CHAPTER XI—MEANS OF EGRESS REQUIREMENTS

(Exits and Exit Access)

SECTION 1101—GENERAL PROVISIONS

(a) In every building hereafter erected means of egress shall comply with the minimum requirements of this Chapter.

(b) Means of egress shall consist of continuous and unobstructed paths of travel to the exterior of a building at all times. (See Section 1123)

(c) Where unusually hazardous conditions exist, additional means of egress facilities shall be provided as ordered by the Building Official, when necessary to assure the safety of the occupants.

(d) No building shall hereafter be altered so as to reduce the capacity of the means of egress to less than required by this Chapter nor shall any change of occupancy be made in any building unless such building conforms with the requirements of this Chapter.

(e) Stairways, ramps and passageways used for required exits shall be of a non-combustible construction except where otherwise specifically permitted by Sections 1115—Stairways; 1112—Exit Outlets; and 1118—Ramps.

SECTION 1102—DEFINITION

(a) A MEANS OF EGRESS is a continuous path of travel from any point in a building or structure to the open air outside at ground level and consists of two separate and distinct parts: (1) the exit access, and (2) the exit. A means of egress comprises the vertical and horizontal means of travel and may include the room space, doorway, corridor, hallway, passageway, stairs, ramp, lobby, fire escape, escalator, and other paths of travel.

(1) EXIT is that portion of a means of egress which is separated from the area of the building from which escape is to be made, by walls, floors, doors or other means which provide the protected path necessary for the occupants to proceed with reasonable safety to the exterior of the building.

(2) EXIT ACCESS is that portion of a means of egress which leads to an entrance to an exit.

NOTE: An interior aisle, corridor, hallway, or other means of travel used to reach an exit stair or doorway is not an exit, except where the maximum allowable distance of travel to an exit is exceeded—at which point it must be treated as part of the exit or is so located, arranged, and enclosed as to constitute an integral part of an exit facility. (See Section 1123)

SECTION 1103—ARRANGEMENT AND NUMBER OF EXITS

1103.1—ARRANGEMENTS (DISTANCE TO EXITS)

(a) Exits shall be so located that the *distance* from the most remote point in the floor area, room, or space served by them to the nearest exit, (in office buildings, hotels and apartments where floor areas are sub-

divided into small spaces or rooms, the distance of travel to an exit shall be measured from the corridor entrance to such rooms or spaces) measured along the line of travel, shall be not more than that specified below, except that where sprinklers are installed throughout a building, maximum distance of travel to an exit may be fifty (50) percent greater than these tabular values:

Occupancy	Dead End Limits**	Maximum Distance of travel to an Exit (Lin. Ft.)
Group A, Residential	35	100
Group B-1, Business, Offices	50	150
Group B-2, Business, Mercantile	50	100
Group C, Schools	20	125
Group D, Institutional	30	100
Group E, Assembly		100
Group F, Storage*		100
Group G, Industrial*	50	100
Group H, Hazardous	0	75
Group I, Fallout Shelters (Single Purpose)		150

*In a one story building of Group F, Storage, or Group G, Industrial occupancy which complies with the requirements of Section 403.7 for unlimited area, the distance of travel to an exit may be increased to 150 feet.

**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 as far as 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.

(b) The *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 foot from the most remote point, curving around any corners or obstructions with a 1-foot clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, it shall be taken in the plane of the tread nosing.

(c) In the case of *open areas, distance to exits* shall be *measured* from the most remote point subject to occupancy. 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 feet.

(d) Where open stairways 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*, and the travel from the end of the stairway to reach an outside door or other exit, in addition to the distance to reach the stairway.

(e) Where any part of an outside stair or other outside exit is within 15 feet horizontal distance of any unprotected building opening, the distance to the exit shall include the length of travel, to ground level, on the exit itself.

(f) In any building used for Group F or G occupancy (such as aircraft assembly or other special purpose occupancy with low concentration of personnel) requiring undivided floor areas so large that the distances from points within the area to the nearest outside walls where exit doors could be provided are in excess of 150 feet, requirements for distance to exits may be satisfied by providing stairs leading to exit tunnels or to overhead passageways. In cases where such arrangements are not practicable the authority having jurisdiction may, by special ruling, permit other exit arrangements for 1-story buildings with distances in excess of the maximum distances specified if complete automatic sprinkler protection is provided and if the height of ceilings, ceiling curtain boards, and roof ventilation is such as to minimize the possibility that employees will be overtaken by the spread of fire or smoke within 6 feet of the floor level before they have time to reach exits, provided, however, that in no case may the distance of travel to reach the nearest exit exceed 400 feet. Where smoke venting is required as a condition for permitting distances of travel to exits in excess of the maximum otherwise allowed, the smoke venting arrangement shall be in accordance with NFPA 204.

1103.2—MINIMUM NUMBER OF EXITS

(a) *General*—Every room or floor space of a building, occupied by seventy-five *(75) persons or more*, or occupied by a Group A, C, D or H, Hazardous occupancy, shall have not less than two *(2) independent exits*, located as remote as practicable from each other except where one exit is permitted by this Code. A school plan with outside doors or stairways at both ends of a central corridor meets this requirement. Pockets may be created where stairways are not at the end of corridors but at intermediate points.

(b) *Assembly*—In *Group E-2*, Small Assembly Places, there shall be at least *two exit ways*, and in *Group E-1*, Large Assembly Places, there shall be not less than three *(3) exitways*, except that where more than 1,000 persons are accommodated there shall be at least four (4) exitways. Exits shall be located as *remotely* from one another as practicable. The units of *Exit width* shall be as *equally divided* among the exitways as practicable.

(c) *Exceptions for one Exit for Group A, Residential and Group B-1 Office*—There shall be not less than two (2) exits serving every floor area, except that in the following cases there may be *one (1) exit.*

(1) Every living unit shall have access to at least 2 separate exits which are remote from each other and are reached by travel in different directions, except that a common path of travel may be permitted for the first 35 feet (i.e., a dead-end corridor up to 35 feet long may be permitted) provided that a single exit may be permitted under any of the following conditions:

   (a) Any *living unit* which has direct exit to the street or yard at grade, 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 basement or other area not a part of the apartment served.

   (b) Any building of fire-resistive construction of any height with not more than *2 living units per floor*, with a smokeproof tower or an outside stairway as the exit, immediately accessible to all apartments served thereby.

divided into small spaces or rooms, the distance of travel to an exit shall be measured from the corridor entrance to such rooms or spaces) measured along the line of travel, shall be not more than that specified below, except that where sprinklers are installed throughout a building, maximum distance of travel to an exit may be fifty (50) percent greater than these tabular values:

Occupancy	Dead End Limits**	Maximum Distance of travel to an Exit (Lin. Ft.)
Group A, Residential	35	100
Group B-1, Business, Offices	50	150
Group B-2, Business, Mercantile	50	100
Group C, Schools	20	125
Group D, Institutional	30	100
Group E, Assembly		100
Group F, Storage*		100
Group G, Industrial*	50	100
Group H, Hazardous	0	75
Group I, Fallout Shelters (Single Purpose)		150

*In a one story building of Group F, Storage, or Group G, Industrial occupancy which complies with the requirements of Section 403.7 for unlimited area, the distance of travel to an exit may be increased to 150 feet.

**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 as far as 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.

(b) The *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 foot from the most remote point, curving around any corners or obstructions with a 1-foot clearance therefrom, and ending at the center of the doorway or other point at which the exit begins. Where measurement includes stairs, it shall be taken in the plane of the tread nosing.

(c) In the case of *open areas, distance to exits* shall be *measured* from the most remote point subject to occupancy. 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 feet.

(d) Where open stairways 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*, and the travel from the end of the stairway to reach an outside door or other exit, in addition to the distance to reach the stairway.

(e) Where any part of an outside stair or other outside exit is within 15 feet horizontal distance of any unprotected building opening, the distance to the exit shall include the length of travel, to ground level, on the exit itself.

(f) In any building used for Group F or G occupancy (such as aircraft assembly or other special purpose occupancy with low concentration of personnel) requiring undivided floor areas so large that the distances from points within the area to the nearest outside walls where exit doors could

(2) Any *residential building* not more than 2 stories in height with no basement, or, in case there is a basement, with the street floor construction at least 2 hours fire resistance and with street floor level not more than 8 feet 6 inches above grade at any point next to building, excluding areaways or driveways not more than 10 percent of the perimeter, subject to the following conditions:

(a) The stairway is completely enclosed (walls and ceilings) with 2 hour fire-resistive construction with self-closing fire doors protecting all openings between the stairway enclosure and the building and the stairway is ventilated on each floor with free net area of 20 sq. ft.

(b) Access to the basement is only from the exterior of the building if the basement contains a heating plant, group storage, incinerator room, or paint shop, or other hazardous occupancy.

(c) All corridors serving as access to exits are of fire-resistive construction.

(d) There is not more than 20 feet of travel distance to reach an exit from the entrance door of any living unit.

(e) The building or fire section served by the single exit contains a total of not more than 16 living units on the first and second floors, or not more than 12 units with a maximum gross area per floor of 4,000 square feet if any part of the structure is of combustible construction.

(3) In Group B-1, *Office Buildings* having no floor over twenty-five hundred (2,500) sq. ft. in area and not over two stories in height provided the occupant content shall not exceed 40 persons above the street floor. Maximum distance of travel to an exit shall not exceed 75 feet.

(d) Sufficient exit facilities shall be provided so that the aggregate capacity of all such exits, determined in accordance with this Chapter, shall not be less than the occupant content as determined from Section 1105.1.

(e) It shall be unlawful to occupy any part of a building by a greater number of persons than that for which exit capacity, as prescribed in this Chapter, has been provided.

SECTION 1104—SPECIAL EXIT REQUIREMENTS

1104.1—SPECIAL MEANS OF EGRESS REQUIREMENTS FOR GROUP A AND D OCCUPANCIES

(a) Special Requirements for Location of Exits of *hotels*, *hospitals*, *dormitories*, *apartments*, flats and other buildings in which rooms are rented for living and sleeping purposes:

(1) All hotels, lodging houses, school dormitories, hospitals, sanatoriums, apartment houses, flats, tenement houses and all other buildings in which rooms are to be rented or leased or let or offered for rent, let or leased for living or sleeping purposes, hereafter constructed in this State shall be constructed so that the occupants of all rooms above the first floor shall have unobstructed access to two separate and distinct ways of egress extending from the uppermost floor to the ground, such ways of egress to be so arranged in reference to rooms that in case of fire on one stairway the other stairway can

be reached by the occupant without his or her having to pass the stairway involved. Entrance to all such ways of egress aforementioned in this section shall be from corridors or hallways of not less than five feet in width, and in no case shall entrance to such ways of egress be through a room or closet, and where such building is, in the opinion of the Insurance Commissioner, of sufficient size to require more than two ways of egress, the standard established by this code shall be adhered to. (See Section 1103.2(c) where one exit is permitted for apartment houses)

(2) Every hotel, lodging house, school dormitory, hospital, sanatorium, apartment house, flat, tenement house or other building in which rooms are rented, leased, let or offered for rent, leased or let for living or sleeping purposes, shall be provided with such additional ways of egress as the Insurance Commissioner shall deem practicable in order that the objects of this code may be accomplished and that existing dangers shall not be perpetuated.

(3) The maximum dead end distance of any corridor may be in accordance with Section 1103.

(b) In Group D-2, *Institutional* occupancies all *doorways* to areas housing patients and doorways between patient occupied spaces and the required exit and all exit doorways leading to the exterior shall be not less than 44 inches in clear width except that exit doors so located as not to be subject to use by patients may be not less than 36 inches in clear width. Required corridors, ramps, or passageways shall be not less than 8 feet in clear width in all areas occupied by patients or serving as part of the means of egress from patient areas. Corridor dead ends shall not exceed thirty (30) feet in length.

(c) In rooms in which are located steam boilers, oil-fired incinerators, or apparatus using or producing gas or vapor, the maximum distance of travel to an exit shall not exceed 50 feet.

1104.2—FIRE TOWERS REQUIRED FOR BUILDINGS EXCEEDING 60 FEET IN HEIGHT

In buildings exceeding sixty (60) feet in height, (except office buildings of light occupancy) at least one stairway shall be a *fire tower*; provided that in sprinklered buildings in which two or more stairways conforming to the requirements of this Chapter are provided, such fire tower shall not be required unless the building exceeds one hundred (100) feet in height.

