatic sprinkler system may have partitions having a ½-hour fire resistance rating.

16-3.6.2 Each guest room door which opens onto an interior corridor shall have a fire protection rating of at least 20 minutes. Openings shall resist the passage of smoke.

16-3.6.3 Doors between guest rooms and corridors shall be self-closing, and shall meet the requirements of 16-3.6.2.

16-3.6.4 Unprotected openings other than door openings shall be prohibited in partitions of corridors serving as exit access from guest rooms.

16-3.6.5 No transom shall be installed in partitions of sleeping rooms.

16-3.7 Subdivision of Building Spaces. No special requirements.

16-3.8 Special Features.

16-3.8.1* Smokeproof towers shall be provided in accordance with 5-2.3 in buildings seven or more stories in height.

Exception: Buildings protected throughout by an approved automatic sprinkler system.

SECTION 16-4 SPECIAL PROVISIONS

SECTION 16-5 BUILDING SERVICES

16-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

16-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2, except as otherwise required in this chapter.

16-5.3* Elevators, Dumbwaiters and Vertical Conveyors. Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4. In buildings over six stories one elevator shall be provided with a protected power supply and be available for use by the fire department in case of emergency.

16-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 16-6 NEW DORMITORIES

16-6.1 Application.

16-6.1.1 New dormitories shall comply with the requirements for new hotels, except as modified in the following paragraphs.

Exception: Any dormitory divided into suites of rooms, with one or more bedrooms opening into a living room or study which has a door opening into a common corridor serving a number of suites, shall be classified as an apartment building.

16-6.1.2 Every individual living unit covered by this section shall at least comply with the minimum provisions of Chapter 22, One- and Two-Family Dwellings.

Exception: The requirement of Section 22-2 for means of window egress shall be applicable to buildings of six stories or less.

16-6.2 Means of Egress Requirements.

16-6.2.1 Types and Capacities of Exits.

16-6.2.1.1 Exits of the same types and capacities as required for hotels (*see 16-2.2 and 16-2.3*) shall be provided.

Exception: Each street floor door shall be sufficient to provide one unit of exit width for each 50 persons capacity of the street floor, plus one unit for each unit of required stairway width discharging through the street floor.

16-6.2.2 Arrangement of Means of Egress.

16-6.2.2.1 In any dormitory having sleeping rooms or areas containing more than four occupants, there shall be access to two separate and distinct exits in different directions from the room door, with no common path of travel.

Exception: One exit may be accepted where the room or space is subject to occupancy by not more than ten persons and has a door opening directly to the outside of the building at street or ground level or to an outside stairway.

16-6.2.3 Measurement of Travel Distance to Exits.

16-6.2.3.1 Exits shall be so arranged that it will not be necessary to travel more than 100 ft (30.48 m) from any point, or 150 ft (45.72 m) in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, to reach the nearest outside door or exit, nor to traverse more than a one-story flight of inside, unenclosed stairs.

16-6.3 Protection.

16-6.3.1 Protection of Vertical Openings.

16-6.3.1.1 Every exit stair and other vertical openings shall be enclosed or protected in accordance with Section 6-2.

Exception: If every sleeping room or area has direct access to an outside exit without the necessity of passing through any corridor or other space exposed to any unprotected vertical opening and the building is equipped with an automatic fire detection system in accordance with Section 7-6, unprotected openings may be permitted by the authority having jurisdiction.

16-6.3.2 Alarm and Detection Systems.

16-6.3.2.1 Every dormitory shall have a manual fire alarm system in accordance with Section 7-6.

Exception No. 1: Buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Buildings protected throughout by an approved automatic fire detection system in accordance with Section 7-6.

16-6.3.2.2* Approved smoke detectors shall be installed on each floor by either:

(a) Using single station smoke detectors in all habitable rooms, or

(b) Using corridor detectors connected to the building fire alarm system and at not over 30 ft (914.4 cm) spacing.

16-6.4 Special Provisions. Reserved.

16-6.5 Building Services.

16-6.5.1 Utilities.

16-6.5.1.1 Building service equipment shall be installed in accordance with Section 7-1.

16-6.5.2 Heating/Air Conditioning.

16-6.5.2.1 Heating and air conditioning equipment shall meet the requirements of Section 7-2.

CHAPTER 17 EXISTING HOTELS

(See also Chapter 31.)

SECTION 17-1 GENERAL REQUIREMENTS

17-1.1 Application.

17-1.1.1 This *Code* has differing requirements for the several types of residential occupancies; thus, the *Code* has several residential occupancy chapters, Chapters 16 through 23.

17-1.1.2 This chapter establishes life safety requirements for all existing hotels. Section 17-6 contains special provisions for existing dormitories. *(See Chapter 31 for operating features.)*

17-1.2 Mixed Occupancies.

17-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.5 of this *Code* shall be applicable.

17-1.2.2 For requirements on mixed mercantile and residential occupancies, see 25-1.2.

17-1.2.3 Public Assembly Occupancies. Any ballroom, assembly or exhibition hall, and other space used for purposes of public assembly shall be in accordance with Chapter 9. Dining areas having a capacity of 50 or more persons shall be treated as places of assembly.

17-1.3 Definitions.

17-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

Dormitories. Includes buildings or spaces in buildings where group sleeping accommodations are provided for persons not members of the same family group in one room or in a series of closely associated rooms under joint occupancy and single management, as in college dormitories, fraternity houses, military barracks; with or without meals, but without individual cooking facilities.

Hotels. Includes buildings or groups of buildings under the same management in which there are more than 15 sleeping accommodations for hire, primarily used by transients who are lodged with or without meals, whether designated as a hotel, inn, club, motel, or by any other name. So-called apartment hotels shall be classified as hotels because they are potentially subject to transient occupancy like that of hotels.

Mezzanine. An intermediate level between the floor and ceiling of any story and covering not more than one-third of the floor area of the room in which it is located.

17-1.4 Classification of Occupancy. (*See 17-1.3.*)

17-1.5 Classification of Hazard of Contents.

17-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13, shall apply. (*See Appendix B.*)

17-1.6 Minimum Construction Requirements. No special requirements.

17-1.7 Occupant Load.

17-1.7.1* The occupant load in numbers of persons for whom exits are to be provided shall be determined on the basis of one person per 200 sq ft (18.58 sq m) gross floor area, or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining exit capacity.

SECTION 17-2 MEANS OF EGRESS REQUIREMENTS

17-2.1 General.

17-2.1.1 Any floor below the level of exit discharge occupied for public purposes shall have exits arranged in accordance with 17-2.4.1 and 17-2.6.1.

17-2.1.2 Any floor below the level of exit discharge not open to the public and used only for mechanical equipment, storage, and service operations (other than kitchens which are considered part of the hotel occupancy) shall have exits appropriate to its actual occupancy in accordance with other applicable sections of this *Code*.

17-2.1.3* The same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress from more than one floor, unless it conforms to 6-2.2.3.1, Exception No. 1.

17-2.2 Types of Exits.

17-2.2.1 Exits or exit components, arranged in accordance with Chapter 5, shall be of one or more of the following types:

(a) Doors to outside at ground level, as per 5-2.1.

(b) Revolving doors, as per 5-2.1 (not at foot of stairs).

(c) Doors to subways only if the subway meets the requirements of exit passageways or tunnels as specified in 5-2.7.

(d) Interior stairs, Class A or Class B, in accordance with 5-2.2.

(e) Outside stairs, in accordance with 5-2.5.

(f) Smokeproof towers, in accordance with 5-2.3.

(g) Ramps, Class A or Class B, in accordance with 5-2.6.

(h) Escalators, in accordance with 5-2.8.

(i) Horizontal exits, in accordance with 5-2.4.

(j) Exit passageways, in accordance with 5-2.7.

17-2.2.2 Any existing interior stair or fire escape not complying with 5-2.2 or 5-2.9 may be continued in use subject to the approval of the authority having jurisdiction.

17-2.3 Capacity of Means of Egress.

17-2.3.1 Exits, arranged as specified elsewhere in this section of the *Code*, shall be sufficient to provide for the occupant load in numbers of persons as determined in accordance with 17-1.7, on the following basis:

(a) Doors, including those three risers or 24 in. (60.96 cm) above or below ground level, Class A ramps and horizontal exits—100 persons per unit of exit width.

(b) Stairs and other types of exits not included in (a) above—75 persons per unit of exit width.

17-2.3.2* Street-floor exits shall provide units of exit width as follows, occupant load being determined in accordance with 17-1.7.

(a) One unit for each 100 persons street-floor capacity for doors and other level exits, including those 24 in. (60.96 cm) or three risers above or below ground level.

(b) One unit for each 75 persons street-floor capacity for stair or other exit requiring descent to ground level.

(c) One and one-half exit units for each two-unit required stair from upper floors discharging through the street floor.

(d) One and one-half exit units for each two-unit required stair from floors below the street floor discharging through the street floor.

17-2.3.3 Every floor below the level of exit discharge shall have exits sufficient to provide for the occupant load of that floor as determined in accordance with 17-1.7 on the basis of 100 persons per exit unit for travel on the same level, 75 persons for upward travel, as up stairs.

17-2.3.4 Upper-floor exits shall provide numbers of units of exit width sufficient to meet the requirements of 17-2.3.1.

17-2.4 Number of Exits.

17-2.4.1 Not less than two exits shall be accessible from every floor, including floors below the level of exit discharge and occupied for public purposes.

17-2.4.2 Any room having a capacity of less than 50 persons with an outside door at street or ground level may have such outside door as a single exit provided that no part of the room or area is more than 50 ft (15.24 m) from the door measured along the natural path of travel.

17-2.5 Arrangement of Exits.

17-2.5.1 Access to all required exits shall be in accordance with Section 5-5, shall be unobstructed, and shall not be blocked from open view by ornamentation, curtain, or other appurtenance.

17-2.5.2 Exits shall be so arranged that, from any corridor room door, exits will be accessible in at least two different directions.

Exception: Up to the first 35 ft (10.67 m) of exit travel from a corridor room door may be along a corridor with exit access only in one direction (dead end).

17-2.6 Measurement of Travel Distance to Exits.

17-2.6.1 Any exit as indicated in 17-2.4.1 shall be such that it will not be necessary to travel more than 100 ft (30.48 m) from the door of any room to reach the nearest exit. Travel distance to exits shall be measured in accordance with Section 5-6.

Exception No. 1: Travel distance to exits may be increased to 200 ft (60.96 m) for exterior ways of exit access arranged in accordance with 5-5.4.

Exception No. 2: Travel distance to exits may be increased to 150 ft (45.72 m) if the exit access and any portion of the building which is tributary to the exit access are protected throughout by an approved automatic sprinkler system. In addition, the portion of the building in which the 150-ft (45.72-m) travel distance is permitted shall be separated from the remainder of the building by construction having a fire resistance rating of not less than 1 hour for buildings up to four stories in height, and 2 hours for buildings four or more stories in height.

17-2.6.2 Travel distance from the door of the most remote room in a suite or in an apartment to a corridor door shall not exceed 50 ft (15.24 m).

Exception: One-hundred-ft (30.48-m) travel distance is allowed in buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, or an approved single station smoke detector in each habitable area in the suite or living unit.

17-2.7 Discharge from Exits.

17-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or

through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

17-2.7.2 If any exits discharge through areas on the level of exit discharge, the conditions of 5-7.2 shall be met.

17-2.8 Illumination of Means of Egress.

17-2.8.1 Each public space, hallway, stairway, or other means of egress shall have illumination in accordance with Section 5-8. Access to exits shall be continuously illuminated at all times.

17-2.9 Emergency Lighting.

17-2.9.1 Any hotel with 26 or more rooms shall have emergency lighting in accordance with Section 5-9.

Exception: Where each guest room has a direct exit to the outside of the building at ground level (as in motels), no emergency lighting shall be required.

17-2.10 Marking of Means of Egress.

17-2.10.1 Every exit access door from public hallways or from corridors on floors with sleeping accommodations shall have an illuminated sign in accordance with Section 5-10. Where exits are not visible in a hallway or corridor, illuminated directional signs shall be provided to indicate the direction to exits.

17-2.11 Special Features.

17-2.11.1* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2.*).

SECTION 17-3 PROTECTION

17-3.1 Protection of Vertical Openings.

17-3.1.1 Every stairway, elevator shaft and other vertical opening shall be enclosed or protected in accordance with 6-2.2 or provide means of satisfying the requirements of Section 2-9.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for hotel occupancy only may be permitted in accordance with the conditions of 6-2.2.3.1, Exception No. 1.

Exception No. 2: An atrium may be utilized in accordance with 6-2.2.3.1, Exception No. 2.

Exception No. 3: In any building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, and where exits and required ways of travel thereto are adequately safeguarded against fire and smoke within the building or where every individual room

has direct access to an exterior exit without passing through any public corridor, the protection of vertical openings not part of required exits may be waived by the authority having jurisdiction to such extent as such openings do not endanger required means of egress.

Exception No. 4: Stairway enclosures shall not be required where a one-story stair connects two levels within a single dwelling unit, guest room or suite located above the level of exit discharge.

17-3.1.2* Any required exit stair which is so located that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to the lobby level, or to a mezzanine within the lobby (*see 17-2.7*).

17-3.1.3 No floor below the level of exit discharge, used only for storage, heating equipment, or other purpose other than hotel occupancy open to guests or the public, shall have unprotected openings to floors used for hotel purposes.

17-3.2 Protection from Hazards.

17-3.2.1 Any room containing high pressure boilers, refrigerating machinery, transformers, or other service equipment subject to possible explosion shall not be located directly under or directly adjacent to exits. All such rooms shall be effectively cut off from other parts of the building as specified in Section 6-4.

17-3.2.2 Every hazardous area shall be separated from other parts of the building by construction having a fire resistance rating of at least 1 hour and communicating openings shall be protected by approved self-closing fire doors, or such area shall be equipped with automatic fire extinguishing system. Hazardous areas include, but are not limited to:

Boiler and heater rooms
Laundries
Repair shops
Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

17-3.3 Interior Finish.

17-3.3.1 Interior finish on walls and ceilings, in accordance with Section 6-5 and subject to the limitations and modifications therein specified, shall be as follows:

(a) Vertical exits [*see 5-1.2.1(b)*] — Class A or B.

(b) Exit access [*see 5-1.2.1(a)*] — Class A or B.

(c) Lobbies, corridors that are not exit access — Class A, B, or C.

(d) Places of assembly (*see 9-3.3*).

(e) Individual guest rooms and other rooms — Class A, B, or C.

17-3.3.2 Interior floor finish in corridors and exitways shall be Class I or Class II in accordance with Section 6-5.

Exception: Previously installed floor coverings may be continued in use, subject to the approval of the authority having jurisdiction.

17-3.4 Alarm and Communication Systems.

17-3.4.1 An alarm system, in accordance with Section 7-6, shall be provided for any hotel having accommodations for 15 or more guests.

Exception: Where each guest room has a direct exit to the outside of the building and the building is three or less stories in height.

17-3.4.2 Every sounding device shall be of such character and so located as to alert all occupants of the building or section thereof endangered by fire.

17-3.4.3 A manual fire alarm station shall be provided at the hotel desk or other convenient central control point under continuous supervision of responsible employees. Additional manual alarms (*as specified in Section 7-6*) may be waived where there are other effective means (such as complete automatic sprinkler or automatic fire detection systems) for notification of fire as required in 17-3.4.2.

17-3.4.4 Provisions shall be made for the immediate notification of the public fire department by either telephone or other means in case of fire. Where there is no public fire department this notification shall go to the private fire brigade.

17-3.5 Extinguishment Requirements.

17-3.5.1 Where an automatic sprinkler system is installed, either for total or partial building coverage, the system shall be in accordance with the requirements of *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

Exception: Sprinkler installation may be omitted in small compartmented areas such as closets not over 24 sq ft (2.23 sq m) and bathrooms not over 55 sq ft (5.11 sq m).

17-3.5.2 Hand portable fire extinguishers shall be provided in hazardous areas. When provided, hand portable fire extinguishers shall be installed and maintained as specified in *Standard for Portable Fire Extinguishers*, NFPA 10 (*see Appendix B*). (*See Section 31-6.*)

17-3.6 Minimum Fire Resistance Requirements for Protection of Guest Rooms (Corridors).

17-3.6.1 Fire resistance for interior corridors shall be 30 minutes.

Exception No. 1: Where a corridor sprinkler system is provided as outlined in 19-3.5.1 through 19-3.5.3, in which case there will be no fire resistance rating required, but all openings shall resist the passage of smoke.

Exception No. 2: Where interior corridor walls have openings from transfer grills, see 17-3.6.6.

17-3.6.2 Each guest room door which opens onto an interior corridor shall have a fire protection rating of at least 20 minutes.

Exception No. 1: Previously approved 1¾-in. (4.45-cm) solid bonded wood core doors may remain in use.

Exception No. 2: In buildings protected throughout by an approved automatic sprinkler system, doors shall be so constructed as to resist the passage of smoke. Doors shall be equipped with latches for keeping doors tightly closed, but may be provided with glass vision panels without restriction.

17-3.6.3 Doors between guest rooms and corridors shall be self-closing, and shall meet the requirements of 17-3.6.2.

17-3.6.4 Unprotected openings shall be prohibited in partitions of interior corridors serving as exit access from guest rooms.

17-3.6.5 Existing transoms installed in corridor partitions of sleeping rooms shall be fixed in the closed position and shall be covered or otherwise protected to provide a fire resistance rating at least equivalent to that of the wall in which they are installed.

17-3.6.6 Transfer grills, whether protected by fusible link operated dampers or not, shall not be used in these walls or doors.

Exception No. 1: Where a corridor smoke detection system is provided which when sensing smoke will sound the building alarm and shut down return or exhaust fans which draw air into the corridor from the guest rooms. The grills shall be located in the lower one-third of the wall or door height.

Exception No. 2: Where automatic sprinkler protection is provided in the corridor in accordance with 19-3.5.1 and where the transfer grill is located in the lower one-third of the wall or door height.

17-3.7 Subdivision of Building Spaces. No special requirements.

17-3.8 Special Features.

17-3.8.1 Smokeproof towers, if provided, shall comply with 5-2.3.

SECTION 17-4 SPECIAL PROVISIONS

SECTION 17-5 BUILDING SERVICES

17-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

17-5.2 Heating, Ventilating and Air Conditioning. Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2, except as otherwise required in this chapter.

17-5.3 Elevators, Dumbwaiters, and Vertical Conveyors. Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

17-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

SECTION 17-6 EXISTING DORMITORIES

17-6.1 Application.

17-6.1.1 Existing dormitories shall comply with the requirements for existing hotels, except as modified in the following paragraphs.

Exception: Any dormitory divided into suites of rooms, with one or more bedrooms opening into a living room or study which has a door opening into a common corridor serving a number of suites, shall be classified as an apartment building.

17-6.1.2 Every individual living unit covered by this section shall at least comply with the minimum provisions of Chapter 22, One- and Two-Family Dwellings.

Exception: The requirement of Section 22-2 for means of window egress shall be applicable to buildings of six stories or less.

17-6.2 Means of Egress Requirements.

17-6.2.1 Types and Capacities of Exits.

17-6.2.1.1 Exits of the same types and capacities as required for hotels (*see 17-2.2 and 17-2.3*) shall be provided.

Exception: Each street floor door shall be sufficient to provide one unit of exit width for each 50 persons capacity of the street floor, plus one unit for each unit of required stairway width discharging through the street floor.

17-6.2.2 Arrangement of Means of Egress.

17-6.2.2.1 In any dormitory having sleeping rooms or areas containing more than four occupants, there shall be access to two separate and distinct exits in different directions from the room door, with no common path of travel.

Exception No. 1: One exit may be accepted where the room or space is subject to occupancy by not more than ten persons and has a door opening directly to the outside of the building at street or ground level or to an outside stairway.

Exception No. 2: In existing buildings a common path of travel not exceeding 35 ft (10.67 m) is permitted.

17-6.2.3 Measurement of Travel Distance to Exits.

17-6.2.3.1 Exits shall be so arranged that it will not be necessary to travel more than 100 ft (30.48 m) from any point, or 150 ft (45.72 m) in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, to reach the nearest outside door or exit, nor to traverse more than a one-story flight of inside, unenclosed stairs.

17-6.3 Protection.

17-6.3.1 Protection of Vertical Openings.

17-6.3.1.1 Every exit stair and other vertical openings shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: In existing buildings not more than two stories in height of any type of construction, unprotected openings may be permitted by the authority having jurisdiction if the building is protected by automatic sprinklers in accordance with Section 7-7.

Exception No. 2: If every sleeping room or area has direct access to an outside exit without the necessity of passing through any corridor or other space exposed to any unprotected vertical opening and the building is equipped with an automatic fire detection system in accordance with Section 7-6, unprotected openings may be permitted by the authority having jurisdiction.

17-6.3.2 Alarm and Detection Systems.

17-6.3.2.1 Every dormitory shall have a manual fire alarm system in accordance with Section 7-6.

Exception No. 1: Buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception No. 2: Buildings protected throughout by an approved automatic fire detection system in accordance with Section 7-6.

17-6.3.2.2* Approved smoke detectors shall be installed on each floor by either:

(a) Using single station smoke detectors in all habitable rooms, or

(b) Using corridor detectors connected to the building fire alarm system and at not over 30 ft (914.4 cm) spacing.

17-6.4 Special Provisions. Reserved.

17-6.5 Building Services.

17-6.5.1 Utilities.

17-6.5.1.1 Building service equipment shall be installed in accordance with Section 7-1.

17-6.5.2 Heating/Air Conditioning.

17-6.5.2.1 Heating and air conditioning equipment shall meet the requirements of Section 7-2.

CHAPTER 18 NEW APARTMENT BUILDINGS

(See also Chapter 31.)

SECTION 18-1 GENERAL REQUIREMENTS

18-1.1 Application.

18-1.1.1 This *Code* has differing requirements for the several types of residential occupancies; thus, the *Code* has several residential occupancy chapters, Chapters 16 through 23.

18-1.1.2 All new buildings classified as apartment buildings by 18-1.3.1 shall conform to the provisions of this chapter, and shall meet the requirements of one of the following options (*see Table 18-1*):

Option 1: Buildings without fire suppression or detection systems;

Option 2: Buildings provided with a complete automatic fire detection and notification system;

Option 3: Buildings provided with automatic sprinkler protection in selected area;

Option 4: Buildings protected throughout by an approved automatic sprinkler system.

18-1.1.3 Apartments for the elderly as defined in 18-1.3.1 shall meet the requirements for apartment houses as provided in this section unless otherwise noted.

18-1.1.4 Every individual living unit covered by this section shall at least comply with the minimum provisions for windows of Chapter 22, One- and Two-Family Dwellings.

Exception: The requirements of Section 22-2 for a second means of escape may be waived for buildings over six stories provided that an approved means of smoke control is provided throughout the building as described in Appendix B of Standard for the Installation of Air Conditioning and Ventilating Systems, NFPA 90A (*see Appendix B*).

18-1.2 Mixed Occupancies.

18-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.5 of this *Code* shall be applicable.

18-1.2.2 For requirements on mixed mercantile and residential occupancies, see 24-1.2.

18-1.3 Definitions.

18-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

Apartment Buildings. Includes buildings containing three or more living units with independent cooking and bathroom facilities, whether designated as apartment house, tenement, garden apartment, or by any other name.

Apartments for the Elderly. An apartment building specifically designed for housing elderly individuals who are capable of self-preservation.

Complete Automatic Fire Detection and Notification System. A supervised system which will initiate a trouble signal. It consists of smoke detectors so installed as to provide fire detection in sleeping and living areas, means of egress and mechanical and electrical equipment rooms.

Mezzanine. An intermediate level between the floor and ceiling of any story and covering not more than one-third of the floor area of the room in which it is located.

18-1.4 Classification of Occupancy. (*See 18-1.3.1.*)

18-1.5 Classification of Hazard of Contents.

18-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13, shall apply. (*See Appendix B.*)

18-1.6 Minimum Construction Requirements. No special requirements.

18-1.7 Occupant Load.

18-1.7.1* The occupant load in numbers of persons for whom exits are to be provided shall be determined on the basis of one person per 200 sq ft (18.58 sq m) gross floor area, or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining exit capacity.

SECTION 18-2 MEANS OF EGRESS REQUIREMENTS

18-2.1 General.

18-2.2 Types of Exits.

18-2.2.1 Exits, or exit components, arranged in accordance with Chapter 5, shall be of one or more of the following types:

(a) Doors, as per 5-2.1.

(b) Revolving doors, as per 5-2.1 (not at foot of stairs).

(c) Doors to subways, only if the subway meets the requirements of exit passageways or tunnels as specified in 5-2.7.

(d) Interior stairs, in accordance with 5-2.2.

(e) Outside stairs, in accordance with 5-2.5.

(f) Smokeproof towers, in accordance with 5-2.3.

(g) Ramps, Class A or Class B, in accordance with 5-2.6.

(h) Escalators, in accordance with 5-2.8.

(i) Horizontal exits, in accordance with 5-2.4.

(j) Exit passageways, in accordance with 5-2.7.

18-2.2.2 In apartments for the elderly horizontal exits are required.

Exception No. 1: Where exterior exit balconies are provided.

Exception No. 2: Where a single exit building is acceptable under 18-2.4.1.

Exception No. 3: Where buildings are three or less stories in height.

Exception No. 4: Where smoke barriers are permitted by 18-3.7.2(b).

18-2.3 Capacity of Means of Egress.

18-2.3.1 Exits, arranged as specified elsewhere in this section of the *Code*, shall be sufficient to provide for the occupant load in numbers of persons as determined in accordance with 18-1.7, on the following basis:

(a) Doors, including those three risers or 24 in. (60.96 cm) above or below ground level, Class A ramps and horizontal exits—100 persons per unit of exit width.

(b) Stairs and other types of exits not included in (a) above—75 persons per unit of exit width.

18-2.3.2* Street-floor exits shall provide units of exit width, as follows, occupant load being determined in accordance with 18-1.7.

(a) One unit for each 100 persons street-floor capacity for doors and other level exits, including those 24 in. (60.96 cm) or three risers above or below ground level.

(b) One unit for each 75 persons street-floor capacity for stair or other exit requiring descent to ground level.

(c) One and one-half units for each two-unit required stair from upper floors discharging through the street floor.

(d) One and one-half exit units for each two-unit required stair from floors below the street floor discharging through the street floor.

18-2.3.3 Every floor below the level of exit discharge shall have exits sufficient to provide for the occupant load of that floor as determined in

accordance with 18-1.7 on the basis of 100 persons per exit unit for travel on the same level, 75 persons for upward travel, as up stairs.

18-2.3.4 Upper-floor exits shall provide numbers of units of exit width sufficient to meet the requirements of 18-2.3.1.

18-2.4 Number of Exits.

18-2.4.1 Every living unit shall have access to at least two separate exits remote from each other as required by 5-5.1.

Exception No. 1: Any living unit which has an exit directly to the street or yard at ground level or by way of an outside stairway, or an enclosed stairway with fire resistance rating of 1 hour or more serving that apartment only and not communicating with any floor below the level of exit discharge or other area not a part of the apartment served, may have a single exit.

Exception No. 2: A building of any height with not more than four living units per floor with a smokeproof tower or outside stair in accordance with the requirements of 5-2.3 as the exit, immediately accessible to all living units served thereby, may have a single exit. ["Immediately accessible" means there is not more than 20 ft (609.6 cm) of travel distance to reach an exit from the entrance door of any living unit.]

Exception No. 3: Any building three stories or less in height with ¾-hour horizontal and vertical separation between living units may have a single exit, under the following conditions:

(a) The stairway is completely enclosed with a partition having a fire resistance rating of at least 1 hour with self-closing 1-hour fire protection rated doors protecting all openings between the stairway enclosure and the building.

(b) The stairway does not serve more than ½ story below the level of exit discharge.

(c) All corridors serving as access to exits have at least a 1-hour fire resistance rating.

(d) There is not more than 35 ft (10.67 m) of travel distance to reach an exit from the entrance door of any living unit.

18-2.5 Arrangement of Exits.

18-2.5.1 Access to all required exits shall be in accordance with Section 5-5, shall be unobstructed, and shall not be blocked from open view by ornamentation, curtain, or other appurtenance.

18-2.6 Measurement of Travel Distance to Exits.

18-2.6.1 Travel distance from the door of a room in a suite or living unit to a corridor door shall not exceed the following limits:

(a) For buildings using Option 1 or 3 — 50 ft (15.24 m).

(b) For buildings using Option 2 or 4 — 100 ft (30.48 m).

(c) For apartments for the elderly using Option 1 or 3 — 50 ft (15.24 m).

(d) For apartments for the elderly using Option 2 — 75 ft (22.86 m).

(e) For apartments for the elderly using Option 4 — 100 ft (30.48 m).

18-2.6.2 Maximum single path corridor length of 35 ft (10.67 m) is permitted.

18-2.6.3 The travel distance from a living unit entrance door to the nearest exit shall not exceed the following limits:

(a) For buildings using Option 1 — 100 ft (30.48 m).

(b) For buildings using Option 2, 3 or 4 — 150 ft (45.72 m).

(c) In apartments for the elderly using Option 1 — 75 ft (22.86 m).

(d) In apartments for the elderly using Option 2, 3, or 4 — 100 ft (30.48 m).

Table 18-2.6.3
Travel Distance from Living Unit Entrance Door to Nearest Exit

	Options			
Occupancy	**No. 1**	**No. 2**	**No. 3**	**No. 4**
Residential	100 ft (30.48 m)	150 ft (45.72 m)	150 ft (45.72 m)	150 ft (45.72 m)
Apartments for Elderly	75 ft (22.86 m)	100 ft (30.48 m)	100 ft (30.48 m)	100 ft (30.48 m)

18-2.7 Discharge from Exits.

18-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

18-2.7.2 A maximum of 50 percent of the exits may discharge through areas on the floor of exit discharge in accordance with 5-7.2.

18-2.8 Illumination of Means of Egress.

18-2.8.1 Every public space, hallway, stairway, and other means of egress shall have illumination in accordance with Section 5-8.

18-2.9 Emergency Lighting.

18-2.9.1 Any apartment building with more than twelve living units or four or more stories in height shall have emergency lighting in accordance with Section 5-9.

Exception: Where every living unit has a direct exit to the outside at grade level.

18-2.10 Marking of Means of Egress.

18-2.10.1 Signs in accordance with Section 5-10 shall be provided in all apartment buildings requiring more than one exit.

18-2.11 Special Features.

18-2.11.1 Within any individual living unit, stairs more than one story above or below the entrance floor level of the living unit shall not be permitted.

18-2.11.2 Smokeproof towers shall be provided in accordance with 5-2.3 in buildings seven or more stories in height using Option 1, 2, or 3.

18-2.11.3* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2.*).

18-2.11.4 Spiral stairs in accordance with 5-2.2.1.6 are permitted within a single living unit.

Exception: Not permitted in apartments for the elderly.

18-2.11.5 Winders in accordance with 5-2.2.2.4 are permitted within a single living unit.

Exception: Not permitted in apartments for the elderly.

SECTION 18-3 PROTECTION

18-3.1 Protection of Vertical Openings.

18-3.1.1 Every stairway, elevator shaft and other vertical opening shall be enclosed or protected in accordance with Section 6-2.2.

Exception No. 1: Stairway enclosures shall not be required where a one-story stair connects two levels within a single dwelling unit, guest room or suite located above the level of exit discharge.

Exception No. 2: There shall be no unprotected vertical opening in any building or fire section with only one exit.

Exception No. 3: Vertical exits shall be protected as follows:

(a) In buildings using Option 1, 2, or 3 — Fire resistance of walls in buildings of one to three stories shall be 1 hour; four or more stories, 2 hours.

Fire protection rating of doors in buildings of one to three stories shall be 1 hour; four or more stories, 1½ hours.

(b) In buildings using Option 4 — Fire resistance of walls in buildings of one to three stories shall be ¾ hour; four or more stories, 1 hour.

Fire protection rating of doors in buildings of one to three stories in height shall be ¾ hour; four or more stories, 1 hour.

Exception No. 4: An atrium may be utilized in accordance with 6-2.2.3.1, Exception No. 2.

18-3.1.2* Any required exit stair which is so located that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to the lobby level, or to a mezzanine within the lobby. (*See Section 18-2.7.*)

18-3.1.3 No floor below the level of exit discharge, used only for storage, heating equipment, or other purposes other than residential occupancy open to the public, shall have unprotected openings to floors used for residential purposes.

18-3.2 Protection from Hazards.

18-3.2.1 In buildings using Option 1, 2, or 3, every hazardous area shall be separated from other parts of the building by construction having a fire resistance rating of at least 1 hour and communicating openings shall be protected by approved smoke-actuated automatic, or self-closing fire doors, or such area shall be equipped with automatic extinguishing system. Hazardous areas include, but are not limited to:

Boiler and heater rooms
Laundries
Repair shops
Rooms or spaces used for storage of combustible supplies and equipment in quantities deemed hazardous by the authority having jurisdiction.

18-3.2.2 In buildings using Option 4, the enclosure for hazardous areas may be of any reasonably smoke resisting construction with or without a fire resistance rating.

18-3.3 Interior Finish.

18-3.3.1 Interior finish on walls and ceilings, in accordance with Section 6-5, and subject to the limitations and modifications therein specified, shall be as follows:

(a) In buildings using Option 1, 2 or 3

1. Vertical Exits — Class A
2. Exit Access — Class A or B
3. Lobbies, corridors that are not exit access — Class A or B

4. Individual apartments and other habitable spaces — Class A, B, or C.

(b) In buildings using Option 4

1. Vertical exits — Class A or Class B
2. Exit access — Class A, B or C
3. Lobbies, corridors that are not exit access — Class A, B or C
4. Individual apartments and other habitable spaces — Class A, B or C.

18-3.3.2 Interior floor finish within corridors and exits of buildings using Option 1 or 2 shall be Class I or Class II in accordance with Section 6-5.

18-3.4 Detection, Alarm and Communication Systems.

18-3.4.1 Smoke Detectors.

