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FIRESAFETY

EGRESS/ACCESS REQUIREMENTS

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FIGURES

APPENDICES

1. GENERAL

1.01 This practice outlines standards for the arrangement, method and means of egress, and access from all buildings. Fire Department access is also covered herein.

1.02 This section is being updated to reflect refinements in firesafety covered in the Network Service Protection Task Force Report (NSPTFR). Whenever this section is reissued, the reason(s) for reissue will be given in this paragraph.

1.03 The recommendations in this section are based, in general, on the National Fire Protection Association (NFPA) standards, the Model Building and Fire Codes, insurance and property risk management considerations, technical advice of Bellcore and consensus opinion of Company subject matter experts. All detailed features of source documents have not been covered herein; they should be reviewed for complete details.

1.04 Where local, state, federal or Occupational Safety and Health Act (OSHA) regulations require higher degrees of protection, the legislated criteria should be followed to the extent required. Where those provisions are in conflict with this section, a variance means should be found by seeking "equivalent protection" through alternative installation methods which will satisfy the intent of this section.

1.05 The definitions contained in Section 760-600-100, Glossary, may also be helpful in understanding this practice.

2. DEFINITIONS

2.01 **Means of Egress:** A means of egress is a continuous and unobstructed way of exit travel from any point in a building or structure to a public way and consists of three separate and distinct parts:

(a) the exit access,

(b) the exit, and

(c) the exit discharge.

A means of egress comprises the vertical and horizontal travel and shall include intervening room spaces, doorways, hallways, corridors, passage-ways, balconies, ramps, stairs, enclosures, lobbies, escalators, horizontal exits, courts, and yards.

For means of egress components, (See Figure 1.)

2.02 **Exit Access:** Exit access is that portion of a means of egress which leads to an entrance to an exit.

2.03 **Exit:** Exit is that portion of a means of egress which is separated from all other spaces of the building or structure by construction having a minimum fire resistance rating of 1 hour to provide a protected way of travel to the exit discharge.

2.04 **Exit Discharge:** Exit discharge is that portion of a means of egress between the termination of an exit and a public way.

2.05 **Horizontal Exit:** A horizontal exit is a way of passage from one building to an area of refuge in another building on approximately the same level or a way of passage through or around a fire barrier to an area of refuge on approximately the same level in the same building that affords safety from fire and smoke from the area of incidence and areas communicating therewith.

2.06 **Exit Passageway:** An exit passageway is a horizontal means of exit travel protected from fire in a manner similar to an enclosed interior exit stair. (See Figure 2.)

2.07 **Ramp:** A ramp is a walking surface in an accessible space that has a running slope greater than 1:20.

3. OCCUPANCY LOADS

3.01 For the purpose of determining the required number of exits, occupancy loads in telephone buildings shall be established on the basis of intended use with minimum requirements of one person per every 100 square feet except for mechanical equipment rooms which shall be based on one person for every 300 square feet.

3.02 Where occupancies of different classes of space are encountered within the same building, the occupant load for each class of space shall be computed independently.

3.03 In determining total occupancy load, the maximum number of persons intended to occupy an area shall be used to determine exit requirements, but in no case shall be less than the number computed in paragraphs 3.01 and 3.02.

4. STAIRWAYS

A. Location

4.01 Stairways shall be located so they are readily accessible and provide continuous uniform egress. When stairways continue to below the grade level, a barrier shall be provided so that individuals descending from the upper levels would be prevented from continuing to the basement. Adequate exit signs shall be provided, as discussed in Part 7, to indicate stairway location and the direction of egress to the street.

Exception: This provision does not apply to one story buildings with a basement.

B. Number Required

4.02 Stairways shall be provided in the ratio of one unit of stairway width for every 60 persons or fraction thereof. A unit of stairway width is 22 inches. Two units make one standard 44-inch stairway, and stairways shall not be constructed of less than two units. Fractions of a unit are not counted, except that 12 inches added to two or more full units shall be counted as one-half a unit of exit width.