1104.3—SPECIAL EXIT REQUIREMENTS FOR SCHOOL BUILDINGS AND SUNDAY SCHOOL BUILDINGS

(a) All school buildings and Sunday School buildings over one story in height shall have two means of egress so located with reference to rooms that in case of fire on one stairway, the other stairway can be reached by the occupant without his or her having to pass the stairway involved. The maximum dead end distance of any corridor may be in accordance with Section 1103, for Type I or Type II Buildings.

(b) All public owned school buildings over one story in height, except those of Type I or Type II construction, hereafter erected shall have the stairways and exits so constructed, arranged and located as to form, without the use of automatic or self-operating devices, a positive barrier to the rapid spread of heat, smoke and/or flame (a smoke tower in conformance

with 1115.7 will meet this requirement). All stairways in school buildings over one story in height of Type I or Type II construction shall be enclosed with non-combustible partition having a fire resistance of not less than one hour.

(c) Exits for auditoriums and gymnasiums in school buildings shall, unless it is established to the satisfaction of the Building Official that such auditorium or gymnasium will not be used for entertainment purposes, be of the same size and number as that required for theatres.

(d) Churches. Same as theatres except the exit and aisles may be reduced one-fourth.

1104.4—WINDOWS FOR RESCUE AND VENTILATION FOR GROUP C OCCUPANCIES

Except in buildings with complete sprinkler protection, every room or space used for classroom or other educational purposes or normally subject to student occupancy, unless it has a door leading directly to the outside of building, shall have at least one *outside window* which can readily be used for emergency rescue or ventilation purposes, and which meets all of the following provisions:

(a) Is readily openable from the inside without the use of tools.

(b) Provides a clear opening with a minimum dimension of approximately 22 inches and is approximately 600 square inches in area.

(c) Bottom of window opening is not more than 42 inches above the floor.

(d) Where storm windows, screens, or burglar guards are used, these shall be provided with quick opening devices so that they may be readily opened from the inside for emergency egress, and shall be so arranged that when opened they will not drop to the ground.

1104.5—UNDERGROUND AND WINDOWLESS EDUCATIONAL BUILDINGS

In addition to the requirements of this Section for Underground and Windowless Educational Buildings, such buildings shall be provided with complete automatic *sprinkler protection*.

1104.6—UNDERGROUND STRUCTURES AND WINDOWLESS BUILDINGS

(a) *General*

(1) Any floor area subject to *occupancy by 100* or more persons, from which there is no direct access to outdoors or to another fire area, and no outside light or ventilation through windows, shall be equipped with complete automatic *sprinkler protection*.

(2) Any underground structure, building, or floor area lacking outside access or windows and having combustible contents, interior finish, or construction, if subject to occupancy by more than 1,000 persons shall have automatic *smoke venting* facilities in addition to automatic sprinkler protection.

(3) Any underground structure, or windowless building for which no natural lighting is provided, subject to occupancy by more than 100 persons in any room or fire area, shall be provided with Type I

or II *emergency exit* lighting provided that where the occupancy is such as to require a specific type of emergency lighting such requirements shall govern.

(b) *Underground Structures.* Where required exits from underground structures involve upward travel, such as ascending stairs or ramps, such upward exits shall be cut off from main floor areas. If the area contains any combustible contents or combustible interior finish it shall be provided with outside vented smoke traps or other means to prevent the exits serving as flues for smoke from any fire in the area served by the exits, thereby making the exits impassable.

(c) Windowless Buildings. Every windowless building shall be provided with *outside access panels* on each floor level, designed for fire department access from ladders for purposes of ventilation and rescue of trapped occupants. (See Section 717)

1104.7—INTERIOR CORRIDORS FOR GROUP C, D AND E OCCUPANCIES

(a) Every interior corridor of Group C, D and E occupancy shall be of not less than *1-hour* fire-resistive construction, and all openings therein protected accordingly. *Room doors* may be 1¾ inch solid bonded core wood doors or the equivalent. Such corridor protection shall not be required when all rooms served by such corridors have at least one door directly to the outside or to an exterior balcony or corridor.

(b) Any interior corridor of Group C and E occupancy more than 300 feet in length shall be divided into sections not to exceed 300 feet in length by *smoke barriers*, consisting of 1 hour rated partitions with smokestop doors therein. Such partitions shall be continuous through any concealed space such as between the hung ceiling and the floor or roof above. Doors in smoke barriers shall be of metal, metal covered, or other approved type appropriate to the purpose and construction of the smoke barrier, with clear wired glass panels. The above distances shall be reduced to 150 ft. for Group D occupancy.

(c) *Interior finish* in Group C, D and E occupancy shall be Class A in corridors, stairways and other means of egress, and may be Class B or C elsewhere. (See Section 704.3)

(d) Any corridor shall be separated from *institutional* sleeping rooms and treatment areas by construction having at least a 1-hour fire resistance rating. Fixed wired glass vision panels not exceeding 1,296 square inches in size in approved metal frames may be used in such corridor enclosures.

(e) An *institutional sleeping room* shall be provided with a substantial door, such as a 1¾-inch solid wood bonded core door, with openings therein, if any, limited to 1,296 square inches and glazed with wired glass in approved metal frames. These doors shall be provided with latches of a type suitable for keeping the door tightly closed.

1104.8—SMOKE VENTING FOR WINDOWLESS AND UNDERGROUND STRUCTURE

(a) Smoke venting facilities where required for safe use of exits in windowless buildings, underground structures, and large area factories shall be automatic in operation and in conformance with NFPA-204.

(b) Natural draft smoke venting shall utilize roof vents or vents in walls at or near the ceiling level, such vents to be normally open or if closed shall be designed for automatic opening by approved means in case of fire.

(c) Where smoke venting facilities are installed for purposes of exit safety in accordance with the requirements of this Code they shall be adequate to prevent dangerous accumulations of smoke during the period of time necessary to evacuate the area served, using available exit facilities with a margin of safety to allow for unforeseen contingencies. (Compliance with NFPA-204 will meet this requirement.)

(d) The discharge apertures of all natural draft smoke vents shall be so arranged as to be readily susceptible to opening by fire departments working from the exterior.

(e) A power-operated smoke exhausting system may be substituted for required natural draft vents only by specific permission of the authority having jurisdiction.

1104.9—STAIRS AND CORRIDORS NOT TO BE USED AS RETURN AIR PLENUM—GROUP A, C, D AND E

(a) Stairways and required Exit corridors in Group C, and E occupancies shall not be used as return air plenums when corridor serves more than 100 people. They shall not be used in Group A occupancies when the corridor exceeds 75 ft. in length. They shall not be used in Group D occupancies where corridor serves more than 15 people.

1104.10—SPECIAL EXIT REQUIREMENTS FOR MALLS

(a) Covered malls. One-half of the required units of exit width for buildings connected by a covered mall shall lead to the outside by means other than through the mall. The covered mall connecting buildings shall have not less than two (2) independent exits located as remotely as practical from each other and shall have a total number of units of exit width equal to that required for the exits from the buildings leading into the mall which are within a 100 foot travel distance to the exits from the mall. The maximum distance of travel to an exit measured within the mall shall not exceed 200 feet.

(b) Enclosed and tunneled walkways or serviceways shall not be accepted as a required means of egress unless they comply with the provisions of this chapter. When the length of enclosed and tunneled walkways or serviceways, not meeting the provisions of this chapter for required exits, is more than one and one-half (1½) times the maximum allowable distance of travel of the most restrictive occupancy being connected, one or more exits from the enclosed or tunneled walkway shall be provided. Such exits shall be located as remotely from the points of connection between the enclosed or tunneled walkway and the buildings as is practicable.

SECTION 1105—MEANS OF EGRESS CAPACITY REQUIREMENTS

1105.1—OCCUPANT CONTENT

For determining the exits required, the minimum number of persons or the occupant content of any floor area shall in no case be taken less than specified below:

Occupancy	Min. Occupant Content Floor Area Sq. ft. per Person
Group A—Residential	125 Gross
Group B-2—Stores—street floor and sales basements	30 Net
—upper sales floors	60 Net
Office Buildings and other Group B-1 occupancies	100 Gross
Group C—Schools—classrooms	20 Net
—laboratories, museums, libraries, and similar rooms	30 Net
—shops, vocational, administrative rooms	50 Net
—gymnasiums	15 Net
Group D—Institutional	125 Gross
Group E—Assembly—with fixed seats	6 Net
Assembly—without fixed seats	15 Net
Group F—Storage	300 Gross
Group G—Industrial	100 Gross
Group H—Hazardous	100 Gross
Group I—Fallout Shelters	10 Net

1105.2—MEASUREMENT OF MEANS OF EGRESS WIDTH

(a) The *width* of the means of egress shall be measured in *units of 22 inches.* Fractions of a unit shall not be counted except that 12 inches added to one or more full units shall be counted as one-half a unit.

(b) The width shall be measured in the clear at its narrowest point. *Handrails* may project 3½ inches and door jambs 1 inch on each side of the measured width.

1105.3—CAPACITY OF MEANS OF EGRESS

(a) The *capacity of a unit* (22 inches) of means of egress through doors, corridors, stairs and other paths of exit travel shall be in accordance with the following Table:

Occupancy	Persons Per Unit of Exit Width	
	Level Travel (Corridors, doors, etc.)	Stairs
Group A—Residential	60	45
B—Business	100	60
C—Schools	100	60
D—Institutional	80	22
E—Assembly	100	75
F—Storage	60	45
G—Industrial	60	45
H—Hazardous	60	45
I—Fallout Shelters	100	60

(b) The minimum aggregate width of main street entrance doorways shall be 6 feet for Group E, Assembly occupancy and churches. Main street entrance doorways shall be considered as part of the requirements for the means of egress.

(c) The *capacity of exit stairways* constructed in accordance with Section 1115 shall not exceed the limits specified herein and may be used as a required exit from all floors which they serve. (If, for example, three (3) stairways are required to serve the third floor of a building and a like number are required for the second floor, the total number of stairways required shall be three, not six, and the capacity of the stairway shall be determined by the floor having the highest occupant content and not the total occupant content of the building.)

(d) The *aggregate width* of passageways, aisles or corridors serving as access to exits shall be at least equal to the required width of the exit. Where all travel to any exit is along the same access to the exit, the width of the access shall be at least equal to the exit; where there are several accesses to an exit each shall have a width suitable for the travel which it may be called on to accommodate. (6' Min. req. for Group C, D and E)

(e) The *minimum width* of any means of egress shall be 36" in the clear except for Group A, B, F, G, H, (where less than thirty people are accommodated) the minimum is 30 inches. (See Section 1104 for special requirements.)

(f) Where *exits serve more than one floor*, only the occupant content of each floor, considered individually, need be used in computing the required capacity of the exits at that floor: provided that such capacity shall not be decreased at any point along the exit facility in the direction of exit travel. When exits from floors above and below converge at an intermediate floor, the capacity of the exit from such intermediate floor shall not be less than the sum of the widths of the exits converging on such intermediate floor. There shall be no reduction in the capacity of the exits along the means of egress from the building.

(g) 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 case of a door leading directly from the street floor to the street or open air, the exit comprises only the doorway.

NOTE: Doors of small individual rooms, as in hotels, while constituting means of escape 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. An interior aisle, corridor or hallway used to reach a stair or door exit is not an exit except where it is so located, arranged, and enclosed as to constitute an integral part of a system of travel.

1105.4—CAPACITY OF ESCALATORS OR MOVING STAIRS

The width and exit capacity of escalators complying with the requirements of Section 1122 shall be as specified for stairways except that the maximum width of escalators shall not exceed 48 inches.

SECTION 1106—EXIT ENCLOSURES

1106.1—GENERAL

(a) In all buildings, *four (4) stories* or more in height, except one and two family dwellings, all interior stairways including platforms, landings

and hallways connecting them to the doorway leading to the outside, shall be completely enclosed with partitions of not less than *2-hour fire-resistance*; except that such stairways, platforms, landings, and hallways may be enclosed with partitions of not less than one-hour fire-resistance in buildings occupied by more than forty (40) people above or below the story at street level when such occupancy is in connection with use of a designated portion of the building as a fallout shelter in times of emergency. Structural members supporting all such enclosing walls and partitions, and floors or roofs that form a part of the enclosure shall have at least 2-hour fire resistance also.