18-3.4.1.1* An approved single station smoke detector, continuously powered by the house electrical service, shall be installed in an approved manner in every living unit within the apartment building. When activated, the detector shall initiate an alarm which is audible in the sleeping rooms of that unit. This individual unit detector shall be in addition to any sprinkler system or other detection system that may be installed in the building. For location of single station detectors, see Appendix A, Chapter 18.

18-3.4.1.2 In apartments for the elderly in buildings seven stories and higher, in addition to being tied into the 24-hour manned location, the detectors shall be tied into an annunciator panel which will provide indication of the floor where the detector is activated.

18-3.4.1.3 In buildings using Option 2 a total automatic smoke detection system is required. An automatic smoke detection system is one which is designed to give complete coverage with smoke detectors in accordance with the spacings and layouts given in *Standard on Automatic Fire Detectors*, NFPA 72E (*see Appendix B*), and laboratory test data and is one in which the detectors are tied together to initiate the alarm and other automatic fire protection devices.

18-3.4.2 Alarms.

18-3.4.2.1 Every apartment building of four or more stories in height, or with 12 or more apartment units, shall have a manual fire alarm system in accordance with Section 7-6.

18-3.4.2.2 In apartments for the elderly, buildings of two or more stories in height, or with 12 or more living units, shall have a manual fire alarm system in accordance with Section 7-6.

Exception: Where all units in a one-story building have direct access to outside at grade.

18-3.4.2.3 Buildings seven or more stories in height shall have an annunciator panel connected with the alarm system to visually indicate the floor of fire involvement. The location of the annunciator panel at an accessible location shall be approved by the authority having jurisdiction.

18-3.4.3 In buildings seven or more stories using Option 1 or 3, in addition to a manual fire alarm system, an approved means of voice communication between an accessible central point approved by the authority having jurisdiction and the corridors, elevators, elevator lobbies and exits shall be provided.

18-3.4.4 In apartments for the elderly located in buildings seven or more stories in height using Option 2, an approved means of voice communication between an accessible central point approved by the authority having jurisdiction and the corridors, elevators, elevator lobbies and exits shall be provided.

18-3.4.5 In buildings using Option 2, four stories or more in height, or with 12 or more units, the alarm system shall be initiated by the automatic smoke detection system, as well as being capable of manual initiation.

18-3.4.6 In buildings using Option 3, the audible alarm shall be activated upon operation of the sprinkler system as well as manually.

18-3.4.7 In buildings using Option 4, four stories or more in height, or with 12 or more units, the alarm system shall be activated upon operation of the automatic sprinkler system as well as being capable of manual initiation.

18-3.4.8* In apartments for the elderly located in buildings four or more stories in height the fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the building is located by the most direct and reliable method approved by local regulations in accordance with 7-6.3.4.

18-3.5 Extinguishment Requirements.

18-3.5.1 In buildings using Option 3 automatic sprinklers shall be installed in corridors along the corridor ceiling, and one sprinkler head shall be opposite the center of and inside any living unit door opening onto the corridor.

18-3.5.2 The sprinkler installation required in 18-3.5.1 shall meet the requirements of Section 7-7 and *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), in terms of workmanship and materials.

18-3.5.3 The installation of the corridor sprinklers required by 18-3.5.1 shall meet the spacing and protection area requirements of *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

18-3.5.4 Buildings using Option 4 shall be protected throughout by an approved automatic sprinkler system. The automatic sprinkler system shall meet the requirements of Section 7-7, including requirements for supervision.

Exception: Sprinkler installation may be omitted in small compartmented areas such as closets not over 24 sq ft (2.23 sq m)and bathrooms not over 55 sq ft (5.11 sq m).

18-3.5.5 Hand portable fire extinguishers shall be provided in hazardous areas. When provided, hand portable fire extinguishers shall be installed and maintained as specified in Section 7-7 and *Standard for Portable Fire Extinguishers*, NFPA 10 (*see Appendix B*).

18-3.6 Corridors.

18-3.6.1 Exit access corridors shall be protected as follows:

(a) In buildings using Option 1 — Fire resistance of corridor walls shall be 1 hour; fire protection rating of doors from living units to corridor, 20 minutes.

(b) In buildings using Option 2 or 3 — Fire resistance of corridor walls shall be ¾ hour; fire protection rating of doors from living unit to corridor, 20 minutes.

(c) In buildings using Option 4 — Fire resistance of corridor walls shall be ½ hour; fire protection rating of doors from living unit to corridor, 20 minutes.

18-3.6.2 Doors between apartments and corridors shall be self-closing.

18-3.6.3* The fire resistance rating of living unit/corridor doors shall be 20 minutes.

18-3.7 Subdivisions of Building Spaces.

18-3.7.1 Horizontal Exits. Sufficient horizontal exits are required to limit the maximum gross area per story between horizontal exits to that specified below:

(a) The gross area per story between horizontal exits shall not be limited for the purposes of this *Code* for buildings three stories or less.

(b) In buildings using Option 1 or 2, the gross area per story between horizontal exits shall be a maximum of 20,000 sq ft (1,858 sq m) for buildings four to six stories in height.

(c) The gross area per story between horizontal exits for buildings seven or more stories in height shall be a maximum of 10,000 sq ft (929 sq m) in buildings using Option 1; 15,000 sq ft (1394 sq m) in Option 2; and 20,000 sq ft (1858 sq m) in Option 3.

18-3.7.2 Protection of horizontal exits shall be as follows:

(a) In buildings using Option 1, 2, or 3 — Fire resistance of walls, 2 hours; fire protection rating of doors, 1½ hours.

(b) In apartments for the elderly using Option 4, smoke barriers may be used in lieu of horizontal exits. Smoke barriers shall be constructed in accordance with the provisions of Section 6-3 and shall have a fire resistance rating of at least 1 hour.

18-3.7.3 Smoke Barriers. Smoke barriers in accordance with Section 6-3 shall be provided in exit access corridors between stairs as follows:

(a) In buildings using Option 1 when stairs are spaced greater than 50 ft (15.24 m) apart

(b) In buildings using Option 2 or 3 when exit stairs are spaced greater than 100 ft (30.48 m) apart

(c) In apartments for the elderly using Option 1 when exit stairs are spaced greater than 50 ft (15.24 m) apart

(d) In apartments for the elderly using Option 2 or 3 when exit stairs are spaced greater than 75 ft (22.86 m) apart

(e) In apartments for the elderly using Option 4 when exit stairs are greater than 125 ft (38.10 m) apart.

Protection may be accomplished in conjunction with the provisions for horizontal exits.

Table 18-3.7.3
Smoke Barriers Are Required Where Exit Stair Spacing Is in Excess of:

	Options			
Occupancy	**No. 1**	**No. 2**	**No. 3**	**No. 4**
Residential	50 ft (15.24 m)	100 ft (30.48 m)	100 ft (30.48 m)	NR
Apartments for Elderly	50 ft (15.24 m)	75 ft (22.86 m)	75 ft (22.86 m)	125 ft (38.10 m)

Note: When required, there shall be a smoke barrier between stairs.

18-3.7.4 In apartments for the elderly the minimum width of smoke barrier doors is 32 in. (81.28 cm) and may be a single door that will swing in either direction. Side lights or a vision panel are required in smoke doors.

18-3.8 Special Features.

18-3.8.1 Interior exit access corridors in buildings seven or more stories in height using Option 1 or 2, and in all apartments for the elderly using Option 1, 2, or 3 over three stories in height, shall be continuously pressurized at a minimum of 0.01 in. (2.49 Pa) water, measured at any living unit door.

Table 18-1
Alternate Requirements for New Apartment Buildings According to Protection Provided

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Max. Gross Area per Story Between Horizontal Exits				
1-3 Stories	NR	NR	NR	NR
4-6 Stories	20,000 sq ft (1,858 sq m)	20,000 sq ft (1,858 sq m)	NR	NR
>6 Stories	10,000 sq ft (929 sq m)	15,000 sq ft (1,394 sq m)	20,000 sq ft (1,858 sq m)	NR
Exit Access				
Travel Distance	100 ft (30.48 m)	150 ft (45.72 m)	150 ft (45.72 m)	150 ft (45.72 m)
Smoke Barrier Req. for Stair Spacing	>50 ft (15.24 m)	>100 ft (30.48 m)	>100 ft (30.48 m)	NR
Max. Single Path Corridor Distance	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Max. Dead End	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Fire Resistance				
Walls	1 hr	¾ hr	¾ hr	½ hr
Doors (Fire Protection Rating)	20 min	20 min	20 min	20 min
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Exits—Vertical				
Fire Resistance Walls				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	2 hr	2 hr	2 hr	1 hr
Smokeproof Towers				
1-6 Stories	NR	NR	NR	NR
>6 Stories	Req.	Req.	Req.	NR
Doors				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	1½ hr	1½ hr	1½ hr	1 hr
Flame Spread				
Walls & Ceilings	A	A	A	A or B
Floors	I or II	I or II	NR	NR
Bedroom Windows, 1- to 6-Story Bldg. Ref. 18–1.1.4	Req.	Req.	Req.	Req.

Table 18-1 (Continued)

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Exits—Horizontal				
Fire Resistance				
Walls	2 hr	2 hr	2 hr	NA
Doors	1½ hr	1½ hr	1½ hr	NA
Habitable Spaces				
Max. Distance from any Room Door to Corridor	50 ft (15.24 m)	100 ft (30.48 m)	50 ft (15.24 m)	100 ft (30.48 m)
Flame Spread				
Walls & Ceilings	A, B, or C	A, B, or C	A, B, or C	A, B, or C
Smoke Detector				
Indiv. in Unit	Req.	Req.	Req.	Req.
Door to Corridor				
Self-closing	Req.	Req.	Req.	Req.
Alarm System				
>3 Stories or				
>11 Units	manual	manual & auto	manual & auto	manual & auto
>6 Stories	annunciator panel and voice communication	annunciator panel	annunciator panel and voice communication	annunciator panel
HVAC				
>6 Stories Pressurized Corridor, 0.01 in. Water (2.49 Pa), min.	Req.	Req.	NR	NR
Elevator—ANSI	A17.1	A17.1	A17.1	A17.1

NL=No Limit.
NR=No Requirements.
NA=Not Applicable.

Table 18-2
Alternate Requirements for New Apartments for the Elderly According to Protection Provided

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Max. Gross Area per Story Between Horizontal Exits				
1-3 Stories	NL	NL	NL	NL
4-6 Stories	20,000 sq ft (1,858 sq m)	20,000 sq ft (1,858 sq m)	NL	NL
>6 Stories	10,000 sq ft (929 sq m)	15,000 sq ft (1,394 sq m)	20,000 sq ft (1,858 sq m)	NL
Exit Access				
Travel Distance	75 ft (22.86 m)	100 ft (30.48 m)	100 ft (30.48 m)	100 ft (30.48 m)
Smoke Barrier Req. for Stair Spacing	>50 ft (15.24 m)	>75 ft (22.86 m)	>75 ft (22.86 m)	>125 ft (38.10 m)
Max. Single Path Corridor Distance	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Max. Dead End	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Fire Resistance				
Walls	1 hr	¾ hr	¾ hr	½ hr
Doors (Fire Protection Rating)	20 min	20 min	20 min	20 min
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Exits—Vertical				
Fire Resistance Walls				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	2 hr	2 hr	2 hr	1 hr
Smokeproof Towers				
1-6 Stories	NR	NR	NR	NR
>6 Stories	Req.	Req.	Req.	NR
Doors				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	1½ hr	1½ hr	1½ hr	1 hr
Flame Spread				
Walls & Ceilings	A	A	A	A or B
Floors	I or II	I or II	NR	NR
Bedroom Windows, 1- to 6-Story Bldg. Ref. 18–1.1.4	Req.	Req.	Req.	Req.

Table 18-2 (Continued)

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Exits—Horizontal				
Fire Resistance				
Walls	2 hr	2 hr	2 hr	NR
Doors	1½ hr	1½ hr	1½ hr	NR
Habitable Spaces				
Max. Distance from any Room Door to Corridor	50 ft (15.24 m)	75 ft (22.86)	50 ft (15.24 m)	100 ft (30.48 m)
Flame Spread				
Walls & Ceilings	A, B, or C	A, B, or C	A, B, or C	A, B, or C
Smoke Detector				
Indiv. in Unit	Req.	Req.	Req.	Req.
Door to Corridor				
Self-closing	Req.	Req.	Req.	Req.
Alarm System				
2 Stories or more, or >11 Units	manual	manual	manual & auto	manual
4 Stories or more	auto to FD	auto* & auto to FD	auto* & auto to FD	auto* & auto to FD
>6 Stories	annunciator and voice communication	annunciator and voice communication	annunciator and voice communication	annunciator
HVAC				
>3 or more, Stories Pressurized Corridor, 0.01 in. Water (2.49 Pa), min.	Req.	Req.	Req.	NR
Elevator—ANSI	A17.1	A17.1	A17.1	A17.1
Vestibule	Req.	Req.	Req.	Req.

NL=No Limit.
NR=No Requirements.
NA=Not Applicable.
*=Also req. in buildings with 12 or more living units.

SECTION 18-4 SPECIAL PROVISIONS

SECTION 18-5 BUILDING SERVICES

18-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

18-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating, and air conditioning equipment shall comply with the provisions of Section 7-2.

18-5.3 Elevators, Dumbwaiters, and Vertical Conveyors.

18-5.3.1 Elevators, dumbwaiters, and vertical conveyors shall comply with the provisions of Section 7-4.

18-5.3.2 In apartments for the elderly of seven or more stories, vestibules designed in accordance with the smoke partition requirements of Section 6-3 shall be provided at each floor.

18-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators, and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 19 EXISTING APARTMENT BUILDINGS

(See also Chapter 31.)

SECTION 19-1 GENERAL REQUIREMENTS

19-1.1 Application.

19-1.1.1 This *Code* has differing requirements for the several types of residential occupancies; thus, the *Code* has several residential occupancy chapters, Chapters 16 through 23.

19-1.1.2 All existing buildings classified as apartment buildings by 19-1.3 shall conform to the provisions of this chapter, and shall meet the requirements of one of the following options:

Option 1: Buildings without fire suppression or detection systems;

Option 2: Buildings provided with a total automatic smoke detection system;

Option 3: Buildings provided with automatic sprinkler protection in selected areas;

Option 4: Buildings protected throughout by an approved automatic sprinkler system.

19-1.1.3 Existing apartments for the elderly as defined in 19-1.3.1 shall meet the requirements for existing apartment houses as provided in this section unless otherwise noted.

19-1.1.4 Every individual living unit covered by this section shall at least comply with the minimum provisions for windows of Chapter 22, One- and Two-Family Dwellings.

Exception: The requirement of Section 22-2 for a second means of escape may be waived for buildings over six stories provided that adequate means for smoke ventilation are employed.

19-1.2 Mixed Occupancies.

19-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.4 of this *Code* shall be applicable.

19-1.2.2 For requirements on mixed mercantile and residential occupancies, see 25-1.2.

19-1.3 Definitions.

19-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

Apartment Buildings. Includes buildings containing three or more living units with independent cooking and bathroom facilities, whether designated as apartment house, tenement, garden apartment, or by any other name.

Apartments for the Elderly. An apartment building specifically designed for housing elderly individuals who are capable of self-preservation.

Mezzanine. An intermediate level between the floor and ceiling of any story and covering not more than one-third of the floor area of the room in which it is located.

19-1.4 Classification of Occupancy. (*See 19-1.3.1.*)

19-1.5 Classification of Hazard of Contents.

19-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), shall apply.

19-1.6 Minimum Construction Requirements. No special requirements.

19-1.7 Occupant Load.

19-1.7.1* The occupant load in numbers of persons for whom exits are to be provided shall be determined on the basis of one person per 200 sq ft (18.58 sq m) gross floor area, or the maximum probable population of any room or section under consideration, whichever is greater. The occupant load of any open mezzanine or balcony shall be added to the occupant load of the floor below for the purpose of determining exit capacity.

SECTION 19-2 MEANS OF EGRESS REQUIREMENTS

19-2.1 General.

19-2.2 Types of Exits.

19-2.2.1 Exits, or exit components, arranged in accordance with Chapter 5, shall be of one or more of the following types:

(a) Doors, as per 5-2.1.

(b) Revolving doors, as per 5-2.1 (not at foot of stairs).

(c) Doors to subways, only if the subway meets the requirements of exit passageways or tunnels as specified in 5-2.7.

(d) Interior stairs, Class A or Class B, in accordance with 5-2.2.

(e) Outside stairs, in accordance with 5-2.5.

(f) Smokeproof towers, in accordance with 5-2.3.

(g) Ramps, Class A or Class B, in accordance with 5-2.6.

(h) Escalators, in accordance with 5-2.8.

(i) Horizontal exits, in accordance with 5-2.4.

(j) Exit passageways, in accordance with 5-2.7.

(k) Fire escape stairs, in accordance with 5-2.9.

19-2.2.2 In apartments for the elderly, smoke barriers are required.

Exception No. 1: Where exterior exit balconies are provided.

Exception No. 2: Where a single exit building is acceptable under 19-2.4.1.

Exception No. 3: Where buildings are three or less stories in height.

19-2.2.3 Any existing interior stair or fire escape not complying with 5-2.2 or 5-2.9 may be continued in use subject to the approval of the authority having jurisdiction.

19-2.3 Capacity of Means of Egress.

19-2.3.1 Exits, arranged as specified elsewhere in this section of the *Code*, shall be sufficient to provide for the occupant load in numbers of persons as determined in accordance with 19-1.7, on the following basis:

(a) Doors, including those three risers or 24 in. (60.96 cm) above or below ground level, Class A ramps and horizontal exits—100 persons per unit of exit width.

(b) Stairs and other types of exits not included in (a) above—75 persons per unit of exit width.

19-2.3.2* Street-floor exits shall provide units of exit width as follows, occupant load being determined in accordance with 19-1.7.

(a) One unit for each 100 persons street-floor capacity for doors and other level exits, including those 24 in. (60.96 cm) or three risers above or below ground level.

(b) One unit for each 75 persons street-floor capacity for stair or other exit requiring descent to ground level.

(c) One and one-half exit units for each two-unit required stair from upper floors discharging through the street-floor.

(d) One and one-half exit units for each two-unit required stair from floors below the street-floor discharging through the street-floor.

19-2.3.3 Every floor below the level of exit discharge shall have exits sufficient to provide for the occupant load of that floor as determined in accordance with 19-1.7 on the basis of 100 persons per exit unit for travel on the same level, 75 persons for upward travel, as up stairs.

19-2.3.4 Upper-floor exits shall provide numbers of units of exit width sufficient to meet the requirements of 19-2.3.1.

19-2.3.5 In apartments for the elderly the minimum width of exit access corridors is controlled by 19-3.7.3.

19-2.4 Number of Exits.

19-2.4.1 Every living unit shall have access to at least two separate exits remote from each other as required by 5-5.1.

Exception No. 1: Any living unit which has an exit directly to the street or yard at ground level or by way of an outside stairway, or an enclosed stairway with fire resistance rating of 1 hour or more serving that apartment only and not communicating with any floor below the level of exit discharge or other area not a part of the apartment served, may have a single exit.

Exception No. 2: A building of any height with not more than four living units per floor with a smokeproof tower or outside stair in accordance with the requirements of 5-2.3 as the exit, immediately accessible to all living units served thereby, may have a single exit. ["Immediately accessible" means there is not more than 20 ft (609.6 cm) of travel distance to reach an exit from the entrance door of any living unit.]

Exception No. 3: Any building three stories or less in height, with ¾-hour horizontal and vertical separation between living units, may have a single exit, under the following conditions:

(a) The stairway is completely enclosed, with a partition having a fire resistance rating of at least 1 hour with self-closing 1-hour fire protection rated doors protecting all openings between the stairway enclosure and the building.

(b) The stairway does not serve more than one-half story below the level of exit discharge.

(c) All corridors serving as access to exits have at least a 1-hour fire resistance rating.

(d) There is not more than 35 ft (10.67 m) of travel distance to reach an exit from the entrance door of any living unit.

19-2.5 Arrangement of Exits.

19-2.5.1 Access to all required exits shall be in accordance with Section 5-5, shall be unobstructed, and shall not be blocked from open view by ornamentation, curtain, or other appurtenance.

19-2.6 Measurement of Travel Distance to Exits.

19-2.6.1 Travel distance from the door of a room in a suite or living unit to a corridor door shall not exceed the following limits:

(a) For buildings using Option 1 or 3 — 50 ft (15.24 m).

(b) For buildings using Option 2 or 4 — 100 ft (30.48 m).

19-2.6.2 Maximum single path corridor length of 35 ft (10.67 m) permitted.

19-2.6.3 The travel distance from a living unit entrance door to the nearest exit shall not exceed the following limits:

(a) For buildings using Option 1 — 100 ft (30.48 m).

(b) For buildings using Option 2, 3 or 4 — 150 ft (45.72 m).

(c) In apartments for the elderly using Option 1 — 75 ft (22.86 m).

(d) In apartments for the elderly using Option 2, 3 or 4 — 100 ft (30.48 m).

Table 19-2.6.3
Travel Distance from Living Unit Entrance Door to Nearest Exit

	Options			
Occupancy	**No. 1**	**No. 2**	**No. 3**	**No. 4**
Residential	100 ft (30.48 m)	150 ft (45.72 m)	150 ft (45.72 m)	150 ft (45.72 m)
Apartments for Elderly	75 ft (22.86 m)	100 ft (30.48 m)	100 ft (30.48 m)	100 ft (30.48 m)

19-2.7 Discharge from Exits.

19-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

19-2.7.2 If any exits discharge through areas on the level of exit discharge, the conditions of 5-7.2 shall be met.

19-2.8 Illumination of Means of Egress.

19-2.8.1 Every public space, hallway, stairway, and other means of egress shall have illumination in accordance with Section 5-8.

19-2.9 Emergency Lighting.

19-2.9.1 Any apartment building with more than 12 living units or four or more stories in height shall have emergency lighting in accordance with Section 5-9.

Exception: Where every living unit has a direct exit to the outside at grade level.

19-2.10 Marking of Means of Egress.

19-2.10.1 Exit signs in accordance with Section 5-10 shall be provided in all apartment buildings requiring more than one exit.

19-2.11 Special Features.

19-2.11.1 Within any individual living unit, stairs more than one story above or below the entrance floor level of the living unit shall not be permitted.

19-2.11.2* In buildings using Option 1, 2 or 3, smokeproof towers shall be provided in accordance with 5-2.3 in buildings seven or more stories in height.

19-2.11.3* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2*).

19-2.11.4 Spiral stairs in accordance with 5-2.2.1.6 are permitted within a single living unit.

Exception: Not permitted in apartments for the elderly.

19-2.11.5 Winders in accordance with 5-2.2.2.4 are permitted.

Exception: Not permitted in apartments for the elderly.

SECTION 19-3 PROTECTION

19-3.1 Protection of Vertical Openings.

19-3.1.1 Every stairway, elevator shaft and other vertical opening shall be enclosed or protected in accordance with 6-2.2 or provide means of satisfying the requirements of Section 2-9.

Exception No. 1: Unprotected vertical openings connecting not more than three floors may be permitted in accordance with the conditions of 6-2.2.3.1, Exception No. 1.

Exception No. 2: In any building provided with a complete automatic sprinkler system in accordance with Section 7-7, and where exits and required ways of travel thereto are adequately safeguarded against fire and smoke within the building or where every individual room has direct access to an exterior exit without passing through any public corridor, the protection of vertical openings not part of required exits may be waived by the authority having jurisdiction to such extent as such openings do not endanger required means of egress.

Exception No. 3: Stairway enclosures shall not be required where a one-story stair connects two levels within a single dwelling unit, guest room or suite located above the level of exit discharge.

Exception No. 4: An atrium may be utilized in accordance with 6-2.2.3.1, Exception No. 2.

19-3.1.2 Any required exit stair which is so located that it is necessary to pass through the lobby or other open space to reach the outside of the building shall be continuously enclosed down to the lobby level, or to a mezzanine within the lobby. (*See 19-2.7.*)

19-3.1.3 No floor below the level of exit discharge used only for storage, heating equipment, or other purpose other than residential occupancy open to the public shall have unprotected openings to floors used for residential purposes.

19-3.2 Protection from Hazards.

19-3.2.1 Hazardous areas, including but not limited to boiler and heater rooms, laundries, repair shops, and rooms or spaces used for storage of combustible supplies and equipment deemed hazardous by the authority having jurisdiction, shall be protected as follows:

(a) In buildings using Option 1, 2 or 3, every hazardous area shall be separated from other parts of the building by construction having a fire resistance rating of at least 1 hour. Communicating openings shall be protected by approved smoke-activated automatic, or self-closing, fire doors with a fire protection rating of ¾ hour.

(b) In buildings using Option 4, the enclosure for hazardous areas may be of any reasonably smoke resisting construction with or without a fire resistance rating.

19-3.3 Interior Finish.

19-3.3.1 Interior finish on walls and ceilings, in accordance with Section 6-5, and subject to the limitations and modifications therein specified, shall be as follows:

(a) In buildings using Option 1, 2 or 3

1. Vertical exits — Class A or B
2. Exit access — Class A or B
3. Lobbies, corridors that are not exit access — Class A or B
4. Individual living units and other habitable spaces — Class A, B, or C

(b) In buildings using Option 4

1. Vertical exits — Class A, B, or C
2. Exit access — Class A, B or C
3. Lobbies, corridors that are not exit access — Class A, B or C
4. Individual living units and other habitable spaces — Class A, B or C

19-3.3.2 Interior Floor Finish. In buildings using Option 1 or 2, interior floor finish in corridors and exitways shall be Class I or Class II in accordance with Section 6-5.

Exception: Previously installed floor coverings may be continued in use, subject to the approval of the authority having jurisdiction.

19-3.4 Detection, Alarm and Communication Systems.

19-3.4.1 Smoke Detectors.

19-3.4.1.1* An approved single station smoke detector, continuously powered by the house electrical service, shall be installed in an approved manner in every living unit within the apartment building. When activated, the detector shall initiate an alarm which is audible in the sleeping rooms of that unit. This individual unit detector shall be in addition to any sprinkler system or other detection system that may be installed in the building. For location of single station detectors, see Appendix A, Chapter 19.

19-3.4.1.2 In apartments for the elderly in buildings seven stories and higher, in addition to being tied into the 24-hour manned location, the detectors shall be tied into an annunciator panel which will provide indication of the floor where the detector is activated.

19-3.4.1.3 In buildings using Option 2, a total automatic smoke detection system is required. An automatic smoke detection system is one which is designed to give complete coverage with smoke detectors in accordance with the spacing and layouts given in *Standard on Automatic Fire Detectors*, NFPA 72E (*see Appendix B*), and laboratory test data, and is one in which the detectors are tied together to initiate the alarm and other automatic fire protection devices.

19-3.4.2 Alarms.

19-3.4.2.1 Every apartment building of four or more stories in height or 12 or more apartment units shall have a manual fire alarm system in accordance with Section 7-6.

19-3.4.2.2 In apartments for the elderly, buildings of two or more stories in height or 12 or more living units shall have a manual fire alarm system in accordance with Section 7-6.

Exception: Where all units in a one-story building have direct access to outside at grade.

19-3.4.2.3 Buildings seven or more stories in height shall have an annunciator panel connected with the alarm system to visually indicate the floor of fire involvement. The location of the annunciator panel at an accessible location shall be approved by the authority having jurisdiction.

19-3.4.3* In apartments for the elderly using Option 1 or 3, in buildings seven or more stories in height, in addition to a manual fire alarm system, an approved means of voice communication between an accessible central point approved by the authority having jurisdiction and the corridors, elevators, elevator lobbies and exits shall be provided.

19-3.4.4 In buildings using Option 2, four stories or more in height, or with 12 or more units, the alarm system shall be initiated by the automatic fire or smoke detection system, as well as being capable of manual initiation.

19-3.4.5 In buildings using Option 3, the audible alarm shall be activated upon operation of the sprinkler system as well as manually.

19-3.4.6 In buildings using Option 4, four stories or more in height, or with 12 or more units, the alarm system shall be activated upon operation of the automatic sprinkler system as well as being capable of manual initiation.

19-3.4.7* In apartments for the elderly located in buildings four or more stories in height the fire alarm system shall be arranged to transmit an alarm automatically to the fire department legally committed to serve the area in which the building is located by the most direct and reliable method approved by local regulations in accordance with 7-6.3.4.

19-3.5 Extinguishment Requirements.

19-3.5.1 In buildings using Option 3, automatic sprinklers shall be installed in corridors along the corridor ceiling, and one sprinkler head shall be opposite the center of and inside any living unit door opening into the corridor.

Exception: The sprinkler head inside living units may be omitted if the door to the living unit has 20 minutes or greater fire resistance and is self-closing.

19-3.5.2 The sprinkler installation required in 19-3.5.1 shall meet the requirements of Section 7-7 and *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), in terms of workmanship and materials.

19-3.5.3 The installation of the corridor sprinklers required in 19-3.5.1 shall not exceed the maximum spacing and protection area requirements of *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

19-3.5.4 Buildings using Option 4 shall be protected throughout by an approved automatic sprinkler system. The automatic sprinkler system shall meet the requirements of Section 7-7 and the requirements for supervision, for buildings over six stories in height.

19-3.5.5 Automatic sprinkler system installations required by 19-3.5.4 shall meet the requirements of Section 7-7 and *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*).

Exception: Sprinkler installation may be omitted in small compartmented areas such as closets not over 24 sq ft (2.23 sq m) and bathrooms not over 55 sq ft (5.11 sq m).

19-3.5.6 Hand portable fire extinguishers shall be provided in hazardous areas. When provided, hand portable fire extinguishers shall be installed and maintained as specified in Section 7-7 and *Standard for Portable Fire Extinguishers*, NFPA 10 (*see Appendix B*).

19-3.6 Corridors.

19-3.6.1 Exit access corridors shall be protected as follows:

(a) In buildings using Option 1 or 2, corridor walls shall have fire resistance rating of not less than 30 minutes; doors from living units to corridor shall have 20 minutes fire resistance rating or shall be previously approved 1¾-in. (4.45-cm) solid bonded wood core doors.

(b) In buildings using Option 3, fire resistance of corridor walls shall be ¾ hour; doors and frames shall be constructed to resist passage of smoke. Doors shall be equipped with latches for keeping doors tightly closed.

(c) In buildings using Option 4, fire resistance of corridor walls shall be ½ hour; doors and frames shall be constructed to resist the passage of smoke. Doors shall be equipped with latches for keeping doors tightly closed.

19-3.6.2 Doors between living units and corridors shall be self-closing. Doors shall be equipped with latches for keeping doors tightly closed.

19-3.6.3* The fire resistance rating of living unit/corridor doors shall be minimum 20 minutes.

Exception No. 1: Previously approved 1¾-in. (4.45-cm) solid bonded wood core doors may continue in use.

Exception No. 2: In buildings using Option 3 or 4, doors shall be so constructed as to resist the passage of smoke.

19-3.6.4 Transfer grills, whether protected by fusible link operated dampers or not, shall not be permitted in these walls or doors.

19-3.7 Subdivision of Building Spaces.

19-3.7.1 Horizontal Exit Requirements. No requirements.

Protection of horizontal exits, if provided, shall be as follows:

(a) In buildings using Option 1, 2 or 3 — Fire resistance of walls: 2 hours; Fire protection rating of doors: 1½ hours.

(b) In apartments for the elderly using Option 4, smoke barriers may be used in lieu of horizontal exits. Smoke barriers shall be constructed in accordance with the provisions in Section 6-3 and shall have a fire resistance rating of at least 1 hour.

19-3.7.2 Smoke Partitions. Smoke partitions in accordance with Section 6-3 shall be provided in exit access corridors between stairs as follows:

(a) In buildings using Option 1 when exit stairs are spaced greater than 50 ft (15.24 m) apart.

(b) In buildings using Option 2 or 3 when exit stairs are spaced greater than 100 ft (30.48 m) apart.

(c) In apartments for the elderly using Option 1 when exit stairs are greater than 50 ft (15.24 m) apart.

(d) In apartments for the elderly using Option 2 or 3 when exit stairs are greater than 75 ft (22.86 m) apart.

(e) In apartments for the elderly using Option 4 when exit stairs are greater than 150 ft (45.72 m) apart.

Protection may be accomplished in conjunction with the provisions for horizontal exits.

Table 19-3.7.2
Smoke Barriers Are Required Where Exit Stair Spacing Is in Excess of:

	Options			
Occupancy	**No. 1**	**No. 2**	**No. 3**	**No. 4**
Residential	50 ft (15.24 m)	100 ft (30.48 m)	100 ft (30.48 m)	NR
Apartments for Elderly	50 ft (15.24 m)	75 ft (22.86 m)	75 ft (22.86 m)	150 ft (45.72 m)

Note: When required, there shall be a smoke barrier between stairs.

19-3.7.3 In apartments for the elderly the minimum width of smoke barrier doors is 32 in. (81.28 cm) and may be a single door that will swing in either direction. Side lights or a vision panel are required in smoke doors.

SECTION 19-4 SPECIAL PROVISIONS

SECTION 19-5 BUILDING SERVICES

19-5.1 Utilities. Utilities shall comply with the provisions of Section 7-1.

19-5.2 Heating, Ventilating, and Air Conditioning. Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2.