Note: For the purposes of this practice, basements shall be provided with at least one exit per stairway.

C. Arrangement

4.03 The stairway shall be so arranged that the travel distance to reach them or their enclosures is not over 200 feet. When more than one exit is required from a level, at least two of the exits shall be remote from each other and so arranged as to minimize any possibility that both may be blocked by any one fire or other emergency condition. (See Figure 3.)

4.04 All stairways shall be cut off from the main part of the building. Passage of ducts through stairways should be avoided.

4.05 In buildings four stories or more in height having flat roofs, at least one of the stairways shall extend to the roof. Where an exterior stairway is used as one of the means of egress, such a stairway is the one preferably extended to the roof.

4.06 All stairways shall lead directly to the street or by way of a yard, court, fire-

resistive passage, or properly enclosed hall or lobby. Where two or more stairways discharge into one passage, the passage width shall be at least equal to three-quarters of the aggregate widths discharging into it. Doors or gates at the exits from stairways, passages, or smokeproof towers shall be arranged so that they can always be opened from the inside.

4.07 Where stairways discharge through fire-resistive exit passages (or vestibules), such passages shall not be less than 8 feet in height. These fire-resistive passages or vestibules shall have enclosure walls of equivalent fire-resistance rating to those surrounding the stairways. Where there is communication between the passage (or vestibule) and the street floor, all such openings shall be protected by listed class B fire doors. In the case of smokeproof towers, the passages shall be unpierced.

4.08 Stairways shall be at least 44 inches wide. All such widths shall be clear of obstructions except projecting handrails. Stairs shall be so arranged that persons coming down will not tend to push doors closed against others trying to enter the stairway. Doors shall not open immediately on a flight of stairs but on a landing, and during their swing shall not reduce the effective width of stairs, landings, or passages by more than 1 1/2 the required width. When open, doors shall not project more than 7 inches into an exit corridor nor more than 3 1/2 inches into the stair landing.

D. Fire Escape Stairs

4.09 Fire escape stairs, which differ from exterior stairways, generally are approved only for improving means of exit in existing buildings and should in no case constitute more than 50 percent of the required exit capacity. Fire escapes are normally regarded only as an expedient which is permitted to remedy deficiencies in the exit capacity of existing buildings when conditions do not justify the expense of providing additional interior or exterior stairways. Fire escapes shall be constructed of iron, steel, or concrete. They shall be treated on the same basis as stairways in calculation of exit capacity and are subject to the 50 percent limitation.

E. Smokeproof Stair Towers

4.10 At least one smokeproof tower, naturally or mechanically ventilated, shall be provided for buildings over 75 feet in height. In buildings where it is not feasible to provide a smokeproof tower, an interior stairway may be pressurized.

4.11 A smokeproof tower shall consist of a stairway enclosed from the highest point to the ground floor by a cutoff having a 2-hour noncombustible fire-resistance rating. Smokeproof tower enclosures shall extend from the sidewalk, court, or yard level to a roof bulkhead or penthouse which is accessible through a door to the roof. Smokeproof tower stairways shall extend only to grade, although the tower enclosure may be used below grade for a separate stairway from the first floor to the basement. Where this is done, the first floor entrance to such a basement stairway shall be separated from the entrance to the tower by a rated partition without openings. Access to the stairway shall be by way of a vestibule or way of an open exterior balcony. (See Figure 4a.)

Note: The exterior type smokeproof tower has an exterior opening from the vestibule.

4.12 **Natural Ventilation:** The vestibule shall have a minimum dimension not less than the required width of the corridor leading to it and 72 inches in direction of exit travel. The vestibule shall have a minimum of 16 square feet of opening in a wall facing an exterior court, yard or public way at least 20 feet in width. (See Figure 4a.)