(b) In all buildings *less than four (4)* stories in height, except in one and two family dwellings, all required interior stairways shall be enclosed in partitions of at least *one-hour* fire resistance.

(c) In *Group E*, Assembly occupancies, all exit enclosures shall be not less than *2-hour* fire-resistance.

(d) Stairways in buildings of Group G, *Industrial* occupancies that are *not required for exits* and that serve only one floor above the first floor may not be required to be enclosed, provided the occupancy of the building is of low fire hazard and provided that omission of such stair enclosure is approved by the Building Official.

(e) *Basement* or cellar stairs: Except in one and two family dwellings, basement or cellar stairways located under stairways from upper stories shall be completely enclosed by construction providing fire resistance not less than required for the stair enclosure above the basement but in no case less than 1-hour fire resistance.

(f) In stair enclosure walls or partitions protecting the stair from the interior of the building, *no openings except the necessary doorways* shall be permitted. (This shall not, however, prohibit the use of fire windows of approved type, in stair enclosures provided they open to the exterior of the building and are located at least ten (10) feet from any other wall opening.) Such doorways shall be equipped with approved self-closing fire doors, except that when enclosing partitions are not required to provide over 1-hour fire-resistance, approved self-closing metal or metal-covered doors or solid core wooden doors of the flush type of nominal thickness of at least one and three quarters (1¾) inch in all parts, may be used.

1106.2—SPECIAL PROVISIONS FOR OPEN (UNPROTECTED) STAIRWAYS FOR GROUP B-1, F AND G OCCUPANCIES

(a) In any building (other than Group A, C, D and E) with low hazard occupancy, or with ordinary hazard occupancy with automatic sprinkler protection, where necessary to effective utilization of building site with sloping grade or otherwise essential to the functional design of the building, not to exceed 3 communicating floor levels may be permitted without enclosure or protection between such area, provided all the following conditions are met:

(1) The building is of Type I, II or IV construction.

(2) The lowest or next to the lowest level is a street floor.

(3) The entire 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 of all communicating levels and areas.

(4) 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.

(5) 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 area without traversing another communicating floor level or being exposed to the spread of fire or smoke therefrom.

(6) All requirements of this Code with respect to interior finish, protection of hazards, construction and other features are fully observed, without waivers.

(7) These unprotected stairs cannot be used as exits from other areas which do not conform with 1106.2(a)3 above. (For example, the lowest three levels of stairs which are required exits for a six story building cannot be open.) (See Section 1112 for Exit Outlets.)

(b) Exceptions for Group B-2 Mercantile occupancies.

(1) In any store, openings may be unprotected between any 2 floors, such as open stairs or escallators between street floor and basement, or open stairs to second floor or balconies or mezzanines above the street floor level (not both to basement and above unless sprinklered). (See 1112 for Exit Outlets.)

(2) In any Group B-2 Mercantile store with automatic sprinklers, openings may be unprotected between basement and street floor and between street floor and second floor, or if no openings to basement, between street floor, street floor balcony, or mezzanine, and second floor, but not more than between 3 floor levels.

(3) In existing stores only, 1 floor above those otherwise permitted may be open if such floor is not used for sales purposes and the entire building is sprinklered.

1106.3—SPECIAL PROVISIONS FOR ESCALATOR OPENINGS

Any escalator serving as a required exit shall be enclosed in the same manner as exit stairs. An escalator not constituting an exit shall have its floor opening enclosed or protected as required for other vertical openings, provided that in lieu of such protection escalator openings in buildings completely protected by a standard supervised sprinkler system, escalator openings may be protected by any one of the following methods:

(a) *Sprinkler-Vent Method:* Under the conditions specified in 1106.2, escalator 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 moving stairway floor opening, having an average velocity of not less than 300 feet per minute under normal conditions for a period of not less than 30 minutes.

(2) Operation of the exhaust system for any floor opening shall be initiated by an approved device in the story involved and shall be by any one of the following means in addition to a manual means for operating and testing the system.

(a) Thermostats—either fixed temperature, rate-of-rise, or a combination of both.

(b) Water flow in the sprinkler system.

(c) 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.

(4) Any fan or duct used in connection with an automatic exhaust system shall be constructed and installed in a standard manner.

(5) Periodic tests, not less frequently than quarterly, shall be made of the automatic exhaust system to maintain the system and the various 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 gallons per minute per lineal 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 moving stairway opening.

(8) Every automatic exhaust system, including all motors and 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 in 1106.2, escalator 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 moving stairway 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 gallons of water per square foot per minute 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 counter draft effect. They shall be so positioned that the center line of spray discharge is as closely as possible in line with the slope of the moving stairway; not more than an angle of 30 degrees with the top slope of the wellway

housing. Nozzles shall be positioned, also, 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 pounds per square inch. Water supply piping may be taken from the sprinkler system provided 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.

(5) Control valves shall be readily accessible to minimize water damage.

(6) A non-combustible draft curtain shall be provided extending at least 20 inches below and around the opening and a solid non-combustible wellway housing at least 5 feet long measured parallel to the hand-rail, and extending from the top of the handrail enclosure to the soffit of the stairway or ceiling above, at each moving stairway 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 so placed with respect to the ceiling (floor) opening that the spray nozzle system comes into action upon the advance of heat towards the moving stairway opening. Supervised smoke detection located in or near the moving stairway opening may be used to sound an alarm. The spray nozzle system shall also be provided with manual means of operation.

(8) Control valves for the spray nozzle system, and approved smoke detection or thermostatic devices shall be supervised.

(c) *Rolling Shutter Method:* Under the conditions specified in 1106.2, escalator openings above the street floor only may be protected by the rolling shutter method, consisting of an automatic self-closing rolling shutter which will completely enclose the top of each moving stairway, meeting the following requirements, and of a design meeting the approval of the authority having jurisdiction.

(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 moving stairway, and, 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 pounds applied on any one square foot of area, 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 feet per minute and shall be equipped with a sensitive leading edge. The leading edge shall arrest the progress of the moving shutter and cause it to retract a distance of approximately 6 inches upon the application of a force not in excess of 20 pounds 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 ecalator and apply

the brakes as soon as the shutter starts to close, and will prevent further operation of the escalator until the escalator 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.

(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*

(1) Under the conditions specified in 1106.2, escalator 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.

(2) 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. Such doors may be equipped with electric opening mechanism to open the door automatically upon the approach of a person, provided however that the mechanism shall be such as to return the door to its closed position upon any interruption of electric current supply, and provided further that the adjustment is such that the pressure of smoke will not cause opening of the door.

SECTION 1107—MONUMENTAL STAIRS

No enclosure shall be required in Group A, B, E, F or G occupancy for a flight of "monumental" stairs (as used in public buildings, stores, hotels, office buildings, etc.) from the main street entrance floor to the floor next above (or to the basement) when such stairs are not a part of the required exit facilities, or for such stairs leading to a mezzanine or balcony from the main floor. Required Exit Corridors connecting with such stairs at the upper level must be separated by one hour partitions.

SECTION 1108—OUTSIDE STAIRS AND EXTERIOR BALCONIES

1108.1—GENERAL

(a) Any permanently installed stair outside of the building served may be *accepted as a required exit* under the same condition as an inside stair, provided that such stairs comply with all the requirements hereinbefore stated for inside stairs, except as modified by the following paragraphs of this subsection.

(b) Outside stairs, serving as required exits, 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 *3 stories* in height any arrangement intended to meet this requirement shall have guard rails at least *4 feet in height.*

(c) 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 all other reasonable requirements for life safety are maintained.

1108.2—ENCLOSURES

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. Such protection shall not be required where the stairs are located on the side of the balcony or corridor away from the building if separated from the building by the full required width of the balcony or corridor, if 3 stories or less in height. If 4 stories or more in height openings shall be protected as follows:

(a) *Horizontally.* If within 15 feet of any balcony, platform, or stairway, constituting a part of the exit proper. This provision does not apply to a platform or walkway leading from the same floor to the exit proper. Protection need not extend around a right angle corner (outside angle 270 degrees) of the building except where stairs are close to such corner.

(b) *Below.* If within 3 stories or 35 feet of any balcony, platform, walkway, or stairway constituting a part of the exit, or within 2 stories or 20 feet of a platform or walkway leading from any story to the exit proper.

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

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

1108.3

Where stairs are located in courts the least dimension of which is less than one-third their height, or in alcoves having width less than one-third of their height and depth greater than one-quarter of their height, all openings below shall be protected.

1108.4

Outside stairs in climates *subject to snow and ice* shall be protected to prevent accumulation of snow or ice, except in the case of main entrance stairs providing the principal access to a building where it may be assumed that normal use of the building will require removal of snow and ice as a necessary condition for the entrance of occupants. 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, not to exceed 7½ inches below the level of the inside floor.

1108.5

For outside stairs of monumental type, constructed of stone or concrete, the requirement for a *nosing* may be waived if treads are at least 11 inches wide.

(a) *Treads* shall be solid except that ½ inch diameter perforations may be permitted.

(b) *Risers* shall be solid except that the skirt type having 1 inch space for drainage may be permitted.

(c) Except where embedded in masonry or concrete or where a suitable fire-resistive and waterproof covering is provided, no structural metal member shall be employed the entire surface of which is not capable of being *inspected and painted.*

(d) 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* to the framework of the building. Where metal members pass through walls, they shall be protected effectively against corrosion.

(e) Balcony and stair enclosures and railings shall be designed to withstand a *horizontal pressure of 50 pounds* per running foot of railing or enclosure without serious deflection.

1108.6—EXTERIOR BALCONIES

(a) Any *exterior balcony*, porch, or gallery *may serve as a means of egress* if it complies with all the requirements as to width, arrangement and materials of construction that are specified in this Chapter for means of egress and provided they comply with the requirements of the following paragraphs of this section.

(b) Balconies or other open spaces serving as means of egress shall have solid floors substantially level and shall have balustrades or *railings* substantially supported for not less than 42 inches for buildings 3 stories or less and 48 inches for buildings above 3 stories above the balcony floor measured vertically to the top of the rail. All such balustrades or railings shall form an enclosure of solid, slatted, grille or screen construction along the edge of the balcony, porch or gallery and in no case shall the opening of the enclosure have a horizontal width of more than 3 inches, except that where a lower rail is employed not less than 2 inches nor more than 6 inches above the balcony floor, the space above such rail may have horizontal opening of not more than 6 inches.

(c) Balconies, porches or galleries having structural concrete floors shall have all supporting framing members of non-combustible materials.

SECTION 1109—MEANS OF EGRESS FOR INTERIOR BALCONY AND GALLERY

(a) For balconies or galleries of Group E, Assembly occupancies having a seating *capacity of over 50*, at *least two means of egress* shall be provided, one from each side of every balcony or gallery, leading directly to a street or exit court.

(b) All interior stairways and other *vertical openings* shall be enclosed and protected as provided in this Chapter, except that stairs may be open between balcony and main assembly floor in occupancies such as theaters, churches, and auditoriums. The means of egress capacity required for balconies or galleries shall be determined on the same basis as those required for the occupancy use.

(c) The maximum distance of travel for balcony or gallery from any seat to an exit shall be determined on the same basis as the building occupancy.

(d) All stairways and other vertical openings should be enclosed for safety but in the case of theater balconies, open to the main floor below, it is generally not practicable to provide enclosed stairs from upper levels to the street. However, in large capacity facilities such as sports arenas, music halls, large university assembly halls, etc., attention should be given in their design to provide *protected stairways* and exits from upper levels to the street.

SECTION 1110—MEANS OF EGRESS FOR STAGE AND DRESSING ROOM AREAS OF GROUP E-1 LARGE ASSEMBLY

Not less than one exit to a street, exit court, or passageway to a street 3 feet or more in width, shall be provided from each side of the stage of every Group E-1, Large Assembly Place, and from each side of the sub-stage or basement or cellar under the stage, and an exit not less than 30 inches wide shall be provided from each fly-gallery and from the gridiron. An iron ladder shall be provided leading from the gridiron to a scuttle in the stage roof; such scuttle shall be not less than 2 feet x 3 feet in size and shall be provided with a metal-covered or non-combustible trap door. Each tier of dressing rooms shall be provided with at least two means of egress, each not less than 2 feet-6 inches wide, one of which shall lead directly into an exit court or street. All exit stairs shall be constructed of non-combustible material as prescribed in Section 1115, Stair Construction. Stair exits from stage and dressing rooms need not be enclosed.