19-5.3 Elevators, Dumbwaiters and Vertical Conveyors. Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

19-5.4 Rubbish Chutes, Incinerators, and Laundry Chutes. Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

Table 19-1
Alternate Requirements for Existing Apartment Buildings According to Protection Provided

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Max. Gross Area per Story Between Horizontal Exits				
1-3 Stories	NR	NR	NR	NR
4-6 Stories	NR	NR	NR	NR
>6 Stories	NR	NR	NR	NR
Exit Access				
Travel Distance	100 ft (30.48 m)	150 ft (45.72 m)	150 ft (45.72 m)	150 ft (45.72 m)
Smoke Barrier Req. for Stair Spacing	>50 ft (15.24 m)	>100 ft (30.48 m)	>100 ft (30.48 m)	NR
Max. Single Path Corridor Distance	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Max. Dead End	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Fire Resistance				
Walls	½ hr	½ hr	¾ hr	½ hr
Doors (Fire Protection Rating)	20 min	20 min	N/A	N/A
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Exits—Vertical				
Fire Resistance Walls				
1-3 Stories	1 hr	1 hr	1 hr	1 hr
>3 Stories	2 hr	2 hr	2 hr	2 hr
Smokeproof Towers				
1-6 Stories	NR	NR	NR	NR
>6 Stories	Req.	Req.	Req.	NR
Doors				
1-3 Stories	1 hr	1 hr	1 hr	1 hr
>3 Stories	1½ hr	1½ hr	1½ hr	1½ hr
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Bedroom Windows, 1- to 6-Story Bldg. Ref. 18-1.1.4	Req.	Req.	Req.	Req.

Table 19-1 (Continued)

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Exits—Horizontal				
Fire Resistance				
Walls	2 hr	2 hr	2 hr	NA
Doors	1½ hr	1½ hr	1½ hr	NA
Habitable Spaces				
Max. Distance from any Room Door to Corridor	50 ft (15.24 m)	100 ft (30.48 m)	50 ft (15.24 m)	100 ft (30.48 m)
Flame Spread				
Walls & Ceilings	A, B, or C	A, B, or C	A, B, or C	A, B, or C
Smoke Detector				
Indiv. in Unit	Req.	Req.	Req.	Req.
Door to Corridor				
Self-closing	Req.	Req.	Req.	Req.
Alarm System				
>3 Stories or >11 Units	manual	manual & auto	manual & auto	manual & auto
>6 Stories	annunciator panel	annunciator panel	annunciator panel	annunciator panel
HVAC				
>6 Stories Pressurized Corridor, 0.01 in. Water (2.49 Pa), min.	NR	NR	NR	NR
Elevator—ANSI	A17.1	A17.1	A17.1	A17.1

NL=No Limit.
NR=No Requirements.
NA=Not Applicable.

Table 19-2
Alternate Requirements for Existing Apartments for the Elderly According to Protection Provided

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Max. Gross Area per Story Between Horizontal Exits				
1-3 Stories	NR	NR	NR	NR
4-6 Stories	NR	NR	NR	NR
>6 Stories	NR	NR	NR	NR
Exit Access				
Travel Distance	75 ft (22.86 m)	100 ft (30.48 m)	100 ft (30.48 m)	100 ft (30.48 m)
Smoke Barrier Req. for Stair Spacing	>50 ft (15.24 m)	>75 ft (22.86 m)	>75 ft (22.86 m)	>150 ft (45.72 m)
Max. Single Path Corridor Distance	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Max. Dead End	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)	35 ft (10.67 m)
Fire Resistance				
Walls	½ hr	½ hr	¾ hr	½ hr
Doors (Fire Protection Rating)	20 min	20 min	N/A	N/A
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Exits—Vertical				
Fire Resistance Walls				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	2 hr	2 hr	2 hr	1 hr
Smokeproof Towers				
1-6 Stories	NR	NR	NR	NR
>6 Stories	Req.	Req.	Req.	NR
Doors				
1-3 Stories	1 hr	1 hr	1 hr	¾ hr
>3 Stories	1½ hr	1½ hr	1½ hr	1 hr
Flame Spread				
Walls & Ceilings	A or B	A or B	A or B	A, B, or C
Floors	I or II	I or II	NR	NR
Bedroom Windows, 1- to 6-Story Bldg. Ref. 18–1.1.4	Req.	Req.	Req.	Req.

Table 19-2 (Continued)

	No Suppression or Detection System Option No. 1	Total Automatic Smoke Detection Option No. 2	Sprink. Prot. in Select. Areas Option No. 3	Auto Ext. NFPA 13 (with exceptions) Option No. 4
Exits—Horizontal Fire Resistance				
Walls	2 hr	2 hr	2 hr	1 hr
Doors	1½ hr	1½ hr	1½ hr	NR
Habitable Spaces				
Max. Distance from any Room Door to Corridor	50 ft (15.24 m)	100 ft (30.48 m)	50 ft (15.24 m)	100 ft (30.48 m)
Flame Spread				
Walls & Ceilings	A, B, or C	A, B, or C	A, B, or C	A, B, or C
Smoke Detector				
Indiv. in Unit	Req.	Req.	Req.	Req.
Door to Corridor				
Self-closing	Req.	Req.	Req.	Req.
Alarm System				
2 Stories or more, or >11 Units	manual	manual	manual & auto	manual
4 Stories or more, or >11 Units	auto to FD	auto* & auto to FD	auto & auto to FD	auto* & auto to FD
>6 Stories	annunciator and voice communication	annunciator	annunciator and voice communication	annunciator
HVAC				
>6 Stories Pressurized Corridor, 0.01 in. Water (2.49 Pa), min.	NR	NR	NR	NR
Elevator—ANSI	A17.1	A17.1	A17.1	A17.1

NL=No Limit.
NR=No Requirements.
NA=Not Applicable.
*=Also req. in buildings with 12 or more living units.

CHAPTER 20 LODGING OR ROOMING HOUSES

SECTION 20-1 GENERAL REQUIREMENTS

20-1.1 Application.

20-1.1.1 This *Code* has differing requirements for the several types of residential occupancies; thus, the *Code* has several residential occupancy chapters, Chapters 16 through 23.

20-1.1.2 This chapter applies only to lodging or rooming houses providing sleeping accommodations for 15 or less persons. Lodging or rooming houses include buildings in which separate sleeping rooms are rented providing sleeping accommodations for a total of 15 or less persons on either a transient or permanent basis, with or without meals but without separate cooking facilities for individual occupants, except as provided in Chapter 22.

20-1.1.3 The requirements of this chapter are applicable to new buildings, and to existing or modified buildings according to the provisions of Section 1-4 of this *Code*.

20-1.1.4 In addition to the following provisions, every lodging or rooming house shall comply with the minimum requirements for one- and two-family dwellings.

20-1.2 Mixed Occupancies.

20-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.5 of this *Code* shall be applicable.

20-1.2.2 For requirements on mixed mercantile and residential occupancies, see 24-1.2 or 25-1.2.

20-1.3 Definitions.

20-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

20-1.4 Classification of Occupancy. (*See 20-1.1.2.*)

20-1.5 Classification of Hazard of Contents.

20-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), shall apply.

20-1.6 Minimum Construction Requirements. No special requirements.

20-1.7 Occupant Load. (*See 20-1.1.2.*)

SECTION 20-2 MEANS OF ESCAPE

20-2.1 Number and Means of Escape.

20-2.1.1 Every sleeping room above or below the level of exit discharge shall have access to two separate means of escape one of which shall be either an enclosed interior stairway, an exterior stairway, or a horizontal exit.

Exception: In existing buildings a fire escape stair is acceptable.

20-2.1.2 At least one means of escape shall be located to provide a safe path of travel to the outside of the building without traversing any corridor or space exposed to an unprotected vertical opening.

Exception: Unprotected vertical openings may be permitted in buildings three stories or less in height protected throughout by an approved automatic sprinkler system designed in accordance with Section 7-7 and Standard for the Installation of Sprinkler Systems, NFPA 13, or Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes, NFPA 13D (see Appendix B).

20-2.1.3 Every sleeping room located on the level of exit discharge shall have access to two separate means of escape, one of which may be an operable window. (*See Section 22-2.*)

Exception: One-story buildings with rooms having direct access to the exterior at grade.

20-2.2 Winders in accordance with 5-2.2.2.4 are permitted.

20-2.3* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2*).

SECTION 20-3 PROTECTION

20-3.1 Alarm System.

20-3.1.1 A manual fire alarm system shall be provided in accordance with Section 7-6.

20-3.2 Detection System.

20-3.2.1 Approved smoke detectors, meeting the requirements of *Standard for Household Fire Warning Equipment*, NFPA 74 (*see Appendix B*), and powered by the house electrical service, shall be installed on each floor level including basements and excluding crawl spaces and unfinished attics. When activated, the detectors shall initiate an alarm which shall be audible in all sleeping areas.

SECTION 20-4 SPECIAL PROVISIONS

SECTION 20-5 BUILDING SERVICES

CHAPTER 21 (RESERVED)

CHAPTER 22 ONE- AND TWO-FAMILY DWELLINGS

SECTION 22-1 GENERAL REQUIREMENTS

22-1.1 Application.

22-1.1.1 This chapter establishes life safety requirements for all one- and two-family private dwellings. One- and two-family dwellings include buildings containing not more than two dwelling units in which each living unit is occupied by members of a single family with no more than three outsiders, if any, accommodated in rented rooms.

22-1.1.2 The requirements of this chapter are applicable to new buildings, and to existing or modified buildings according to the provisions of Section 1-4 of this *Code*.

22-1.2 Mixed Occupancies.

22-1.2.1 Where another type of occupancy occurs in the same building as a residential occupancy, the requirements of 1-4.5 of this *Code* shall be applicable.

22-1.2.2 For requirements on mixed mercantile and residential occupancies, see 24-1.2 or 25-1.2.

22-1.3 Definitions.

22-1.3.1 Terms applicable to this chapter are defined in Chapter 3 of this *Code*; where necessary, other terms will be defined in the text as they may occur.

22-1.4 Classification of Occupancy. (*See 22-1.1.1.*)

22-1.5 Classification of Hazard of Contents.

22-1.5.1* Building contents shall be classified according to the provisions of 4-2.1 of this *Code*. For design of sprinkler systems, the classification of contents in *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), shall apply.

22-1.6 Minimum Construction Requirements. No special requirements.

22-1.7 Occupant Load.

SECTION 22-2* MEANS OF ESCAPE REQUIREMENTS

22-2.1 Number of Exits.

22-2.1.1 In any dwelling of more than two rooms, every bedroom and living room area shall have at least two means of escape, at least one of which shall be a door or stairway providing a means of unobstructed travel

to the outside of the building at street or ground level. No bedroom or living room area shall be accessible by only a ladder or folding stairs, or through a trap door.

22-2.2 Type of Second Means of Escape.

22-2.2.1* The second means of escape shall be either:

(a) A door or stairway providing a means of unobstructed travel to the outside of the building at street or ground level, or

(b) An outside window operable from the inside without the use of tools and providing a clear opening of not less than 20 in. (50.8 cm) in width, 24 in. (60.96 cm) in height, and 5.7 sq ft (.53 sq m) in area. The bottom of the opening shall not be more than 44 in. (111.76 cm) above the floor.

Exception No. 1: If the room has a door leading directly outside of the building to grade, a second means of escape shall not be required.

Exception No. 2: If buildings are protected throughout by an approved automatic sprinkler system installed in accordance with Standard for the Installation of Sprinkler Systems, NFPA 13, or Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Mobile Homes, NFPA 13D (see Appendix B), a second means of escape shall not be required.

22-2.3 Arrangement of Means of Egress.

22-2.3.1 No required path of travel to the outside from any room shall be through another room or apartment not under the immediate control of the occupant of the first room or his family, nor through a bathroom or other space subject to locking.

22-2.4 Doors.

22-2.4.1 No door in the path of travel of a means of escape shall be less than 28 in. (71.12 cm) wide.

Exception: Bathroom doors may be 24 in. (60.96 cm) wide.

22-2.4.2 Every closet door latch shall be such that children can open the door from inside the closet.

22-2.4.3 Every bathroom door lock shall be designed to permit the opening of the locked door from the outside in an emergency.

22-2.4.4 Exterior exit doors may be swinging or sliding and are exempt from the requirements of 5-2.1.1.4.1.

22-2.5 Vertical Means of Escape, Stairs.

22-2.5.1 The width, risers, and treads of every stair shall comply with the minimum requirements for stairs, as described in 5-2.2. Winders and spiral stairs in accordance with Chapter 5 are permitted within a single living unit.

22-2.6* No door in any means of egress shall be locked against egress when the building is occupied (*see 5-2.1.2*).

SECTION 22-3 PROTECTION

22-3.1 Interior Finish.

22-3.1.1 Interior finish on walls and ceilings of occupied spaces shall be Class A, B, or C as defined in Section 6-5.

22-3.1.2 Interior Floor Finish. No requirements.

22-3.2 Detection and Alarm.

22-3.2.1* At least one approved smoke detector powered by the house electric service shall be installed in an approved manner in every dwelling unit. When activated, the detector shall initiate an alarm which is audible in the sleeping rooms. For location of single station detectors, see Appendix A, Chapter 22.

Exception: In existing construction approved smoke detectors powered by batteries may be used.

SECTION 22-4 (RESERVED)

SECTION 22-5 BUILDING SERVICES

22-5.1 Heating Equipment.

22-5.1.1 No stove or combustion heater shall be so located as to block escape in case of fire arising from malfunctioning of the stove or heater.

CHAPTER 23 (RESERVED)

CHAPTER 24 NEW MERCANTILE OCCUPANCIES

(See also Chapter 31.)

SECTION 24-1 GENERAL REQUIREMENTS

24-1.1 Application.

24-1.1.1 New mercantile occupancies shall comply with the provisions of Chapter 24. *(See Chapter 31 for operating features.)*

24-1.1.2 This chapter establishes life safety requirements for the design of all new mercantile buildings. Specific requirements for sub-occupancy groups such as Class A, B and C stores and covered malls are contained in paragraphs pertaining thereto.

24-1.1.3 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure need not be modified, provided that the new construction has not diminished the fire safety features of the facility.

Exception: Existing portions must be upgraded if the addition results in a change of mercantile classification.

24-1.2 Mixed Occupancies.

24-1.2.1 Combined Mercantile and Residential Occupancies.

24-1.2.1.1 No dwelling unit shall have its sole means of egress through any mercantile occupancy in the same building.

24-1.2.1.2 No multiple dwelling occupancy shall be located above a mercantile occupancy.

Exception No. 1: Where the dwelling occupancy and exits therefrom are separated from the mercantile occupancy by construction having a fire resistance of at least 1 hour.

Exception No. 2: Where the mercantile occupancy is protected by automatic sprinklers in accordance with Section 7-7.

24-1.3 Special Definitions.

(a) **Class A Stores.** See 24-1.4.2.1(a).

(b) **Class B Stores.** See 24-1.4.2.1(b).

(c) **Class C Stores.** See 24-1.4.2.1(c).

(d) **Covered Mall.** A covered or roofed interior area used as a pedestrian way and connecting building(s) or portions of a building housing single and/or multiple tenants.

(e) **Open-Air Mercantile Operations.** Operations conducted outside of all structures with the operations area devoid of all walls and roofs except for small individual weather canopies.

(f) **Gross Leasable Area.** The total floor area designated for tenant occupancy and exclusive use, expressed in square feet, measured from centerlines of adjoining partitions and exteriors of outside walls.

(g) **Anchor Store.** A department store or major merchandising center having direct access to the covered mall but having all required means of egress independent of the covered mall.

24-1.4 Classification of Occupancy.

24-1.4.1 Mercantile occupancies shall include all buildings and structures or parts thereof with occupancy as described in 4-1.7.

24-1.4.2 Subclassification of Occupancy.

24-1.4.2.1 Mercantile occupancies shall be classified as follows:

(a) *Class A.* All stores having aggregate gross area of 30,000 sq ft (2,787 sq m) or more, or utilizing more than three floor levels for sales purposes.

(b) *Class B.* All stores of less than 30,000 sq ft (2,787 sq m) aggregate gross area, but over 3,000 sq ft (279 sq m), or utilizing any balconies, mezzanines (*see 24-1.4.2.3*), or floors above or below the street floor level for sales purposes.

Exception: If more than three floors are utilized, the store shall be Class A, regardless of area.

(c) *Class C.* All stores of 3,000 sq ft (279 sq m) or less gross area used for sales purposes on the street floor only. (*Balcony permitted, see 24-1.4.2.3.*)

24-1.4.2.2 For the purpose of the classification in 24-1.4.2.1, the aggregate gross area shall be the total gross area of all floors used for mercantile purposes and, where a store is divided into sections, regardless of fire separation, shall include the area of all sections used for sales purposes. Areas of floors not used for sales purposes, such as an area used only for storage and not open to the public, shall not be counted for the purposes of the above classifications, but exits shall be provided for such nonsales areas in accordance with their occupancy, as specified by other chapters of this *Code.*

24-1.4.2.3* A balcony or mezzanine floor having an area less than one-half of the floor below shall not be counted as a floor level for the purpose of applying the classification of 24-1.4.2.1, but if there are two balcony or mezzanine floors, one shall be counted.

24-1.4.2.4 Where a number of stores under different management are located in the same building or in adjoining buildings with no fire wall or

other standard fire separations between, the aggregate gross area of all such stores shall be used in determining classification per 24-1.4.2.1.

Exception: Covered malls (see 24-4.3).

24-1.5 Classification of Hazard of Contents. Mercantile occupancies contents shall be classed as ordinary hazard in accordance with Section 4-2.

Exception: Mercantile occupancies shall be classified as high hazard if high hazard commodities are displayed or handled without protective wrappings or containers, in which case the following additional provisions shall apply:

(a) Exits shall be located so that not more than 75 ft (22.86 m) of travel from any point is required to reach the nearest exit.

(b) From every point there shall be at least two exits accessible by travel in different directions (no common path of travel).

(c) All vertical openings shall be enclosed.

24-1.6 Minimum Construction Requirements. No special requirements.

24-1.7 Occupant Load.

24-1.7.1* For purposes of determining required exits, the occupant load of mercantile buildings or parts of buildings used for mercantile purposes shall be not less than the following:

(a) Street floor, one person for each 30 sq ft (2.79 sq m) gross floor area of sales space. In stores with no street floor, as defined in Chapter 3, but with access directly from the street by stairs or escalators, the principal floor at the point of entrance to the store shall be considered the street floor. In stores where, due to differences in grade of streets on different sides, there are two or more floors directly accessible from streets (not including alleys or similar back streets), each such floor shall be considered a street floor for the purpose of determining occupant load.

(b) Sales floors below the street floor — same as street floor.

(c) Upper floors, used for sales — one person for each 60 sq ft (5.57 sq m) gross floor area of sales space.

(d) Floors or portions of floors used only for offices — one person for each 100 sq ft (9.29 sq m) gross floor area of office space.

(e) Floors or portions of floors used only for storage, receiving, shipping and not open to the general public — one person per each 300 sq ft (27.87 sq m) gross area of storage, receiving, or shipping space.

(f) Floors or portions of floors used for assembly purposes — occupant load determined in accordance with Chapter 8 for such places of assembly.

(g)* Mall buildings — one person for each 30 sq ft (2.79 sq m) gross floor area for street level and below, and one person for each 60 sq ft (5.57 sq m) gross floor area for upper floors.

Exception: The covered mall, when considered a pedestrian way (see Exception to 24-4.3.1), shall not be assessed an occupant load. However, means of egress from the mall shall be provided for an occupant load determined by dividing the gross leasable area (not including anchor stores) by the appropriate occupant load factor listed below:

Gross Leasable Area [See 24-1.3(f).] (sq ft)	*Occupant Load Factor*
Less than 150,000 (13,935 sq m)	*30*
Over 150,000 (13,935 sq m) but less than 200,000 (18,580 sq m)	*35*
Over 200,000 (18,580 sq m) but less than 250,000 (23,225 sq m)	*40*
Over 250,000 (23,225 sq m) but less than 300,000 (27,870 sq m)	*45*
Over 300,000 (27,870 sq m) but less than 400,000 (37,160 sq m)	*50*
Over 400,000 (37,160 sq m)	*55*

Each individual tenant space shall have means of egress to the outside and/or to the mall based on occupant loads figured utilizing 24-1.7.1 (a) through (f).

Each individual anchor store shall have means of egress independent of the covered mall.

24-1.7.2 In case of mezzanines or balconies open to the floor below or other unprotected vertical openings between floors as permitted by the Exceptions to 24-3.1, the occupant load (or area) of the mezzanine or other subsidiary floor level shall be added to that of the street floor for the purpose of determining required exits, provided, however, that in no case shall the total number of exit units be less than would be required if all vertical openings were enclosed.

SECTION 24-2 MEANS OF EGRESS REQUIREMENTS

24-2.1 General.

24-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter. Only types of exits specified in 24-2.2 shall be used as required exit facilities in any mercantile occupancy.

24-2.1.2* Where a stairway, escalator, outside stair or ramp serves two or more upper floors, the same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor.

24-2.1.3 Where there are two or more floors below the street floor, the same stairway or other exit may serve all floors (same principle as stated in 24-2.1.2 for upper floors), but all required exits from such areas shall be independent of any open stairways between the street floor and the floor below it.

24-2.1.4 Where a level outside exit from upper floors is possible owing to hills, such outside exits may serve instead of horizontal exits. If, however, such outside exits from the upper floor also serve as an entrance from a principal street, the upper floor shall be classed as a street floor in accordance with the definition in Chapter 3, and is subject to the requirements of this section for street floors.

24-2.1.5 For special considerations with contents of high hazard, see 24-1.5.

24-2.2 Types of Exits.

24-2.2.1* Exits shall be restricted to the following permissible types:

(a) *Doors* (*see 5-2.1*).
(b) *Interior stairs* (*see 5-2.2*).
(c) *Smokeproof towers* (*see 5-2.3*).
(d) *Outside stairs* (*see 5-2.5*).
(e) *Horizontal exits* (*see 5-2.4*).
(f) *Ramps* (*see 5-2.6*).
(g) *Exit passageways* (*see 5-2.7*).
(h) *Escalators* (*see 5-2.8*).
(i) *Revolving doors* (*see 5-2.1*).

24-2.3 Capacity of Means of Egress.

24-2.3.1 The capacity of a unit of exit width shall be as follows:

(a) Doors including those leading to outside the building at the ground level or three risers above or below the ground level — 100 persons per unit of exit width.

(b) Interior stairs, smokeproof towers, or outside stairs — 60 persons per unit of exit width.

(c) Ramps: Class A — one unit for 100 persons; Class B — one unit for 60 persons.

(d) Escalators — same as stairs if qualifying as required exits.

(e) Horizontal exits — 100 persons per unit of exit width.

24-2.3.2 In Class A and Class B stores, street floor exit doors or horizontal exit doors, located as required by 24-2.5 and 24-2.6, shall be sufficient to provide the following numbers of units of exit width:

(a) One unit for each 100 persons capacity of street floor, plus

(b) One and one-half units for each two units of required stairways discharging through the street floor from floors below, plus

(c) One and one-half units for each two units of required stairways discharging through the street floor, plus

(d) One and one-half units for each two units of escalator width discharging through the street floor where escalators qualify as required exits or as means of access to required exits.

(e) If ramps are used instead of stairways, street floor doors shall be provided on the same basis as for stairways, with door width appropriate to the rated discharge of ramps, per 5-2.6.

24-2.4 Number of Exits.

24-2.4.1 In Class A and Class B stores, at least two separate exits shall be accessible from every part of every floor, including floors below the street floor.

24-2.4.2 In Class C stores, at least two separate exits shall be provided as specified by 24-2.4.1.

Exception: Where no part of the Class C store is more than 50 ft (15.24 m) from the street door, measured in accordance with 5-6.2, a single exit shall be permitted.

24-2.5 Arrangement of Means of Egress.

24-2.5.1 Exits shall be arranged in accordance with Section 5-5.

24-2.5.2* No dead-end corridor shall exceed 50 ft (15.24 m).

Exception: A common path of travel may be permitted for the first 50 ft (15.24 m) from any point. (See 24-1.5 if high hazard contents.)

24-2.5.3 The aggregate width of all aisles leading to each exit shall be equal to at least the required width of the exit.

24-2.5.4 In no case shall any aisle be less than 28 in. (71.12 cm) in clear width.

24-2.5.5 In Class A stores, at least one aisle of 5 ft (152.4 cm) minimum width shall lead directly to an exit.

24-2.5.6 If the only means of customer entrance is through one exterior wall of the building, two-thirds of the required exit width shall be located in this wall.

24-2.5.7 At least one-half of the required exits shall be so located as to be reached without going through check-out stands. In no case shall check-out stands or associated railings or barriers obstruct exits, required aisles or approaches thereto.

24-2.5.8* Where wheeled carts or buggies are used by customers, adequate provision shall be made for the transit and parking of such carts to minimize the possibility that they may obstruct means of egress.

24-2.5.9 Exit access in Class C stores may pass through storerooms providing the following conditions are met:

(a) At least one other means of egress is provided.

(b) The storeroom is not subject to locking.

(c) The main aisle through the storeroom shall be not less than 48 in. (121.92 cm) wide.

(d) The path of travel, defined with fixed barriers, through the storeroom shall be direct and continuously maintained in an unobstructed condition.

24-2.6 Measurement of Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall be no more than 100 ft (30.48 m).

Exception: An increase in the above travel distance to 150 ft (45.72 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

24-2.7* Discharge from Exits. In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, one-half of rated number of exit units of stairways, escalators or ramps serving as required exits from floors above or below the street floor may discharge through the main street floor area, instead of directly to the street, or through a fire-resistive passage to the street, provided that:

(a) Not more than one-half of the required exit units from any single floor considered separately discharge through the street floor area.

(b) The exits are enclosed in accordance with Section 6-2 to the street floor.

(c) The distance of travel from the termination of the enclosure to an outside street door is not more than 50 ft (15.24 m).

(d) The street floor doors provide sufficient units of exit width to serve exits discharging through the street floor in addition to the street floor itself, per 24-2.3.2.

24-2.8 Illumination of Means of Egress. Every mercantile occupancy shall have exit illumination and signs in accordance with Section 5-8.

24-2.9 Emergency Lighting. Every Class A and Class B store shall have emergency lighting facilities conforming to Section 5-9.

24-2.10 Marking of Means of Egress. Every mercantile occupancy shall have exit signs in accordance with Section 5-10.

Exception: Where an exit is immediately apparent from all portions of the sales area, the exit marking may be omitted.

24-2.11 Special Features.

24-2.11.1 Every street floor door shall be in accordance with 5-2.1, and a horizontal exit door, if used, in accordance with 5-2.4.

24-2.11.2* Where revolving doors are used to provide part of the required number of units of street floor exit width, such doors shall be used in accordance with the provisions of Section 5-2.

24-2.11.3 All doors at the foot of stairs from upper floors or at the head of stairs leading to floors below the street floor shall swing with the exit travel.

24-2.11.4* Locks in accordance with the Exception stated in 5-2.1.2.1.1 shall be permitted only on principal entrance/exit doors.

24-2.11.5 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted.

24-2.11.6 Where horizontal or vertical security grills or doors are used as a part of the required means of egress from a tenant space, such grills or doors shall be used in accordance with the provisions of 5-2.1.1.4.1.

24-2.11.7 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

SECTION 24-3 PROTECTION

24-3.1* Protection of Vertical Openings. Each stairway, elevator shaft, escalator opening or other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: As permitted in Class A stores where:

(a) Openings may be unprotected between any two floors, such as open stairs or escalators between the street floor and the floor below, or open stairs to the second floor or balconies or mezzanines above the street floor level.

(b) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected both to the floor below and to the floor above the street floor, or to balconies or mezzanines above the street floor.

(c) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected under the conditions permitted by 6-2.2.3.1 Exception No. 1, or between the street floor and the floor below the street floor and between the street floor and the second floor or, if no openings to the floor below the street floor, between the street floor, street floor balcony or mezzanine, and second floor, but not between more than three floor levels.

Exception No. 2: As permitted in Class B stores where:

(a) Openings may be unprotected between any two floors, such as open stairs or escalators between the street floor and the floor below, or between the street floor and the mezzanine or second floor.

(b) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected both to the floor below and to the floor above the street floor, or to balconies or mezzanines above the street floor.

(c) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected under the conditions permitted in 6-2.2.3.1 Exception No. 1, or between the floor below the street floor and the street floor, and between the street floor and balcony or mezzanine and second floor.

Exception No. 3: As permitted in Class C stores where:

(a) In any store, openings may be unprotected between the street floor and balcony.

24-3.2 Protection from Hazards.

24-3.2.1 An area used for general storage, boiler or furnace rooms, fuel storage, janitor closets, maintenance shops including woodworking and painting areas, and kitchens shall be separated from other parts of the building by an assembly(ies) having a fire resistance rating of not less than 1 hour, and all openings shall be protected with self-closing fire doors.

Exception: Areas protected by an automatic extinguishing system.

24-3.2.2 Areas with high hazard contents as defined in Section 4-2 shall be provided with both fire-resistive separation and automatic sprinkler protection.

24-3.3 Interior Finish.

24-3.3.1 Interior finish on walls and ceilings shall be Class A or B, in accordance with Section 6-5.

Exception: In any mercantile occupancy, exposed portions of structural members complying with the requirements for heavy timber construction may be permitted. Laminated wood shall not delaminate under the influence of heat.

24-3.3.2 Interior Floor Finish. No requirements.

24-3.4 Alarm Systems. Class A and Class B stores shall be provided with a manual fire alarm system in accordance with Section 7-6.

Exception No. 1: Buildings protected throughout by an approved automatic fire detection and alarm initiation system in accordance with Section 7-6.

Exception No. 2: Buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7 which provides alarm initiation in accordance with Section 7-6.

24-3.5 Extinguishment Requirements. Approved automatic sprinkler protection shall be installed in accordance with Section 7-7 in all mercantile occupancies as follows:

(a) In all buildings with a story over 15,000 sq ft (1,394 sq m) in area.

(b) In all buildings exceeding 30,000 sq ft (2,787 sq m) in gross area.

(c) Throughout stories below the level of exit discharge when such stories have an area exceeding 2,500 sq ft (232 sq m) when used for the sale, storage, or handling of combustible goods and merchandise.

24-3.6 Corridors. No special requirements.

24-3.7 Subdivision of Building Spaces. No special requirements.

24-3.8 Special Features.

SECTION 24-4 SPECIAL PROVISIONS

24-4.1 Windowless or Underground Buildings. (*See Section 30-7.*)

24-4.2 Open-Air Mercantile Operations.

24-4.2.1 Open-air mercantile operations, such as open-air markets, gasoline filling stations, roadside stands for the sale of farm produce, and other outdoor mercantile operations shall be so arranged and conducted as to maintain free and unobstructed ways of travel at all times to permit prompt escape from any point of danger in case of fire or other emergency, with no dead ends in which persons might be trapped due to display stands, adjoining buildings, fences, vehicles, or other obstructions.

24-4.2.2 If mercantile operations are conducted in roof-over areas, they shall be treated as mercantile buildings, provided that canopies over individual small stands to protect merchandise from the weather shall not be construed to constitute buildings for the purpose of this *Code*.

24-4.3. Covered Malls. The purpose of this section is to establish minimum standards of life safety for covered malls having not more than three levels.

24-4.3.1 The covered mall and all buildings connected thereto shall be treated as a single building for the purposes of calculation of means of egress and shall be subject to the requirements for appropriate occupancies. The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this *Code*.

Exception: The covered mall may be considered to be a pedestrian way, in which case the distance of travel within a tenant space to an exit or to the covered mall shall be a maximum of 150 ft (45.72 m) (see Exception to 24-2.6), or shall be the maximum for the appropriate occupancy; plus an additional 200 ft (60.96 m) shall be permitted for travel through the covered mall space if all the following requirements are met:

(a) The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this chapter, but in no case less than 20 ft (609.6 cm) wide in its narrowest dimension.

(b) The covered mall shall be provided with an unobstructed exit access on each side of the mall floor area of not less than 10 ft (304.8 cm) in clear width parallel to and adjacent to the mall tenant front. Such exit access shall lead to an exit having a minimum of three units of exit width. (See 24-4.3.2.)*

(c) The covered mall and all buildings connected thereto shall be protected throughout by an approved electrically supervised automatic sprinkler system in accordance with Section 7-7.

(d) Walls dividing stores from each other shall extend from the floor to the underside of the roof deck or floor deck above. No separation is required between a tenant space and the covered mall.

(e) The covered mall shall be provided with a smoke control system.*

24-4.3.2 Exit Details.

24-4.3.2.1 Every floor of a covered mall shall have no less than two exits located remote from each other.

24-4.3.2.2 No less than one-half the required exit widths for each Class A or Class B store connected to a covered mall shall lead directly outside without passage through the mall.

24-4.3.2.3* Each individual anchor store shall have means of egress independent of the covered mall.

24-4.3.2.4 Every covered mall shall be provided with unobstructed exit access, parallel to and adjacent to the connected buildings. This exit access shall extend to each mall exit.

24-4.4 Atriums.

24-4.4.1 Atriums are permitted provided they comply with Section 6-2 and 24-4.4.2 through 24-4.4.6.

24-4.4.2 The occupancy within the atrium meets the specifications for classification as low hazard contents. (*See 4-2.2.2.*)

24-4.4.3 The automatic sprinkler system required by 6-2.2.3.1 Exception No. 2(e) shall be electrically supervised.

24-4.4.4 The atrium is provided with an automatic ventilation system operated by all of the following:

(a) Approved smoke detectors located at the top of the space and adjacent to each return air intake from the atrium, and

(b) The required automatic fire extinguishing system, and

(c) Manual controls which are readily accessible to the fire department.

24-4.4.5 Fire Alarm System. A fire alarm system shall be provided for the building in accordance with Section 7-6.

(a) The initiation of the fire alarm shall be by the activation of any smoke detector or the automatic sprinkler system.

(b) Manual pull stations are not required.

24-4.4.6 All electrical equipment essential for smoke control or automatic extinguishing equipment for buildings more than six stories or 75 ft (22.86 m) in height containing an atrium shall be provided with an emergency source of power in accordance with *National Electrical Code*, NFPA 70, Section 700-12(b) (*see Appendix B*), or equivalent.

SECTION 24-5 BUILDING SERVICES

24-5.1 Utilities shall compiy with the provisions of Section 7-1.

24-5.2 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2.

24-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

24-5.4 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 25 EXISTING MERCANTILE OCCUPANCIES

(See also Chapter 31.)

SECTION 25-1 GENERAL REQUIREMENTS

25-1.1 Application.

25-1.1.1 Existing mercantile occupancies shall comply with the provisions of Chapter 25 (*see Chapter 31 for operating features*).