4.13 **Mechanical Ventilation:** Ventilation for smokeproof towers shall conform to the following:

(a) The vestibule shall be provided with not less than one air change per minute and the exhaust shall be 150 percent of the supply. Supply air shall enter and exhaust air shall discharge from the vestibule through separate tightly constructed ducts used only for that purpose. Supply air shall enter the vestibule within 6 inches of the floor level. The top of the exhaust register shall be located at the top of the smoke trap but no more than 6 inches down from the top of the trap and shall be entirely within the smoke trap area. Doors, when in the open position, shall not obstruct duct openings. Duct openings may be provided with controlling dampers, if needed, to meet the design requirements but are not otherwise required.

Note: For buildings where such air changes would result in excessively large duct and blower requirements, a specially engineered system shall provide 2500 CFM exhaust from a vestibule when in emergency operation and shall be sized to handle three vestibules simultaneously. A smoke detector installed in each vestibule shall, upon activation, open the supply and exhaust dampers in that affected vestibule.

(b) The vestibule ceiling shall be at least 20 inches higher than the door opening into the vestibule to serve as a smoke and heat trap and to provide an upward moving air column.

(c) The stair shaft shall be provided with mechanical supply and exhaust air. There shall be a minimum of 2500 CFM discharge at the top of the shaft. The supply shall be sufficient to provide a minimum of 0.05-inch of water column with respect to atmospheric pressure with all doors closed and a minimum of 0.10-inch water column difference between the air shaft and vestibule.

(d) Vestibule and stair shaft mechanical ventilation shall be inactive or may operate at reduced levels for normal operation providing that, upon operation or failure of the early warning fire detection system, the mechanical equipment shall operate at the levels specified in (a) and (c). Manually operated switches should also be provided to arrange for full ventilation in the vestibules and stair shafts.

(e) Mechanical ventilation equipment shall be provided with an emergency power supply.

4.14 **Stair Pressurization:** When it is not feasible to construct smokeproof tower, such as in an existing building, a system of pressurization for fire emergency should be provided. The pressurization system should be arranged to provide not more than 0.25-inch water-column pressure between the stair shaft and any openings in the stair shaft. The system should operate upon activation of any early warning fire detector in the building and shall have emergency power backup. (See Section 760-610-400, Standby Engines.) Manually operated switches should be provided to arrange for operation of the pressurization system in the stairway enclosures.

5. EXITS

A. Number Required

5.01 Not less than two exits shall be accessible from every part of each floor, including below grade levels. An exception may apply to single story buildings having an occupancy load of less than 100 persons, with direct exit to the street or to an outside area at ground level with a total travel distance to this exit being 100 feet or less from any point in the building.

B. Horizontal Exits

5.02 A horizontal exit is a passageway from one building to an area of refuge in another building on approximately the same level, or a passageway through or around a wall or partition to an area of refuge on approximately the same level in the same building, which affords safety from fire or smoke from the area of incidence and areas communicating therewith. No more than 50 percent of the required exits, as dictated by such factors as occupancy load and height of structure, may be of the horizontal type (i.e., no less than 50 percent of the required exits may be used for purposes other than direct exit to the outside of the building). One unit of exit width shall be provided for each 100 persons of occupancy. A single unit of exit width is 22 inches; however, where one exit door suffices, its minimum width must be at least 32 inches.

C. Distance to Exits

5.03 The maximum travel distance to any exit door, horizontal exit, exit passageway, or enclosed stairway in any telephone building not equipped with an automatic sprinkler system, shall not exceed 200 feet. When automatic sprinkler protection is provided for the entire building, this distance may be Increased to 300 feet. In the case of open areas, distance to exits is measured from the most remote point subject to occupancy. In the case of individual rooms subject to occupancy by not more than six persons, distance to exits is 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. No corridor/hallway shall have any dead end extending more than 20 feet beyond the point where exits are accessible in different directions.

6. DOORS

6.01 Only self-closing, side-hinged swinging doors shall be used in vertical and horizontal exits, and they shall open in the direction of exit travel.