SECTION 1111—AISLES AND SEATING

For the requirements in Group E, Assembly occupancies, see Section 512, and for Church occupancies see Section 514.

SECTION 1112—EXIT OUTLETS

(a) All exits shall *discharge directly to the street*, or to a yard, *exit court*, or other open space that gives safe access to the street. The streets to which the exits discharge shall be of width adequate to accommodate all persons leaving the building. Yards, courts, or other open spaces to which exits discharge shall also be of adequate width and size to provide all persons leaving the building with ready access to the street.

Except in Group A, C, D and E occupancies, a maximum of 50 percent of the exits may *discharge into street floor* areas provided:

(1) Such exits discharge to a free and unobstructed way to the outside of the building; and

(2) The entire street floor area is protected with an approved automatic sprinkler system; and

(3) The street floor is separated from floors below by construction having a 2-hour fire resistance rating.

(b) Such *exit courts or passageways* shall be enclosed with construction providing not less than *2-hours* fire resistance.

(c) The *width* of such courts or passageways shall be not less than the width of the exits tributary thereto. There shall be no reduction of width

in the direction of exit travel. Such courts or passageways shall be not less than 7 feet 6 inches in *height.*

(d) *Slope* of floors in exits shall not exceed one foot in ten feet.

(e) Stairs and other exits shall be so arranged as to make clear the *direction of egress* to the street. Exit stairs that continue to the basement or other lower stories shall be interrupted at the story of discharge by partitions, doors, or other effective means to make clear the direction of egress.

(f) Exits and ways of exit access shall be so designed and maintained as to provide adequate headroom but in no case shall the *ceiling height* be less than 7 feet 6 inches nor any projection from the ceiling be less than 6 feet 8 inches from the floor.

SECTION 1113—FOYER—REQUIRED

(a) In every Group E-1, Large Assembly Places, a foyer consisting of a space at the *main entrance* of the auditorium or place of assembly shall be provided. Such foyer, if not directly connected to a public street by all the main entrances or extis, shall have a straight and unobstructed corridor or passage to every such main entrance and exit.

(b) The *width* of foyer at any point shall not be less than the combined width of aisles, stairways, and passageways tributary thereto. The foyer shall be at the same level as the back of the auditorium, and exits leading therefrom shall not have a steeper gradient than 1 foot in 10 feet.

SECTION 1114—WAITING SPACES—REQUIRED

In theaters and similar Group E, Assembly occupancies, where persons are admitted to the building at times when seats are not available and are allowed to wait in a lobby or similar space, such use of lobby or similar space shall not encroach upon the required clear width of exits. Such waiting areas shall be *separated from the required exitways* by substantial permanent partitions or by fixed rigid railings not less than 42 inches high.

SECTION 1115—STAIRWAY CONSTRUCTION

1115.1—GENERAL

(a) Exterior and interior exit stairways shall be constructed of noncombustible materials throughout in the following buildings:

(1) All buildings of Type I, Fireproof and Type II, Fire-Resistive construction.

(2) All buildings of Group C, Public Owned Schools; and other Schools over 2 stories; of Group D, Institutions; of Group E-1 Assembly Occupancy, and Group E-2 over 2 stories.

(3) All other buildings over two stories in height or occupied by more than forty (40) persons above or below the first story at street or grade level.

(b) All interior stairways shall have solid risers. (See Section 1108.5)

(c) Interior stairs constructed of wood shall be firestopped as specified in Section 705.

(d) No closet shall be located beneath stairs that are in whole or part of combustible construction; such space shall be left entirely open and free from encumbrance.

(e) The underside of interior stairways, if of combustible construction, shall be protected to provide not less than 1-hour fire resistance.

1115.2—BASEMENT STAIRS

(a) In Group E, Theaters and Assembly occupancies, no exit stair from a lower story shall lead to an exit doorway serving an exit stair from an upper story.

(b) In no case shall a stair from a lower story lead to an exit doorway serving an exit stair from an upper story, unless such stair from below is separated at its upper end from the stair above by partitions equal to the fire rating of the stair enclosure.

1115.3—TREADS AND RISERS

(a) Treads and risers of required stairs shall be so *proportioned* that the sum of two (2) risers and a tread, exclusive of projection of nosing, is not less than twenty-four (24) inches nor more than twenty-five (25) inches. The height of riser shall not exceed seven and three-quarter (7¾) inches, and treads, exclusive of nosing, shall be not less than nine (9) inches wide. Every tread less than ten (10) inches wide shall have a nosing, or effective projection, of approximately one (1) inch over the level immediately below that tread. (See Section (11X)5.4 for stair nosing for physically handicapped.)

(b) Treads shall be of *uniform width* and risers of uniform height in any one flight of stairs.

(c) The use of *winders* and/or spiral stairways, is *prohibited* in stairways serving as required exits.

1115.4—LANDINGS

(a) No flight of stairs shall have a *vertical rise* of more than twelve (12) feet between floors or landings; provided that in stairways serving as exits in buildings of Group E Theater and Assembly occupancies, such vertical rise shall not exceed eight (8) feet between landings.

(b) The length and width of landings shall be not less than the width of stairways in which they occur.

(c) In buildings of Group E Assembly occupancies, flights of less than three risers shall not be used in stairways, interior or exterior, passageways, at entrance or elsewhere in connection with required exits. To overcome lesser differences in level, gradients not exceeding 1 foot in ten feet may be used.

1115.5—HANDRAILS

(a) All stairs shall have walls or well-secured handrails or guards on both sides of stairs of not less than thirty-two (32) inches high. Stairs of less than forty-four (44) inches in width may have handrails on one side only. Horizontal runs of rails around *open wells* shall be not less than *42* inches high for buildings *3 stories* or less in height. For buildings more than 3 stories in height, horizontal runs of rails around *open wells* shall be not less than *48* inches high.

(b) When the required width of a flight of stairs exceeds eighty-eight (88) inches, one or more intermediate handrails, continuous between landings, substantially supported and terminating at the upper end in newels or standards shall be provided and there shall be not more than sixty-six (66) inches between such adjacent handrails.

1115.6—WIDTH

(a) Stairs serving as required means of egress shall be clear of all obstructions except that handrails attached to walls may project not more than 3½ inches at each side within the required width.

(b) Width of stairs shall not decrease in the direction of exit travel.

(c) The minimum width of any stair serving as a means of egress shall not be less than 44 inches, except for Group A, B, F, G and H occupancies, (where less than 30 people are accommodated) the minimum is 36 inches.

1115.7—SMOKEPROOF TOWERS

(a) 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 building and the tower by means of *balconies directly open to the outer air.*

(b) Stairs in smokeproof towers shall be of *non-combustible construction* and all requirements hereinbefore specified for inside stairs shall apply to stairs in smokeproof towers.

(c) Stairways shall be completely enclosed by brick or concrete walls or walls of other materials having adequate structural strength and fire resistance rating of two-hours. 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 not subject to severe fire exposure hazard from the same or nearby buildings.

(d) *Access* to a stairway 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. 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 shall be directly open to a street or alley or yard or to an enclosed court open at the top not less than 20 feet in width and 1,000 square feet in area. Balconies or vestibules shall have guards not less than 4 feet high. Wall openings exposing balconies or vestibules shall be protected.

(e) Access from a building to vestibules or balconies shall be through doorways not less than 40 inches wide for new and 36 inches wide for existing towers. These openings and the entrances to the towers shall be provided with U.L. Listed, *self-closing fire doors* swinging with the exit travel. Clear wired glass not exceeding 720 square inches may be provided in doors giving access to the enclosure.

(f) The level of a vestibule or balcony floor shall be placed approximately 7½ inches below the floor level of each story where climatic conditions involve the possibility of blocking doors by *snow or ice.* In mild climates in which this hazard is not presented, the floors shall be approximately level. There shall be no step from the vestibule or balcony into the stair enclosure.

SECTION 1116—FIRE ESCAPES

(See Section 1007.4)

SECTION 1117—DOORWAYS

1117.1—DOORWAYS, GENERAL

(a) Every exit doorway shall open into an enclosed stairway, a horizontal exit, a fire protected corridor or passageway, meeting the requirements of this chapter and providing continuous protected egress to a street, or to an exterior open space leading to a street.

(b) No exit doorway shall be less than thirty-six *(36) inches in width* except that in Group D, Institutional occupancies, doorways serving as exits for areas housing bedridden patients shall be not less than forty-four (44) inches in width.

(c) Exit doorways shall *swing in the direction of exit* and shall not obstruct the travel along any required exit, except that doors swung flat against the walls may project not more than six (6) inches. No door shall at any point in its swing reduce the required width of an exit stairway or landing to less than thirty (30) inches nor interfere with full use of the stairs. Doors leading from individual rooms occupied by less than 50 people, such as classrooms may open in.

(d) No exit doorway shall open immediately upon a flight of stairs. A *landing* of at least the width of door shall be provided.

(e) All doors designed to be kept normally closed in connection with exits, such as doors on stair enclosures and smoke stop doors, shall be provided with reliable *self-closing mechanism* and shall not at any time be secured in the open position, except smoke stop doors in hospitals and schools may be kept normally open for operating convenience provided that qualified personnel is continually available to assure prompt closing of doors in case of fire or other emergency.

(f) In any building of low or moderate hazard contents, where the Building Official approves the installation and finds that the circumstances are such that reasonable life safety from fire and smoke is not endangered thereby, stairway doors, smokestop doors, and doors on horizontal exits *may be normally open*, where

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

(2) An approved release device is provided, so arranged that upon interruption of electric current, the door will be released, and

(3) The electric current will be positively interrupted by (a) 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, (b) the operation of an approved automatic fire detecting 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 exit before the system operates, or (c) by the operation of approved smoke detectors installed in such a way to detect smoke or other products of combustion on either side of the door opening, and

(4) 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, and

(5) The release device is so designed that it may be instantly released manually, by some simple and readily obvious operation.

(g) All doors on exits or providing required means of access to exits, 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, structure, or area served is occupied.

(h) For required width of doorways, serving exit stairways and the exit capacity of doorways, see Sections 1105.2 and 1105.3.

(i) Locks, if provided, shall not require any key to operate from the inside, except as may be required for mental and penal institutions.

(j) Where for operating reasons it may be undesirable to allow unrestricted communications through *exit doors*, *alarm devices* may be provided which will sound when doors are opened. Control of use of exits may also be facilitated by telltale devices, which will give indication that doors have been opened. Where circumstances require more rigid control than can be secured by these methods, continuous personal supervision may be necessary, as any mechanical or electrical locking method to prevent improper use of exits is likely to interfere with their availability in any emergency.

(k) If *locks* are installed on hospital, nursery, or mentally retarded *sleeping room doors*, they shall be of such type that they can be *locked only from the corridor side*, provided that doors of such rooms leading directly to the outside of the building may be subject to locking from the room side. In any case, such locks, shall be such as to be readily opened by the occupant from inside the room without the use of any key.

Exception: Doors in Homes for the Aged and in Nursing Homes may be lockable by the occupant provided that they are capable of being unlocked from the corridor side and keys are readily available to attendants.

(l) All *doorways to institutional* sleeping rooms, diagnostic and treatment areas such as X-ray, surgery, physical therapy, etc., all doorways between these occupied spaces and the required exits and all exit doorways shall be at least *44 inches in clear width* except that exit doors so located as not to be subject to use by these occupants may be not less than 28 inches in clear width. Doors to nursery sleeping rooms, as covered in this section of the Code, shall be at least 36 inches in clear width.

(m) Any door in the line of exit travel from an *institutional* sleeping room shall be of the *swinging type*.

1117.2—PANIC HARDWARE

(a) The exit doors of *schools* (except doors of individual school rooms), motion picture *theaters*, and theaters of any capacity shall be equipped with latches (fire exit bolts) which release when pressure of not to exceed 15 pounds is applied to the releasing devices in the direction of the exit travel. Such releasing devices may be bars or panels extending not less than two-thirds of the width of the door and placed at heights suitable for the service required, but not less than 30 nor more than 44 inches above the floor.

(b) The exit doors of all other places of *public assembly* having capacity in excess of *600 persons* shall be equipped with latches (fire exit bolts) as provided in the preceding paragraph.

