8.1 EXIT LIGHTING AND EXIT SIGN

8.1.1 Exit lighting

a. Exits of all buildings, except for PG I, shall be provided with artificial lighting facilities to the satisfaction of the requirements under this Code.

b. The minimum illuminance to be provided for all exits and the spacing for luminaires shall be in accordance with the requirements in *SS 563*.

c. The delay between the failure of the electrical supply to normal lighting and the energisation of the exit lighting shall not exceed 1 sec.

8.1.2 Emergency lighting for corridors and lobbies

a. Emergency lighting shall be provided in all corridors and lobbies of all buildings except PG I.

b. The minimum level of illuminance, the spacing of luminaires and the maximum delay for emergency lighting required in this clause shall be the same as that for the exit lighting.

8.1.3 Emergency lighting for occupied areas

a. For all buildings except PG I or II, emergency lighting shall be provided in the occupied areas following the requirements below:

(1) along paths leading to corridors, lobbies and exits in all occupied areas where the direct distance from the entry point of the corridor, lobby or exit to the furthest point in the area concerned exceeds 13m; or

(2) over the whole of such area if there are no explicit paths leading to corridors, lobbies and exits.

b. The provision of emergency lighting is exempted for:

(1) open-to-sky roof terrace/ garden; and

(2) open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).

c. Notwithstanding the requirements in *Cl.8.1.3a*. above, emergency lighting shall be provided in the following locations:

(1) Lift cars as stipulated in this Code;

(2) Fire Command Centres;

(3) Generator rooms;

(4) Basement and aboveground multi-storey car parks;

(5) Fire pump rooms; and

(6) Areas of refuge within the same building.

d. The minimum level of illuminance shall comply with the requirements in *SS 563*.

e. The delay between the failure of the electrical supply to normal lighting and the energisation of the emergency lighting for occupied areas shall not exceed 15 secs.

8.1.4 Emergency lighting for firefighting facilities

a. Fire alarm panels, fire alarm call points and firefighting equipment shall be adequately illuminated at all times so that they can be readily located.

b. The minimum level of illuminance shall comply with the requirements in *SS 563*.

c. The delay between the failure of the electrical supply to normal lighting and the energisation of the emergency lighting for firefighting facilities shall not exceed 15 secs.

8.1.5 Secondary source of power supply

a. The delay for energisation of the exit and emergency lighting systems between normal supply and the secondary source shall be as stipulated in the relevant clauses.

b. Duration of the secondary source of power supply shall comply with the requirements in *SS 563*.

c. Location, arrangement and control, installation of electrical wiring of the secondary source of supply, be it in the form of battery, standby generator, inverter or other accepted equipment, shall comply with the requirements in *SS 563*.

8.1.6 Luminaire

All exit and emergency luminaires required by this Code shall be of approved type as specified in *SS 563*.

8.1.7 Exit and exit directional signs

a. Exit sign

(1) The entrance to every exit on every floor shall be clearly indicated by an exit sign placed over the exit door. Such signs shall be placed so as to be clearly visible at all times.

(2) Exit sign shall be provided over all the exit access doors for rooms with more than one door. (See *Diagram 8.1.7a.(2)*)

(3) Exit sign shall be provided over final discharge door within exit enclosure such as exit staircase and internal exit passageway having other exit/ exit access door opening into the exit enclosure at the discharge floor (see *Diagram 8.1.7a.(3*)).

(4) Exemption

Exit sign is not required under the following situations:

(a) PG I and II buildings

(b) Room provided with emergency lighting

When a room is provided with only one door (see *Diagram 8.1.7a.(4)(b)*.

(c) Room without emergency lighting

(i) When a room is provided with only one door and the direct distance from the furthest distance in the room to the exit access door is 7m or less (see *Diagram 8.1.7a.(4)(c)(i) – 1 & 2*); or

(ii) When the furthest point in the room to the exit access door is 13m or less and wall of the room comprises not less than 50% clear glazing facing (see *Diagram 8.1.7a.(4)(c)(ii)*):

- an internal corridor covered by emergency lighting,
- an external corridor, or
- the external of the building.

(d) Open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).

(e) When a room or internal space is fully open towards an external corridor or the external of a building.

(f) Exit enclosure such as exit staircase and internal exit passageway not provided with final discharge door (see *Diagram 8.1.7a.(4)(f)*).

b. Directional signs

(1) In long corridors, in open floor areas, and in all situations where the location of the exits may not be readily visible, directional signs shall be provided to serve as guides from all portions of the corridors or floors. (See *Diagram 8.1.7b.(1)*)

(2) In rooms where the line of sight to the exit access door is obstructed, directional sign shall be provided.

(3) Exemption

Directional sign is not required under the following situations:

(a) PG I and II buildings.

(b) Open-to-sky roof terrace/ garden.