6.02 Refer to Section 760-630-400, Compartmentation, for classification and application of fire-rated doors as applied to this practice.

6.03 **Hardware:** Considerations for door hardware are as follows:

(a) Hardware furnished with listed fire doors shall not be substituted, and latches shall not be removed from use or made inoperable. Latches provide a positive means of holding such doors in a closed position in the event of pressure differentials between the stairways and other areas.

(b) A latch or other fastening device on an exit door shall be provided with a knob, handle, panic bar, or other one-hand operation type device; the method of operation shall be obvious even in darkness. This requirement may be satisfied by the use of conventional types of hardware whereby the door is released by the turning of a knob or handle or pushing against a panic bar.

(c) Fusible hold open links shall not be used on exit doors.

(d) Where special conditions occur which require a fire door be held open, it shall be arranged to close automatically upon activation of a smoke detector. (See Section 760-650-100, Fire Detection Systems.)

6.04 **Revolving Doors:** Considerations for revolving doors are as follows:

(a) These doors may be considered as an exit only from street-floor elevator lobbies where no stairways or doors from other parts of the building discharge through the lobby, and the lobby has no other occupancy other than a means of travel between elevators and the street.

(b) Rotation speed should be kept to a maximum of 12 rpm for safe egress.

(c) At least one conforming exit door shall be located adjacent to each revolving door.

6.05 Power doors may be used as an exit; however, manual override must be provided.

7. EXIT SIGNS

7.01 Exit signs shall be provided in all occupancies whenever the main means of exit is not immediately visible to the occupants or where the occupant load is 50 or more.

7.02 All exit doors and passageways shall be marked by readily visible signs reading "EXIT". Access to exits shall be marked in all cases where the exit or way to reach the exit is not immediately visible to the occupants. These signs should read "EXIT" with an arrow indicating the direction.

7.03 Any door, passage, or stairway which is not an exit or a way of exit access, but which could be mistaken for an exit, shall be marked "NOT AN EXIT" or by a sign indicating its actual character.

7.04 Exit signs and access exits shall have the word "EXIT" in plainly legible letters.

7.05 Except where otherwise required by law or ordinance, exit signs should have red letters on a white field. Every exit sign shall be suitably illuminated by a reliable light source (ac power plant or battery supply) giving a value of not less than 5-foot candles on the illuminated surface. Such illumination shall be continuous as required for exit ways.

Note: Self-illuminated type exit signs may be considered where their use is permitted by local codes.

8. MEANS OF EGRESS LIGHTING

8.01 All stairways, exists and associated passageways shall be properly illuminated to a minimum of 1-foot candle at the floor level to facilitate egress. Such illumination shall be maintained during the time that occupancy conditions require that the exit ways be open or available.

8.02 The lighting source should be arranged to provide continued illumination of all exit ways in case of emergency. This would be in accordance with the general procedure outlined in Section 760-230-130, Lighting in Equipment Buildings, where the source of current during the emergency is from the central office standby ac power plant or a battery supply.

8.03 In addition to having an emergency light outlet near the exit signs, a light shall be provided in interior stairways or smokeproof towers at each story, and in the case of exterior stairways or fire escapes, over each exit door on the outside of the building.

9. EMERGENCY USE OF ELEVATORS

9.01 A sign shall be posted or painted above each call button on every floor. The sign shall read "IN CASE OF FIRE, USE STAIRS".

9.02 Elevators located in mechanically pressurized vestibules can be used by firefighters for rescue and suppression operations.

9.03 All automatic (non-designated attendant) operation elevators having a travel of 25 feet (7.62m) or more above or below the level of Fire Department access must provide recall operation through the use of smoke detection in elevator lobbies and elevator mechanical equipment rooms. See Appendix 1 to this Section for a detailed discussion of emergency operation.