25-1.1.2 This chapter establishes life safety requirements for existing buildings. Specific requirements for sub-occupancy groups such as Class A, B and C stores and covered malls are contained in paragraphs pertaining thereto.

25-1.1.3 Modernization or Renovation. No construction in either modernization or renovation projects shall diminish the fire safety features of the building below the level of new construction as described elsewhere in this *Code*. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction. (*See Section 1-5 for equivalency concepts.*)

25-1.1.4 Additions to existing buildings shall conform to the requirements for new construction. Existing portions of the structure need not be modified, provided that the new construction has not diminished the fire safety features of the facility.

Exception: Existing portions must be upgraded if the addition results in a change of mercantile classification.

25-1.2 Mixed Occupancies.

25-1.2.1 Combined Mercantile and Residential Occupancies.

25-1.2.1.1 No dwelling unit shall have its sole means of egress through any mercantile occupancy in the same building.

25-1.2.1.2 No multiple dwelling occupancy shall be located above a mercantile occupancy.

Exception No. 1: Where the dwelling occupancy and exits therefrom are separated from the mercantile occupancy by construction having a fire resistance of at least 1 hour.

Exception No. 2: Where the mercantile occupancy is protected by automatic sprinklers in accordance with Section 7-7.

Exception No. 3: As permitted in 25-1.2.1.3.

25-1.2.1.3 A building with not more than two dwelling units above a mercantile occupancy shall be permitted provided that the mercantile occupancy is protected by an automatic fire detection system in accordance with Section 7-6.

25-1.3 Special Definitions.

(a) **Class A Stores.** See 25-1.4.2.1(a).

(b) **Class B Stores.** See 25-1.4.2.1(b).

(c) **Class C Stores.** See 25-1.4.2.1(c).

(d) **Covered Mall.** A covered or roofed interior area used as a pedestrian way and connecting building(s) or portions of a building housing single and/or multiple tenants.

(e) **Open-Air Mercantile Operations.** Operations conducted outside of all structures with the operations area devoid of all walls and roofs except for small individual weather canopies.

(f) **Gross Leasable Area.** The total floor area designated for tenant occupancy and exclusive use, expressed in square feet, measured from centerlines of joining partitions and exteriors of outside walls.

(g) **Anchor Store.** A department store or major merchandising center having direct access to the covered mall but having all required means of egress independent of the covered mall.

25-1.4 Classification of Occupancy.

25-1.4.1 Mercantile occupancies shall include all buildings and structures or parts thereof with occupancy as described in 4-1.7.

25-1.4.2 Subclassification of Occupancy.

25-1.4.2.1 Mercantile occupancies shall be classified as follows:

(a) *Class A.* All stores having aggregate gross area of 30,000 sq ft (2,787 sq m) or more, or utilizing more than three floor levels for sales purposes.

(b) *Class B.* All stores of less than 30,000 sq ft (2,787 sq m) aggregate gross area, but over 3,000 sq ft (279 sq m), or utilizing any balconies, mezzanines (*see 25-1.4.2.3*), or floors above or below the street floor level for sales purposes.

Exception: If more than three floors are utilized, the store shall be Class A, regardless of area.

(c) *Class C.* All stores of 3,000 sq ft (279 sq m) or less gross area used for sales purposes on the street floor only. (*Balcony permitted, see 25-1.4.2.3.*)

25-1.4.2.2 For the purpose of the classification in 25-1.4.2.1, the aggregate gross area shall be the total gross area of all floors, used for

mercantile purposes and, where a store is divided into sections, regardless of fire separation, shall include the area of all sections used for sales purposes. Areas of floors not used for sales purposes, such as an area used only for storage and not open to the public, shall not be counted for the purposes of the above classifications, but exits shall be provided for such nonsales areas in accordance with their occupancy, as specified by other chapters of this *Code*.

25-1.4.2.3* A balcony or mezzanine floor having an area less than one-half of the floor below shall not be counted as a floor level for the purpose of applying the classification of 25-1.4.2.1, but if there are two balcony or mezzanine floors, one shall be counted.

25-1.4.2.4 Where a number of stores under different management are located in the same building or in adjoining buildings with no fire wall or other standard fire separations between, the aggregate gross area of all such stores shall be used in determining classification per 25-1.4.2.1.

Exception: Covered malls (see 25-4.3).

25-1.5 Classification of Hazard of Contents. Mercantile occupancies contents shall be classed as ordinary hazard in accordance with Section 4-2.

Exception: Mercantile occupancies shall be classified as high hazard if high hazard commodities are displayed or handled without protective wrappings or containers, in which case the following additional provisions shall apply:

(a) Exits shall be located so that not more than 75 ft (22.86 m) of travel from any point is required to reach the nearest exit.

(b) From every point there shall be at least two exits accessible by travel in different directions (no common path of travel).

(c) All vertical openings shall be enclosed.

25-1.6 Minimum Construction Requirements. No special requirements.

25-1.7 Occupant Load.

25-1.7.1* For purposes of determining required exits, the occupant load of mercantile buildings or parts of buildings used for mercantile purposes shall be not less than the following:

(a) Street floor, one person for each 30 sq ft (2.79 sq m) gross floor area of sales space. In stores with no street floor as defined in Chapter 3, but with access directly from the street by stairs or escalators, the principal floor at the point of entrance to the store shall be considered the street floor. In stores where, due to differences in grade of streets on different sides, there are two or more floors directly accessible from streets (not including alleys or similar back streets), each such floor shall be considered a street floor for the purpose of determining occupant load.

(b) Sales floors below the street floor — same as street floor.

(c) Upper floors, used for sales — one person for each 60 sq ft (5.57 sq m) gross floor area of sales space.

(d) Floors or portions of floors used only for offices — one person for each 100 sq ft (9.29 sq m) gross floor area of office space.

(e) Floors or portions of floors used only for storage, receiving, shipping and not open to the general public — one person per each 300 sq ft (27.87 sq m) gross area of storage, receiving, or shipping space.

(f) Floors or portions of floors used for assembly purposes — occupant load determined in accordance with Chapter 9 for such places of assembly.

(g)* Mall buildings — one person for each 30 sq ft (2.79 sq m) gross floor area for street level and below, and one person for each 60 sq ft (5.57 sq m) gross floor area for upper floors.

Exception: The covered mall, when considered a pedestrian way (see Exception to 25-4.3.1), shall not be assessed an occupant load. However, means of egress from the mall shall be provided for an occupant load determined by dividing the gross leasable area (not including anchor stores) by the appropriate occupant load factor listed below:

Gross Leasable Area [See 25-1.3(f).] (sq ft)	***Occupant Load Factor***
Less than 150,000 (13,935 sq m)	*30*
Over 150,000 (13,935 sq m) but less than 200,000 (18,580 sq m)	*35*
Over 200,000 (18,580 sq m) but less than 250,000 (23,225 sq m)	*40*
Over 250,000 (23,225 sq m) but less than 300,000 (27,870 sq m)	*45*
Over 300,000 (27,870 sq m) but less than 400,000 (37,160 sq m)	*50*
Over 400,000 (37,160 sq m)	*55*

Each individual tenant space shall have means of egress to the outside and/or to the mall based on occupant loads figured utilizing 25-1.7.1 (a) through (f).

Each individual anchor store shall have means of egress independent of the covered mall.

25-1.7.2 In case of mezzanines or balconies open to the floor below or other unprotected vertical openings between floors as permitted by the Exceptions to 25-3.1 the occupant load (or area) of the mezzanine or other subsidiary floor level shall be added to that of the street floor for the purpose of determining required exits, provided, however, that in no case shall the total number of exit units be less than would be required if all vertical openings were enclosed.

SECTION 25-2 MEANS OF EGRESS REQUIREMENTS

25-2.1 General.

25-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter. Only types of exits specified in 25-2.2 shall be used as required exit facilities in any mercantile occupancy.

25-2.1.2* Where a stairway, escalator, outside stair, or ramp serves two or more upper floors, the same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor.

25-2.1.3 Where there are two or more floors below the street floor, the same stairway or other exit may serve all floors (same principle as stated in 25-2.1.2 for upper floors), but all required exits from such areas shall be independent of any open stairways between the street floor and the floor below it.

25-2.1.4 Where a level outside exit from upper floors is possible owing to hills, such outside exits may serve instead of horizontal exits. If, however, such outside exits from the upper floor also serve as an entrance from a principal street, the upper floor shall be classed as a street floor in accordance with the definition of Chapter 3, and is subject to the requirements of this section for street floors.

25-2.1.5 For special considerations with contents of high hazard, see 25-1.5.

25-2.2 Types of Exits.

25-2.2.1* Exits shall be restricted to the following permissible types:

(a) *Doors* (*see 5-2.1*).
(b) *Interior stairs, Class A or B* (*see 5-2.2*).
(c) *Smokeproof towers* (*see 5-2.3*).
(d) *Outside stairs* (*see 5-2.5*).
(e) *Horizontal exits* (*see 5-2.4*).
(f) *Ramps* (*see 5-2.6*).
(g) *Exit passageways* (*see 5-2.7*).
(h) *Escalators* (*see 5-2.8*).
(i) *Revolving doors* (*see 5-2.1*).
(j) *Fire escape stair* (*see 5-2.9*).

25-2.2.2 An existing interior stair or outside stair not complying with 5-2.2 or 5-2.5 may be continued in use, subject to the approval of the authority having jurisdiction.

25-2.3 Capacity of Means of Egress.

25-2.3.1 The capacity of a unit of exit width shall be as follows:

(a) Doors including those leading to outside the building at the ground level or three risers above or below the ground level — 100 persons per unit of exit width.

(b) Class A or Class B interior stairs, smokeproof towers, or outside stairs — 60 persons per unit of exit width.

(c) Ramps: Class A — one unit for 100 persons; Class B — one unit for 60 persons.

(d) Escalators — same as stairs if qualifying as required exits.

(e) Horizontal exits — 100 persons per unit of exit width.

25-2.3.2 In Class A and Class B stores, street floor exit doors or horizontal exit doors, located as required by 25-2.5 and 25-2.6 shall be sufficient to provide the following numbers of units of exit width:

(a) One unit for each 100 persons capacity of street floor, plus

(b) One and one-half units for each two units of required stairways discharging through the street floor from floors below, plus

(c) One and one-half units for each two units of required stairways discharging through the street floor, plus

(d) One and one-half units for each two units of escalator width discharging through the street floor where escalators qualify as required exits or as means of access to required exits.

(e) If ramps are used instead of stairways, street floor doors shall be provided on the same basis as for stairways, with door width appropriate to the rated discharge of ramps, per 5-2.6.

25-2.4 Number of Exits.

25-2.4.1 In Class A and Class B stores, at least two separate exits shall be accessible from every part of every floor, including floors below the street floor.

25-2.4.2 In Class C stores, at least two separate exits shall be provided as specified by 25-2.4.1.

Exception: Where no part of the Class C store is more than 50 ft (15.24 m) from the street door, measured in accordance with 5-6.2, a single exit shall be permitted.

25-2.5 Arrangement of Means of Egress.

25-2.5.1 Exits shall be arranged in accordance with Section 5-5.

25-2.5.2* No dead-end corridor shall exceed 50 ft (15.24 m).

Exception: A common path may be permitted for the first 50 ft (15.24 m) from any point. (See 25-1.5, if high hazard content.)

25-2.5.3 The aggregate width of all aisles leading to each exit shall be equal to at least the required width of the exit.

25-2.5.4 In no case shall any aisle be less than 28 in. (71.12 cm) in clear width.

25-2.5.5 In Class A stores, at least one aisle of 5 ft (152.4 cm) minimum width shall lead directly to an exit.

25-2.5.6 If the only means of customer entrance is through one exterior wall of the building, two-thirds of the required exit width shall be located in this wall.

25-2.5.7 At least one-half of the required exits shall be so located as to be reached without going through check-out stands. In no case shall check-out stands or associated railings or barriers obstruct exits, required aisles or approaches thereto.

25-2.5.8* Where wheeled carts or buggies are used by customers, adequate provision shall be made for the transit and parking of such carts to minimize the possibility that they may obstruct means of egress.

25-2.5.9 Exit access in Class B and Class C stores may pass through storerooms providing the following conditions are met:

(a) At least one other means of egress is provided.

(b) The storeroom is not subject to locking.

(c) The main aisle through the storeroom shall be not less than 48 in. (121.92 cm) wide.

(d) The path of travel defined with fixed barriers through the storeroom shall be direct and continuously maintained in an unobstructed condition.

25-2.6 Measurement of Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall be no more than 100 ft (30.48 m).

Exception: An increase in the above travel distance to 150 ft (45.72 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

25-2.7* Discharge from Exits. In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, one-half of rated number of exit units of stairways, escalators or ramps serving as required exits from floors above or below the street floor may discharge through the main street floor area, instead of directly to the street, or through a fire-resistive passage to the street, provided that:

(a) Not more than one-half of the required exit units from any single floor considered separately discharge through the street floor area.

(b) The exits are enclosed in accordance with Section 6-2 to the street floor.

(c) The distance of travel from the termination of the enclosure to an outside street door is not more than 50 ft (15.24 m).

(d) The street floor doors provide sufficient units of exit width to serve exits discharging through the street floor in addition to the street floor itself, per 25-2.3.2.

25-2.8 Illumination of Means of Egress. Every mercantile occupancy shall have exit illumination and signs in accordance with Section 5-8.

25-2.9 Emergency Lighting. Every Class A and Class B store shall have emergency lighting facilities conforming to Section 5-9.

25-2.10 Marking of Means of Egress. Every mercantile occupancy shall have exit signs in accordance with Section 5-10.

Exception: Where an exit is immediately apparent from all portions of the sales area, the exit marking may be omitted.

25-2.11 Special Features.

25-2.11.1 Every street floor door shall be in accordance with 5-2.1, and a horizontal exit door, if used, in accordance with 5-2.4.

25-2.11.2 In Class C mercantile occupancies, doors may swing inward where such doors serve only the street floor area.

25-2.11.3* Where revolving doors are used to provide part of the required number of units of street floor exit width, such doors shall be used in accordance with the provisions of Section 5-2.

25-2.11.4 All doors at the foot of stairs from upper floors or at the head of stairs leading to floors below the street floor shall swing with the exit travel.

25-2.11.5* Locks in accordance with the Exception stated in 5-2.1.2.1.1 shall be permitted only on principal entrance/exit doors.

25-2.11.6 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted.

25-2.11.7 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

25-2.11.8 Where horizontal or vertical security grills or doors are used as a part of the required means of egress from a tenant space, such grills or doors shall be used in accordance with the provisions of 5-2.1.1.4.1.

25-2.11.9 Winders in stairs in accordance with 5-2.2.2.4 are permitted.

SECTION 25-3 PROTECTION

25-3.1* Protection of Vertical Openings. Each stairway, elevator shaft, escalator opening or other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: As permitted in Class A stores where:

(a) Openings may be unprotected between any two floors, such as open stairs or escalators between the street floor and the floor below, or open stairs to the second floor or balconies or mezzanines above the street floor level.

(b) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected both to the floor below and to the floor above the street floor, or to balconies or mezzanines above the street floor.

(c) In stores protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, openings may be unprotected under the conditions permitted by 6-2.2.3.1 Exception No. 1 or between the street floor and the floor below the street floor and between the street floor and the second floor or, if no openings to the floor below the street floor, between the street floor, street floor balcony or mezzanine, and second floor, but not between more than three floor levels.

(d) One floor above those otherwise permitted may be open if such floor is not used for sales purposes and the entire building is sprinklered.

Exception No. 2: As permitted in Class B stores where:

(a) Openings may be unprotected between any two floors, such as open stairs or escalators between the street floor and the floor below, or between the street floor and mezzanine or the second floor.

(b) All floors permitted under Class B may have unprotected openings if the building is protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

Exception No. 3: As permitted in Class C stores where:

(a) In any store, openings may be unprotected between the street floor and balcony.

(b) Openings may be unprotected between the street floor and the floor below or the second floor if not used for sales purposes.

25-3.2 Protection from Hazards.

25-3.2.1 An area used for general storage, boiler or furnace rooms, fuel storage, janitor closets, maintenance shops including woodworking and painting areas, and kitchens shall be separated from other parts of the building by an assembly(ies) having a fire resistance rating of not less than 1 hour, and all openings shall be protected with self-closing fire doors.

Exception: Areas protected by an automatic extinguishing system.

25-3.2.2 Areas with high hazard contents as defined in Section 4-2 shall be provided with both fire-resistive separation and automatic sprinkler protection.

25-3.3 Interior Finish.

25-3.3.1 Interior finish on walls and ceilings shall be Class A or B, in accordance with Section 6-5.

Exception No. 1: Existing Class C interior finish shall be permitted as follows:

(a) On walls.

(b) Throughout Class C stores.

Exception No. 2: In any mercantile occupancy, exposed portions of structural members complying with the requirements for heavy timber construction may be permitted. Laminated wood shall not delaminate under the influence of heat.

25-3.3.2 Interior Floor Finish. No requirements.

25-3.4 Alarm Systems. Class A and Class B stores shall be provided with a manual fire alarm system in accordance with Section 7-6.

Exception No. 1: Buildings protected throughout by an approved automatic fire detection and alarm initiation system in accordance with Section 7-6.

Exception No. 2: Buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7 which provides alarm initiation in accordance with Section 7-6.

25-3.5 Extinguishment Requirements. Approved automatic sprinkler protection shall be installed in accordance with Section 7-7 in all mercantile occupancies as follows:

(a) In all buildings with a story over 15,000 sq ft (1,394 sq m) in area.

(b) In all buildings exceeding 30,000 sq ft (2,787 sq m) in gross area.

(c) Throughout stories below the level of exit discharge when such stories have an area exceeding 2,500 sq ft (232 sq m) when used for the sale, storage, or handling of combustible goods and merchandise.

25-3.6 Corridors. No special requirements.

25-3.7 Subdivision of Building Spaces. No special requirements.

25-3.8 Special Features.

SECTION 25-4 SPECIAL PROVISIONS

25-4.1 Windowless or Underground Buildings. (*See Section 30-7.*)

25-4.2 Open-Air Mercantile Operations.

25-4.2.1 Open-air mercantile operations, such as open-air markets, gasoline filling stations, roadside stands for the sale of farm produce, and other outdoor mercantile operations shall be so arranged and conducted as to maintain free and unobstructed ways of travel at all times to permit

prompt escape from any point of danger in case of fire or other emergency, with no dead ends in which persons might be trapped due to display stands, adjoining buildings, fences, vehicles, or other obstructions.

25-4.2.2 If mercantile operations are conducted in roof-over areas, they shall be treated as mercantile buildings, provided that canopies over individual small stands to protect merchandise from the weather shall not be construed to constitute buildings for the purpose of this *Code*.

25-4.3 Covered Malls.

25-4.3.1 The covered mall and all buildings connected thereto shall be treated as a single building for the purposes of calculation of means of egress and shall be subject to the requirements for appropriate occupancies. The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this *Code*.

Exception: The covered mall may be considered to be a pedestrian way, in which case the distance of travel within a tenant space to an exit or to the covered mall shall be a maximum of 150 ft (45.72 m) (see Exception to 25-2.6), or shall be the maximum for the appropriate occupancy; plus an additional 200 ft (60.96 m) shall be permitted for travel through the covered mall space if all the following requirements are met:

(a) The covered mall shall be at least of sufficient clear width to accommodate egress requirements as set forth in other sections of this chapter, but in no case less than 20 ft (609.6 cm) wide in its narrowest dimension.

(b) The covered mall shall be provided with an unobstructed exit access on each side of the mall floor area of not less than 10 ft (304.8 cm) in clear width parallel to and adjacent to the mall tenant front. Such exit access shall lead to an exit having a minimum of three units of exit width. (See 25-4.3.2.1.)*

(c) The covered mall and all buildings connected thereto shall be protected throughout by an approved electrically supervised automatic sprinkler system in accordance with Section 7-7.

(d) Walls dividing stores from each other shall extend from the floor to the underside of the roof deck or floor deck above. No separation is required between a tenant space and the covered mall.

(e) The covered mall shall be provided with a smoke control system.*

25-4.3.2 Exit Details.

25-4.3.2.1 Every floor of a covered mall shall have no less than two exits located remote from each other.

25-4.3.2.2 No less than one-half the required exit widths for each Class A or Class B store connected to a covered mall shall lead directly outside without passage through the mall.

25-4.3.2.3* Each individual anchor store shall have means of egress independent of the covered mall.

25-4.3.2.4 Every covered mall shall be provided with unobstructed exit access, parallel to and adjacent to the connected buildings. This exit access shall extend to each mall exit.

25-4.4 Atriums.

25-4.4.1 Atriums are permitted provided they comply with Section 6-2 and 25-4.4.2 through 25-4.4.6.

25-4.4.2 The occupancy within the atrium meets the specifications for classification as low hazard contents. (*See 4-2.2.2.*)

25-4.4.3 The automatic sprinkler system required by 6-2.2.3.1 Exception No. 2(e) shall be electrically supervised.

25-4.4.4 The atrium is provided with an automatic ventilation system operated by all of the following:

(a) Approved smoke detectors located at the top of the space and adjacent to each return air intake from the atrium, and

(b) The required automatic fire extinguishing system, and

(c) Manual controls which are readily accessible to the fire department.

25-4.4.5 Fire Alarm System. A fire alarm system shall be provided for the building in accordance with Section 7-6.

(a) The initiation of the fire alarm shall be by the activation of any smoke detectors or the automatic sprinkler system.

(b) Manual pull stations are not required.

25-4.4.6 All electrical equipment essential for smoke control or automatic extinguishing equipment for buildings more than six stories or 75 ft (22.86 m) in height containing an atrium shall be provided with an emergency source of power in accordance with *National Electrical Code*, NFPA 70, Section 700-12(b) (*see Appendix B*), or equivalent.

SECTION 25-5 BUILDING SERVICES

25-5.1 Utilities shall comply with the provisions of Section 7-1.

25-5.2 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2.

25-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

25-5.4 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 26 NEW BUSINESS OCCUPANCIES

(See also Chapter 31.)

SECTION 26-1 GENERAL REQUIREMENTS

26-1.1 Application.

26-1.1.1 New construction shall comply with the provisions of this chapter. *(See Chapter 31 for operating features.)*

26-1.1.2 This section establishes life safety requirements for the design of all new business buildings. Specific requirements for high-rise buildings [buildings over 75 ft (22.86 m) in height] are contained in paragraphs pertaining thereto.

26-1.1.3 Additions to existing buildings shall conform to the requirements for new constructon. Existing portions of the structure need not be modified, provided that the new construction has not diminished the fire safety features of the facility.

26-1.2 Mixed Occupancies.

26-1.2.1 Combined Business and Mercantile Occupancy.

26-1.2.1.1 In any building occupied for both business and mercantile purposes, the entire building shall have exits in accordance with 1-4.5.

Exception: If mercantile occupancy sections are effectively segregated from business sections, exit facilities may be treated separately.

26-1.3 Special Definitions. None.

26-1.4 Classification of Occupancy.

26-1.4.1 Business occupancies shall include all buildings and structures or parts thereof with occupancy described in 4-1.8.

26-1.5 Classification of Hazard of Contents.

26-1.5.1 The contents of business occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

26-1.5.2 For purposes of the design of an automatic sprinkler system, a business occupancy shall be classified as "light hazard occupancy," as identified by *Standard for the Installation of Sprinkler Systems*, NFPA 13. *(See Appendix B.)*

26-1.6 Minimum Construction Requirements. No requirements.

26-1.7 Occupant Load.

26-1.7.1 For purposes of determining required exits, the occupant load of business buildings or parts of buildings used for business purposes shall be no less than one person per 100 sq ft (9.29 sq m) of gross floor area.

26-1.7.2 In the case of a mezzanine or balcony open to the floor below or other unprotected vertical openings between floors as permitted by 26-3.1, the occupant load of the mezzanine or other subsidiary floor level shall be added to that of the street floor for the purpose of determining required exits. However, in no case shall the total number of exit units be less than would be required if all vertical openings were enclosed.

SECTION 26-2 MEANS OF EGRESS REQUIREMENTS

26-2.1 General.

26-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter. However, only types of exits specified in 26-2.2 may be used as required exit facilities in any business occupancy with access thereto and ways of travel therefrom in accordance with Chapter 5.

26-2.1.2 If, owing to differences in grade, any street floor exits are at points above or below the street or ground level, such exits shall comply with the provisions for exits from upper floors or floors below the street floor.

26-2.1.3* Where a stairway, escalator, outside stair or ramp serves two or more upper floors, the same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor.

26-2.1.4 Where two or more floors below the street floor are occupied for business use, the same stairways, escalators or ramps may serve each.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor level.

26-2.1.5 Floor levels below the street floor used only for storage, heating, and other service equipment, and not subject to business occupancy, shall have exits in accordance with Chapter 29.

26-2.2 Types of Exits.

26-2.2.1 Exits shall be restricted to the following permissible types:

(a) *Doors* (*see 5-2.1*).
(b) *Interior stairs* (*see 5-2.2*).
(c) *Smokeproof towers* (*see 5-2.3*).
(d) *Outside stairs* (*see 5-2.5*).
(e) *Horizontal exits* (*see 5-2.4*).

(f) *Ramps (see 5-2.6).*

(g) *Exit passageways (see 5-2.7).*

(h) *Escalators (see 5-2.8).*

(i) *Revolving doors (see 5-2.1).*

26-2.2.2 Slide escapes, elevators or other types of exit facility not specified in 26-2.2.1 shall not be used to provide required exits from any business occupancy.

26-2.3 Capacity of Means of Egress.

26-2.3.1 The minimum width of any corridor or passageway shall be 44 in. (111.76 cm) in the clear.

26-2.3.2 The capacity of a unit of exit width shall be as follows:

(a) Doors, including those leading outside the building at the ground level or three risers above or below the ground level — one unit for 100 persons.

(b) Stairs, outside stairs or smokeproof towers — one unit for 60 persons.

(c) Ramps: Class A — one unit for 100 persons; Class B — one unit for 60 persons.

(d) Escalators — one unit for 60 persons.

(e) Horizontal exits — one unit for 100 persons, but no more than 50 percent of the required exit capacity.

26-2.3.3 Any street floor exit, arranged as required by 26-2.4 and 26-2.6, shall be sufficient to provide the following numbers of units of exit width.

(a) One unit for each 100 persons capacity of the street floor, plus

(b) One and one-half units for each two units of stairway, ramp or escalator from upper floors discharging through the street floor, plus

(c) One and one-half units for each two units of stairway, ramp or escalator from the floor levels below the street floor.

26-2.4 Number of Exits. Not less than two exits shall be accessible from every part of every floor, including floor levels below the street floor occupied for business purposes or uses incidental thereto.

Exception No. 1: For a room or area with a total occupant load of less than 100 persons (or less than 50 if a place of assembly — see Chapter 8), having direct exit to the street or to an open area outside the building at the ground level, with a total distance from any point of not over 100 ft (30.48 m), a single exit may be permitted. Such travel shall be on the same floor level or, if the traversing of stairs is required, such stairs shall not be more than 15 ft (457.2 cm) in height, and they shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein.

Exception No. 2: Any business occupancy not over three stories and not exceeding 3,000 sq ft (279 sq m) gross floor area per floor may be permitted with a single separate exit to each floor if the total travel distance to the outside of the building does not exceed 100 ft (30.48 m) and if such exit is enclosed in accordance with 5-1.3 and serves no other levels and discharges directly to the outside. A single outside stairway in accordance with 5-2.5 may serve all floors.

26-2.5 Arrangement of Means of Egress.

26-2.5.1* Exits shall be arranged in accordance with Section 5-5.

26-2.5.2 No dead-end corridor shall exceed 50 ft (15.24 m).

Exception: A common path may be permitted for the first 50 ft (15.24 m) from any point.

26-2.6* Measurement of Travel Distance to Exits. Travel distance to exits, measured in accordance with Section 5-6, shall be no more than 200 ft (60.96 m).

Exception: An increase in the above travel distance to 300 ft (91.44 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

26-2.7 Discharge from Exits.

26-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

26-2.7.2 A maximum of 50 percent of the exits may discharge through areas on the level of discharge, provided:

(a) Such exits discharge to a free and unobstructed way to the exterior of the building which way is readily visible and identifiable from the point of discharge from the exit.

(b) The floor into which the exit discharges is protected throughout by an approved automatic sprinkler system and any other area with access to the level of discharge is provided with automatic sprinkler protection or separated from it in accordance with the requirements for the enclosure of exits (*see 5-1.3*).

(c) The entire area on the floor of discharge is separated from areas below by an assembly(ies) having a minimum of 2-hour fire resistance rating.

26-2.8 Illumination of Means of Egress. Exit illumination shall be provided in accordance with Section 5-8. For the purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

26-2.9 Emergency Lighting.

26-2.9.1 Emergency lighting in accordance with Section 5-9 shall be required in any business occupancy building where:

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1,000 or more total occupants.

For the purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

26-2.9.2 Emergency lighting in accordance with Section 5-9 shall be provided for all windowless or underground structures meeting the definition of 30-1.3.

26-2.10 Marking of Means of Egress. Signs designating exits and ways of travel thereto shall be provided in accordance with Section 5-10.

26-2.11 Special Features.

26-2.11.1* Locks in accordance with the Exception stated in 5-2.1.2.1.1 shall be permitted only on principal entrance/exit doors.

26-2.11.2 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted.

26-2.11.3 Where horizontal or vertical security grills or doors are used as a part of the required means of egress from a tenant space, such grills or doors shall be used in accordance with the provisions of 5-2.1.1.4.1.

26-2.11.4 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

SECTION 26-3 PROTECTION

26-3.1 Protection of Vertical Openings.

26-3.1.1 Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for business occupancy only may be permitted in accordance with the conditions of Section 6-2.2.3.1 Exception No. 1.

Exception 2: A vertical opening enclosure will not be required for a vertical opening where:

(a) The vertical opening connects only two adjacent floors, neither of which is a basement, and

(b) The vertical opening is not a required means of egress, and

(c) The vertical opening is not connected with corridors or other stairways, and

(d) The building is protected throughout by an approved automatic sprinkler system, or the connected floors are protected throughout by an approved automatic smoke detection system installed in accordance with Section 7-6.

26-3.1.2 Floors below the street floor used for storage or other than business occupancy shall have no unprotected openings to business occupancy floors.

26-3.2 Protection from Hazards.

26-3.2.1 Any area used for general storage, boiler or furnace rooms, fuel storage, janitor closets, maintenance shops including woodworking and painting areas, and kitchens shall be separated from other parts of the building by construction having a fire resistance rating of not less than 1 hour, and all openings shall be protected with self-closing fire doors.

Exception: Areas protected by an automatic extinguishing system.

26-3.2.2 High hazard content areas, as defined in Section 4-2, shall be protected by both fire-rated construction and automatic extinguishing equipment.

26-3.3 Interior Finish.

26-3.3.1 Interior finish on walls and ceilings of exits and of enclosed corridors furnishing access thereto or ways of travel therefrom shall be Class A or Class B in accordance with Section 6-5.

26-3.3.2 In office areas, Class A, Class B, or Class C interior finish shall be provided in accordance with Section 6-5.

26-3.3.3 Interior Floor Finish. No requirements.

26-3.4 Alarm and Communication Systems. A manual fire alarm system shall be provided in accordance with Section 7-6 in any business occupancy where:

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1,000 or more total occupants.

Exception No. 1: In buildings protected throughout by an approved automatic fire detection and alarm initiation system in accordance with Section 7-6.

Exception No. 2: In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, which provides alarm initiation in accordance with Section 7-6.

26-3.5 Extinguishment Systems. (*See Section 26-4.*)

26-3.6 Corridors.

26-3.6.1* Where access to exits is limited to corridors, such corridors shall be separated from use areas by partitions having a fire resistance rating of at least 1 hour.

Exception No. 1: Where exits are available from an open floor area, corridors need not be separated.

Exception No. 2: Corridors need not be separated within a space occupied by a single tenant.

Exception No. 3: Corridors need not be separated within buildings protected throughout by an approved automatic sprinkler system.

26-3.6.2 Doors and frames, each with a minimum 20-minute fire protection rating, equipped with a positive latch and closing device, shall be used to protect openings in 1-hour partitions separating the corridor from use areas.

26-3.6.3 Glass vision panels within 1-hour fire-rated partitions, or doors therein, shall be limited to fixed wired glass in approved steel frames and shall be 1,296 sq in. (.84 sq m) or less in size per panel.

SECTION 26-4 SPECIAL PROVISIONS

26-4.1 Windowless or Underground Buildings. (*See Section 30-7.*)

26-4.2* High-Rise Buildings.

26-4.2.1 All business occupancy buildings over 75 ft (22.86 m) in height shall be protected throughout by an approved automatic sprinkler system, fully electrically supervised and designed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*), or shall be designed with a system that will provide equivalent life safety as permitted by the provisions of Section 1-5. Building height shall be measured from the lowest level of fire department access to the floor of the highest occupiable story.

26-4.2.2 In addition to the above requirements, all buildings regardless of height shall comply with all other applicable provisions of this chapter.

26-4.3 Atriums.

26-4.3.1 Atriums are permitted provided they comply with Section 6-2 and 26-4.3.2 through 26-4.3.6.

26-4.3.2 The occupancy within the atrium meets the specifications for classification as low hazard contents. (*See 4-2.2.2.*)

26-4.3.3 The automatic sprinkler system required by 6-2.2.3.1 Exception No. 2(e) shall be electrically supervised.

26-4.3.4 The atrium is provided with an automatic ventilation system operated by all of the following:

(a) Approved smoke detectors located at the top of the space and adjacent to each return air intake from the atrium, and

(b) The required automatic fire extinguishing system, and

(c) Manual controls which are readily accessible to the fire department.

26-4.3.5 Fire Alarm System. A fire alarm system shall be provided for the building in accordance with Section 7-6.

(a) The initiation of the fire alarm shall be by the activation of any smoke detectors or the automatic sprinkler system.

(b) Manual pull stations are not required.