(c) 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.

(d) *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 exit purposes. (See Section 1117.1(j).)

1117.3—POWER OPERATED DOORS

Where required doors are operated by power such as doors with photo-electric activated mechanism to open the door upon the approach of a person, or doors with power-assisted manual operation, the designs shall be such that in the event of power failure the door may be *manually opened* to permit exit travel, or closing where necessary, to safeguard ways of exit.

1117.4—REVOLVING DOORS

(a) Approved revolving doors may be used between street floor and street as required exits except as noted in paragraph (e) below, but not within 5 feet of the swing of the wings at foot of stairs from upper floors nor within 3 feet of the swing of the wings at head of basement stairs. Where used there shall be at least *one swing door exit within 20 feet* of each revolving door, with there being no fewer swing doors than revolving doors as individual exits, except as provided in paragraph (c) below.

(b) Each revolving door shall receive *egress credit* equal to the dimension of the clear opening between the extreme ends of the enclosure walls, less that space occupied by all of the wings when collapsed in a "book-fold" manner and moved to the extreme egress position.

(c) Revolving doors may serve as exits, without 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 elevator and street.

(d) All *approved revolving doors* shall be:

(1) Equipped with means to prevent their *rotation* at too rapid a rate to permit orderly egress. (Note: A rate of 12 revolutions per minute is recommended), and

(2) Equipped with *emergency collapsing devices* such that each of the wings will collapse in either direction when a force of not more than 180 pounds is applied on the outer stile of the wings at push bar level, and all of the wings must collapse together into a "book-fold" position.

(e) Revolving doors may be used in the following occupancy classifications in accordance with this section:

Group A—Residential
Group B—Business
Group F—Storage
Group G—Industrial

Group C—Schools—Only at main entrances of administrative buildings where not subject to emergency use.

Group D—Institutional—Only at main entrances of administrative buildings where not subject to emergency use.

Group E—Not permitted as required exits.

1117.5—SPECIAL DOORWAY REQUIREMENTS

No door, when opening or when fully open shall project beyond the building line more than 12 inches. (See Chapter XXVI, Use of Public Property). Every door used as a means of egress or ingress in cafes, restaurants, or in any building of Group E, Assembly Occupancy, shall be considered as an exit doorway and shall meet all the requirements as set forth in this chapter.

1117.6—FOLDING DOORS

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, except that 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.

1117.7—FIRE DOORS AND SMOKESTOP DOORS

(a) *Smokestop doors*, where installed to meet the requirements of this Code, shall be of metal, metal covered or approved treated wood construction, with clear, wired glass panels, except that in buildings not over 2 stories in height and not required by other sections of this Code to be of fire-resistive construction, smokestop doors may be of ordinary solid bonded core wood type not less than 1¾ inches thick with clear wired glass panels. Such doors shall be self-closing, and shall be either single or in pairs. They shall close the opening completely with only such clearance as is reasonably necessary for proper operation. (See Section 703.2(b))

(b) Any fire door, installed in accordance with the requirements of this Code shall be of an approved type listed by Underwriters Laboratories or Factory Mutual Laboratories. The fire protection ratings of any fire door shall be measured in accordance with NFPA No. 80. Each fire door shall be appropriate for the location in which it is installed.

(c) Any swinging fire door and any door in *stair enclosure* walls designed to prevent the spread of fire shall be provided with approved

positive latching means to hold it in the closed position against the pressure of expanding fire gases. Such latching means shall not be required for smokestop doors or for any other doors not designed to pervent the spread of fire.

SECTION 1118—RAMPS

(a) The width and enclosure of exit ramps shall be as required in Section 1112—Exit Outlets.

(b) The slope of ramps shall not exceed one foot in ten feet.

(c) Surface of ramps shall be of non-slip material.

(d) Exit ramps shall be of non-combustible construction except as otherwise permitted for stairs.

(e) Ramps shall comply with all requirements for stairways so far as those requirements are applicable.

SECTION 1119—HORIZONTAL EXITS

(a) A horizontal exit is a horizontal passageway through a fire wall or through a two-hour fire-resistive partition into another building or into another section of the same building, provided however, that horizontal exits may comprise not more than fifty percent (50%) of the required exits from any building or floor area except for exits in mechanical or equipment rooms.

(b) The width of horizontal exits shall not be less than required for exit doorways. The exit capacity of horizontal exits shall be as specified in Section 1105.3.

(c) Horizontal exits shall be equipped with at least one (1) approved fire door of a self-closing type. No automatic sliding fire door shall be used on horizontal exits. Door openings shall be protected as specified in Section 703.

(d) Floor area on either side of a horizontal exit shall be sufficient to hold the occupants of both floor areas served, allowing not less than three (3) Sq. Ft. net clear area per person.

(e) The area into which a horizontal exit leads shall be provided with exits adequate to meet the requirements of this Chapter, at least one of which shall lead directly to the exterior.

(f) Where there is a difference of level between connected areas, ramps not steps, shall be used, meeting the requirements of Section 1118—Ramps.

(g) Doors in horizontal exits shall be kept unlocked and unobstructed.

SECTION 1120—EXIT TO ROOF

(a) In all buildings over three (3) stories in height, of other than Type I, Fireproof or Type II, Fire-Resistive construction, one enclosed exit stairway shall be continued from street grade level to or through roof level except where roofs have a slope greater than one in four. Such stairway shall be marked at street and floor levels with a sign indicating that it continues to the roof.

(b) Where roofs are used for roof gardens or for other purposes, stairways shall be provided as required for such use or occupancy.

(c) Where no stairway extends to the roof, *scuttles* shall be provided of size not less than two (2) feet by three (3) feet, giving access to the roof.

(d) Refer to Elevator Code A17.1-1965 for access to Elevator Machinery.

SECTION 1121—ELEVATORS

(a) Elevator shafts shall be enclosed and protected from the rest of the building as specified in Section 701.3.

(b) Elevators shall not be located in a common enclosing shaft with an exit stairway. (See Section 701.3)

(c) Elevators shall conform with the requirements of the North Carolina State Elevator Code (Chapter XXXI), which includes the "American Standards Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks"—A17.1-1965 of the American Standards Association, as applicable unless otherwise specified.

SECTION 1122—ESCALATORS

(a) Only escalators of the horizontal tread type, which normally operate in the direction of exit travel shall be used as a required means of exit. Except in Group C, School occupancies, such escalators may be used as required exits provided they comply with all the requirements applying to exit stairways and are enclosed and protected from the rest of the building as required for exit stairways. (See Section 1106)

(b) Unless otherwise specified, escalators shall comply with the requirements for escalators (and/or moving walks) in the American Standards Safety Code for Elevators, Dumbwaiters, Escalators and Moving Walks (ASA-A17.1-1965), of the American Standards Association.

SECTION 1123—ACCESS TO EXITS AND EXIT PASSAGEWAYS

1123.1—ACCESS TO EXITS

(a) Exits shall be so located and exit access shall be so arranged that exits are *readily accessible* at all times. Where exits are not immediately accessible from an open floor area, safe and continuous passageways, aisles, or corridors leading directly to every exit and so arranged as to provide convenient access for each occupant to at least 2 exits by separate ways of travel, except as a single exit or limited dead ends are permitted by other provisions of this Code, shall be maintained.

(b) A door from a room to an exit or to a way of exit access shall be of the side-hinged, swinging type. It shall *swing with exit travel* when the room is occupied by more than *50 persons* or used for a high hazard occupancy.

(c) In no case shall access to an exit be through a bathroom, bedroom, or other room subject to locking, except 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.

(d) Ways of exit access and the doors to exits to which they lead shall be so designed and arranged as to be *clearly recognizable* as such. No hangings or draperies shall be placed over exit doors or otherwise so located as to conceal or obscure any exit. No mirrors shall be placed on exit doors. No mirrors shall be placed in or adjacent to any exit in such a manner as to confuse the direction of exit.

(e) Exit access shall be so arranged that it will not be necessary to travel toward any area of *high hazard occupancy* in order to reach the nearest exit, unless the path of travel is effectively *shielded* from the high hazard location by suitable partitions or other physical barriers.

(f) Where the floor of a way of *exit access* is not substantially *level*, such differences in elevation shall be negotiated by stairs or ramps conforming to the requirements of this chapter for exit stairs and exit ramps. Such stairs or ramps need not be enclosed unless they connect two or more separate stories.

(g) 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.

(h) *No obstruction* shall be placed in any aisle, exit, foyer, passageway or corridor.

(i) Where the floor space of a Group E, Assembly occupancy, is occupied by tables, chairs or other movable furniture, *aisles* at least 36 inches in clear width shall be maintained to provide ready access to exit doorways.

1123.2—EXIT PASSAGEWAYS

(a) Any hallway, corridor, passage, tunnel, underfloor passageway, or overhead passageway may be designated as an *exit passageway* and used as an exit or exit component when conforming to all other requirements as modified by the provisions of this Section.

(b) Protective enclosure and arrangement. When an *exit passageway* is *used as an exit* or exit component (rather than as exit access) it shall be protected by separation from other parts of the building. The separating construction shall meet the following requirements:

(1) The separation shall have at least a 1-hour fire resistance rating in buildings not more than 3 stories in height.

(2) The separation shall have at least a 2-hour fire resistance rating in buildings more than 3 stories in height, shall be constructed of non-combustible materials, and shall be supported by construction having at least a 2-hour fire resistance rating.

(3) Any opening therein shall be protected by an approved self-closing fire door.

(c) Fixed wired glass panels in steel sash may be installed in such a separation in a fully sprinklered building.

(d) An exit passageway in a building more than 3 stories in height or in a building of any height of non-combustible or fire-resistive construction, shall be of non-combustible construction. The floor shall be solid and without perforations.

(e) Any stair serving as an exit access to an exit passageway shall be fully enclosed and separated from other parts of the building.

SECTION 1124—ILLUMINATION OF EXITS

1124.1—GENERAL

(a) Artificial lighting when necessary to meet the requirements of this Section, shall be from a source independent of the general building lighting, namely, Type 2 or Type 1, as indicated in the requirements of Table 1123.

1124.2—ILLUMINATION

(a) Every *exit* and the necessary ways of *exit access* thereto shall be illuminated to facilitate egress. Such illumination 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 foot-candle values herein specified.

(b) The *floors* of exits and of ways of exit access shall be illuminated at all points such as angles and intersections of corridors and passageways, stairways, landings of stairs, and exit doors to values of not less than *1.0 foot-candle* measured at the floor.

(c) 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 ways may be reduced during such period of projection to values of not less than *1/5 foot-candle*.

(d) 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.

(e) The *same equipment* or units installed to meet the requirements for *Exit Marking* 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.

1124.3—SOURCES OF ILLUMINATION

(a) Exit illumination shall be from a source of reasonably assured reliability, such as a *public utility* electric service.

(b) Where electricity is used as a source of exit illumination, the installation shall be properly made in accordance with the minimum requirements of the National Electrical Code, Article 700.

(c) No portable battery operated electric light nor any type of portable lamp or lantern shall be used for any required exit illumination.

(d) No luminescent or fluorescent or reflective materials may be used as a substitute for any of the required illumination herein specified.

(e) In hospitals and in certain institutions, emergency light and power are needed for various purposes. Such emergency electric power facilities where provided for the most essential features of hospital and institutional operation may serve the purpose of a source of illumination for exit signs, illumination of exits, fire alarm systems, automatic sprinkler and automatic smoke detector systems.

1124.4—EMERGENCY LIGHTING

(a) In occupancies specified in Table 1125, emergency lighting facilities shall be provided for exits so arranged that necessary exit illumination will be maintained in the event of failure of the normal lighting of the building.

(b) Emergency lighting facilities (as indicated in Article 700 of the National Electrical Code) shall be arranged to maintain the specified degree of illumination in the event of failure of the normal lighting for a period of at least ½ hour, and for a period of at least 1 hour in hospitals and institutions.

(c) Type 1 or Type 2 emergency lighting shall be provided as specified in Table 1125, subject to the approval of the Building Official as to the suitability of the equipment for its intended use and the conditions in the individual premises.

(d) Electric *battery operated emergency lights* as described in Article 700 of the National Electrical Code shall use only reliable types of storage batteries suitable for their intended use, and shall be provided with suitable facilities for maintenance in properly charged condition. Conventional automobile storage batteries of the lead acid type are prohibited for emergency light source or for emergency generator cranking service.