10. EXIT RAMPS

10.01 Ramps are used where floor-level transitions require less than three risers. They help avoid the situations where it is difficult to see abrupt elevation changes. For handicapped occupants, the ramp width should be at least 36 inches for traffic in one direction and 44 inches for two-directional traffic. A 1:10 slope is suggested. To accommodate wheelchairs, ramps should have straight, level-bottom platforms to provide sufficient stopping distance and should be finished in a nonslip surface. Handrails should be provided on both sides of the ramp.

11. ESCALATOR FIRE PROTECTION

11.01 Floor openings to accommodate escalators can be protected by the use of horizontally rolling shutters. These shutters can be used to prevent the spread of smoke and fire between floors through escalator openings. When a fire is detected, the shutters should close automatically and the escalators should stop. When this occurs, the building occupants can only leave the fire floor by stairway exits. To avoid injury to persons in the openings, the shutters should close at a slow rate.

12. FIRE DEPARTMENT ACCESS

12.01 Completely enclosed buildings, without exterior openings in the enclosure walls or without ready access for the purpose of fighting fire, shall be provided with access panels as required herein and by local codes.

12.02 Buildings not over 75 feet high shall be provided with access panels in the exterior

walls to accommodate Fire Department access as determined by local codes.

12.03 Buildings over 75 feet high shall be provided with smokeproof stair towers. (See paragraph 4.10.)

12.04 The minimum recommended aisle widths for adequate means of egress and for fire fighting access in new telephone equipment installations are:

(a) Main Cross Aisles: 4 feet, 4 inches minimum between frame uprights (3 feet, 8 inches clear with two 4-inch end guards on frame uprights).

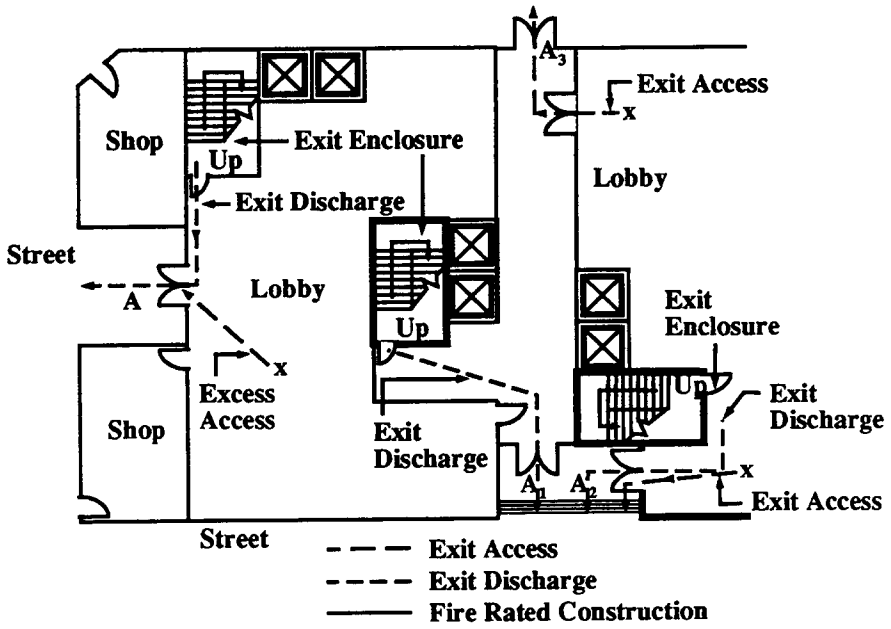
(b) End Aisles (Aisles Perpendicular to Equipment Lineups): 3-feet minimum for continuous walls (2 feet, 6 inches at columns or projections).

(c) Perimeter Aisles (Aisles Parallel to Equipment Lineups and Required for Fire Fighting Access): 3-feet minimum for continuous wall (2 feet, 6 inches at columns or projections).

(d) Equipment Lineup Length: 50-foot maximum between cross aisles.

Note: The specific type of equipment to be installed may require some deviation from these recommendations. Where such deviations will be required, the building code of the authority having jurisdiction should be reviewed to assure compliance in the area of means of egress and fire fighting access equipment.