26-4.3.6 All electrical equipment essential for smoke control or automatic extinguishing equipment for buildings more than six stories or 75 ft (22.86 m) in height containing an atrium shall be provided with an emergency source of power in accordance with *National Electrical Code*, NFPA 70, Section 700-12(b) (*see Appendix B*), or equivalent.

SECTION 26-5 BUILDING SERVICES

26-5.1 Utilities shall comply with the provisions of Section 7-1.

26-5.2 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2.

26-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

26-5.4 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 27 EXISTING BUSINESS OCCUPANCIES

(See also Chapter 31.)

SECTION 27-1 GENERAL REQUIREMENTS

27-1.1 Application.

27-1.1.1 Existing business occupancies shall comply with the provisions of this chapter. *(See Chapter 31 for operating features.)*

27-1.1.2 This chapter establishes life safety requirements for existing buildings. Specific requirements for high-rise buildings [buildings over 75 ft (22.86 m) in height] are contained in paragraphs pertaining thereto.

27-1.1.3 Modernization or Renovation. No construction in either modernization or renovation projects shall diminish the fire safety features of the building below the level of new construction as described elsewhere in this *Code*. Alterations or installations of new building services equipment shall be accomplished as nearly as possible in conformance with the requirements for new construction. *(See Section 1-5 for equivalency concepts.)*

27-1.1.4 Additions to existing buildings shall conform to the requirements for new constructon. Existing portions of the structure need not be modified, provided that the new construction has not deminished the fire safety features of the facility.

27-1.2 Mixed Occupancies.

27-1.2.1 Combined Business and Mercantile Occupancy.

27-1.2.1.1 In any building occupied for both business and mercantile purposes, the entire building shall have exits in accordance with 1-4.5.

Exception: If mercantile occupancy sections are effectively segregated from business sections, exit facilities may be treated separately.

27-1.3 Special Definitions. None.

27-1.4 Classification of Occupancy.

27-1.4.1 Business occupancies shall include all buildings and structures or parts thereof with occupancy described in 4-1.8.

27-1.5 Classification of Hazard of Contents.

27-1.5.1 The contents of business occupancies shall be classified as ordinary hazard in accordance with Section 4-2.

27-1.5.2 For purposes of the design of an automatic sprinkler system, a business occupancy shall be classified as "light hazard occupancy," as identified by *Standard for the Installation of Sprinkler Systems*, NFPA 13. (*See Appendix B.*)

27-1.6 Minimum Construction Requirements. No requirements.

27-1.7 Occupant Load.

27-1.7.1 For purposes of determining required exits, the occupant load of business buildings or parts of buildings used for business purposes shall be no less than one person per 100 sq ft (9.29 sq m) of gross floor area.

27-1.7.2 In the case of a mezzanine or balcony open to the floor below or other unprotected vertical openings between floors as permitted by 27-3.1, the occupant load of the mezzanine or other subsidiary floor level shall be added to that of the street floor for the purpose of determining required exits. However, in no case shall the total number of exit units be less than would be required if all vertical openings were enclosed.

SECTION 27-2 MEANS OF EGRESS REQUIREMENTS

27-2.1 General.

27-2.1.1 All means of egress shall be in accordance with Chapter 5 and this chapter. However, only types of exits specified in 27-2.2 may be used as required exit facilities in any business occupancy with access thereto and ways of travel therefrom in accordance with Chapter 5.

27-2.1.2 If, owing to differences in grade, any street floor exits are at points above or below the street or ground level, such exits shall comply with the provisions for exits from upper floors or floors below the street floor.

27-2.1.3* Where a stairway, escalator, outside stair, or ramp serves two or more upper floors, the same stairway or other exit required to serve any one upper floor may also serve other upper floors.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor.

27-2.1.4 Where two or more floors below the street floor are occupied for business use, the same stairways, escalators or ramps may serve each.

Exception: No inside open stairway, escalators or ramp may serve as a required egress facility from more than one floor level.

27-2.1.5 Floor levels below the street floor used only for storage, heating, and other service equipment, and not subject to business occupancy, shall have exits in accordance with Chapter 29.

27-2.2 Types of Exits.

27-2.2.1 Exits shall be restricted to the following permissible types:

(a) *Doors (see 5-2.1).*
(b) *Interior stairs, Class A or B (see 5-2.2).*
(c) *Smokeproof towers (see 5-2.3).*
(d) *Outside stairs (see 5-2.5).*
(e) *Horizontal exits (see 5-2.4).*
(f) *Ramps (see 5-2.6).*
(g) *Exit passageways (see 5-2.7).*
(h) *Escalators (see 5-2.8).*
(i) *Revolving doors (see 5-2.1).*
(j) *Fire escape stairs (see 5-2.9).*

27-2.2.2 An existing interior stair or outside stair not complying with 5-2.2 or 5-2.5 may be continued in use subject to the approval of the authority having jurisdiction.

27-2.2.3 Slide escapes, elevators or other types of exit facility not specified in 27-2.2.1 shall not be used to provide required exits from any business occupancy.

27-2.3 Capacity of Means of Egress.

27-2.3.1 The minimum width of any corridor or passageway shall be 44 in. (111.76 cm) in the clear.

27-2.3.2 The capacity of a unit of exit width shall be as follows:

(a) Doors, including those leading outside the building at the ground level, or three risers above or below the ground level — one unit for 100 persons.

(b) Class A or Class B stairs, outside stairs or smokeproof towers — one unit for 60 persons.

(c) Ramps: Class A — one unit for 100 persons; Class B — one unit for 60 persons.

(d) Escalators — one unit for 60 persons.

(e) Horizontal exits — one unit for 100 persons, but no more than 50 percent of the required exit capacity.

27-2.3.3 Any street floor exit, arranged as required by 27-2.4 and 27-2.6, shall be sufficient to provide the following numbers of units of exit width:

(a) One unit for each 100 persons capacity of the street floor, plus

(b) One and one-half units for each two units of stairway, ramp or escalator from upper floors discharging through the street floor, plus

(c) One and one-half units for each two units of stairway, ramp or escalator from floor levels below the street floor.

27-2.4 Number of Exits. Not less than two exits shall be accessible from every part of every floor, including floor levels below the street floor occupied for business purposes or uses incidental thereto.

Exception No. 1: For a room or area with a total occupant load of less than 100 persons (or less than 50 if a place of assembly — see Chapter 9), having direct exit to the street or to an open area outside the building at the ground level, with a total travel distance from any point of not over 100 ft (30.48 m), a single exit may be permitted. Such travel shall be on the same floor level or, if the traversing of stairs is required, such stairs shall not be more than 15 ft (457.2 cm) in height, and they shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein.

Exception No. 2: Any business occupancy not over three stories and not exceeding 3,000 sq ft (279 sq m) gross floor area per floor may be permitted with a single separate exit to each floor if the total travel distance to the outside of the building does not exceed 100 ft (30.48 m) and if such exit is enclosed in accordance with 5-1.3 and serves no other levels and discharges directly to the outside. A single outside stairway in accordance with 5-2.5 may serve all floors.

27-2.5 Arrangement of Means of Egress.

27-2.5.1* Exits shall be arranged in accordance with Section 5-5.

27-2.5.2 No dead-end corridor shall exceed 50 ft (15.24 m).

Exception: A common path may be permitted for the first 50 ft (15.24 m) from any point.

27-2.6* Measurement of Travel Distance to Exits. Travel distance to exits, measured in accordance with 5-6, shall be no more than 200 ft (60.96 m).

Exception: An increase in the above travel distance to 300 ft (91.44 m) shall be permitted in a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

27-2.7 Discharge from Exits.

27-2.7.1 At least half of the required number of units of exit width from upper floors, exclusive of horizontal exits, shall lead directly to the street or through a yard, court, or passageway with protected openings and separated from all parts of the interior of the building.

27-2.7.2 A maximum of 50 percent of the exits may discharge through areas on the level of discharge provided:

(a) Such exits discharge to a free and unobstructed way to the exterior of the building, which way is readily visible and identifiable from the point of discharge from the exit.

(b) The floor into which the exit discharges is protected throughout by an approved automatic sprinkler system and any other area with access to the level of discharge is provided with automatic sprinkler protection or separated from it in accordance with the requirements for the enclosure of exits (*see 5-1.3*).

(c) The entire area on the floor of discharge is separated from areas below by an assembly(ies) having a minimum of 2-hour fire resistance rating.

27-2.8 Illumination of Means of Egress. Exit illumination shall be provided in accordance with Section 5-8. For the purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

27-2.9 Emergency Lighting.

27-2.9.1 Emergency lighting in accordance with Section 5-9 shall be required in any business occupancy building where:

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1,000 or more total occupants.

For the purpose of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

27-2.9.2 Emergency lighting in accordance with Section 5-9 shall be provided for all windowless or underground structures meeting the definition of 30-1.3.

27-2.10 Marking of Means of Egress. Signs designating exits and ways of travel thereto shall be provided in accordance with Section 5-10.

27-2.11 Special Features.

27-2.11.1* Locks in accordance with the Exception stated in 5-2.1.2.1.1 shall be permitted only on principal entrance/exit doors.

27-2.11.2 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted.

27-2.11.3 Where horizontal or vertical security grills or doors are used as a part of the required means of egress from a tenant space, such grills or doors shall be used in accordance with the provisions of 5-2.1.1.4.1.

27-2.11.4 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

27-2.11.5 Winders in stairs in accordance with 5-2.2.2.4 are permitted.

SECTION 27-3 PROTECTION

27-3.1 Protection of Vertical Openings.

27-3.1.1 Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception No. 1: Unprotected vertical openings connecting not more than three floors used for business occupancy only may be permitted in accordance with the conditions of Section 6-2.2.3.1 Exception No. 1.

Exception No. 2: In buildings protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, vertical openings may be unprotected if no unprotected vertical opening serves as any part of any required exit facility and all required exits consist of smokeproof towers in accordance with 5-2.3, outside stairs in accordance with 5-2.5, or horizontal exits in accordance with 5-2.4.

Exception No. 3: A vertical opening enclosure will not be required for a vertical opening where:

(a) The vertical opening connects only two adjacent floors, neither of which is a basement, and

(b) The vertical opening is not a required means of egress, and

(c) The vertical opening is not connected with corridors or other stairways, and

(d) The building is protected throughout by an approved automatic sprinkler system, or the connected floors are protected throughout by an approved automatic smoke detection system installed in accordance with Section 7-6.

27-3.1.2 Floors below the street floor used for storage or other than business occupancy shall have no unprotected openings to business occupancy floors.

27-3.2 Protection from Hazards.

27-3.2.1 Any area used for general storage, boiler or furnace rooms, fuel storage, janitor closets, maintenance shops including woodworking and painting areas, and kitchens shall be separated from other parts of the building by construction having a fire resistance rating of not less than 1 hour, and all openings shall be protected with self-closing fire doors.

Exception: Areas protected by an automatic extinguishing system.

27-3.2.2 High hazard content areas, as defined in Section 4-2, shall be protected by both fire-rated construction and automatic extinguishing equipment.

27-3.3 Interior Finish.

27-3.3.1 Interior finish on walls and ceilings of exits and of enclosed

corridors furnishing access thereto or ways of travel therefrom shall be Class A or Class B in accordance with Section 6-5.

27-3.3.2 In office areas, Class A, Class B, or Class C interior finish shall be provided in accordance with Section 6-5.

27-3.3.3 Interior Floor Finish. No requirements.

27-3.4 Alarm and Communication Systems. A manual fire alarm system shall be provided in accordance with Section 7-6 in any business occupancy where:

(a) The building is two or more stories in height above the level of exit discharge, or

(b) The occupancy is subject to 100 or more occupants above or below the level of exit discharge, or

(c) The occupancy is subject to 1,000 or more total occupants.

Exception No. 1: In buildings protected throughout by an approved automatic sprinkler system in accordance with both Sections 7-6 and 7-7.

Exception No. 2: In buildings protected throughout by an approved automatic fire detection system in accordance with Section 7-6.

27-3.5 Extinguishment Systems. (*See Section 27-4.*)

SECTION 27-4 SPECIAL PROVISIONS

27-4.1 Windowless or Underground Buildings. (*See Section 30-7.*)

27-4.2* High-Rise Buildings.

27-4.2.1 All business occupancy buildings over 75 ft (22.86 m) in height shall be protected throughout by an approved automatic sprinkler system, fully electrically supervised and designed in accordance with *Standard for the Installation of Sprinkler Systems*, NFPA 13 (*see Appendix B*); or shall be designed with a system that will provide equivalent life safety as permitted by the provisions of Section 1-5. Building height shall be measured from the lowest level of fire department access to the floor of the highest occupiable story.

27-4.2.2 In addition to the above requirements, all buildings regardless of height shall comply with all other applicable provisions of this chapter.

27-4.3 Atriums.

27-4.3.1 Atriums are permitted provided they comply with Section 6-2 and 27-4.3.2 through 27-4.3.3.

27-4.3.2 The occupancy within the atrium meets the specifications for classification as low hazard contents. (*See 4-2.2.2.*)

27-4.3.3 The automatic sprinkler system required by 6-2.2.3.1 Exception No. 2(e) shall be electrically supervised.

27-4.3.4 The atrium is provided with an automatic ventilation system operated by all of the following:

(a) Approved smoke detectors located at the top of the space and adjacent to each return air intake from the atrium, and

(b) The required automatic fire extinguishing system, and

(c) Manual controls which are readily accessible to the fire department.

27-4.3.5 Fire Alarm System. A fire alarm system shall be provided for the building in accordance with Section 7-6.

(a) The initiation of the fire alarm shall be by the activation of any smoke detectors or the automatic sprinkler system.

(b) Manual pull stations are not required.

27-4.3.6 All electrical equipment essential for smoke control or automatic extinguishing equipment for buildings more than six stories or 75 ft (22.86 m) in height containing an atrium shall be provided with an emergency source of power in accordance with *National Electrical Code*, NFPA 70, Section 700-12(b) (*see Appendix B*), or equivalent.

SECTION 27-5 BUILDING SERVICES

27-5.1 Utilities shall comply with the provisions of Section 7-1.

27-5.2 Heating, ventilating and air conditioning equipment shall comply with the provisions of Section 7-2.

27-5.3 Elevators, dumbwaiters and vertical conveyors shall comply with the provisions of Section 7-4.

27-5.4 Rubbish chutes, incinerators and laundry chutes shall comply with the provisions of Section 7-5.

CHAPTER 28 INDUSTRIAL OCCUPANCIES

(See also Chapter 31.)

SECTION 28-1 GENERAL REQUIREMENTS

28-1.1 Application. The requirements of this chapter apply to both new and existing Industrial Occupancies. Industrial occupancies include factories making products of all kinds and properties used for operations such as processing, assembling, mixing, packaging, finishing or decorating, repairing and similar operations.

28-1.2 Mixed Occupancies. In any building occupied for both industrial and other purposes, exits shall comply with 1-4.5.

28-1.3 Special Definitions. None.

28-1.4 Classification of Occupancy. *(See 4-1.9, and for open industrial structures, see Chapter 30.)*

28-1.4.1 General Industrial Occupancy. Ordinary and low hazard manufacturing operations, conducted in buildings of conventional design suitable for various types of manufacture. Included are multistory buildings where floors are rented to different tenants or buildings suitable for such occupancy and, therefore, subject to possible use for types of manufacturing with a high density of employee population.

28-1.4.2 Special Purpose Industrial Occupancy. Includes ordinary and low hazard manufacturing operations in buildings designed for and suitable only for particular types of operations, characterized by a relatively low density of employee population, with much of the area occupied by machinery or equipment.

28-1.4.3* High Hazard Industrial Occupancy. Includes those buildings having high hazard materials, processes or contents. Incidental high hazard operations in low or ordinary occupancies and provided in accordance with Section 4-2 and 28-3.2 shall not be the basis for overall occupancy classification.

28-1.5 Classification of hazard of contents shall be as defined in Section 4-2.

28-1.6 Minimum Construction Standards. No occupancy requirement.

28-1.7* Occupant Load. The occupant load of industrial occupancies for determination of exits shall be one person per 100 sq ft (9.29 sq m) of gross floor area.

Exception: In special purpose industrial occupancy, the occupant load shall be the maximum number of persons to occupy the area under any probable conditions.

SECTION 28-2 MEANS OF EGRESS REQUIREMENTS

28-2.1 General.

28-2.1.1 Each required means of egress shall be in accordance with the applicable portions of Chapter 5.

28-2.1.2 Any floor below the street floor used only for storage, heating, and other service equipment, and not subject to industrial occupancy, shall have exits in accordance with Chapter 29.

28-2.2 Types of Exits. Exits shall be restricted to the following permissible types:

Doors (see 5-2.1).

Smokeproof towers (see 5-2.3).

Interior stairs (see 5-2.2). In existing buildings Class A or B.

Outside stairs (see 5-2.5).

Horizontal exits (see 5-2.4).

Ramps (see 5-2.6).

Exit passageways (see 5-2.7).

Escalators (see 5-2.8).

Exception No. 1: Any existing stairway or fire escape not complying with 5-2.2 and 5-2.5 may be continued in use, subject to the approval of the authority having jurisdiction.

Exception No. 2: Approved slide escapes may be used as required exits for both new and existing high hazard industrial occupancies. Slide escapes shall be counted as exits only when regularly used in drills or for normal exit so that occupants are, through practice, familiar with their use.

28-2.3 Capacity of Means of Egress.

28-2.3.1 The capacity of a unit of exit width shall be as follows:

(a) Doors including those leading outside the building at the ground level or three risers above or below the ground level — one unit for 100 persons.

(b) Class A or Class B stairs, outside stairs or smokeproof towers — one unit for 60 persons.

(c) Ramps: Class A — one unit for 100 persons; Class B — one unit for 60 persons.

(d) Escalators — one unit for 60 persons.

(e) Horizontal exits — one unit for 100 persons but no more than 50 percent of the required exit capacity.

Exception: In special purpose industrial occupancies, means of egress shall be provided at least for the persons actually employed; spaces not subject to human occupancy because of the presence of machinery or equipment may be excluded from consideration.

28-2.3.2* Required means of egress for multistoried buildings may serve floors other than the level where required. For multistory buildings, means of egress shall be designed in accordance with the provisions of 5-3.1.4 and 5-3.1.5.

Exception: No inside open stairway, escalator, or ramp may serve as a required egress facility from more than one floor level.

28-2.4 Number of Exits.

28-2.4.1 No less than two exits shall be provided for every story or section, including stories below the floor of exit discharge used for general industrial purposes or for uses incidental thereto.

Exception: For rooms or areas with a total capacity of less than 25 persons having a direct exit to the street or to an open area outside the building at ground level, with a total travel distance from any point of not over 50 ft (15.24 m), a single exit may be permitted. Such travel shall be on the same floor level or, if the traversing of stairs is required, there shall be a vertical travel of no more than 15 ft (457.2 cm) and such stairs shall be provided with complete enclosures to separate them from any other part of the building, with no door openings therein. This exception shall not apply to high hazard industrial occupancies.

28-2.4.2 There shall be at least two separate means of egress from every high hazard area regardless of size.

28-2.5 Arrangement of Means of Egress.

28-2.5.1* Measurement of Width of Means of Egress. The minimum width of any corridor or passageway serving as a required exit, exit access, or exit discharge shall be 44 in. (111.76 cm) in the clear.

28-2.5.2* Where two or more exits are required, they shall be so arranged as to be reached by different paths of travel in different directions.

Exception: A common path of travel may be permitted for the first 50 ft (15.24 m) from any point.

28-2.5.3 No dead end may be more than 50 ft (15.24 m) deep.

28-2.6 Measurement of Travel Distance to Exits.

28-2.6.1 Travel to exits shall not exceed 100 ft (30.48 m) from any point to reach the nearest exit.

Exception No. 1: In a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, travel distance may be increased to 150 ft (45.72 m).

Exception No. 2: As permitted by 28-2.6.2.

Exception No. 3: Travel distance to exits in high hazard industrial occupancies shall not exceed 75 ft (22.86 m).

28-2.6.2 In a building used for low or ordinary hazard, general industrial occupancies or special industrial occupancy requiring undivided floor areas necessitating travel distances exceeding 150 ft (45.72 m), distance to exits shall be satisfied by providing stairs leading to exit tunnels, overhead passageways or through horizontal exits through firewalls, arranged in accordance with Chapter 5. Where such arrangements are not practicable, the authority having jurisdiction may, by special ruling, permit travel distances up to 400 ft (121.92 m) to the nearest exit. Distances shall be based on meeting the following additional provisions in full:

(a) Shall limit application to one-story buildings only.

(b) Shall limit interior finish to Class A or B (*see Section 6-5*).

(c) Shall provide emergency lighting (*see Section 5-9 and 28-2.9*).

(d) Shall provide automatic sprinkler or other automatic fire extinguishing systems in accordance with Section 7-7. The extinguishing system shall be supervised.

(e) Shall provide smoke and heat venting by engineered means or by building configuration to ensure that employees shall not be overtaken by spread of fire or smoke within 6 ft (182.88 cm) of floor level before they have time to reach exits. Smoke and heating venting shall be in accordance with *Guide for Smoke and Heat Venting*, NFPA 204 (*see Appendix B*).

28-2.7 Discharge from Exits. A maximum of 50 percent of the exits may discharge through areas on the level of discharge arranged in accordance with 5-7.2.

28-2.8 Illumination of Means of Egress.

28-2.8.1 Illumination of means of egress shall be provided in accordance with Section 5-8. For purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

Exception: Means of egress illumination may be eliminated in structures occupied only in daylight hours with skylights or windows arranged to provide, during these hours, the required level of illumination on all portions of the means of egress.

28-2.9 Emergency Lighting.

28-2.9.1 All industrial occupancies shall have emergency lighting in accordance with Section 5-9. For purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways.

Exception No. 1: Special purpose industrial occupancies do not require emergency lighting when routine human habitation is not the case.

Exception No. 2: Emergency lighting may be eliminated in structures occupied only in daylight hours with skylights or windows arranged to provide, during those hours, the required level of illumination on all portions of the means of egress.

28-2.10 Marking of Means of Egress.

28-2.10.1 Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

28-2.11 Special Features.

28-2.11.1 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted on exterior doors.

28-2.11.2 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

28-2.11.3 In existing buildings winders in accordance with 5-2.2.2.4 are permitted.

SECTION 28-3 PROTECTION

28-3.1 Protection of Vertical Openings.

28-3.1.1* Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with Chapter 5 and Section 6-2.

Exception No. 1: In existing buildings with low or ordinary hazard contents and protected throughout by an approved automatic sprinkler system in accordance with Sections 7-6 and 7-7, vertical openings may be unprotected providing the vertical opening does not serve as a required exit. All required exits under such conditions shall consist of smokeproof towers in accordance with 5-2.3, outside stairs in accordance with 5-2.5, or horizontal exits in accordance with 5-2.4.

Exception No. 2: In special purpose and high hazard occupancies where unprotected vertical openings are in new or existing buildings and necessary to manufacturing operations, they may be permitted beyond the specified limits, provided every floor level has direct access to one or more enclosed stairways or other exits protected against obstruction by any fire or smoke in the open areas connected by the unprotected vertical openings.

28-3.2* Protection from Hazards. Every high hazard industrial occupancy, operation, or process shall have automatic extinguishing systems or such other protection as may be appropriate to the particular hazard, such as explosion venting or suppression, for any area subject to an explosion hazard, designed to minimize danger to occupants in case of fire or other emergency before they have time to utilize exits to escape.

28-3.3 Interior Finish.

28-3.3.1 Interior finish on walls and ceilings shall be Class A, B or C in accordance with Section 6-5, in operating areas, and shall be as permitted by Chapter 5 in exits.

28-3.3.2 Interior Floor Finish. No occupancy requirements.

28-3.4 Fire Alarm System.

28-3.4.1 Industrial occupancies shall be provided with a manual or automatic fire alarm system in accordance with Section 7-6. The alarm system shall sound an audible alarm in a continuously manned location for purposes of initiating emergency action.

Exception: If the total capacity of the building is under 100 persons and less than 25 persons are employed above or below the level of exit discharge.

28-3.4.2 In all high hazard industrial occupancies, the fire alarm system shall automatically initiate an evacuation alarm signal. The alarm shall also sound at a continuously manned location.

CHAPTER 29 STORAGE OCCUPANCIES

(See also Chapter 31.)

SECTION 29-1 GENERAL REQUIREMENTS

29-1.1 Application. The requirements of this chapter apply to both new and existing storage occupancies. Storage occupancies include all buildings or structures used primarily for the storage or sheltering of goods, merchandise, products, vehicles or animals.

29-1.2 Mixed Occupancies. *(See 1-4.5 and 29-1.4.)*

29-1.3 Special Definitions. None.

29-1.4 Classification of Occupancy. Storage occupancies shall include all occupancies defined in 4-1.10. Incidental storage in another occupancy shall not be the basis for overall occupancy classification.

Exception: Storage occupancies or areas of storage occupancies which are used for the purpose of packaging, labeling, sorting, special handling or other operations requiring an occupant load greater than that normally contemplated for storage shall be classified as industrial occupancies (see Chapter 28).

29-1.5* Classification of Hazard of Contents. Contents of storage occupancies shall be classified as high hazard, ordinary hazard, or low hazard in accordance with Section 4-2, depending upon the character of the materials stored, their packaging, and other factors.

29-1.6 Minimum Construction Standards. No occupancy requirements.

29-1.7 Occupant Load. No requirements.

SECTION 29-2 MEANS OF EGRESS REQUIREMENTS

29-2.1 General. Every required means of egress shall be in accordance with the applicable portions of Chapter 5.

29-2.2 Types of Exits. Exits shall be restricted to the following permissible types:

Doors (see 5-2.1).

Smokeproof towers (see 5-2.3).

Interior stairs (see 5-2.2). In existing buildings Class A or B.

Outside stairs (see 5-2.5).
Horizontal exits (see 5-2.4).
Ramps (see 5-2.6).
Exit passageways (see 5-2.7).
Fire escape stairs (see 5-2.9).
Ladders (see 5-2.10).
Slide escapes (see 5-2.11).

Exception: Any existing stairway or fire escape not complying with 5-2.2 and 5-2.5 may be continued in use, subject to the approval of the authority having jurisdiction.

29-2.3 Capacity of Means of Egress. The capacity of a means of egress shall be in accordance with Chapter 5.

29-2.4 Number of Exits.

29-2.4.1 Every building or structure used for storage and every section thereof considered separately shall have at least two separate means of egress, as remote from each other as practicable.

Exception: One means of egress may be provided from rooms or enclosures within storage buildings, structures or sections of a storage building not exceeding 10,000 sq ft (929 sq m) and not occupied normally by more than ten persons, and not containing high hazard material. Travel distance in that means of egress in an unsprinklered building shall not exceed 50 ft (15.24 m) and 100 ft (30.48 m) in a building protected throughout by an approved automatic sprinkler system.

29-2.4.2 Locked exit doors are permissible when arranged in accordance with 5-2.1.2.

29-2.5 Arrangement of Means of Egress.

29-2.5.1 Measurement of Width of Means of Egress. The minimum width of any corridor or passageway serving as a required exit or means of travel to or from a required exit shall be 44 in. (111.76 cm) in the clear.

29-2.5.2 Travel from all locations in a storage occupancy of high hazard contents shall be via at least two separate routes to exits remote from each other.

29-2.6 Measurement of Travel Distance to Exits.

29-2.6.1* Travel to exits shall not exceed 200 ft (60.96 m) from any point to reach the nearest exit.

Exception No. 1: In a building protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, travel distance may be increased to 400 ft (121.92 m).

Exception No. 2: There shall be no limitations on travel to exits for low hazard storage occupancy.

Exception No. 3: Every area used for the storage of high hazard commodities shall have an exit within 75 ft (22.86 m) of any point in the area where persons may be present. Travel distance shall be measured in accordance with 5-6.2.

Exception No. 4: In areas used for the storage of high hazard commodities and protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, distances to an exit shall be within 100 ft (30.48 m) of any point in the area where persons may be present.

29-2.7 Discharge from Exits. A maximum of 50 percent of the exits may discharge through areas on the level of discharge arranged in accordance with 5-7.2.

29-2.8 Illumination of Means of Egress.

29-2.8.1 Illumination of means of egress shall be provided in accordance with Section 5-8. For purposes of this requirement, exit access shall include only designated aisles, corridors, and passageways leading to an exit.

Exception: In structures occupied only in daylight hours with windows arranged to provide, during daylight hours, the required level of illumination of all portions of the means of egress may be eliminated by special permission of the authority having jurisdiction.

29-2.9 Emergency Lighting.

29-2.9.1 All storage occupancies shall have emergency lighting in accordance with Section 5-9.

Exception No. 1: Storage occupancies do not require emergency lighting when not normally occupied.

Exception No. 2: In structures occupied only in daylight hours with skylights or windows arranged to provide, during these hours, the required level of illumination on all portions of the means of egress, emergency lighting may be eliminated.

29-2.10 Marking of Means of Egress. Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

29-2.11 Special Features.

29-2.11.1 Special locking arrangements in accordance with 5-2.1.2.1.5 are permitted on exterior doors.

29-2.11.2 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

29-2.11.3 In existing buildings winders in accordance with 5-2.2.2.4 are permitted.

SECTION 29-3 PROTECTION

29-3.1 Protection of Vertical Openings.

29-3.1.1 Every stairway, elevator shaft, escalator opening, manlift opening and other vertical opening shall be enclosed or protected in accordance with Section 6-2.

Exception: In existing buildings with low and ordinary hazard contents and protected throughout by an approved automatic sprinkler system in accordance with Sections 7-6 and 7-7, vertical openings may be unprotected when they do not serve as required exits. All required exits under such conditions shall consist of smokeproof towers in accordance with 5-2.3, outside stairs in accordance with 5-2.5, or horizontal exits in accordance with 5-2.4.

29-3.2 Protection from Hazards. No occupancy requirements.

29-3.3 Interior Finish.

29-3.3.1 Interior finish on walls and ceilings shall be Class A, B, or C, in accordance with Section 6-5.

29-3.3.2 Interior Floor Finish. No occupancy requirements.

29-3.4 Fire Alarm Systems. Occupancies with ordinary or high hazard contents exceeding an aggregate floor area of 100,000 sq ft (9,290 sq m) in unsprinklered buildings shall be provided with a manual or automatic fire alarm system in accordance with Section 7-6. The alarm system shall sound an audible alarm in a continuously manned location for purposes of initiating emergency action.

SECTION 29-4 SPECIAL PROVISIONS

(RESERVED)

SECTION 29-5 BUILDING SERVICES

(RESERVED)

SECTION 29-6 SPECIAL PROVISIONS FOR GARAGES

29-6.1 General Requirements.

29-6.1.1* The following provisions apply to parking garages of closed or open type, above or below ground, but not to mechanical or exclusively attendant parking facilities, which are not occupied by customers and thus require a minimum of exits.

29-6.1.2 In areas where repair operations are conducted, the exits shall comply with Chapter 28, Industrial Occupancies.

29-6.1.3 Where both parking and repair operations are conducted in the same building, the entire building shall comply with Chapter 28.

Exception: If the parking and repair sections are separated by 1-hour fire-rated construction, the parking and repair sections may be treated separately.

29-6.2 Means of Egress Requirements.

29-6.2.1 General. Means of egress shall be in accordance with Section 29-2.

29-6.2.2 Types of Exits. Exits shall be restricted to the following permissible types:

Doors, in accordance with 5-2.1.

Interior stairs, in accordance with 5-2.2.

Smokeproof towers, in accordance with 5-2.3.

Outside stairs, in accordance with 5-2.5.

Horizontal exits, in accordance with 5-2.4.

Exception No. 1: In a ramp-type open garage with open ramps not subject to closure, the ramp may serve in lieu of the second exit from floors above the level of exit discharge, providing the ramp discharges directly outside of the street level.

Exception No. 2: For garages extending only one floor level below the level of exit discharge a ramp leading directly to the outside may serve in lieu of the second exit, provided no door or shutter is installed therein.

Exception No. 3: An opening for the passage of automobiles may serve as an exit from a street floor, provided no door or shutter is installed therein.

29-6.2.3 Capacity of Means of Egress.

29-6.2.4 Number of Exits. Every floor of every garage shall have access to at least two separate exits.

29-6.2.5 Arrangement of Means of Egress.

29-6.2.5.1 Exits shall be so arranged that from any point in the garage the paths of travel to the two exits will be in different directions.

Exception: A common path of travel may be permitted for the first 50 ft (15.24 m) from any point.

29-6.2.5.2* If any gasoline pumps are located within any closed parking garage, exits shall be arranged and located to meet the following:

(a) Travel away from the gasoline pump in any direction will lead to an exit, with no dead end in which occupants might be trapped by fire or explosion at any gasoline pump.

(b) Such exit shall lead to the outside of the building on the same level, or stairs; no upward travel shall be permitted unless direct outside exits are available from that floor.

(c) Any story below that story at which gasoline is being dispensed shall have exits direct to outside via outside stairs or doors at ground level.

29-6.2.6 Measurement of Travel Distance to Exit. Exits in garages shall be so arranged that no point in the area will be more than 150 ft (45.72 m) (measured in accordance with 5-6.2) from the nearest exit other than a ramp on the same floor level.

Exception No. 1: Travel distance may be increased to 200 ft (60.96 m) for open floors of unsprinklered, open garages and 300 ft (91.44 m) in open garages protected throughout by an approved automatic sprinkler system.

Exception No. 2: Travel distance may be increased to 200 ft (60.96 m) for enclosed parking garages protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

29-6.2.7 Discharge from Exits. No special occupancy provisions.

29-6.2.8 Illumination of Means of Egress. Every public space, hall, stair enclosure, and other means of egress shall have illumination in accordance with 29-2.8.

29-6.2.9 Emergency Lighting. Every public space, hall, stair enclosure, and other means of egress shall have emergency lighting in accordance with 29-2.9.

29-6.2.10 Exit Marking. Signs in accordance with 5-2.10 shall be provided for all required exits and exit access.