(e) Required emergency lighting facilities, except as specifically approved otherwise, shall be *automatic*, not requiring any manual action to put them into operation after failure of normal lighting, in accordance with Article 700 (700-15) of the National Electrical Code.

(f) Where maintenance of illumination depends upon changing from one energy source to another, there shall be no appreciable *interruption* of illumination during the change-over except that in hospitals where emergency lighting is provided by a prime mover operated electric generator, a delay of not to exceed *10 seconds* may be permitted. (See Article 700 (Section 700-8) of the National Electrical Code).

(g) Public utility source of electrical current may be used to supply emergency lighting circuits which must be established and maintained independently of other electrical circuits in the building. (See Article 700 (700-10) of the National Electrical Code.) Such installations meet the requirements for Type 2 emergency lighting only.

1124.5—TYPE 1 EMERGENCY LIGHTING

(a) Type 1 emergency lighting shall be so arranged as to provide the required illumination automatically in the event of any failure of normal lighting due to any fault in the main lighting system, due to any failure of public utility or other outside electric power supply, or any single manual act such as accidental opening of a switch controlling normal lighting facilities.

(b) Type 1 emergency lighting shall be either continuously in operation, or shall be capable of repeated automatic operation without manual intervention.

(c) Type 1 emergency lighting, subject to the approval of the Building Official, may be provided by any method or combination of methods which will produce the desired results, such as

(1) *Two separate electric lighting systems*, with independent wiring, each adequate alone to provide the specified emergency 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 the absence of natural illumination.

(2) An electric circuit or circuits used only for emergency lighting with *two independent electric sources* so arranged that on the failure of one the other will come automatically and immediately into operation. *One* such independent *source* shall be a connection from a *public utility* or similar outside power source, and *the other* (a) 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 due to turning off the primary electric source, it will be shut off after its specified period of operation and will be automatically recharged and be ready for further service when the primary current source is again turned on; or (b) such other source may be an emergency electric *generator* set provided and maintained as per Article 700 (700-8) of the National Electrical Code.

(3) *Unit devices* (U.L. Listed and labeled) with approved individual batteries providing for the same functions as specified above, except that the battery supplied light may be operated on a separate circuit at a voltage different from that of the primary light, provided the unit battery powered devices are installed and maintained according to Underwriters Laboratories Listing. (See Article 700 (700-22) of the National Electrical Code for Approved Type Batterys, etc.)

(4) Two separate sources of illumination, one electric and the other of the incandescent *gas mantle* type, supplied by city gas, propane or gasoline vapor, utilizing only approved gas lighting devices and with reliable arrangements acceptable to the authority having jurisdiction to assure that both gas and electric lighting sources will be in regular continuous operation during occupancy of the building in the absence of natural illumination. Such gas lighting devices shall be so installed as not themselves to create a fire or explosion hazard within the building.

1124.6—TYPE 2 EMERGENCY LIGHTING

(a) Type 2 emergency lighting shall be so arranged as to provide the required illumination automatically in the event of any *failure of normal lighting* due to any fault within the building, such as opening of a circuit breaker or melting of a fuse due to short circuit due to fire or other cause or due to overloading.

(b) Type 2 emergency lighting shall be either continuously in operation or shall be capable of repeated automatic operation without manual intervention.

(c) Type 2 emergency lighting may be provided by any method or combination of methods that will produce the desired results such as an arrangement whereby *emergency lights and exit signs* are on a *separate*

electric circuit or circuits used for no purpose other than for emergency lights and exit signs, such circuit or circuits being connected to the electric service wires ahead of any main disconnecting device (circuit breakers or fuses) controlling the normal electric supply or service to the building.

(d) This type of emergency lighting does not necessarily provide any safeguard against outside power failure, but does guard against light failure from causes within the building.

1124.7—INSTALLATION METHODS

(a) For installation requirements, see National Electrical Code, NFPA Publication No. 70, Article 700.

SECTION 1125—EXIT SIGNS

(a) Exits shall be indicated by approved signs or lights at all times when the building is occupied. (See Table 1125.)

(b) All exits shall be marked with illuminating signs bearing the *word "Exit"* in letters at least *6 inches* high. All required illumination shall be so arranged that the failure of any single light unit, such as the burning out of an electric bulb, will not leave any area in darkness. All exit signs shall be illuminated at all times when the building is occupied by a reliable light source of not less than *25 watts* or equivalent photometric rating that will be *readable* easily at a distance of *100 feet*. Where a main entrance serves as an exit and is visible to the occupants, no exit sign is required over the main entrance door.

(c) Where exit lights or signs or the exits themselves are not visible from the exit approach, *directional signs* indicating the way of egress shall be provided. The level at which there is direct exit to the exterior shall also be clearly indicated.

(d) *Lighting* of exit signs, when necessary to meet the requirements of this section, shall be from a *source independent* of the general building lighting, namely, Type 2 or Type 1 Emergency Lighting Source as indicated in the requirements of Table 1125.

SECTION 1126—FIRE ALARM

(a) A manual fire alarm system shall be installed as required by Table 1125 unless the building is equipped with an automatic fire alarm system or an automatic sprinkler system.

(1) Electric power for *fire alarm* systems or the sprinkler system shall be from a *source independent* of the general building lighting, namely, Type 2 or Type 1 Emergency Lighting Source.

(b) Alarm sending stations.

(1) A manual operated *sending station* shall be provided near *each main exit* and in the natural path of escape from fire, at readily accessible and visible points which are not likely to be obstructed.

(2) Each *sending station* shall be *located* so that from any part of the building not more than *200 feet* will have to be traversed in order to reach a sending station on the *same floor*, or *100 feet* and *1 flight of stairs* to reach a sending station upon another floor located in the natural path of escape from fire.

(3) The arrangement of sending stations, and the manner of their connection with sounding devices shall be such that there will be *no difference* between the sounding of *actual alarms* and *drill signals.*

(c) Sounding devices.

(1) A required sounding device shall be used for fire alarm purposes.

(2) Alarm *sounding devices* shall be provided of such character and so distributed as to be effectively *heard in every room* above all other sounds. Visible alarm devices may be used in lieu of audible devices only where specifically permitted for institutional occupancies and for places of assembly.

(3) Every alarm *sounding device* shall be *distinctive in pitch* and quality from all other sounding devices.

SECTION 1127—AUTOMATIC SMOKE DETECTORS

(a) All buildings exceeding 3 stories in height shall be provided with U.L. Listed Smoke Detectors placed to automatically open at least 10% of the area of each *vertical shaft* at the top to the outer air including stairways and elevators. In lieu of the detectors, a net free area of 10% of the shaft at the top may be left open to the outer air in the side of the shaft. (See Section 701.1 (e) for glazing openings.)

(b) Automatic smoke detectors are required to be placed at the return to *cut* the *fan off* at a predetermined concentration of smoke when fans are used to recirculate air for heating, air conditioning or ventilating systems in Group A, serving over 100 people; Group B-1, over 300 people; Groups C and D, over 50 people; Groups B-2 and E-1, over 1000 people.

(c) Wherever possible, smoke detectors requiring electrical energy shall be supplied from independent circuits of the emergency lighting system.

TABLE 1125

REQUIREMENTS FOR EXIT SIGNS, EMERGENCY ILLUMINATION AND FIRE ALARMS

OCCUPANCY (a)	EXIT SIGNS REQUIRED (b)	MANUAL FIRE ALARM (Section 1126) (g)
A—Residential (404)		
Hotel (h)	15 Rooms	15 Rooms
Apartment House	More than 2 stories and more than 12 living units	More than 2 stories and more than 12 living units
Dormitories	All	All
Other	100 persons	Over 2 stories and over 20 sleeping rooms
B-1—Business (405)	100 persons, or 5,000 sq. ft. per floor	500 persons or 200 above or below street floor
B-2—Mercantile (405)	100 persons or 5,000 sq. ft. per floor	500 persons or 200 above or below street floor
C—Schools (406)	All (b) (c)	All
D—Institutional (407)	Over 1 story or 30 persons	15 persons (e)
E—Assembly (408)	100 persons (d)	500 persons — 100 persons if part of school or if located above 1st floor (d)
F—Storage, etc. (409)	100 persons	100 persons
G—Industrial (410)	100 persons or 10,000 sq. ft. per floor	Over 1 story or 500 persons or 200 above or below street
H—Hazardous (411)	30 persons	All

Facility is required if occupancy equals or exceeds number designated in Table.

(a) Number shown in parenthesis refers to Code section defining occupancy.

(b) 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 or from classrooms and other spaces with less than 100 people.

(c) Schools with classrooms opening directly to outside at grade are not required to have Exit Signs.

(d) Sanctuaries of churches are exempt from these requirements.

(e) Visible alarm devices permitted as per Section 1126(c)2.

TABLE 1125 (Cont'd)

EMERGENCY POWER SOURCES	
TYPE 1 Automatic Emergency Generator or Battery System—Section 1124.5	TYPE 2 Tap Ahead of Main Service Disconnecting Means — Section 1124.6
250 Rooms	15 Rooms
More than 2 stories and more than 50 living units	More than 2 stories and more than 12 living units
500 persons	Up to 500 persons
250 Rooms	Over 2 stories and over 20 sleeping rooms
Over 1,000 persons or 300 above or below street floor	100 persons or 5,000 sq. ft. per floor
Over 1,000 persons or 200 above or below street floor	100 persons or 5,000 sq. ft. per floor
Over 1,000 persons or 200 above or below street floor (i)	All except when Type 1 is required
100 persons (f)	Over 1 story or 15 persons (j)
1,000 persons	100 persons or if located above 1st floor
Over 1,000 persons or 200 above or below street level	100 persons
Over 1,000 persons or 200 above or below street level	100 person or 10,000 sq. ft. per floor
300 persons	30 to 300 persons

(f) Type 2 permitted for institutional buildings for occupants involuntarily detained.

(g) Fire alarm for entire building must be tied together. Isolated buildings located more than 80 feet away may have their own system.

(h) Motels with all rooms opening directly to outside at grade are exempt from these requirements.

(i) Required for windowless schools.

(j) For as many as 10 to 100 persons—Unit Devices (U.L. Approved) are required (Unit devices may be installed with flexible cords with "Twist-lock" plugs or clamps on plugs) (1124.5(c)3).

SUPPLEMENT TO CHAPTER XI

SECTION (11X)

MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO, AND USABLE BY, THE PHYSICALLY HANDICAPPED

GENERAL REQUIREMENTS

This Standard applies to the following buildings exceeding limitations stated:

Occupancy	
Group A—Residential	Over 4 stories
Group B—Business F—Storage G—Industrial	Over 4 stories or over 100,000 square feet in area
Group C—Schools	Schools designed for Handicapped
Group D-2—Institutional	All
Group E—Assembly	Over 1,000 persons

Subject to determination to be made by the Building Official, all other buildings such as, but not limited to, Public Libraries, City Halls, Court Houses, County and State Public Offices may be required to be provided with the following facilities:

(1) Ramp as an entrance in compliance with Section (11X)5.1 and (11X)5.6(b).

(2) At least one toilet and toilet stall meeting requirements of (11X)5.6.2.

(3) Entrance door to all usable rooms to be at least 32 inches in width to accommodate wheel chair into and throughout building.

SECTION Page

MAKING BUILDINGS AND FACILITIES ACCESSIBLE TO, AND USABLE BY, THE PHYSICALLY HANDICAPPED

(Taken From ASA Standard)

(11X)1.—SCOPE AND PURPOSE

(11X)1.1—SCOPE

(a) This standard when required applies to buildings and facilities used by the public. It applies to temporary or emergency conditions as well as permanent conditions. It does not apply to private residences.

(b) This standard is concerned with non-ambulatory disabilities, semi-ambulatory disabilities, sight disabilities, hearing disabilities, disabilities of incoordination, and aging.[1]

(11X)1.2—PURPOSE

This standard is intended to make buildings and facilities used by the public accessible to, and functional for, the physically handicapped, to, through, and within their doors, without loss of function, space, or facility where the general public is concerned. It supplements existing American Standards, and reflects great concern for safety of life and limb. In cases of practical difficulty, unnecessary hardship, or extreme differences, administrative authorities may grant exceptions from the literal requirements of this standard or permit the use of other methods or materials, but only when it is clearly evident that equivalent facilitation and protection are thereby secured.