MEANS OF EGRESS COMPONENTS



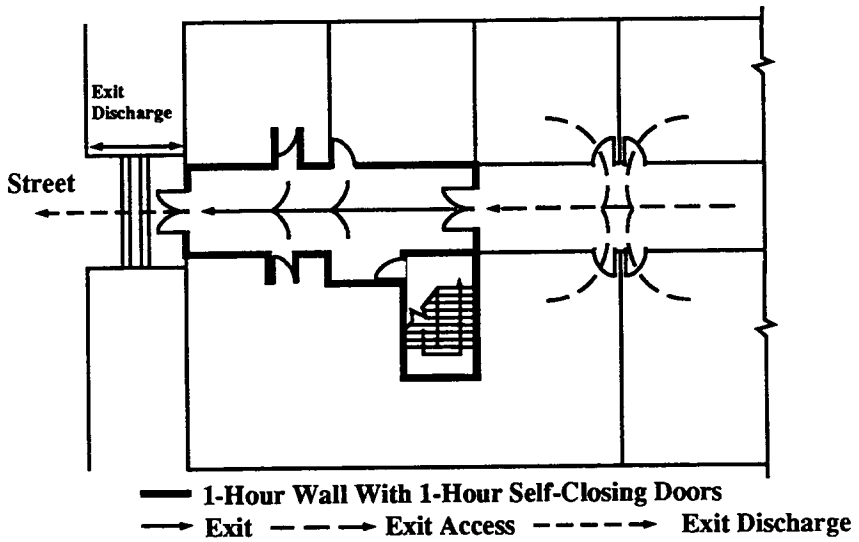
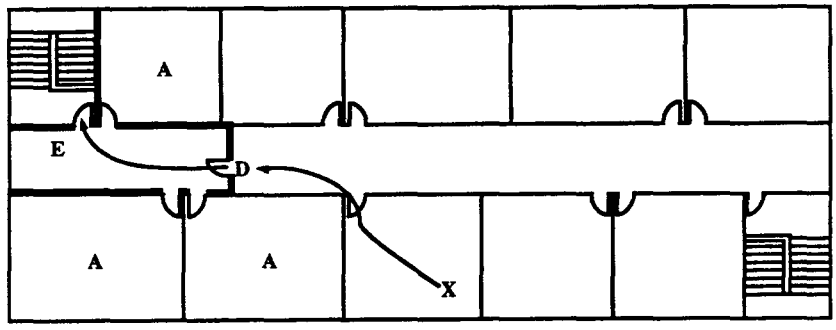
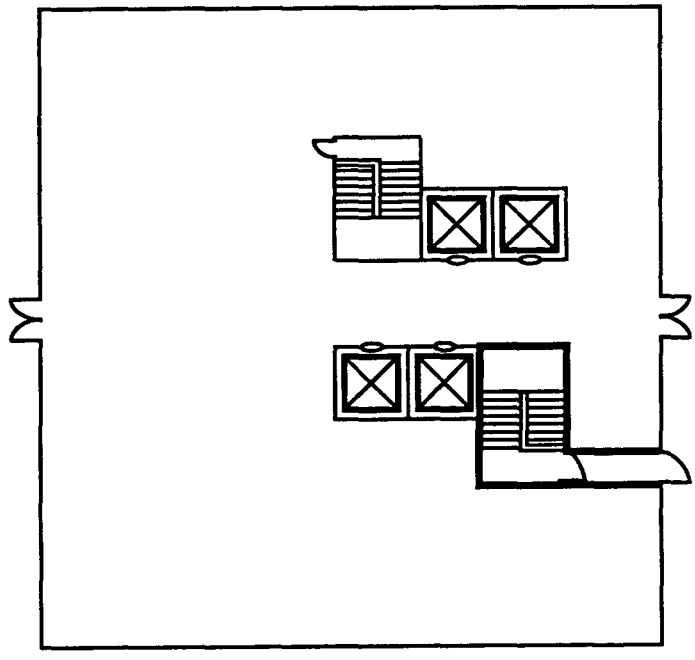