SECTION 29-7* SPECIAL PROVISIONS FOR AIRCRAFT HANGARS

29-7.1 Exits from aircraft storage or servicing areas shall be provided at intervals of not more than 150 ft (45.72 m) on all exterior walls. There shall be a minimum of two exits serving each aircraft storage or servicing area. Horizontal exits through interior fire walls shall be provided at intervals of not more than 100 ft (30.48 m) along the wall.

Exception: Dwarf or "smash" doors in doors accommodating aircraft may be used to comply with these requirements.

29-7.2 Exits from mezzanine floors in aircraft storage or servicing areas shall be so arranged that the maximum travel to reach the nearest exit from any point on the mezzanine shall not exceed 75 ft (22.86 m). Such exits shall lead directly to a properly enclosed stairwell discharging directly to the exterior, to a suitable cutoff area, or to outside stairs.

29-7.3 Signs. Exit signs shall be provided over doors and exitways in accordance with Section 5-10.

SECTION 29-8* SPECIAL PROVISIONS FOR GRAIN OR OTHER BULK STORAGE ELEVATORS

29-8.1 There shall be at least two means of egress from all working levels of the head house. One of these means of egress shall be a stair to the level of exit discharge which is enclosed by a dust resistant 1-hour rated enclosure in accordance with 5-1.3. The second means of egress may be either:

(a) An exterior stair or basket ladder-type fire escape accessible from all working levels of the head house which provides a passage to ground level, or

(b) An exterior stair or basket ladder-type fire escape accessible from all working levels of the head house which provides access to the top of adjoining structures which provide a continuous path to the means of egress described in 29-8.2.

Exception: Stair enclosures in existing structures may have non-fire-rated dust resistant enclosures.

29-8.2 There shall be an exterior stair or basket ladder-type fire escape which provides passage to ground level at the top of the end of the adjoining structures such as silos, conveyors, galleries, gantries, etc.

29-8.3 Underground spaces shall have at least two means of egress, one of which may be a means of escape. The means of escape shall be arranged to eliminate dead ends.

CHAPTER 30 OCCUPANCIES IN UNUSUAL STRUCTURES

(See also Chapter 31.)

SECTION 30-1 GENERAL REQUIREMENTS

30-1.1 Application. The requirements of this chapter apply to both new and existing occupancies in unusual structures. Unusual structures are those buildings or structures occupied for purposes not regulated by Chapters 8 through 29.

30-1.2 Mixed Occupancies. *(See 1-4.5.)*

30-1.3 Special Definitions.

30-1.3.1 Tower. Independent structure or portion of a building occupied for observation, signaling or similar limited use and not open to general use.

30-1.3.2 Vehicles and Vessels. Any house trailer, railroad car, street car or bus, ship, barge or vessel or similar conveyance no longer mobile and permanently fixed to a foundation or mooring.

30-1.3.3 Underground Structure. A structure in which there is no direct access to outdoors or to another fire area other than by upward travel.

30-1.3.4 Windowless Structure. A building lacking any means for direct access to the outside or outside openings for light or ventilation through windows.

30-1.3.5 Water Surrounded Structure. A structure fully surrounded by water.

30-1.3.6 Open Structures. Operations and equipment conducted in open air and not enclosed within buildings, such as found in oil refining and chemical processing plants. Roofs or canopies providing shelter without enclosing walls may be provided and shall not be considered an enclosure.

30-1.4 Classification of Occupancy. Occupancies in unusual structures, but meeting purposes regulated by Chapters 8 through 29, shall meet requirements of those chapters.

30-1.5 Classification of hazard of contents shall be as defined in Section 4-2.

30-1.6 Minimum Construction Standard. No special occupancy provisions.

30-1.7 Occupant Load. The occupant load of unusual structures shall be as determined by the maximum actual design occupant load.

Exception: Any unusual structure or part of an unusual structure utilized for an occupancy regulated by Chapters 8 through 29, in which case the requirements of the appropriate chapter shall apply.

SECTION 30-2 MEANS OF EGRESS REQUIREMENTS

30-2.1 General. Each required means of egress shall be in accordance with the applicable portions of Chapter 5.

30-2.2* Types of Exits. Exits shall be restricted to the following permissible types:

Doors (see 5-2.1).

Smokeproof towers (see 5-2.3).

Interior stairs (see 5-2.2). In existing structures, Class A or B.

Outside stairs (see 5-2.5).

Horizontal exits (see 5-2.4).

Ramps (see 5-2.6).

Exit passageways (see 5-2.7).

Escalators (see 5-2.8).

Exception No. 1: Any existing stairway not complying with 5-2.2 and 5-2.5 may be continued in use, subject to the authority having jurisdiction.

Exception No. 2: Towers, such as a forest fire observation or railroad signal tower designed for occupancy by not more than three persons employed therein may be served by ladder instead of stairs.

Exception No. 3: Open structures.

30-2.3 Capacity of Means of Egress.

30-2.3.1 The width and capacity of a means of egress shall be in accordance with Chapter 5.

Exception No. 1: The means of egress for towers shall be provided for the persons actually employed. Where towers utilize ladders in accordance with 30-2.2, Exception No. 2, the ladders shall comply with ANSI A14.3, Safety Code for Fixed Ladders (see Appendix B).

Exception No. 2: Open structures.

Exception No. 3: Structures fully surrounded by water and arranged in accordance with U.S. Coast Guard regulations.

Exception No. 4: Spaces not subject to human occupancy because of machinery or equipment may be excluded from consideration.

30-2.3.2 Required means of egress for multistoried unusual structures may serve other floors than the level where required. However, an interior egress facility shall serve only one floor for purposes of designing means of egress.

Exception No. 1: No inside open stairway, escalator or ramp may serve as a required egress facility from more than one floor level.

Exception No. 2: Open structures.

30-2.4 Number of Exits. No less than two exits shall be provided for every story or section, including stories below the floor of exit discharge.

Exception No. 1: Piers used exclusively to moor cargo vessels and to store materials where provided with proper exit facilities from structures thereon to the pier and a single means of access to the mainland as appropriate with the pier's arrangement.

Exception No. 2: Any building or tower surrounded by water, such as a light house, off shore oil platform or vessel mooring point when designed and arranged in accordance with U.S. Coast Guard regulations.

Exception No. 3: The grade level of open air structures which by their very nature contain an infinite number of exits.

Exception No. 4: Towers may be provided with single exits if the following conditions are met:*

(a) The tower is subject to less than twenty-five persons on any one floor level.

(b) The tower is not used for living or sleeping purposes and is subject to occupancy by only able-bodied persons.

(c) The tower is of Type I, II or IV construction.

(d) The tower interior finish is Class A or B.

(e) The tower has no combustible materials in, under, or in the immediate vicinity, except necessary furniture.

(f) There are no high hazard occupancies in the tower or immediate vicinity.

Exception No. 5: Open structures.

30-2.5 Arrangement of Means of Egress.

30-2.5.1 Measurement of Width of Means of Egress. The minimum width of any corridor or passageway serving as a required exit, or means of travel to or from a required exit, shall be 44 in. (111.76 cm) in the clear.

Exception: Where ladders are permitted by 30-2.2.

30-2.5.2 Where two or more exits are required, they shall be arranged so as to be reached by different paths of travel in different directions.

Exception: A common path of travel may be permitted for the first 50 ft (15.24 m) from any point.

30-2.5.3 No dead end may be more than 50 ft (15.24 m) deep.

30-2.5.4* Piers.

30-2.5.4.1 Piers not meeting requirements of 30-2.4, Exception No. 1, and occupied for other than cargo handling and storage shall have exits arranged in accordance with Chapters 8 through 29. In addition, one of the following measures shall be provided on piers extending over 150 ft (45.72 m) from shore to minimize the possibility that fire under or on the pier may block escape of occupants to shore.

30-2.5.4.2 The pier shall be arranged to provide two separate ways of travel to shore as by two well-separated walkways or independent structures.

30-2.5.4.3 The pier deck shall be open and fire resistive on noncombustible supports.

30-2.5.4.4 The pier shall be open and unobstructed and is 50 ft (15.24 m) or less in width if less than 500 ft (152.4 m) long, or its width is not less than ten percent of its length if over 500 ft (152.4 m) long.

30-2.5.4.5 The pier deck shall be provided with automatic sprinkler protection for combustible substructure and all superstructures, if any.

30-2.6 Measurement of Travel Distance to Exits. Travel to exits, when not regulated by Chapters 8 through 29, shall not exceed 100 ft (30.48 m).

Exception No. 1: In a building or structure protected throughout by an approved automatic sprinkler system in accordance with Section 7-7, travel distance may be increased to 150 ft (45.72 m).

Exception No. 2: Where ladders are permitted in 30-2.2, Exception No. 2.

Exception No. 3: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

Exception No. 4: Open structures.

30-2.7 Discharge from Exits. A maximum of fifty percent of the exits may discharge through areas on the level of discharge arranged in accordance with 5-7.2.

Exception: Towers or other structures provided with one exit, as permitted by 30-2.4 and arranged in accordance with 30-2.5, may have 100 percent of the exit discharge through areas on the level of discharge.

30-2.8 Illumination of Means of Egress. Illumination of means of egress shall be provided in accordance with Section 5-8.

Exception No. 1: Open structures.

Exception No. 2: Towers with ladders for exits as permitted by 30-2.2, Exception No. 2.

Exception No. 3: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

30-2.9 Emergency Lighting. Emergency lighting shall be provided in accordance with Section 5-9.

Exception No. 1: Open structures.

Exception No. 2: Towers with ladders for exits as permitted by 30-2.2, Exception No. 2.

Exception No. 3: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

Exception No. 4: Locations not routinely inhabited by humans.

Exception No. 5: Structures occupied only in daylight hours with windows arranged to provide, during daylight hours, the required level of illumination on all portions of the means of egress, upon special approval of the authority having jurisdiction.

30-2.10 Marking of Means of Egress. Signs designating exits or ways of travel thereto shall be provided in accordance with Section 5-10.

Exception No. 1: Towers with ladders for exits as permitted by 30-2.2.

Exception No. 2: Open structures.

Exception No. 3: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

Exception No. 4: Locations where routine human habitation is not provided.

30-2.11 Special Features.

30-2.11.1 Spiral stairs in accordance with 5-2.2.1.6 are permitted.

30-2.11.2 In existing buildings winders in accordance with 5-2.2.2.4 are permitted.

SECTION 30-3 PROTECTION

30-3.1 Protection of Vertical Openings. Every stairway, elevator shaft, escalator opening, and other vertical opening shall be enclosed or protected in accordance with Chapter 5 and Section 6-2.

Exception No. 1: In towers where there is no occupancy below the top floor level, stairs may be open with no enclosure required or fire escape stairs may be used when the structure is entirely open.

Exception No. 2: Towers with ladders for exits as permitted by 30-2.2, Exception No. 2.

Exception No. 3: Open structures.

Exception No. 4: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

30-3.2 Protection from Hazards. Every unusual structure shall have automatic, manual or such other protection as may be appropriate to the particular hazard designed to minimize danger to occupants in case of fire or other emergency before they have time to utilize exits to escape.

Exception: Unusual structures, such as open structures, with only occasional occupancy.

30-3.3 Interior Finish.

30-3.3.1 Interior finish on walls and ceilings shall be Class A, B or C, in accordance with Section 6-5, and as required in Chapter 5 for exits.

30-3.3.2 Interior Floor Finish. No special occupancy requirements.

30-3.4 Fire Alarm System. A manual or automatic fire alarm system shall be provided in accordance with Section 7-6. The alarm system shall sound an audible alarm in a continuously manned location for purposes of initiating emergency action.

Exception No. 1: Towers with ladders for exits as permitted by 30-2.2, Exception No. 2.

Exception No. 2: Open structures.

Exception No. 3: Structures surrounded by water with exits arranged in accordance with U.S. Coast Guard regulations.

SECTION 30-4 SPECIAL PROVISIONS

(RESERVED)

SECTION 30-5 BUILDING SERVICES

(RESERVED)

SECTION 30-6* SPECIAL PROVISIONS FOR VEHICLES AND VESSELS

30-6.1 Any vehicle which is subject to human occupancy and is prevented from being mobile shall comply with the appropriate requirements of this *Code* which are appropriate to buildings of similar occupancy.

30-6.2 Any ship, barge or other vessel, permanently moored or aground and occupied for purposes other than navigation, shall be subject to the requirements of this *Code* applicable to buildings of similar occupancy.

SECTION 30-7 SPECIAL PROVISIONS FOR UNDERGROUND STRUCTURES AND WINDOWLESS BUILDINGS

30-7.1 General.

30-7.1.1* Windowless or underground areas occupied by 100 or more persons shall be protected throughout by an approved automatic sprinkler system in accordance with Section 7-7.

30-7.1.2 Windowless or underground buildings, structures and areas shall be provided with emergency lighting in accordance with Section 5-9.

30-7.2 Underground Structures.

30-7.2.1 Where required, exits from underground structures involving upward travel, such as ascending stairs or ramps, shall be cut off from main floor areas per Section 5-1 and shall be provided with outside smoke venting facilities or other means to prevent the exits from becoming charged with smoke from any fire in the area served by the exits.

Exception: As modified by Chapters 8 through 29.

30-7.2.2 Underground buildings, structures, and areas having combustible contents, interior finish or construction shall have automatic smoke venting facilities in accordance with Chapter 7 in addition to automatic sprinkler protection.

CHAPTER 31 OPERATING FEATURES

SECTION 31-1 GENERAL REQUIREMENTS

(See also Sections 31-2 through 31-8 for special occupancy requirements.)

31-1.1 Construction, Repair, Improvement Operations.

31-1.1.1 Adequate escape facilities shall be maintained at all times in buildings under construction for the use of construction workers. Escape facilities shall consist of doors, walkways, stairs, ramps, fire escapes, ladders or other approved means or devices arranged in accordance with the general principles of the *Code* insofar as they can reasonably be applied to buildings under construction. See also *Standard on Building Construction and Demolition Operations*, NFPA 241 (*see Appendix B*).

31-1.1.2 Flammable or explosive substances or equipment for repairs or alterations may be introduced in a building of normally low or ordinary hazard classification while the building is occupied, only if the condition of use and safeguards provided are such as not to create any additional danger or handicap to egress beyond the normally permissible conditions in the building.

31-1.2 Means of Egress Reliability.

31-1.2.1 Every required exit, exit access or exit discharge shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.

31-1.2.2 Furnishings and Decorations in Means of Egress.

31-1.2.2.1 No furnishings, decorations, or other objects shall be so placed as to obstruct exits, access thereto, egress therefrom, or visibility thereof.

31-1.2.2.2 Hangings or draperies shall not be placed over exit doors or otherwise located as to conceal or obscure any exit. Mirrors shall not be placed on exit doors. Mirrors shall not be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

31-1.2.2.3 There shall be no obstruction by railings, barriers, or gates that divide the open space into sections appurtenant to individual rooms, apartments, or other uses. Where the authority having jurisdiction finds the required path of travel to be obstructed by furniture or other movable objects, he may require that they be fastened out of the way or he may require that railings or other permanent barriers be installed to protect the path of travel against encroachment.

31-1.3 Equipment Maintenance and Testing.

31-1.3.1 Every required automatic sprinkler system, fire detection and alarm system, exit lighting, fire door, and other item of equipment required by this *Code* shall be continuously in proper operating condition.

31-1.3.2 Any equipment requiring test or periodic operation to assure its maintenance shall be tested or operated as specified elsewhere in this *Code* or as directed by the authority having jurisdiction.

31-1.3.3 Systems shall be under the supervision of a responsible person who shall cause proper tests to be made at specified intervals and have general charge of all alterations and additions.

31-1.3.4 Systems shall be tested at intervals recommended by the appropriate standards listed in Appendix B.

31-1.3.5* Automatic Sprinkler Systems. All automatic sprinkler systems required by this *Code* shall be continuously maintained in reliable operating condition at all times, and such periodic inspections and tests shall be made as are necessary to assure proper maintenance.

31-1.3.6 Alarm and Fire Detection Systems. Fire alarm signaling equipment shall be restored to service as promptly as possible after each test or alarm and shall be kept in normal condition for operation. Equipment requiring rewinding or replenishing shall be rewound or replenished as promptly as possible after each test or alarm.

31-1.4 Furnishings, Decorations, and Treated Finishes. (*See also 31-1.2.2.*)

31-1.4.1* Draperies, curtains, and other similar furnishings and decorations shall be flame resistant where required by the applicable provisions of this chapter. These materials required herein to be tested in accordance with *Standard Method of Fire Tests for Flame Resistant Textiles and Films*, NFPA 701 (*see Appendix B*), shall comply with both the small- and large-scale tests.

31-1.4.2* Furnishings or decorations of an explosive or highly flammable character shall not be used.

31-1.4.3 Other furnishings, such as furniture and bedding, do not require additional flammability regulations under this *Code*.

31-1.4.4 Fire retardant paints or solutions shall be renewed at such intervals as necessary to maintain the necessary flame retardant properties.

31-1.5* Fire Exit Drills.

31-1.5.1 Fire exit drills conforming to the provisions of this chapter of the *Code* shall be regularly conducted in occupancies where specified by the provisions of this chapter, or by appropriate action of the authority having jurisdiction. Drills shall be designed in cooperation with the local authorities.

31-1.5.2 Fire exit drills, where required by the authority having jurisdiction, shall be held with sufficient frequency to familiarize all occupants with the drill procedure and to have the conduct of the drill a matter of established routine.

31-1.5.3 Responsibility for the planning and conduct of drills shall be assigned only to competent persons qualified to exercise leadership.

31-1.5.4* In the conduct of drills emphasis shall be placed upon orderly evacuation under proper discipline rather than upon speed.

31-1.5.5* Drills shall include suitable procedures to make sure that all persons in the building, or all persons subject to the drill, actually participate.

31-1.5.6 Drills shall be held at unexpected times and under varying conditions to simulate the unusual conditions obtaining in case of fire.

SECTION 31-2 PLACES OF ASSEMBLY

31-2.1* Drills. The employees or attendants of places of public assembly shall be schooled and drilled in the duties they are to perform in case of fire, panic, or other emergency in order to be of greatest service in effecting orderly exit of assemblages.

31-2.2* Open Flame Devices. No open flame lighting devices shall be used in any place of assembly.

Exception No. 1: Where necessary for ceremonial or religious purposes, the authority having jurisdiction may permit open flame lighting under such restrictions as are necessry to avoid danger of ignition of combustible materials or injury to occupants.

Exception No. 2: Open flame devices may be used on stages where a necessary part of theatrical performances, provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

Exception No. 3: Gas lights may be permitted provided adequate precautions, satisfactory to the authority having jurisdiction, are taken to prevent ignition of any combustible materials.

Exception No. 4: As permitted in 31-2.3.

31-2.3 Special Food Service Devices. Portable cooking equipment, not flue-connected, shall be permitted only as follows:

(a) Equipment fueled by small heat sources which can be readily extinguished by water, such as candles or alcohol-burning equipment (including "solid alcohol"), may be used provided adequate precautions satisfactory to the authority having jurisdiction are taken to prevent ignition of any combustible materials.

(b) Candles may be used on tables used for food service if securely supported on substantial noncombustible bases, so located as to avoid danger of ignition of combustible materials, and only if approved by the authority having jurisdiction. Candle flames shall be protected.

(c) "Flaming Sword" or other equipment involving open flames and flamed dishes such as cherries jubilee, crepes suzette, etc., may be permitted provided necessary precautions are taken, and subject to the approval of the authority having jurisdiction.

31-2.4 Smoking.

31-2.4.1 Smoking in places of assembly shall be regulated by the authority having jurisdiction.

31-2.4.2 In rooms or areas where smoking is prohibited, plainly visible "NO SMOKING" signs shall be posted.

31-2.4.3 No person shall smoke in prohibited areas which are so posted.

Exception: The authority having jurisdiction may permit smoking on a stage only when it is a necessary and rehearsed part of a performance and only by a regular performing member of the cast.

31-2.4.4 Where smoking is permitted, suitable ash trays or receptacles shall be provided in convenient locations.

31-2.5 Decorations and Stage Scenery.

31-2.5.1 Combustible materials shall be treated with an effective flame retardant material. Stage settings made of combustible materials shall likewise be treated with flame retardant materials. Flame retardant treatments shall be as specified in 31-1.4.

31-2.5.2 Only noncombustible materials, limited-combustible materials, or fire retardant pressure treated wood may be used for stage scenery or props, on the audience side of the proscenium arch.

31-2.5.3 The authority having jurisdiction shall impose controls on the amount and arrangement of combustible contents (including decorations) in places of assembly to provide an adequate level of safety to life from fire.

31-2.6 Seating.

31-2.6.1 Seats in places of assembly accommodating more than 200 persons shall be securely fastened to the floor except when fastened together in groups of not less than three nor more than seven and as permitted by 31-2.6.2. All seats in balconies and galleries shall be securely fastened to the floor, except in churches.

31-2.6.2 Seats not secured to the floor may be permitted in restaurants, night clubs, and other occupancies where the fastening of seats to the floor may be impracticable, provided that in the area used for seating (excluding dance floor, stage, etc.), there shall be not more than one seat for each 15 sq

ft (1.39 sq m) of net floor area and adequate aisles to reach exits shall be maintained at all times.

Exception: Seating diagrams shall be submitted for approval of the authority having jurisdiction to allow increase in occupant load per 8-1.7.2 and 9-1.7.2.

31-2.6.3 Every room constituting a place of assembly and not having fixed seats shall have the occupant load of the room posted in a conspicuous place, near the main exit from the room. Approved signs shall be maintained in a legible manner by the owner or his authorized agent. Signs shall be durable and shall indicate the number of occupants permitted for each room use.

31-2.7 Projection Room. Unless the projection room is constructed in accordance with the applicable standard listed in Appendix B, there shall be posted on the outside of each projection room door, and within the projection room proper, a conspicuous sign with 1-in. (2.54-cm) block letters stating: "Safety Film Only Permitted in This Room".

SECTION 31-3 EDUCATIONAL OCCUPANCIES

31-3.1 Drills.

31-3.1.1* Fire exit drills shall be conducted regularly in accordance with the applicable provisions of the following paragraphs.

31-3.1.2* There shall be at least eight fire exit drills a year in schools through grade 12. In climates where the weather is severe during the winter months, weekly drills should be held at the beginning of the school term to complete the required number of drills before cold weather so as not to endanger the health of the pupils.

31-3.1.3* Drills shall be executed at different hours of the day or evening; during the changing of classes; when the school is at assembly; during the recess or gymnastic periods; etc., so as to avoid distinction between drills and actual fires. If a drill is called when pupils are going up and down the stairways, as during the time classes are changing, the pupils shall be instructed to form in file and immediately proceed to the nearest available exit in an orderly manner.

31-3.1.4* Every fire exit drill shall be an exercise in school management for principal and teachers, with the chief purpose of every drill complete control of the class so that the teacher will form its ranks quickly and silently, may halt it, turn it, or direct it as desired. Great stress shall be laid upon the execution of each drill in a brisk, quiet and orderly manner. Running shall be prohibited. In case there are pupils incapable of holding their places in a line moving at a reasonable speed, provisions shall be made to have them taken care of by the more sturdy pupils, moving independently of the regular line of march.

31-3.1.5 Monitors shall be appointed from the more mature pupils to assist in the proper execution of all drills. They shall be instructed to hold open doors in the line of march or to close doors where necessary to prevent spread of fire or smoke, per 5-2.1.2.3. There shall be at least two substitutes for each appointment so as to provide for proper performance in case of absence of the regular monitors. The searching of toilet or other rooms shall be the duty of the teachers or other members of the staff. If the teachers are to do the searching, it should be done after they have joined their classes to the preceeding lines.

31-3.1.6 As all drills simulate an actual fire condition, pupils shall not be allowed to obtain clothing after the alarm is sounded, even when in home rooms, on account of the confusion which would result in forming the lines and the danger of tripping over dragging apparel.

31-3.1.7 Each class or group shall proceed to a predetermined point outside the building and remain there while a check is made to see that all are accounted for, leaving only when a recall signal is given to return to the building, or when dismissed. Such points shall be sufficiently far away from the building and from each other as to avoid danger from any fire in the building, interference with fire department operations, or confusion between different classes or groups.

31-3.1.8* Where necessary for drill lines to cross roadways, signs reading "STOP! SCHOOL FIRE DRILL", or equivalent, shall be carried by monitors to the traffic intersecting points in order to stop traffic during the period of the drill.

31-3.1.9* Fire exit drills in schools shall not include any fire extinguishing operations.

31-3.2 Signals.

31-3.2.1 All fire exit drill alarms shall be sounded on the fire alarm system and not on the signal system used to dismiss classes.

31-3.2.2 Whenever any of the school authorities determine that an actual fire exists, they shall immediately call the local fire department using the public fire alarm system or such other facilities as are available.

31-3.2.3 In order that pupils will not be returned to a building which is burning, the recall signal shall be one that is separate and distinct from, and cannot be mistaken for, any other signals. Such signals may be given by distinctive colored flags or banners. If the recall signal is electrical, the push buttons or other controls shall be kept under lock, the key for which shall be in the possession of the principal or some other designated person in order to prevent a recall at a time when there is a fire. Regardless of the method of recall, the means of giving the signal shall be kept under a lock.

31-3.3 Inspection.

31-3.3.1* It shall be the duty of principals and teachers to inspect all exit facilities daily in order to make sure that all stairways, doors, and other exits are in proper condition.

31-3.3.2 Open-plan buildings require extra surveillance to ensure that exit paths are maintained clear of obstruction and are obvious.

31-3.4 Day-Care Centers.

31-3.4.1 Fire prevention inspections shall be conducted monthly by a trained senior member of the staff. A copy of the latest inspection form shall be posted in a conspicuous place in the day-care facility.

31-3.4.2* An approved fire evacuation plan shall be executed not less than once per month.

31-3.4.3 Furnishings and decorations in day-care centers shall be in accordance with the provisions of 31-1.4.

31-3.4.4 Flammable and combustible liquids shall be stored in areas accessible only to designated individuals and as recommended in the appropriate standard listed in Appendix B.

31-3.4.5 Wastebaskets and other waste containers shall be made of noncombustible materials.

31-3.4.6 Child-prepared artwork and teaching materials may be attached directly to the walls and shall not exceed 20 percent of the wall area.

31-3.5 Group Day-Care Homes. At least one operable flashlight shall be provided for each staff member in a location accessible to the staff for use in the event of a power failure.

31-3.6 Family Day-Care Homes. At least one operable flashlight shall be provided in a location accessible to the staff for use in the event of a power failure.

SECTION 31-4* HEALTH CARE OCCUPANCIES

31-4.1 Attendants, Evacuation Plan, Fire Exit Drills.

31-4.1.1 The administration of every hospital, nursing home and residential-custodial care facility shall have in effect and available to all supervisory personnel written copies of a plan for the protection of all persons in the event of fire and for their evacuation to areas of refuge and from the building when necessary. All employees shall be periodically instructed and kept informed respecting their duties under the plan. A copy of the plan shall be readily available at all times in the telephone operator's position or at the security center.

The provisions of 31-4.1.3 to 31-4.2.6 inclusive shall apply.

31-4.1.2 Every bed intended for use by health care occupants shall be easily movable under conditions of evacuation and shall be equipped with the type and size casters to allow easy mobility, especially over elements of the structure such as expansion plates and elevator thresholds. The authority having jurisdiction may make exceptions in the equipping of beds intended for use in areas limited to patients such as convalescent, self-care, or mental health patients.

31-4.1.3* Fire exit drills in health care occupancies shall include the transmission of a fire alarm signal and simulation of emergency fire conditions except that the movement of infirm or bed-ridden patients to safe areas or to the exterior of the building is not required. Drills shall be conducted quarterly on each shift to familiarize facility personnel (nurses, interns, maintenance engineers, and administrative staff) with signals and emergency action required under varied conditions. At least twelve drills shall be held every year. When drills are conducted between 9:00 p.m. (2100 hours) and 6:00 a.m. (0600 hours) a coded announcement may be used instead of audible alarms.

31-4.2 Procedure in Case of Fire.

31-4.2.1 Upon discovery of fire, personnel shall immediately take the following action:

(a) If any person is involved in the fire, the discoverer shall go to the aid of that person, calling aloud an established code phrase. The use of a code provides for both the immediate aid of any endangered person and the transmission of an alarm. Any person in the area, upon hearing the code called aloud, shall transmit the interior alarm using the nearest manual alarm station.

(b) If a person is not involved in the fire, the discoverer shall transmit the interior alarm using the nearest manual alarm station.

(c) Personnel, upon hearing the alarm signal, shall immediately execute their duties as outlined in the facility firesafety plan.

31-4.2.2 The telephone operator shall determine the location of the fire as indicated by the audible signal. In a building equipped with an uncoded alarm system, a person on the floor of fire origin shall be responsible for the prompt notification of the fire location to the facility telephone operator.

31-4.2.3 If the telephone operator receives a telephone alarm reporting a fire from a floor, the operator shall regard that alarm in the same fashion as an alarm over the fire alarm system. The operator shall immediately notify the fire department and alert all facility personnel of the place of fire and its origin.

31-4.2.4 If the interior alarm system is out of order, any person discovering a fire shall immediately notify the telephone operator by telephone. The operator shall then transmit this to the fire service and alert the building.

31-4.2.5 A written facility firesafety plan shall provide for:

(a) Use of alarms
(b) Transmission of alarm to fire department
(c) Response to alarms
(d) Isolation of fire
(e) Evacuation of area
(f) Preparing building for evacuation
(g) Fire extinguishment.

31-4.2.6 All facility personnel shall be instructed in the use of, and response to, fire alarms; and, in addition, they should be instructed in the use of the code phrase to ensure transmission of an alarm under the following conditions:

(a) When the discoverer of a fire must immediately go to the aid of an endangered person.

(b) During a malfunction of the interior alarm system.

Personnel hearing the code announced shall first transmit the interior alarm using the nearest manual alarm station and shall then immediately execute their duties as outlined in the firesafety plan.

31-4.3 Maintenance of Exits. Daily inspection and proper maintenance shall be provided to ensure the dependability of the method of evacuation selected. Facilities which find it necessary to lock exits shall at all times maintain an adequate staff qualified to release and conduct occupants from the immediate danger area to a place of safety in case of fire or other emergency.

31-4.4* Smoking. Smoking regulations shall be adopted and shall include the following minimal provisions:

(a) Smoking shall be prohibited in any room, ward, or compartment where flammable liquids, combustible gases, or oxygen are used or stored and in any other hazardous location. Such areas shall be posted with "NO SMOKING" signs.

(b) Smoking by patients classified as not responsible shall be prohibited.

Exception: When the patient is under direct supervision.

(c) Ashtrays of noncombustible material and safe design shall be provided in all areas where smoking is permitted.

(d) Metal containers with self-closing cover devices into which ash trays may be emptied shall be readily available to all areas where smoking is permitted.

31-4.5 Draperies. Window draperies, curtains for decorative and acoustical purposes and cubical curtains shall be noncombustible or rendered and maintained flame resistant as per *Standard Method of Fire Tests for Flame Resistant Textiles and Films*, NFPA 701 (*see Appendix B*).

31-4.6* Furnishings and Decorations.

31-4.6.1* Furnishings and decorations in health care occupancies shall be in accordance with the provisions of 31-1.4.

31-4.6.2* Combustible decorations are prohibited in any health care occupancy unless flame retardant.

31-4.6.3 Wastebaskets and other waste containers shall be of noncombustible or other approved materials.

SECTION 31-5 DETENTION AND CORRECTIONAL OCCUPANCIES

31-5.1 Attendants, Evacuation Plan, Fire Exit Drills.

31-5.1.1 Detection and correctional facilities, or those portions of facilities having such occupancy, must be provided with 24-hour staffing on any floor level having residency and located within 100 ft (30.48 m) of the accessway to any housing area. Under Use Conditions III, IV and V, as defined in 14-1.4, audio monitoring shall be provided for every sleeping space.

31-5.1.2 The administration of every detention or correctional facility shall have in effect and provided to all supervisory personnel written copies of a plan for the protection of all persons in the event of fire and for their evacuation to areas of refuge and from the building when necessary. All employees shall be periodically instructed and kept informed respecting their duties under the plan.

31-5.2 Books, clothing and other combustible personal property allowed in sleeping rooms shall be stored in closable metal lockers or fire resistant container.

31-5.3 The amount of heat producing appliances (such as toasters, hot plates, etc.) and the overall use of electrical power within a sleeping room shall be controlled by facility administration.

31-5.4 Furnishings and Decorations.

31-5.4.1 Furnishings and decorations in detention and correctional occupancies shall be in accordance with the provisions of 31-1.4.

31-5.4.2* Combustible decorations are prohibited in any detention or correctional occupancy unless flame retardant.

31-5.4.3 Wastebaskets and other waste containers shall be of noncombustible or other approved materials.

31-5.4.4 Furnishings, such as mattress and upholstered or cushioned furniture, shall not be of a highly flammable character.

31-5.4.5 Draperies. Window draperies, curtains for decorative or acoustical purposes and privacy curtains shall be noncombustible or rendered and maintained flame resistant as per *Standard Method of Fire Tests for Flame Resistant Textiles and Films*, NFPA 701 (*see Appendix B*).

31-5.5 All keys necessary for unlocking doors installed in means of egress shall be individually identified by both touch and sight.

SECTION 31-6 RESIDENTIAL OCCUPANCIES

31-6.1 Hotel Emergency Organization.

31-6.1.1* All employees of hotels shall be instructed and drilled in the duties they are to perform in the event of fire, panic, or other emergency.

31-6.1.2* Drills of the emergency organization shall be held at monthly intervals, covering such points as the operation and maintenance of the available first aid fire appliances, the testing of guest alerting devices, and a study of instructions for emergency duties.

31-6.2 Emergency Duties.

31-6.2.1 Upon discovery of fire, some or all of these duties will become immediately imperative, the number and sequence depending upon the exact situation encountered —

Alarms

Notify office.

Notify public fire department.

Notify private fire brigade.

Guests

Warn guests or others who are or may become endangered.

Assist occupants to safety, with special attention to aged, infirm, or otherwise incapacitated persons.

Search rooms to be sure all occupants have escaped.