(11X)2—DEFINITIONS

(11X)2.1—NON-AMBULATORY DISABILITIES

Impairments that, regardless of cause or manifestation, for all practical purposes, confine individuals to wheelchairs.

(11X)2.2—SEMI-AMBULATORY DISABILITIES

Impairments that cause individuals to walk with difficulty or insecurity. Individuals using braces or crutches, amputees, arthritics, spastics, and those with pulmonary and cardiac ills may be semi-ambulatory.

(11X)2.3—SIGHT DISABILITIES

Total blindness or impairments affecting sight to the extent that the individual functioning in public areas is insecure or exposed to danger.

(11X)2.4—HEARING DISABILITIES

Deafness or hearing handicaps that might make an individual insecure in public areas because he is unable to communicate or hear warning signals.

(11X)2.5—DISABILITIES OF INCOORDINATION

Faulty coordination or palsy from brain, spinal, or peripheral nerve injury.

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[1]See definitions in Section 2.

(11X)2.6—AGING

Those manifestations of the aging processes that significantly reduce mobility, flexibility, coordination. and perceptiveness but are not accounted for in the aforementioned categories.

(11X)2.7—STANDARD

When this term appears in small letters and is not preceded by the word "American," it is descriptive and does not refer to an American Standard approved by ASA; for example, a "standard" wheelchair is one characterized as standard by the manufacturers.

(11X)2.8—FIXED TURNING RADIUS, WHEEL TO WHEEL

The tracking of the caster wheels and large wheels of a wheelchair when pivoting on a spot.

(11X)2.9—FIXED TURNING RADIUS, FRONT STRUCTURE TO REAR STRUCTURE

The turning radius of a wheelchair, left front-foot platform to right rear wheel, or right front-foot platform to left rear wheel, when pivoting on a spot.

(11X)2.10—INVOLVED (INVOLVEMENT)

A portion or portions of the human anatomy or physiology, or both, that have a loss or impairment of normal function as a result of genesis, trauma, disease, inflammation, or degeneration.

(11X)2.11—RAMPS, RAMPS WITH GRADIENTS

Because the term "ramp" has a multitude of meanings and uses, its use in this text is clearly defined as ramps with gradients (or ramps with slopes) that deviate from what would otherwise be considered the normal level. An exterior ramp, as distinguished from a "walk," would be considered an appendage to a building leading to a level above or below existing ground level. As such, a ramp shall meet certain requirements similar to those imposed upon stairs.

(11X)2.12—WALK, WALKS

Because the terms "walk" and "walks" have a multitude of meanings and uses, their use in this text is clearly defined as a predetermined, prepared-surface, exterior pathway leading to or from a building or facility, or from one exterior area to another, placed on the existing ground level and not deviating from the level of the existing ground immediately adjacent.

(11X)2.13—APPROPRIATE NUMBER

As used in this text, appropriate number means the number of a specific item that would be necessary, in accord with the purpose and function of a building or facility, to accommodate individuals with specific disabilities in proportion to the anticipated number of individuals with disabilities who would use a particular building or facility.

EXAMPLE: Although these specifications shall apply to all buildings and facilities used by the public, the numerical need for a specific item would differ, for example, between a major transportation terminal, where many individuals with diverse disabilities would be continually coming and going, an office building or factory, where varying numbers of individuals with disabilities of varying manifestations (in many instances, very large

numbers) might be employed or have reason for frequent visits, a school or church, where the number of individuals may be fixed and activities more definitive, and the many other buildings and facilities dedicated to specific functions and purposes.

NOTE: Disabilities are specific and where the individual has been properly evaluated and properly oriented and where architectural barriers have been eliminated, a specific disability does not constitute a handicap. It should be emphasized that more and more of those physically disabled are becoming *participants*, rather than spectators, in the fullest meaning of the word.

(11X)3—GENERAL PRINCIPLES AND CONSIDERATIONS

(11X)3.1—WHEELCHAIR SPECIFICATIONS

The collapsible-model wheelchair of tubular metal construction with plastic upholstery for back and seat is most commonly used. The standard model of all manufacturers falls within the following limits, which were used as the basis of consideration:

(1) Length: 42 inches
(2) Width, when open: 25 inches
(3) Height of seat from floor: 19½ inches
(4) Height of armrest from floor: 29 inches
(5) Height of pusher handles (rear) from floor: 36 inches
(6) Width, when collapsed: 11 inches

(11X)3.2—THE FUNCTIONING OF A WHEELCHAIR

(a) The fixed turning radius of a standard wheelchair, wheel to wheel, is 18 inches. The fixed turning radius, front structure to rear structure, is 31.5 inches.

(b) The average turning space required (180 and 360 degrees) is 60 x 60 inches.

NOTE: Actually, a turning space that is longer than it is wide, specifically 63 x 56 inches, is more workable and desirable. In an area with two open ends, such as might be the case in a corridor, a minimum of 54 inches between two walls would permit a 360-degree turn.

(c) A minimum width of 60 inches is required for two individuals in wheelchairs to pass each other.

(11X)3.3—THE ADULT INDIVIDUAL FUNCTIONING IN A WHEELCHAIR[2]

(a) The average unilateral vertical reach is 60 inches and ranges from 54 inches to 78 inches.

(b) The average horizontal working (table) reach is 30.8 inches and ranges from 28.5 inches to 33.2 inches.

(c) The bilateral horizontal reach, both arms extended to each side, shoulder high, ranges from 54 inches to 71 inches and averages 64.5 inches.

[2]Extremely small, large, strong, or weak and involved individuals could fall outside the ranges of (11X)3.3(a), (b), (c) and their reach could differ from the figure given in (11X)3.3(d). However, these reaches were determined using a large number of individuals who were functionally trained, with a wide range in individual size and involvement.

(d) An individual reaching diagonally, as would be required in using a wall-mounted dial telephone or towel dispenser, would make the average reach (on the wall) 48 inches from the floor.

(11X)3.4—THE INDIVIDUAL FUNCTIONING ON CRUTCHES[3]

(a) On the average, individuals 5 feet 6 inches tall require an average of 31 inches between crutch tips in the normally accepted gaits.[4]

(b) On the average, individuals 6 feet 0 inches tall require an average of 32.5 inches between crutch tips in the normally accepted gaits.[4]

(11X)4—SITE DEVELOPMENT[5]

(11X)4.1—GRADING

The grading of ground, even contrary to existing topography, so that it attains a level with a normal entrance will make a facility accessible to individuals with physical disabilities.

(11X)4.2—WALKS

(a) Public walks should be at least 48 inches wide and should have a gradient not greater than 5 percent.[6]

(b) Such walks shall be of a continuing common surface, not interrupted by steps or abrupt changes in level.

(c) Wherever walks cross other walks, driveways, or parking lots they should blend to a common level.[7]

NOTE: (11X)4.1 and (11X)4.2, separately or collectively, are greatly aided by terracing, retaining walls, and winding walks allowing for more gradual incline, thereby making almost any building accessible to individuals with permanent physical disabilities, while contributing to its esthetic qualities.

(d) A walk shall have a level platform at the top which is at least 5 feet by 5 feet, if a door swings out onto the platform or toward the walk. This platform shall extend at least 1 foot beyond each side of the doorway.

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[3]Most individuals ambulating on braces or crutches, or both, or on canes are able to manipulate within the specifications prescribed for wheelchairs, although doors present quite a problem at times. However, attention is called to the fact that a crutch tip extending laterally from an individual is not obvious to others in heavily trafficked areas, certainly not as obvious or protective as a wheelchair and is, therefore, a source of vulnerability.

[4]Some cerebral palsied individuals, and some severe arthritics, would be extreme exceptions to (11X)3.4(a) and (11X)3.4(b).

[5]Site development is the most effective means to resolve the problems created by topography, definitive architectural designs or concepts, water table, existing streets, and atypical problems, singularly or collectively, so that aggress, ingress, and egress to buildings by physically disabled can be facilitated while preserving the desired design and effect of the architecture.

[6]It is essential that the gradient of walks and driveways be less than that prescribed for ramps, since walks would be void of handrails and curbs and would be considerably longer and more vulnerable to the elements. Walks of near maximum grade and considerable length should have level areas at intervals for purposes of rest and safety. Walks or driveways should have a nonslip surface.

[7]This specification does not require the elimination of curbs, which, particularly if they occur at regular intersections, are a distinct safety feature for all of the handicapped, particularly the blind. The preferred method of meeting the specification is to have the walk incline to the level of the street. However, at principal intersections, it is vitally important that the curb run parallel to the street, up to the point where the walk is inclined, at which point the curb would turn in and gradually meet the level of the walk at its highest point. A less preferred method would be to gradually bring the surface of the driveway or street to the level of the walk. The disadvantage of this method is that a blind person would not know when he has left the protection of a walk and entered the hazards of a street or driveway.

(e) A walk shall have a level platform at least 3 feet deep and 5 feet wide, if the door does not swing onto the platform or toward the walk. This platform shall extend at least 1 foot beyond each side of the doorway.

(11X)4.3—PARKING LOTS

(a) Spaces that are accessible and approximate to the facility should be set aside and identified for use by individuals with physical disabilities.

(b) A parking space open on one side, allowing room for individuals in wheelchairs or individuals on braces and crutches to get in and out of an automobile onto a level surface, suitable for wheeling and walking, is adequate.

(c) Parking spaces for individuals with physical disabilities when placed between two conventional diagonal or head-on parking spaces should be 12 feet wide.

(d) Care in planning should be exercised so that individuals in wheelchairs and individuals using braces and crutches are not compelled to wheel or walk behind parked cars.

(e) Consideration should be given the distribution of spaces for use by the disabled in accordance with the frequency and persistency of parking needs.

(f) Walks shall be in conformity with (11X)4.2.

(11X)5—BUILDINGS

(11X)5.1—RAMPS WITH GRADIENTS

Where ramps with gradients are necessary or desired, they shall conform to the following specifications:

(a) A ramp shall not have a slope greater than 1 foot rise in 12 feet, or 8.33 percent, or 4 degrees 50 minutes.

(b) A ramp shall have handrails on at least one side, and preferably two sides, that are 32 inches in height, measured from the surface of the ramp, that are smooth, that extend 1 foot beyond the top and bottom of the ramp, and that otherwise conform with American Standard Safety Code for Floor and Wall Openings, Railings, and Toe Boards, A12-1932.

NOTE 1: Where codes specify handrails to be of heights other than 32 inches, it is recommended that two sets of handrails be installed to serve all people. Where major traffic is predominantly children, particularly physically disabled children, extra care should be exercised in the placement of handrails, in accordance with the nature of the facility and the age group or groups being serviced.

NOTE 2: Care should be taken that the extension of the handrail is not in itself a hazard. The extension may be made on the side of a continuing wall.

(c) A ramp shall have a surface that is non-slip.

(d) A ramp shall have a level platform at the top which is at least 5 feet by 5 feet, if a door swings out onto the platform or toward the ramp. This platform shall extend at least 1 foot beyond each side of the doorway.

(e) A ramp shall have a level platform at least 3 feet deep and 5 feet wide, if the door does not swing onto the platform or toward the ramp. This platform shall extend at least 1 foot beyond each side of the doorway.

(f) Each ramp shall have at least 6 feet of straight clearance at the bottom.

(g) Ramps shall have level platforms at 30-foot intervals for purposes of rest and safety and shall have level platforms wherever they turn.

(11X)5.2—ENTRANCES

(a) At least one primary entrance to each building shall be usable by individuals in wheelchairs.

NOTE: Because entrances also serve as exits, some being particularly important in case of an emergency, and because the proximity of such exits to all parts of buildings and facilities, in accordance with their design and function, is essential, it is preferable that all or most entrances (exits) should be accessible to, and usable by, individuals in wheelchairs and individuals with other forms of physical disability herein applicable.

(b) At least one entrance usable by individuals in wheelchairs shall be on a level that would make the elevators accessible.

(11X)5.3—DOORS AND DOORWAYS

(a) Doors shall have a clear opening of no less than 32 inches when open and shall be operable by a single effort.

NOTE 1: Two-leaf doors are not usable by those with disabilities defined in (11X)2.1, (11X)2.2, and (11X)2.5 unless they operate by a single effort, or unless one of the two leaves meets the requirement of (11X)5.3(a).