Fig. 1 – Means of Egress Components

EXIT PASSAGEWAY



Exit Passageway Used to Eliminate Excessive Travel Distance
X ⟶ E > Permitted Travel Distance
X ⟶ D ≤ Permitted Travel Distance



Exit Passageway To Connect Exit Stair To Exit Discharge

Fig. 3 – Exit Passageway

ARRANGEMENT OF EXITS

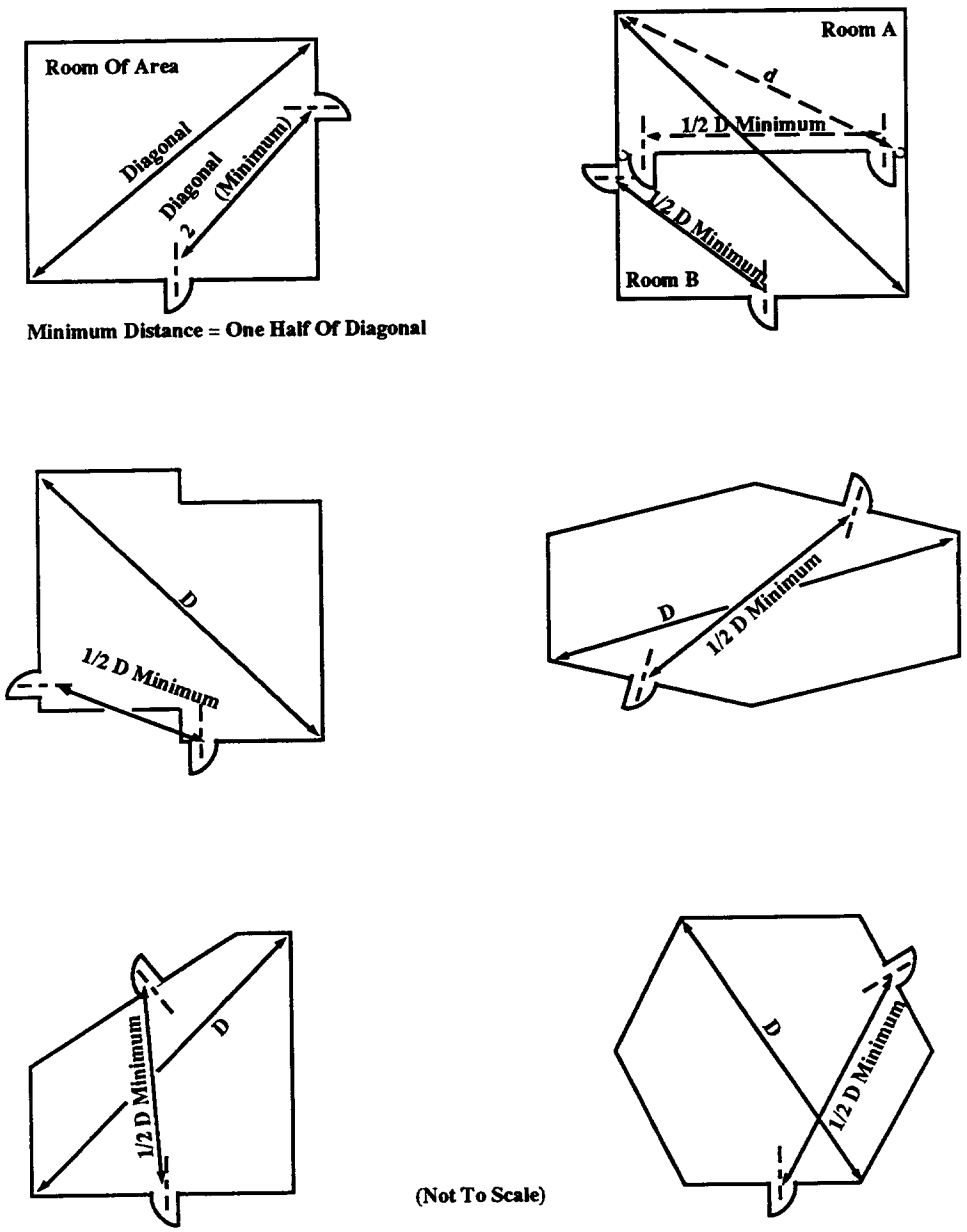
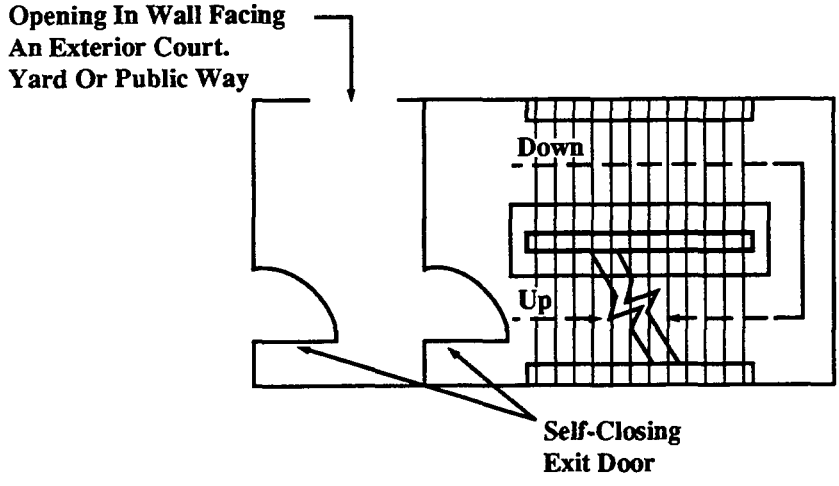
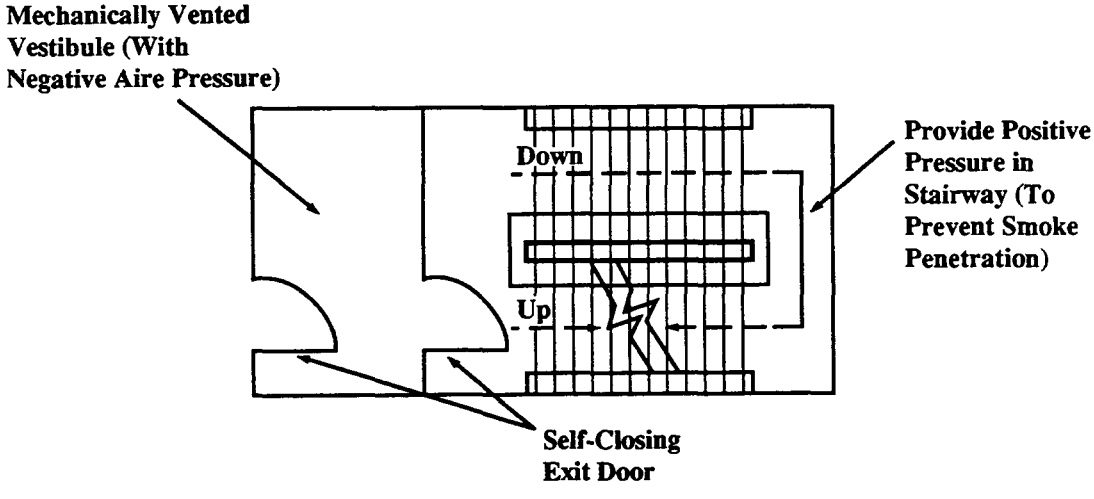


Fig. 3 — Arrangement of Exits

INTERIOR SMOKEPROOF TOWER
(Typical)



(a) Natural Ventilation



(b) Mechanical Ventilation

Fig. 4 – Interior Smokeproof Tower (Typical)