Man all elevators (including those of automatic type) with competent operators.

Extinguishment

Extinguish or control the fire, using available first aid equipment.

Send messenger to meet public fire department upon arrival in order to direct latter to exact location of fire. (The public fire department is in full command upon arrival.)

Special Equipment

Fire Pumps — stand by for instant operation.

Ventilating Equipment — in case of dense smoke, stand by, operate under proper instructions to clear area affected.

Refrigerating Equipment — if machines are definitely endangered, shut them down and blow refrigerant to sewer or atmosphere to prevent explosion.

Generators and Motors — protect against water damage with tarpaulins — shut down motors not needed — keep generators operating to furnish lights, elevator power, etc.

Boilers — if necessary to abandon boiler room, extinguish or dump fire and lower steam pressure by blowing to sewer or atmosphere to prevent possible explosion.

31-6.3 Dormitories.

31-6.3.1 Drills. Fire exit drills shall be regularly conducted in accordance with 31-1.5.

SECTION 31-7 MERCANTILE OCCUPANCIES

31-7.1 Drills. In every Class A store, employees shall be regularly trained in fire exit drill procedures, in general conformance with 31-1.5.

SECTION 31-8 BUSINESS OCCUPANCIES

31-8.1 Drills. In any building subject to occupancy by more than 500 persons or more than 100 above or below the street level, employees and supervisory personnel shall be instructed in fire exit drill procedures in accordance with 31-1.5 and shall hold practice drills periodically where practicable.

APPENDIX A

The following notes, bearing the same number as the text of the *Life Safety Code* to which they apply, contain useful explanatory material and references to standards.

CHAPTER 1

A-1-3.1 Panic. The *Code* recognizes that panic in a burning building may be uncontrollable, but deals with the potential panic hazard through measures designed to prevent the development of panic. Experience indicates that panic seldom develops, even in the presence of potential danger, so long as occupants of buildings are moving toward exits which they can see within a reasonable distance with no obstructions or undue congestion in the path of travel. However, any uncertainty as to the location or adequacy of means of egress, the presence of smoke, or stoppage of exit travel, such as may occur when one person stumbles and falls on the stairs, may be conducive to panic. Panic danger is greatest when there are numbers of people in a confined area.

A-1-4.3 The following is an example of what is intended by 1-4.3. In a hospital which has 6 ft (182.8 cm) corridors, these corridors cannot be reduced in width even though the requirements for existing buildings do not require 6 ft (182.8 cm) wide corridors. However, if a hospital had 10 ft (304.8 cm) wide corridors they may be reduced to 8 ft (243.8 cm) which is the requirement for new construction. If the hospital corridor was 3 ft (91.44 cm) wide it would have to be increased to 4 ft (121.9 cm). If alterations require replacement of a portion of a hospital corridor wall, this portion of the wall should be increased to 1-hour fire resistance in accordance with the requirements for new construction. However, it would not be required that the corridor width be increased to 8 ft (243.8 cm) unless it was practical to do so.

A-1-4.6 In existing buildings it is not always practical to strictly apply the provisions of this *Code*. Physical limitations may require disproportionate effort or expense with little increase in life safety. In such cases the authority having jurisdiction shall satisfy himself that reasonable life safety is assured.

In existing buildings it is intended that any condition which represents a serious threat to life be mitigated by application of appropriate safeguards. It is not intended to require modifications for conditions which do not represent a significant threat to life even though the circumstances are not literally in compliance with the *Code*.

A-1-6.3 Fatal fires have occurred when a required stairway has been closed for repairs or removed for rebuilding, when a required automatic sprinkler system has been shut off to change piping, etc.

CHAPTER 2

A-2-10 The provisions of this *Code* will not necessarily provide a building suitable for use by physically handicapped people. Reference is made to the *Specifications for Making Buildings and Facilities Accessible to and Usable by the Physically Handicapped*, ANSI A117.1 (*see Appendix B*).

CHAPTER 3

A-3-2 Approved. The National Fire Protection Association does not approve, inspect or certify any installations, procedures, equipment or materials nor does it approve or evaluate testing laboratories. In determining the acceptability of installations or procedures, equipment or materials, the authority having jurisdiction may base acceptance on compliance with NFPA or other appropriate standards. In the absence of such standards, said authority may require evidence of proper installation, procedure or use. The authority having jurisdiction may also refer to the listings or labeling practices of an organization concerned with product evaluations which is in a position to determine compliance with appropriate standards for the current production of listed items.

A-3-2 Authority Having Jurisdiction. The phrase "authority having jurisdiction" is used in NFPA Documents in a broad manner since jurisdictions and "approval" agencies vary as do their responsibilities. Where public safety is primary, the "authority having jurisdiction" may be a federal, state, local, or other regional department or individual such as a fire chief, fire marshal, chief of a fire prevention bureau, labor department, health department, building official, electrical inspector, or others having statutory authority. For insurance purposes, an insurance inspection department rating bureau, or other insurance company representative may be the "authority having jurisdiction." In many circumstances, the property owner or his designated agent assumes the role of the "authority having jurisdiction"; at government installations, the commanding officer or departmental official may be the "authority having jurisdiction."

A-3-2 Fire Compartment. In the provisions of fire compartments utilizing the outside walls of a building, it is not intended that the outside wall be specifically fire resistance rated unless required by other standards. Likewise it is not intended for outside windows or doors to be protected unless specifically required for exposure protection by another section of this *Code* or by other standards.

A-3-2 Smoke Compartment. In the provision of smoke compartments utilizing the outside walls or the roof of a building, it is not intended that outside walls or roofs or any openings therein be capable of resisting the passage of smoke.

CHAPTER 4

A-4-1.1 A detailed breakdown of occupancy classification is available from the National Fire Protection Association. [*See Uniform Coding for Fire Protection, NFPA 901 (see Appendix B).*]

A-4-1.2 Such occupancies are characterized by the presence or potential presence of crowds, with attendant panic hazard in case of fire or other emergency. They are generally open to the public, or may on occasion be open to the public, and the occupants, present voluntarily, are not ordinarily subject to discipline or control. Such buildings are ordinarily occupied by able-bodied persons, and are not used for sleeping purposes. The need for alternate exit routes for small commercial places of assembly, such as restaurants, lounges, theaters, etc., with capacities of as few as 50 persons, is specially treated in this method of classification. Special conference rooms, snack areas, etc., incidental to and under the control of the management of other occupancies, such as offices, fall under the 50-person limitation.

A-4.1.3 Educational occupancy is distinguished from assembly in that the same occupants are regularly present and they are subject to discipline and control.

A-4.1.7 Office, storage, and service facilities incidental to the sale of merchandise and located in the same building are included with mercantile occupancy.

A-4-1.8 Doctors' and dentists' offices are included unless of such character as to be classified as hospitals. Service facilities usual to city office buildings such as newsstands, lunch counters serving less than 50 persons, barber shops and beauty parlors are included in this occupancy group.

City halls, town halls, and court houses are included in this occupancy group insofar as their principal function is the transaction of public business and the keeping of books and records. Insofar as they are used for assembly purposes, they are classed as places of assembly.

A-4-1.10 Storage properties are characterized by the presence of relatively small numbers of persons in proportion to the area; any new use which increases the number of occupants to a figure comparable with other classes of occupancy changes the classification of the building to that of the new use.

A-4-2.1.2 Under this provision any violation of the interior finish requirements of Section 6-5 would inherently involve violation of other sections of the *Code*, unless additional exit facilities appropriate for high hazard contents were provided.

A-4-2.1.3 Under this provision any violation of the requirements of Chapters 8 through 30 for segregation or protection of hazardous operation or storage would inherently involve violation of the other sections of the *Code* unless additional exit facilities appropriate to high hazard contents were provided.

A-4-2.2.1 These classifications do not apply to the application of sprinkler protection classifications. [*See Installation of Sprinkler Systems, NFPA 13 (see Appendix B).*]

A-4-2.2.2 Chapter 29, Storage Occupancies, recognizes storage of noncombustible materials as low hazard. In other occupancies it is assumed that even where the actual contents hazard may normally be low, there is sufficient likelihood that some combustible material or hazardous operations will be introduced in connection with building repair or maintenance, or that some psychological factor might create conditions conducive to panic, so that the exit facilities cannot safely be reduced below those specified for ordinary hazard contents.

A-4-2.2.3 This classification represents the conditions found in most buildings, and is the basis for the general requirements of this *Code*.

The fear of poisonous fumes or explosions is necessarily a relative matter to be determined on a judgment basis. All smoke contains some toxic fire gases, but under conditions of ordinary hazard there should be no unduly dangerous exposure during the period necessary to escape from the fire area, assuming there are proper exits.

A-4-2.2.4 High hazard contents may include occupancies where gasoline and other flammable liquids are handled or used or are stored under conditions involving possible release of flammable vapors; where grain dust, wood flour or plastic dusts, aluminum or magnesium dust, or other explosive dusts may be produced; where hazardous chemicals or explosives are manufactured, stored, or handled; where cotton or other combustible fibers are processed or handled under conditions producing flammable flyings; and other situations of similar hazard.

Chapter 28, Industrial Occupancies, and Chapter 29, Storage Occupancies, include detailed provisions on high hazard contents.

CHAPTER 5

A-5-1.1.1 Portable ladders, rope fire escapes, and similar emergency escape devices may have a useful function in facilitating escape from burning buildings lacking adequate exits of the stair or other standard type, but they are not the equivalent of standard exits and their use is not in any

way recognized by this *Code* as satisfying the requirements for means of egress. Furthermore, many such portable devices are of types quite unsuited to use by aged or infirm persons or by small children. Therefore, such devices may give a false sense of security and should not be made an excuse for not providing standard exit facilities.

A-5-1.2 In the case of a stairway, the exit includes the door to the stairway enclosure, stairs and landings inside the enclosure, the door from the stairway enclosure to the street or open air, or any passageway and door necessary to provide a path of travel from the stairway enclosure to the street or open air. In the case of a door leading directly from the street floor to the street or open air the exit comprises only the doorway.

Doors of small individual rooms, as in hotels, while constituting exit access from the room, are not referred to as exits except when they lead directly to the outside of the building or other place of safety, but in a large room, such as a school auditorium, the doors constitute an integral part of the exit system and are referred to as exits from the room.

A-5-1.2.5 Horizontal exits should not be confused with egress through doors in smoke partitions. Doors in smoke partitions are designed only for temporary protection against smoke, whereas horizontal exits provide protection against serious fire for a relatively long period of time in addition to providing immediate protection from smoke.

A-5-1.4 Headroom on stairs is the vertical distance above a plane parallel to and tangent with the most forward projection of the stair tread.

A-5-1.6.3 Means of egress must permit unobstructed travel at all times. Any type barrier including, but not limited to, the accumulations of snow and ice in those climates subject to such accumulations is an impediment to free movement in the means of egress.

A-5-2.1.1.2.1 Figure A-5-2.1.1.2.1 illustrates the difference in measuring the width of doors in new and existing buildings.

A-5-2.1.1.3.1 The minimum width for the leaf of a door in an exit recommended in this paragraph may not be adequate for the normal usage of the doorway for purposes other than exiting.

A-5-2.1.1.4.1 Doors which are designed to prevent spread of fire through wall openings are not necessarily suitable for use on exits, and some doors may involve a personal injury hazard if used on exits.

Where doors are subject to two-way traffic, a desirable practice is to locate a small wired glass panel in the door to avoid accidents.

See other sections of the *Code* such as 5-2.1.1.4.4 and 5-2.4.2.3 for special treatment of the direction of swing of doors used as exit access and doors used in horizontal exits.

A-5-2.1.1.4.4 There are various methods by which the function of screen or storm doors may be provided without having any door swing against the exit travel. A screen or storm door may be used in the same doorway with an ordinary door by means of a vestibule of sufficient size as to permit the

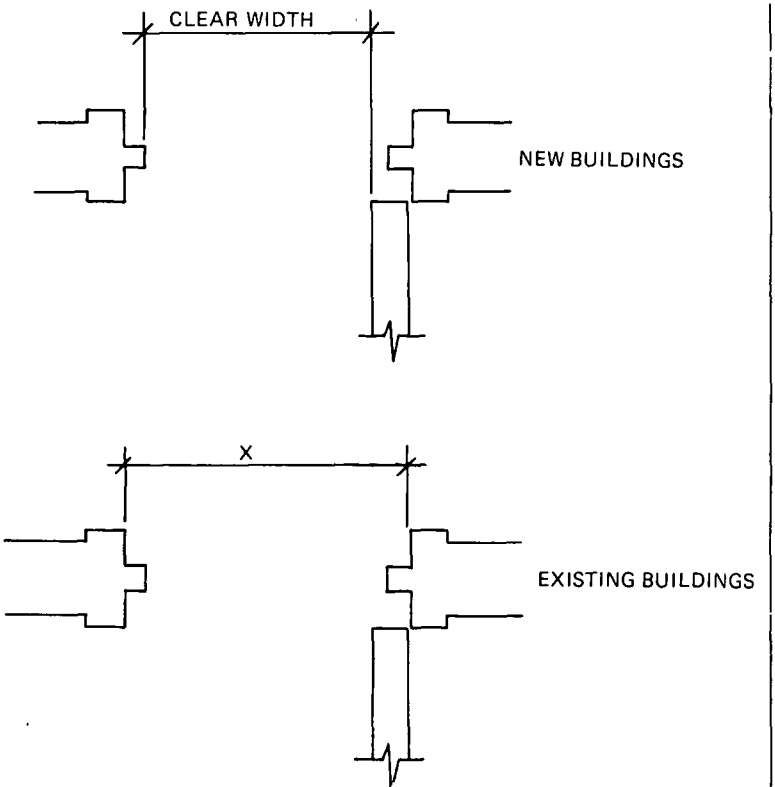


Figure A-5-2.1.1.2.1

inner door to swing outwardly without interfering with the operation of the door at the other end of the vestibule.

A jalousie door, with a screen or storm sash panel, provides the function of both a regular door and screen or storm sash, all in a single unit.

A-5-2.1.2.1.1 Doors to the enclosures of interior stair exits should be arranged to open from the stair side at least at every third floor so that it will be possible to leave the stairway at such floor should the fire render the lower part of the stair unusable during egress or should the occupants seek refuge on another floor.

A-5-2.1.2.1.2 This requirement may be satisfied by the use of conventional types of hardware, whereby the door is released by the turning of a knob or handle, or pushing against a panic bar, but not by unfamiliar methods of operation such as a blow to break glass.

A-5-2.1.2.1.5.2 In the event that the authority having jurisdiction has allowed increased operation time the sign should reflect the appropriate time.

A-5-2.1.3.2.2 The one-half unit rating here specified is based upon operation of the door in normal revolving position, where only one side is used for travel in one direction, and the rotating leaves of the door may slow the rate of travel to about half of that through an unobstructed door opening of the same width as one leaf of the revolving door. Collapsible revolving doors, while better than fixed leaf doors, are not given any increased rating in units of exit width, because if the setting is such as to prevent accidental collapse of leaves in normal operation, their free collapse in case of emergency may be doubtful.

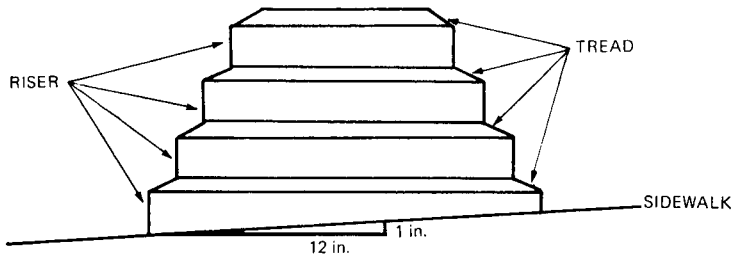
A-5-2.1.3.2.4 A rate of 12 revolutions per minute is recommended.

A-5-2.1.3.3.1 Turnstiles placed in subway or other rapid transit stations and other places of assembly to prevent the entrance of persons without paying fare or admission fee may be a serious obstruction to rapid egress in case of fire or other emergency, even though such turnstiles are designed to permit persons to leave. Multiple bar turnstiles designed to prevent persons from crawling over, under, or around the bars are more objectionable than single bar turnstiles, such as the coin-operated type, but any type of turnstile involves some interference with egress. Where turnstiles are used, required exit facilities may be provided by alternate exits of the swinging-gate type, with visual supervision by employees to prevent improper use.

A-5-2.2.1.2 Recommendations on tread and riser dimensions can be found in NBSIR 78-1554 and *Scientific American*, October 1974 (*see Appendix B*).

A-5-2.2.2.6 When walking up or down stairs a person's foot exerts a smaller horizontal force against treads than achieved when walking on level floors. Therefore, materials that are acceptable as slip resistant for floors (as described by ASTM) provide adequate slip resistance when used for stair treads, including the important leading edges of treads — the part of the tread which the foot first contacts during descent, the most critical direction of travel. If stair treads are wet there may be an increased danger of slipping just as there may be an increased danger of slipping on wet floors of similar materials. A small wash or drainage slope on exterior stair treads is therefore recommended to shed water. [*See NBSIR 78-1554 (see Appendix B), p. 33.*] When environmental conditions (such as illumination levels and directionality or a complex visual field drawing a person's attention away from stair treads) lead to a hazardous reduction in one's ability to perceive stair treads they should be made of a material that permits ready discrimination of the number and position of treads. In all cases the leading edges of all treads should be readily visible during both ascent and descent. A major factor in injury-producing stair accidents, and in the ability to use stairs efficiently in conditions such as egress, is the clarity of the stair treads as separate stepping surfaces.

A-5-2.2.2.9 Exception The following diagram illustrates the intent of the Exception to 5-2.2.2.9.



Conversion: 1 in. = 2.54 cm.

Figure A-5-2.2.2.9 Exception

A-5-2.2.2.10 The following diagram illustrates the method for measuring tread depth.

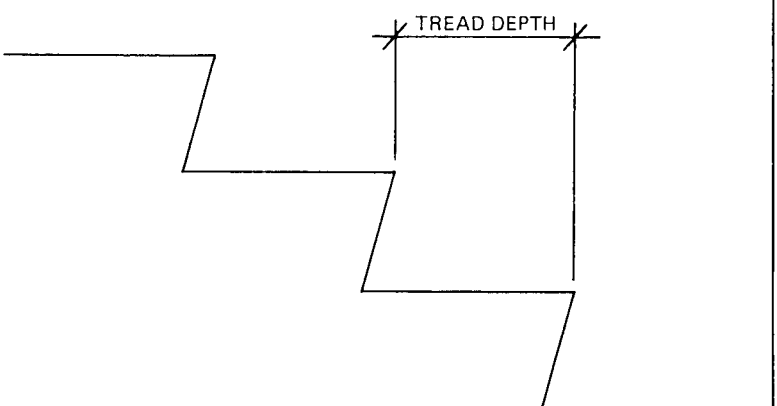


Figure A-5-2.2.2.10

A-5-2.2.3.1 Except as noted in 5-2.2.3.2 and 5-2.2.3.4 handrails are not required on stair landings.

A-5-2.2.3.4 Aisle stairs forming part of a required means of egress should be provided with handrails located along the centerline of such aisles or at one side of such aisle. Center aisle handrails may be made up of short sections, with returns to the stair, and with the resulting gaps not greater than 36 in. (91.44 cm) measured horizontally.

A-5-2.2.3.4(b) This 1½-in. (3.81-cm) clearance assumes that the wall adjacent to the handrail is a smooth surface. Where rough wall surfaces are used, greater clearances are recommended.

A-5-2.2.3.4(d) Handrails should be designed so that they can be grasped firmly with a comfortable grip and so that the hand can be slid along the rail without encountering obstructions. The profile of the rail should comfortably match the hand grips. For example, a round profile such as is provided by the simplest round tubing or pipe having an outside diameter of 1½ to 2 in. (3.81 to 5.08 cm) provides good graspability for adults. Factors such as the use of a handrail by small children and the wall-fixing details should be taken into account in assessing handrail graspability.

It should be noted that handrails are one of the most important components of a stair; therefore, design excesses such as oversized wood handrail sections should be avoided unless there is a readily perceived and easily grasped handhold provided. At all times in handrail design it is useful to remember the effectiveness of a simple round profile that permits some locking action by fingers as they curl around the handrail.

A-5-2.2.3.4(f) Figure A-5-2.2.3.4(f) illustrates some of the requirements of 5-2.2.3.4.

A-5-2.2.3.4(g) A reduced intermediate handrail spacing of approximately 60 in. (152.4 cm), along with a handrail height at the upper limit of permissible heights, is recommended in public assembly, educational and similar occupancies where crowds of people must simultaneously use a stair for normal access and egress as well as for emergency egress. This permits everyone to reach and grasp one handrail. On monumental stairs the required handrails should be located along the normal path of travel to and from the building.

A-5-2.3.1 The following guidance is provided for specifying a level of performance for limitations of products of combustion from entering a smokeproof stair tower.

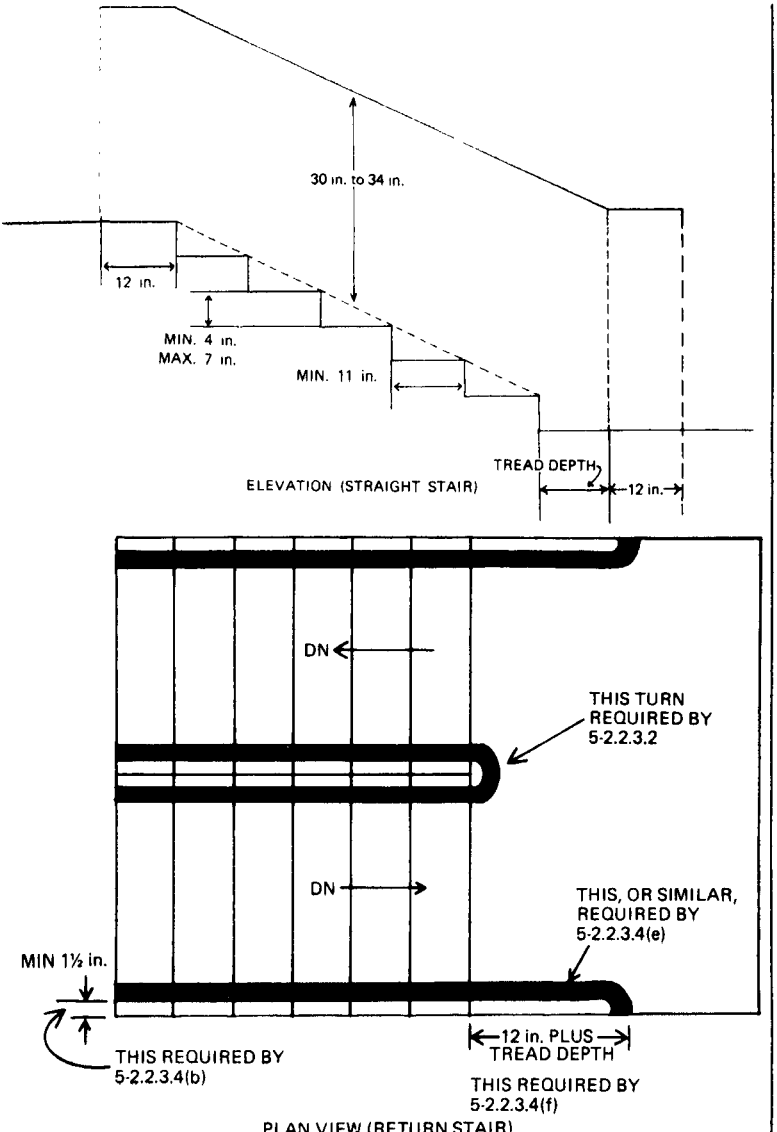
The smoke control system should ensure, on a 97½ percent basis for the geographical location of the building, that the atmosphere of the smokeproof tower will not, during a period of 2 hours, include a quantity of air emanating from the fire area that is more than 1 percent of the volume of the smokeproof stair tower.

The 97½ percent basis for the outside winter temperature may be obtained from the *ASHRAE Handbook of Fundamentals* (*see Appendix B*).

A-5-2.3.7 For information on the selection and installation of fire doors, see *Standard for Fire Doors and Windows*, NFPA 80 (*see Appendix B*).

A-5-2.4.1.1 Example: A department store building 270 ft by 210 ft (82 m × 64 m) (occupant load 945 per floor) would be required by this *Code* to have exits from the upper floors sufficient to furnish 16 units of exit width. This would ordinarily require eight 44-in. (111.76-cm) stairways.

Assume now this building is divided by a fire wall into two sections, one 100 ft by 210 ft (30 m × 64 m) and the other 170 ft by 210 ft (52 m × 64 m), with doors through the wall furnishing horizontal exits. The smaller section, considered separately, will require three 2-unit exits and the larger



Conversion: 1 in. = 2.54 cm.

Figure A-5-2.2.3.4(f)

section will require five 2-unit exits. The horizontal exits will serve as one of the three exits required for the smaller section and two of the five exits required for the larger section. Therefore, only two 2-unit stairs from the

smaller section and three 2-unit stairs from the larger section will be required, if the exits can be arranged to meet the requirements for the 150-ft (45.7-m) distance from any point which can be done in a sprinklered building. Thus, the total number of stairways required for the building will be five, as compared with eight if no horizontal exit is provided. Another option would be the use of two 2½-unit stairs from the larger section, which would reduce the total number of stairways required to four. However, if the building were further subdivided by a second fire wall with fire doors in openings, no further reduction in stairways would be permitted.

A-5-2.4.1.2.2 This requirement is to be complied with only where the entire areas from each side of the horizontal exit to the stairways or other standard means of egress are occupied by the same tenant or where there are public corridors or other continuously available passageways leading from each side of the exit to stairways or other standard means of egress leading to outside the building.

A-5-2.4.2.2 *Standard for Fire Doors and Windows*, NFPA 80, describes the installation of fire doors (*see Appendix B*).

A-5-2.4.2.3 The customary requirement of building codes for fire doors on both sides of an opening in a fire wall may be met by having an automatic sliding fire door on one side, and a self-closing fire door swinging out from the other side of the wall. This arrangement qualifies only as a horizontal exit from the side of the sliding door.

A-5-2.4.2.4 Automatic doors which are often installed covering the entire cross section of a building corridor do not qualify as horizontal exits under these provisions, as dangerous quantities of smoke might pass through the corridor before there is sufficient heat to close the door.

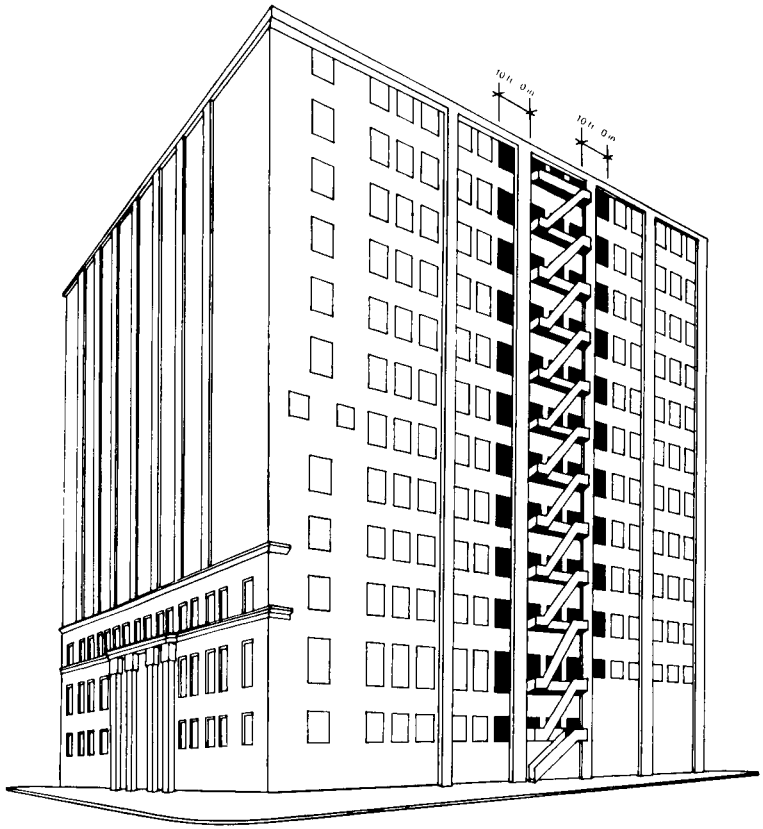
Automatic sliding doors are also open to the objection that once closed they are difficult to open, and thus may trap people behind them in the absence of other available means of escape.

A-5-2.4.3.7 One or two steps at a doorway are considered to constitute an accident hazard in emergency use. Stairways with level landings between door and stair are satisfactory.

A-5-2.5.1.3.1 Figure A-5-2.5.1.3.1 indicates wall openings needing protection in accordance with 5-2.5.1.3.1. Openings needing protection are shown as shaded.

A-5-2.5.1.3.3 The guards that are required by 5-2.2.3 will usually meet this requirement when the stair is not more than three stories high. Special architectural treatment, including application of such devices as metal or masonry screens and grills, will usually be necessary to comply with the intent of the requirements for stairs over three stories in height.

A-5-2.6.1.3.3 This is to prohibit closets and similar spaces under ramps within the enclosure. It is not to be interpreted to prohibit an enclosed ramp beneath another flight.



Conversion: 1 in. = 2.54 cm.

Figure A-5-2.5.1.3.1

A-5-2.6.2.2.1 The protection requirements for wall openings exposing ramps are the same as for outside stairs.

See A-5-2.5.1.3.1 for example of openings needing protection.

A-5-2.6.2.2.3 The guards that are required for the unenclosed sides of ramps by 5-2.2.3 will usually meet this requirement when the ramp is not more than three stories high. Special architectural treatment, including application of such devices as metal or masonry screens and grills, will usually be necessary to comply with the intent of the requirements for ramps over three stories in height.

A-5-2.7 An exit passageway serves as a horizontal means of exit travel that is protected from fire in a manner similar to an enclosed interior exit

stair. Where it is desired to offset exit stairs in a multi-story building, an exit passageway can be used to preserve the continuity of the protected exit by connecting the bottom of one stair to the top of the other stair that continues to the street floor. Probably the most important use of an exit passageway is to satisfy the requirement that exit stairs shall discharge directly outside from multistory buildings. Thus, if it is impractical to locate the stair on an exterior wall, an exit passageway can be connected to the bottom of the stair to convey the occupants safely to an outside exit door. In buildings of extremely large area, such as shopping malls and some factories, the exit passageway can be used to advantage where the distance of travel to reach an exit would otherwise be excessive. Exit passageways are different from access aisles, corridors, and hallways because the latter are not required to be protected by a fire-resistive enclosure.

A-5-2.8.1.1 Chapters 8 through 30 include provisions on the use of escalators as exits in various occupancies. They are not recognized as required exits in educational and institutional occupancies, residential occupancies other than hotels, or storage occupancies. Escalators, as commonly installed in most occupancies, are not so arranged and protected as to qualify as required exits. However, in mercantile occupancies, where open stairs to second floor or basement are permitted under specified conditions, open escalators may serve on the same basis as open stairways to provide a path of travel to reach an outside exit. (*See 5-2.2 for details.*)

A-5-2.8.2.1 It is assumed that where escalators serve as required exits they will be continued in operation in case of fire, but that in case they stop due to electric current failure or other cause they may be used as ordinary stairs.

A-5-2.9.1.1.1 Fire escape stairs as specified in this section of the *Code* should not be confused with outside stairs as covered in 5-2.5.

Fire escape stairs are regarded as, at best, only an expedient way to remedy deficiencies in the exits of existing buildings where it may not be practicable to provide additional inside stairways, properly enclosed and conforming to all other provisions of this *Code* or outside stairs. Fire escape stairs, however, may greatly facilitate fire department rescue and fire fighting operations.

The fire escape stairs specified by this *Code* should not be confused with the inferior fire escapes which are commonly found on old buildings. These utterly inadequate, flimsy, precipitous fire escapes, unshielded against fire in the structure to which they are attached, are positively a menace because they give a false sense of security. Such escapes are not recognized by this *Code* as exits.

Even the superior fire escape stairs constructed in accordance with this *Code* have limitations which may prevent their effective use in time of fire. Even where window protection is provided conditions may be such that fire (or the smoke from fire) on lower floors may render the stairs impassable before the occupants of upper stories have had time to use them. Fire escape

stairs may be blocked by snow, ice or sleet at the time when they are most needed. Persons using fire escape stairs at a considerable height are likely to be timid and to descend the stairs, if at all, at a rate much slower than that which obtains on stairs inside buildings. This applies to some extent even with the solid tread stairs which are specified by this *Code* in place of the ordinary slatted tread construction. Fire escape stairs are not a usual means of egress. Occupants of buildings will not so readily use them in case of fire as they will use the usual means of exit, the inside stairway. Because they are an emergency device not ordinarily used, their proper upkeep may be neglected.

The experiences in many fires, however, show that properly constructed and maintained fire escape stairs, conforming to the requirements for Class A fire escapes, under favorable conditions provide an effective path of escape from fire.

A-5-2.9.3.2 Access to fire escape balconies by doors, or by casement windows equivalent to doors, with sills at floor level, is the only way in which fire escape stairs can furnish exit facilities in any way equivalent to inside stairs. Where access requires climbing over window sills, the exit facility is inherently inferior; such arrangements are suitable only for relatively small numbers of persons in existing buildings where the provision of doors may be impracticable.

A-5-2.9.4 The existing stair with a minimum width of 22 in. (55.88 cm) is a type which may be acceptable for buildings of small or moderate size. Depending upon local conditions, these existing fire escape stairs may generally be accepted.

The existing stair with a minimum width of 18 in. (45.72 cm) is the lowest type in any way recognized. It represents the absolute minimum that may be accepted in an existing fire escape stairway. Because of access over window sills, and its steep pitch and narrow width, travel down the stair will be necessarily slow and may be dangerous. Where there are spiral stair treads, or the stairs terminate at a balcony above ground level with a fixed or movable ladder from there down, the situation is even worse. This fire escape stair is applicable only to existing fire escape stairs, and is suitable only in situations where only a very small number of people are involved.