NOTE 2: It is recommended that all doors have kick plates extending from the bottom of the door to at least 16 inches from the floor, or be made of a material and finish that would safely withstand the abuse they might receive from canes, crutches, wheelchair foot-platforms, or wheelchair wheels.

(b) The floor on the inside and outside of each doorway shall be level for a distance of 5 feet from the door in the direction the door swings and shall extend 1 foot beyond each side of the door.

(c) Sharp inclines and abrupt changes in level shall be avoided at doorsills. As much as possible, thresholds shall be flush with the floor.

NOTE 1: Care should be taken in the selection, placement, and setting of door closers so that they do not prevent the use of doors by the physically disabled. Time-delay door closers are recommended.

NOTE 2: Automatic doors that otherwise conform to (11X)5.3(a), (11X)5.3(b), and (11X)5.3(c) are very satisfactory.

NOTE 3: These specifications apply both to exterior and interior doors and doorways.

(11X)5.4—STAIRS

Stairs shall conform to Section 1115, with the following additional considerations:

(a) Steps in stairs that might require use by those with disabilities defined in (11X)2.2 and (11X)2.5 or by the aged shall not have abrupt (square) nosing. (See Fig. 1.)

NOTE: Individuals with restrictions in the knee, ankle, or hip, with artificial legs, long leg braces, or comparable conditions cannot, without great difficulty and hazard, use steps with nosing as illustrated in Fig. 1a, but can safely and with minimum difficulty use steps with nosing as illustrated in Fig. 1b.

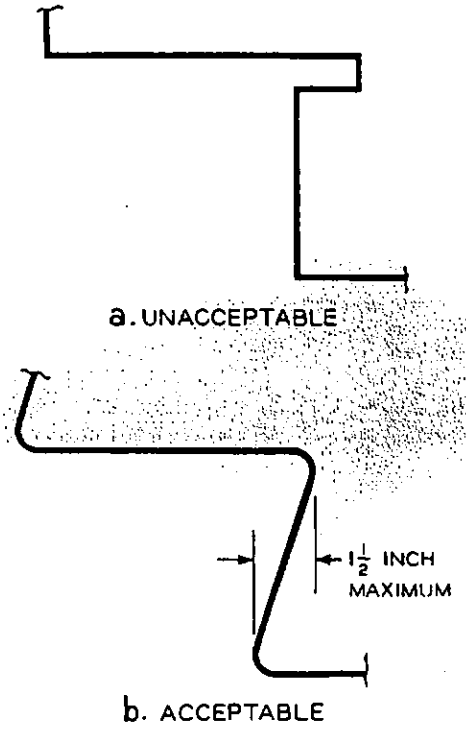

Fig. 1
STEPS

(b) Stairs shall have handrails 32 inches high as measured from the tread at the face of the riser.

NOTE: Where codes specify handrails to be at heights other than 32 inches, it is recommended that two sets of handrails be installed to serve all people. Where traffic is predominantly children, particularly physically disabled children, extra care should be exercised in the placement of handrails in accordance with the nature of the facility and the age group or groups being serviced. Dual handrails may be necessary.

(c) Stairs shall have at least one handrail that extends at least 18 inches beyond the top step and beyond the bottom step.

NOTE: Care should be taken that the extension of the handrails is not in itself a hazard. The extension may be made on the side of a continuing wall.

(d) Steps should, wherever possible, and in conformation with existing step formulas, have risers that do not exceed 7 inches.

(11X)5.5—FLOORS

(a) Floors shall have a surface that is nonslip.

(b) Floors on a given story shall be of a common level throughout or be connected by a ramp in accord with (11X)5.1(a) through (11X)5.1(f), inclusive.

EXAMPLE 1: There shall not be a difference between the level of the floor of a corridor and the level of the floor of the toilet rooms.

EXAMPLE 2: There should not be a difference between the level of the floor of a corridor and the level of a meeting room, dining room, or any other room, unless proper ramps are provided.

(11X)5.6—TOILET ROOMS

It is essential that an appropriate number[8] of toilet rooms, in accordance with the nature and use of a specific building or facility, be made accessible to, and usable by, the physically handicapped.

(a) Toilet rooms shall have space to allow traffic of individuals in wheelchairs, in accordance with (11X)3.1, (11X)3.2, and (11X)3.3.

(b) Toilet rooms shall have at least one toilet stall that—

(1) Is 3 feet wide

(2) It at least 4 feet 8 inches, perferably 5 feet, deep

(3) Has a door (where doors are used) that is 32 inches wide and swings out

(4) Has handrails on each side, 33 inches high and parallel to the floor, 1½ inches in outside diameter, with 1½ inches clearance between rail and wall, and fastened securely at ends and center

(5) Has a water closet with the seat 20 inches from the floor

NOTE: The design and mounting of the water closet is of considerable importance. A wall-mounted water closet with a narrow understructure that recedes sharply is most desirable. If a floor-mounted water closet must be used, it should not have a front that is wide and perpendicular to the floor at the front of the seat. The bowl should be shallow at the front of the seat and turn backward more than downward to allow the individual in a wheelchair to get close to the water closet with the seat of the wheelchair.

(c) Toilet rooms shall have lavatories with narrow aprons, which when mounted at standard height are usable by individuals in wheelchairs; or shall have lavatories mounted higher, when particular designs demand, so that they are usable by individuals in wheelchairs.

NOTE: It is important that drain pipes and hot-water pipes under a lavatory be covered or insulated so that a wheelchair individual without sensation will not burn himself.

(d) Some mirrors and shelves shall be provided above lavatories at a height as low as possible and no higher than 40 inches above the floor, measured from the top of the shelf and the bottom of the mirror.

[8] See (11X)2.13.

(e) Toilet rooms for men shall have wall-mounted urinals with the opening of the basin 19 inches from the floor, or shall have floor-mounted urinals that are on level with the main floor of the toilet room.

(f) Toilet rooms shall have an appropriate number[8] of towel racks, towel dispensers, and other dispensers and disposal units mounted no higher than 40 inches from the floor.

(11X)5.7—WATER FOUNTAINS

An appropriate number[8] of water fountains or other water-dispensing means shall be accessible to, and usable by, the physically disabled.

(a) Water fountains or coolers shall have upfront spouts and controls.

(b) Water fountains or coolers shall be hand-operated or hand- and foot-operated. (See also American Standard Specifications for Drinking Fountains, Z4.2-1942.)

NOTE 1: Conventional floor-mounted water coolers can be serviceable to individuals in wheelchairs if a small fountain is mounted on the side of the cooler 30 inches above the floor.

NOTE 2: Wall-mounted, hand-operated coolers of the latest design, manufactured by many companies, can serve the able-bodied and the physically disabled equally well when the cooler is mounted with the basin 36 inches from the floor.

NOTE 3: Fully recessed water fountains are not recommended.

NOTE 4: Water fountains should not be set into an alcove unless the alcove is wider than a wheelchair. (See (11X)3.1.)

(11X)5.8—PUBLIC TELEPHONES

An appropriate number[8] of public telephones should be made accessible to, and usable by, the physically disabled.

NOTE: The conventional public telephone booth is not usable by most physically disabled individuals. There are many ways in which public telephones can be made accessible and usable. It is recommended that architects and builders confer with the telephone company in the planning of the building or facility.

(a) Such telephones should be placed so that the dial and the handset can be reached by individuals in wheelchairs, in accordance with (11X)3.3.

(b) An appropriate number[8] of public telephones should be equipped for those with hearing disabilities and so identified with instructions for use.

NOTE: Such telephones can be used by everyone.

(11X)5.9—ELEVATORS

In a multiple-story building, elevators are essential to the successful functioning of physically disabled individuals. They shall conform to the following requirements:

(a) Elevators shall be accessible to, and usable by, the physically disabled on the level that they use to enter the building, and at all levels normally used by the general public.

(b) Elevators shall allow for traffic by wheelchairs, in accordance with (11X)3.1, (11X)3.2, (11X)3.3 and (11X)5.3.

(11X)5.10—CONTROLS

Switches and controls for light, heat, ventilation, windows, draperies, fire alarms, and all similar controls of frequent or essential use, shall be placed within the reach of individuals in wheelchairs. (See (11X)3.3.)

(11X)5.11—IDENTIFICATION

Appropriate identification of specific facilities within a building used by the public is particularly essential to the blind.

(a) Raised letters or numbers shall be used to identify rooms or offices.

(b) Such identification should be placed on the wall, to the right or left of the door, at a height between 4 feet 6 inches and 5 feet 6 inches, measured from the floor, and preferably at 5 feet.

(c) Doors that are not intended for normal use, and that might prove dangerous if a blind person were to exit or enter by them, should be made quickly identifiable to the touch by knurling the door handle or knob. (See Fig. 2.)

EXAMPLE: Such doors might lead to loading platforms, boiler rooms, stages, fire escapes, etc.

(11X)5.12—WARNING SIGNALS

(a) Audible warning signals shall be accompanied by simultaneous visual signals for the benefit of those with hearing disabilities.

(b) Visual signals shall be accompanied by simultaneous audible signals for the benefit of the blind.

(11X)5.13—HAZARDS

Every effort shall be exercised to obviate hazards to individuals with physical disabilities.

(a) Access panels or manholes in floors, walks, and walls can be extremely hazardous, particularly when in use, and should be avoided.

(b) When manholes or access panels are open and in use, or when an open excavation exists on a site, particularly when it is approximate to normal pedestrian traffic, barricades shall be placed on all open sides, at least 8 feet from the hazard, and warning devices shall be installed in accord with (11X)5.12(b).

(c) Low-hanging door closers that remain within the opening of a doorway when the door is open, or that protrude hazardously into regular corridors or traffic ways when the door is closed, shall be avoided.

(d) Low-hanging signs, ceiling lights, and similar objects or signs and fixtures that protrude into regular corridors or traffic ways shall be avoided. A minimum height of 7 feet, measured from the floor, is recommended.

(e) Lighting on ramps shall be in accord with Section 1124.

(f) Exit signs shall be in accord with Section 1125, except as modified by (11X)5.11 of this standard.

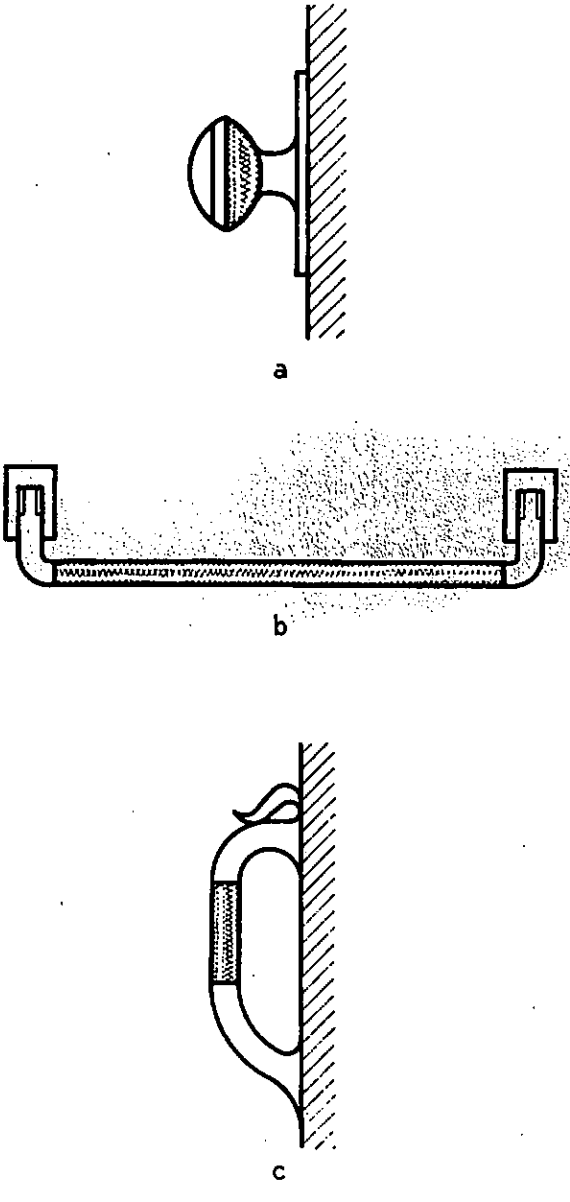

Fig. 2

KNURLED DOOR HANDLES AND KNOBS

[(11X) - 13]