A-5-2.9.7.9 A latch is desirable to hold stairs down when they have once swung to ground.

A-5-2.10.1 Other requirements for ladders may be imposed by the Occupational Safety and Health Act. Reference should be made to OSHA regulations (*see Appendix B*).

A-5-2.10.2.1 Counterbalanced and other forms of movable ladders designed to provide access from the lowest fire escape balcony to the street are not recognized as exits by this *Code*.

A-5-3.1.1 The normal designed occupancy load is not necessarily a suitable criterion, as the greatest hazard may occur when an unusual crowd is present, a condition often difficult for authorities having jurisdiction to

control by regulatory measures. The principle of this *Code* is to provide exits for the maximum probable number of occupants, rather than to attempt to limit the number of occupants to a figure commensurate with available exits; there are, however, limits of occupancy specified in certain special cases for other reasons.

The following table represents a compilation of the occupant load factors specified by the individual occupancies of Chapters 8 through 30.

These figures, based on counts of typical buildings, represent the average maximum density of occupancy.

Occupant Load Factors

Occupancy	Sq Ft	Sq M
Places of assembly (Chapters 8 and 9)		
Less concentrated use without fixed seating	15 net	1.39
Concentrated use without fixed seating	7 net	.65
Waiting space	3 net	.28
Mercantile (Chapters 24 and 25)		
Street floor and sales basement	30 gross	2.79
Other floors	60 gross	5.57
Storage, shipping	300 gross	27.87
Office areas	100 gross	9.29
Malls	See 12-2.3.1(g).	
Educational occupancies (Chapters 10 and 11)		
Classroom area	20 net	1.86
Shops and other vocational areas	50 net	4.65
Day nurseries with sleeping facilities	35 net	3.25
Business, industrial (Chapters 26 through 28)	100 gross	9.29
Hotel and apartment (Chapters 16 through 19)	200 gross	18.58
Health care (Chapters 12 and 13)		
Sleeping departments	120 gross	11.15
Inpatient departments	240 gross	22.30
Detention and correctional occupancies (Chapters 14 and 15)	120 gross	11.15

A-5-3.2.2 Handrails, at approximately waist height, do not actually restrict the effective width of exits. Door jambs, while actually restricting the width, due perhaps to psychological factors, do not appear to have any significant effect on the utilization of exits. This may be because everyone uses doors and is accustomed to the slight reduction in width of the path of travel at the point of passing through a doorway, and instinctively turns or squeezes through in a way which would not occur in the case of a narrow stairway or passage where the feeling of restricted space might be conductive to panic under fire conditions.

Any projection, radiator, pipe, or other object that extends into a corridor, irrespective of width, is undesirable, particularly where large crowds must be accommodated.

A-5-5.1.2 This *Code* generally requires at least two exits, but specifies conditions where one means of egress is all that can reasonably be required in the interest of public safety.

Attention is called to the fact that it is difficult in actual practice to construct scissor stairs so that products of combustion having entered one stairway do not penetrate into the other. Use as separate required exits is discouraged.

A-5-5.1.3 The terms "dead end" and "common path of travel" are commonly used interchangeably. While the concepts of each are similar in practice, they are two different concepts.

A common path of travel exists when a space is arranged so that occupants within that space are able to travel in only one direction to reach any of the exits or to reach the point at which the occupants have the choice of two paths of travel to remote exits. Figure 1 is an example of a common path of travel.

While a dead end is similar, a dead end may occur where there is no path of travel from an occupied space, but where an occupant may enter a corridor or space thinking there is an exit at the end and, finding none, must retrace his or her path to again reach a choice of exits. Figure 2 is an example of such a dead-end arrangement.

Combining the two concepts, Figure 3 is an example of a combined dead-end common path of travel problem.

Common paths of travel and dead-end travel are measured using the same principles used to measure travel distance as described in Section 5-6 of the *Code*. Because the room in Figure 4 is occupied by more than six persons, measurement is made 1 ft (30.48 cm) from the most remote point in the room along the natural path of travel, and through the doorway along the centerline of the corridor to Point C, located at the centerline of the corridor, which provides the choice of two different paths to remote exits, this is common path of travel. The distance 1 ft (30.48 cm) from the wall at Point B along the centerline of the corridor to Point C is a dead end. If the room had been occupied by six or fewer persons, then the common path of travel would have been measured starting from the door to the room.

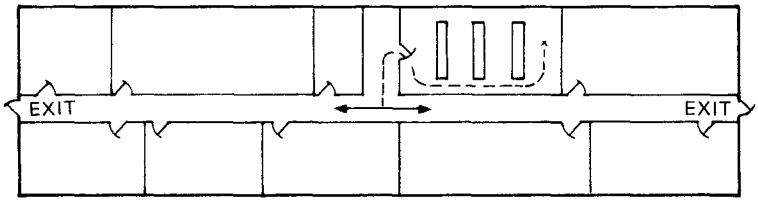


Figure 1

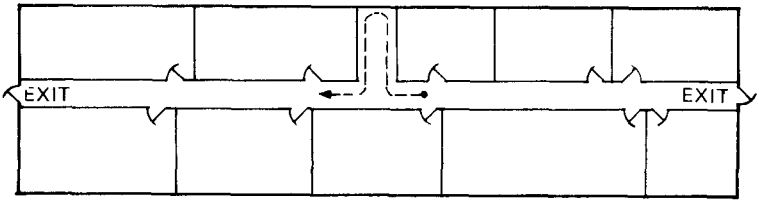


Figure 2

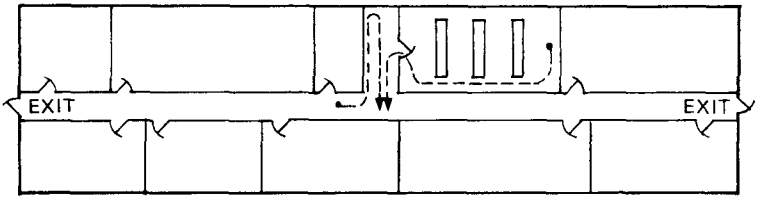


Figure 3

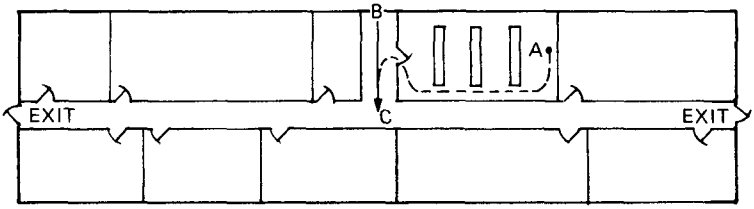


Figure 4

Figure A-5-5.1.3

A-5-5.2.2 Doors which lead through wall paneling and which harmonize in appearance with the rest of the wall so as to avoid detracting from some desired aesthetic or decorative effect are not acceptable, as casual occupants may not be aware of such exits even though actually visible.

A-5-6.1 Table A-5-6.1 is a compilation of the requirements of the individual occupancy (*Chapters 8 through 30*) for length of dead-end

corridors and permissible travel distance to at least one of the required exits.

A dead end occurs when a hallway or other space is so arranged that a person therein is able to travel in one direction only in order to reach any of the exits. Although relatively short dead ends are permitted by this *Code*, it is better practice to eliminate them whenever possible as they increase the danger of persons being trapped in case of fire. Compliance with the dead-end limits does not necessarily mean that the requirements for remoteness of exits have been met. This is particularly true in small buildings or buildings with short public hallways. Adequate remoteness can be obtained in such cases by further reducing the length of dead ends.

A-5-6.2 The natural exit access (path of travel) will be influenced by the contents and occupancy of the building. Furniture, fixtures, machinery, or storage may serve to increase the length of travel. It is good practice in building design to recognize this by spacing exits at closer intervals than would be needed for a completely open floor area, thus reducing the hazard of excessive travel distances due to introduction of furniture, fixtures, machinery, or storage, and minimizing the danger of violation of the travel-distance requirements of this *Code*.

A-5-7.1 An exit from the upper stories, in which the directon of exit travel is generally downward, should not be arranged so that it is necessary to change over to travel in an upward direction at any point before discharging to the outside. A similar prohibition of reversal of the vertical component of travel should be applied to exits from stories below the floor of exit discharge. However, an exception is permissible in the case of stairs used in connection with overhead or underfloor exit passageways which serve the street floor only.

It is important that ample roadways be available from buildings in which there are large numbers of occupants so that exits will not be blocked by persons already outside. Two or more avenues of departure should be available for all but very small places. Location of a larger theater, for example, on a narrow dead-end street may properly be prohibited by the authority having jurisdiction under this rule unless some alternate way of travel to another street is available.

A-5-8.1.1 For further information on illumination, see the following publications of the Illuminating Engineering Society:

Practice for Industrial Lighting, ANSI/IES RP7 (*see Appendix B*)

Guide for School Lighting, ANSI/IES RP3 (*see Appendix B*)

Practice for Office Lighting, ANSI/IES RP1 (*see Appendix B*)

Recommended Practice for Lighting Merchandising Areas, IES RP2 (*see Appendix B*).

A-5-8.1.3 A desirable form of exit lighting is by lights recessed in walls about a foot above the floor. Such lights are not likely to be obscured by smoke.

Table A-5-6.1
Exit Travel Distance and Dead-End Limits
(By Occupancy)

Type of Occupancy	Dead-End Limit	Travel Limit to an Exit	
		Unsprinklered	Sprinklered
PLACES OF ASSEMBLY			
NEW	20[a] (609.6 cm)	150 (45.72 m)	200 (60.96 m)
EXISTING	20[a] (609.6 cm)	150 (45.72 m)	200 (60.96 m)
EDUCATIONAL			
NEW	20 (609.6 cm)	150 (45.72 m)	200 (60.96 m)
EXISTING	20 (609.6 cm)	150 (45.72 m)	200 (60.96 m)
HEALTH CARE			
NEW	30 (914.4 cm)	100[c] (30.48 m)	150[c] (45.72 m)
EXISTING	N.R.[b]	100[c] (30.48 m)	150[c] (45.72 m)
DETENTION AND CORRECTION			
NEW			
Use Conditions			
II, III, IV	50 (15.24 m)	100[c] (30.48 m)	150[c] (45.72 m)
V	20 (609.6 cm)	100[c] (30.48 m)	150[c] (45.72 m)
EXISTING			
Use Conditions			
II, III, IV, V	N.R.[b]	100[c] (30.48 m)	150[c] (45.72 m)
RESIDENTIAL			
A. Hotels			
NEW	35 (10.67 m)	100[c,d] (30.48 m)	150[c,d] (45.72 m)
EXISTING	35 (10.67 m)	100[c,d] (30.48 m)	150[c,d] (45.72 m)
B. Apartments			
NEW	35 (10.67 m)	100[c,e] (30.48 m)	150[c,e] (45.72 m)
EXISTING	35 (10.67 m)	100[c,e] (30.48 m)	150[c,e] (45.72 m)
C. Dormitories			
NEW	0	100 (30.48 m)	150 (45.72 m)
EXISTING	35 (10.67 m)	100 (30.48 m)	150 (45.72 m)
D. Lodging or Rooming Houses, 1- & 2-Family Dwellings	N.R.[b]	N.R.[b]	N.R.[b]
MERCANTILE			
Class A, B & C			
NEW	50 (15.24 m)	100 (30.48 m)	150 (45.72 m)
EXISTING	50 (15.24 m)	100 (30.48 m)	150 (45.72 m)
Open Air	0	N.R.[b]	N.R.[b]
Covered Mall			
NEW	50 (15.24 m)	100 (30.48 m)	350[c,h] (106.68 m)
EXISTING	50 (15.24 m)	100 (30.48 m)	350[c,h] (106.68 m)

Table A-5-6.1 (Continued)

Type of Occupancy	Dead-End Limit	Travel Limit to an Exit	
		Unsprinklered	Sprinklered
BUSINESS			
NEW	50 (15.24 m)	200 (60.96 m)	300 (91.44 m)
EXISTING	50 (15.24 m)	200 (60.96 m)	300 (91.44 m)
INDUSTRIAL			
A. General, and			
B. Special Purpose	50 (15.24 m)	100 (30.48 m)	150[i] (45.72 m)
C. High Hazard	0	75 (22.86 m)	75 (22.86 m)
D. Open Structures	N.R.[b]	N.R.[b]	N.R.[b]
STORAGE			
Low Hazard	N.R.[b]	N.R.[b]	N.R.[b]
Ordinary Hazard	N.R.[b]	200 (60.96 m)	400 (121.92 m)
High Hazard	0	75 (22.86 m)	100 (30.48 m)
Parking Garages, Open	50 (15.24 m)	200 (60.96 m)	300 (91.44 m)
Parking Garages, Enclosed	50 (15.24 m)	150 (45.72 m)	200 (60.96 m)
Aircraft Hangars, Ground Floor	20 (609.6 cm)	Varies[f]	Varies[f]
Aircraft Hangars, Mezzanine Floor	N.R.[b]	75 (22.86 m)	75 (22.86 m)
Grain Elevators	[f]	N.R.	N.R.
Miscellaneous Occupancies, Towers, Piers & Water Surrounded Structures, Vehicles & Vessels & Emergency Shelters	50 (15.24 m)	100 (30.48 m)	150 (45.72 m)

[a] In aisles. In area and thrust stage theaters dead-end aisles at the stage must not exceed five rows beyond cross aisle.
[b] No requirement or not applicable.
[c] See Section 5-6 when space is subdivided.
[d] See Chapters 16 and 17 for exceptions.
[e] See Chapters 18 and 19 for exceptions.
[f] See Chapter 29 for special requirements.
[g] For existing buildings, see 5-5.1.3 for dead-end limits.
[h] See Chapters 24 and 25 for exceptions and special considerations.
[i] See Chapter 28 for special considerations.

A-5-8.2.2 See *National Electrical Code*, NFPA 70, for details of recognized good practice on emergency lighting. (*See Appendix B.*)

A-5-9.2.2 Automobile-type lead storage batteries are not suitable by reason of their relatively short life when not subject to frequent discharge and recharge as occurs in automobile operation.

For proper selection and maintenance of appropriate batteries, refer to the *National Electrical Code*, NFPA 70 (*see Appendix B*).

A-5-9.2.3 When approved by the authority having jurisdiction, this requirement may be met by means such as:

(a) Two separate electric lighting systems with independent wiring, each adequate alone to provide the specified lighting, one supplied from an outside source such as a public utility service and the other from an electric generator on the premises driven by an independent source of power, both sources of illumination being in regular simultaneous operation whenever the building is occupied during periods of darkness.

(b) An electric circuit or circuits used only for means of egress illumination, with two independent electric sources so arranged that on the failure of one the other will come automatically and immediately into operation. One such source shall be a connection from a public utility or similar outside power source and the other an approved storage battery with suitable provision to keep it automatically charged. Such battery shall also be so provided with automatic controls that after the battery comes into operation, due to failure of the primary power source or to turning off the primary electric source for the lights, it will be shut off after its specified period of operation and will be automatically recharged and ready for further service when the primary current source is again turned on.

(c) Electric battery-operated emergency lighting systems, where permitted, complying with the provisions of 5-9.2.2, and operating on a separate circuit and at a voltage different from that of the primary light. Refer to the *National Electrical Code*, NFPA 70 (*see Appendix B*).

These requirements are not intended to prohibit the connection of a feeder serving exit lighting and similar emergency functions ahead of the service disconnecting means, but such provision does not constitute an acceptable alternate source of power. It furnishes only supplementary protection for emergency electrical functions, particularly when intended to permit the fire department to open the main disconnect without hampering exit activities. Provision should be made to alert the fire department that certain power and lighting is fed by an emergency generator and will continue operation after the service disconnect is opened.

A-5-10.1.1 Where a main entrance serves also as an exit, it will usually be sufficiently obvious to occupants so that no exit sign is needed.

The character of the occupancy has a practical effect upon the need for signs. In any place of assembly, hotel, department store, or other building subject to transient occupancy, the need for signs will be greater than in a

building subject to permanent or semi-permanent occupancy by the same people, such as an apartment house where the residents may be presumed to be familiar with exit facilities by reason of regular use thereof. Even in a permanent residence type of building, however, there is need for signs to identify exit facilities such as outside stairs which are not subject to regular use during the normal occupancy of the building.

There are many types of situations where the actual need for signs may be debatable. In cases of doubt, however, it is desirable to be on the safe side by providing signs, particularly as the placing of signs does not ordinarily involve any material expense or inconvenience.

The requirement for the locations of exit signs visible from any direction of exit access may be illustrated as follows:

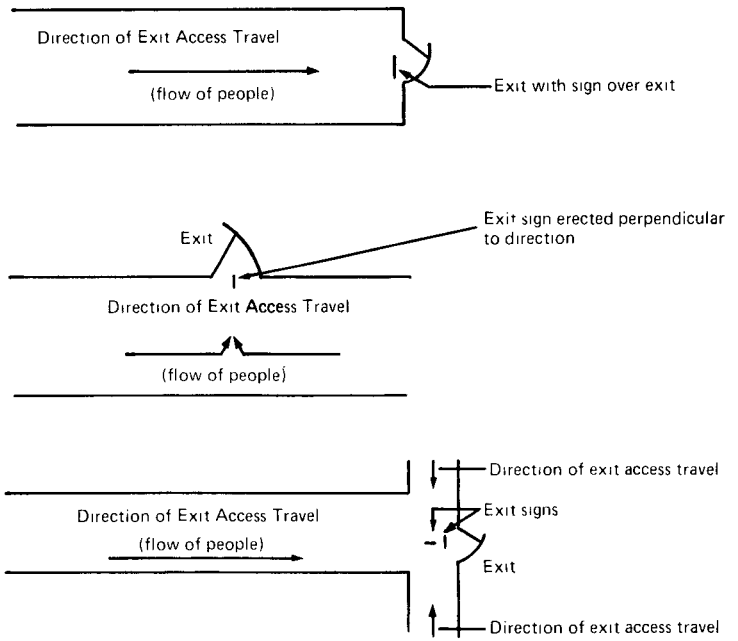


Figure A-5-10.1.1

A-5-10.1.3 For example, in stores an otherwise adequate exit sign may be made inconspicuous by some high-intensity illuminated advertising sign in the immediate vicinity.

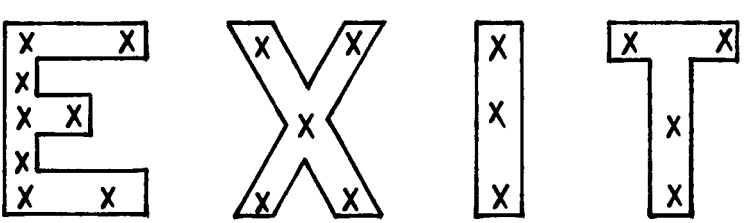
Red is the traditional color for exit signs and is required by law in many places. However, at an early stage in the development of the *Code*, a provision was made that green be the color for exit signs, following the idea of traffic lights where green indicates safety and red is the signal to stop.

During the period when green signs were specified by the *Code*, many such signs were installed, but the traditional red signs also persisted. In 1949, the Fire Marshals Association of North America voted to request that red be restored as the required exit sign color, as they found that the provision for green involved difficulties in law enactment out of proportion to the importance of the subject. The 10th Edition of the *Code* accordingly specified "red where not otherwise required by law." The present text avoids any specific requirement for color, on the assumption that either red or green will be used in most cases, and that there may be some situations where some color other than red or green may actually provide better visibility.

A-5-10.3.1 It is not the intent of this paragraph to require emergency lighting but only to have the sign illuminated by emergency lighting if emergency lighting is required and provided.

A-5-10.3.2 Colors providing a good contrast are red or green letters on matte white background. Glossy background and glossy letter colors should be avoided.

A-5-10.3.3 Two ft lamberts (6.85 lx) are required for sign legibility in total darkness from a distance of 100 ft (30.48 m) (65-year-old adult, 20/20 vision). With a maximum of 3 ft lamberts (10.28 lx), the letters will remain dark against the white background when viewed with high ambient light. The average luminance may be computed by measuring the luminance of ¾-in. (1.91-cm) diameter circular areas at the positions indicated in the diagram by X's.



Self-luminous signs are illuminated by self-contained power sources and operate independently of external power sources. Batteries do not qualify as a self-contained power source under this definition.

A-5-10.3.5 For even background illumination by the internal source, the brightest spot, a ¾-in. (1.91-cm) diameter circle, should not be more than four times as bright as the darkest spot.

A-5-10.3.6 The flashing repetition rate should be approximately one cycle per second and the duration of the off-time should not exceed one quarter second per cycle. During on-time, the illumination levels must be provided in accordance with 5-10.3.2, 5-10.3.3, 5-10.3.4, or 5-10.3.5. Flashing signs when activated with the fire alarm system may be of assistance to people with hearing impairments.

A-5-10-4.2.1 The likelihood of mistaking for exit doors, passageways, or stairways which lead to dead-end spaces where occupants might be trapped depends upon the same considerations as govern the need for exit signs. Thus, such areas should be marked with a sign reading, "NOT AN EXIT". Supplementary lettering indicating the character of the area such as "TO BASEMENT", "STOREROOM", "LINEN CLOSET", or the like may be provided.

A-5-11.1 Seventy-five ft (22.9 m) can be traversed in approximately 10 to 15 seconds, even allowing for some momentary delay in decision as to which way to go, during which it may be assumed that a normal individual can hold his breath.

CHAPTER 6

A-6-2.2.3.1, Exception No. 2 When atriums are used, there is an added degree of safety to occupants because of the large volume of space into which smoke can be dissipated. However, there is a need to ensure that dangerous concentrations of smoke are promptly removed from the atrium and the exhaust system needs careful design.

A-6-2.2.3.1, Exception No. 2(a) As some atriums may be of other than square or rectangular shape, the 20 ft (609.6 cm) obviously cannot be applied where the corners exist. This would necessitate that the designer and the authority having jurisdiction work out equivalent life safety.

A-6-2.2.3.1, Exception No. 2(f) The following information gives guidance for the smoke removal system which may be used in lieu of an engineered smoke control system:

A mechanical exhaust system at the top of the atrium arranged so that the space does not become pressurized.

(1) In atriums 55 ft (16.76 m) or less in height with a volume of 600,000 cu ft (16 992 cu m) or less, the system should exhaust 40,000 cfm (18.88 cu m/s) or six air changes per hour, whichever is greater. Gravity supply inlets should be provided at the lowest level of the atrium and be sized for 75 percent of the exhaust.

(2) In atriums 55 ft (16.76 m) or less in height with a volume in excess of 600,000 cu ft (16 992 cu m), the system should be sized to provide a minimum of four air changes per hour. Gravity supply inlets should be provided at the lowest level of the atrium and be sized for 75 percent of the exhaust.

(3) In atriums in excess of 55 ft (16.76 m) in height (regardless of volume) the exhaust system should be sized to provide a minimum of four air changes per hour. Supply air should be mechanically introduced from near the bottom of the atrium and should be directed vertically toward the top of the atrium at a rate of approximately 75 percent of the exhaust.

For additional information see:

(1) Butcher & Parnell, "Smoke Control in Fire Safety Design" (*see Appendix B*).

(2) A-15-3.1.3.

Volume Determination. The volume of an atrium is determined by calculating all the space having a common atmosphere. The presence of a fire barrier with protected openings, whether developed by fire barriers or specially designed glass walls with special sprinkler protection, is intended to provide the limits of the common atmosphere.

A-6-2.2.3.1, Exception No. 2(g) Activation of the ventilation system by manual fire alarms, extinguishing systems, and detection systems can cause unwanted operation of the system and it is suggested that consideration be given to zoning of the activation functions so the ventilation system operates only when actually needed.

A-6-2.2.3.2 The application of the 2-hour rule, in buildings not divided into stories, may be based on the number of levels of platforms or walkways served by the stairs.

A-6-2.2.3.4 In buildings protected throughout by an approved automatic sprinkler system, escalator or moving walk openings between stories may be protected by one of the following methods, providing the escalator or moving walk does not constitute an exitway.

(a) *Sprinkler — Vent Method.* Under the conditions specified, escalator or moving walk openings may be protected by the "sprinkler-vent" method, consisting of a combination of an automatic fire or smoke detection system, automatic exhaust system and an automatic water curtain meeting the following requirements and of a design meeting the approval of the authority having jurisdiction.

1. The exhaust system shall be of such capacity as to create a downdraft through the escalator or moving walk floor opening. The downdraft shall have an average velocity of not less than 300 ft per minute (1.52 m/s) under normal conditions for a period of not less than 30 minutes.

This requirement can be met by the provisions of an air intake from the outside of the building above the floor opening. The test of the system under "normal" conditions requires that the velocity of the downdraft be developed when windows or doors on the several stories normally used for ventilation are open. The size of the exhaust fan and exhaust ducts must be sufficient to meet such ventilation conditions. Experience indicates that fan capacity should be based on a rating of not less than 500 cfm per sq ft (2.54 cu m/s/sq m) of moving stairway opening to obtain the 300 ft per minute (1.52 m/s) required. If the building is provided with an air-conditioning system, arranged to be automatically shut down in the event of fire, the test conditions should be met with the air-conditioning system shut down. The 300 ft per minute (1.52 m/s) downdraft through the opening provides for the testing of the exhaust system without requiring an expansion of air present under actual fire conditions.

2. Operation of the exhaust system for any floor opening shall be initiated by an approved device in the story involved and shall be conducted by any one of the following means, in addition to a manual means for operating and testing the system:

(i) Thermostats — fixed temperature, rate-of-rise, or a combination of both.

(ii) Water flow in the sprinkler system.

(iii) Approved supervised smoke detection. Smoke detection devices, if used, shall be so located that the presence of smoke is detected before it enters the stairway.

3. Electric power supply to all parts of the exhaust system and its control devices shall be designed and installed for maximum reliability. The electric power supply provisions of *Standard for the Installation of Centrifugal Fire Pumps*, NFPA 20, may be referred to as a guide to design and installation features to assure maximum reliability. (*See Appendix B.*)

4. Any fan or duct used in connection with an automatic exhaust system shall be of the approved type and shall be installed in accordance with the applicable standards listed in Appendix B.

5. Periodic tests, not less frequently than quarterly, shall be made of the automatic exhaust system to maintain the system and the control devices in good working condition.

6. The water curtain shall be formed by open sprinklers or spray nozzles so located and spaced as to form a complete and continuous barrier along all exposed sides of the floor opening and reaching from the ceiling to the floor. Water intensity for water curtain shall be not less than approximately 3 gal per minute per linear foot of water curtain, measured horizontally around the opening.

7. The water curtain shall operate automatically from thermal responsive elements of fixed temperature type so placed with respect to the ceiling (floor) opening that the water curtain comes into action upon the advance of heat toward the escalator or moving walk opening.

8. Every automatic exhaust system, including all motors, controls and automatic water curtain system, shall be supervised in an approved manner, similar to that specified for automatic sprinkler system supervision.

(b) *Spray Nozzle Method.* Under the conditions specified, escalator or moving walk openings may be protected by the spray nozzle method, consisting of a combination of an automatic fire or smoke detection system and a system of high velocity water spray nozzles meeting the following requirements and of a design meeting the approval of the authority having jurisdiction.

1. Spray nozzles shall be of the open type and shall have a solid conical spray pattern with discharge angles between 45 and 90 degrees. The

number of nozzles, their discharge angles and their location shall be such that the escalator or moving walk opening between the top of the wellway housing and the treadway will be completely filled with dense spray on operation of the system.

2. The number and size of nozzles and water supply shall be sufficient to deliver a discharge of 2 gal of water per sq ft per minute (1.4×10^{-3} cu m/s/sq m) through the wellway, area to be figured perpendicular to treadway.

3. Spray nozzles shall be so located as to effectively utilize the full advantage of the cooling and counterdraft effect. They shall be so positioned that the center line of spray discharge is aligned as closely as possible with the slope of the escalator or moving walk, not more than an angle of 30 degrees with the top slope of the wellway housing. Nozzles shall be positioned so that the center line of discharge is at an angle of not more than 30 degrees from the vertical sides of the wellway housing.

4. Spray nozzles shall discharge at a minimum pressure of at least 25 lbs per sq in. (1.72×10^5 Pa). Water supply piping may be taken from the sprinkler system, provided that in so doing an adequate supply of water will be available for the spray nozzles and the water pressure at the sprinkler farthest from the supply riser is not reduced beyond the required minimum. Supply taken from the sprinkler system is designed to provide protection to the wellway opening for life hazard during the exit period, but may not be relied upon to provide an effective floor cutoff.

5. Control valves shall be readily accessible to minimize water damage.

6. A noncombustible or limited-combustible draft curtain shall be provided extending at least 20 in. (50.8 cm) below and around the opening, and a solid noncombustible wellway housing at least 5 ft (152.4 cm) long, measured parallel to the handrail and extending from the top of the handrail enclosure to the soffit of the stairway or ceiling above, at each escalator floor opening. When necessary, spray nozzles shall be protected against mechanical injury or tampering that might interfere with proper discharge.

7. The spray nozzle system shall operate automatically from thermal response elements of the fixed temperature type, placed so that with respect to the ceiling (floor) opening the spray nozzle system comes into action upon the advance of heat towards the escalator opening. Supervised smoke detection located in or near the escalator opening may be used to sound an alarm. The spray nozzle system shall also be provided with manual means of operation. Smoke detection devices are not desirable for action of the spray nozzles as accidental discharge must be safeguarded against from both a panic hazard as well as property damage standpoint.

8. Control valves for the spray nozzle system, and approved smoke detection or thermostatic devices shall be supervised in accordance with the applicable provisions of Section 7-6.

(c) *Rolling Shutter Method.* Under the conditions specified, only escalator or moving walk openings above the street floor may be protected by the rolling shutter method, consisting of an automatic self-closing rolling shutter completely enclosing the top of each escalator or moving walk which meets the following requirements, and the design of which meets the approval of the authority having jurisdiction. The use of an automatic rolling shutter to protect moving stairway or moving walk wellways between street floors and floors below is not acceptable for the reason that the normal path of travel to reach a place of safety in an emergency is usually that used for access to the area. Persons seeking egress from a floor below the street floor served by moving stairways or moving walks could be trapped by fully closed rolling shutters at the street floor level. Observation of rolling shutters in use indicates the likelihood that under emergency conditions there is a quite different psychological reaction by those facing its operation from upper floors than could be expected when the rolling shutter is closed above a person seeking egress from a basement. On upper floors, the operation of an automatic rolling shutter will be clearly visible to persons seeking egress and other means of egress (i.e., stairways) can be readily found and used if the requirements of the *Code* are followed.

1. The shutter shall close off the wellway opening immediately upon the automatic detection, by an approved heat-actuated or smoke-sensitive device, of fire or smoke in the vicinity of the escalator. In addition, there shall be provided a manual means of operating and testing the operation of the shutter.

2. The shutter assembly shall be capable of supporting a weight of 200 lbs (90.72 kg) applied on any 1 sq ft of area (976.4 kg/sq m) and shall be not less resistant to fire or heat than 24 gage steel.

3. The shutter shall operate at a speed of not greater than 30 ft per minute (.15 m/s). It shall be equipped with a sensitive leading edge, which shall arrest the progress of the moving shutter and cause it to retract a distance of approximately 6 in. (15.24 cm) upon the application of a force not in excess of 20 lbs (88.96 N) applied on the surface of the leading edge. The shutter, following retraction, shall continue to close immediately.

4. Automatic rolling shutters shall be provided with an electric contact which will disconnect the power supply from the escalator or moving walk and apply the brakes as soon as the shutter starts to close and prevent further operation of the escalator or moving walk until the rolling shutter is again in the open position.

5. The electrical supply to the control devices for actuation of the automatic rolling shutter shall be so designed and installed as to provide maximum reliability. The electric power supply provisions of *Standard for the Installation of Centrifugal Fire Pumps*, NFPA 20, may be referred to as a guide to design and installation features to assume maximum reliability. (*See Appendix B.*)

6. Rolling shutters shall be operated at least once a week in order to make sure that they remain in proper operating condition.

(d) *Partial Enclosure Method.* Under the conditions specified, escalator or moving walk openings may be protected by a partial enclosure, or so-called kiosk, so designed as to provide an effective barrier to the spread of smoke from floor to floor.

1. Partial enclosures shall be of construction providing fire resistance equivalent to that specified for stairway enclosures in the same building, with openings therein protected by approved self-closing fire doors, or may be of approved wired glass and metal frame construction with wired glass panel doors.

2. Such doors may be equipped with electric opening mechanism to open the door automatically upon the approach of a person. The mechanism shall be such as to return the door to its closed position upon any interruption of electric current supply, and the adjustment shall be such that the pressure of smoke will not cause opening of the door.

A-6-2.2.5 Longer ratings may be required where doors are provided for property protection as well as life safety.

Standard for Fire Doors and Windows, NFPA 80 (*see Appendix B*), may be consulted for standard practice in the selection and installation of fire doors.

A 1¾-in. (4.45-cm) solid bonded wood core door has been considered the equivalent to a door with a 20-minute fire protection rating.

A-6-2.2.7, Exception In engineered smoke control systems, the designers should consider the use of fire dampers having high temperature links where air handling ductwork penetrates fire barriers.

A-6-2.3.1(c) The area limitations are based on life safety considerations and are not intended to suggest that changes should be made in local building codes having similar or more restrictive requirements that are based on other reasons. Building codes generally contain detailed information on the proper selection and installation of firestopping materials.

A-6-3.1 Whenever smoke barriers and doors therein require a degree of fire resistance as may be specified by requirements in the various occupancy chapters (*Chapters 8 through 30*), the construction is more appropriately a fire barrier which has been defined: "to limit the spread of fire and restrict the movement of smoke." See 6-2.2.5 and 6-2.2.6.

A-6-3.3 It is desirable to keep doors in a smoke barrier closed at all times to restrict the travel of smoke and fire gases. When, because of operational necessity, it is desired to have smoke barrier doors normally open, such doors should be provided with hold-open devices which are activated to close the doors by the operation of smoke detectors and other alarm functions. The clearance for proper operation of smoke doors has been defined as ⅛ in. (.32 cm).