(c) Open-sided single storey building, with floor area not exceeding 200m^2 and openings that constitute at least 80% of the perimeter wall area (measured along the roof eaves).

c. Low level signs

Additional low level or floor-mounted exit and exit directional signs shall be provided in hotel accommodation floors including boarding houses.

d. Signs within exit staircase

(1) Where the SCDF has allowed under *Cl.2.3.5d.* for upper storey staircase to be continuous with that serving the basement, appropriate signage, including pictorials, shall be placed at strategic location inside the staircase to direct occupants out of the building in times of emergency.

(2) Where the direction of travel to exit discharge is upward, the staircase signage required under *Cl.2.3.1b.* shall comply with *SS 508*.

e. Electrically-powered exit and directional signs

The legends, dimensions, design and installation of electrically-powered exit and directional signs shall comply with *SS 563*. Either graphic or text format can be used for the design of the signage.

f. Self-luminous sign

The use of self-luminous exit and directional signs powered by radioactive material are permitted in buildings, provided the signs comply with *UL 924*, *SS 563* and *SS 508 (Part 1, 2, 3 & 5)*. Either graphic or text format can be used for the design of the signage. In addition, *SS 563 Part 1* shall be complied with for determination of the viewing distance with distance factor (Z) fixed at 50.

8.1.8 Photoluminescent marking

a. In all buildings, except PG I & II, photoluminescent marking/ tape to guide occupants along evacuation routes to appropriate exit shall be provided:

(1) along internal walls and/ or floors of the exit staircase, smoke-free lobby and fire lift lobby;

(2) on the doors of smoke-free lobby, fire lift lobby and exit staircase; and

(3) along corridor with exit directional signs.

b. The width of photoluminescent marking or tape shall be at least 50mm and be placed at low level. The bottom of the low level sign shall not be less than 150mm or more than 400mm above the floor level.

c. Omission of photoluminescent marking/ tape is permitted on the following conditions:

(1) the emergency power supply of the exit lightings, exit signs and directional signs in the above locations shall be self-contained battery pack (single point emergency lighting system) in compliance with *SS 563* or central battery supply backed up by stand-by generator;

(2) there shall be at least 2 emergency luminaires in the smoke-free lobby, fire lift lobby and corridor with exit directional signs, such that no part of such spaces shall be left in total darkness should there be failure of any one of the emergency luminaires; and

(3) there shall be at least one emergency luminaire at every exit staircase landing.

8.2 EMERGENCY VOICE COMMUNICATION SYSTEM AND FIRE COMMAND CENTRE (FCC)

8.2.1 One-way emergency voice communication system

One-way emergency voice communication system and a FCC shall be provided as follows:

a. For all large buildings under PG III (not applicable to primary school, secondary school and junior colleges), IV, V, VI, VII and VIII with AFA greater than 5000m² or having a total occupant load exceeding 1000 persons. The calculation of AFA and occupant load shall exclude the aboveground or underground car park; or

b. For all buildings belonging to PG III, IV, V, VI, VII, and VIII of more than 24m in habitable height; or

c. For building of mixed commercial-cum-residential usage:

(1) where the commercial component of the building occupies only the lower portion of the building and is separated from the residential occupancies, the habitable height of the commercial component of the building exceeds 24m, or

(2) where a commercial component of the building is located above any residential occupancies, the habitable height of the building exceeds 24m.

d. Exception

For hotel or healthcare buildings of less than 24m in habitable height, AFA not greater than 5000m² and total occupant load not exceeding 1000 persons, an ordinary public address system shall be provided. However, FCC is not required. Loudspeakers for the ordinary public address system shall be provided in every lift lobby, staircase enclosure and other strategic positions within audible distance of all parts of all storeys throughout the building.

8.2.2 Two-way emergency voice communication system

a. Two-way emergency voice communication system shall be provided for

(1) buildings, which are required to be provided with one-way emergency voice communication system under *Cl.8.2.1 a.*, *b.* or *c.*; and

(2) all multi-level basements of buildings under PG II to VIII, except the following:

(a) Single-level basement, irrespective of its usage of building under PG II to VIII and basements of building of PG I.

(b) Multi-level basements of building under PG II, provided the basements are used solely for car parking and not exceeding two basement storeys in depth.

b. Two-way emergency voice communication system, where required, shall provide two-way communication between the FCC and the following areas:

(1) Every fire lift lobby, including 1st storey.

(2) All firefighting-related mechanical equipment rooms. These include sprinkler pump room, wet rising main pump room, hose reel pump room, switch rooms and generator rooms.

(3) All rooms housing smoke control equipment.

(4) All lift machine rooms.

(5) Fire lift. Where the lift car is equipped with built-in intercom system that complies with *SS 546*, the two-way communication system can be exempted.

(6) Each area of refuge.

(7) Air-handling control rooms. Where AHU can be remotely monitored and controlled at the FCC, and cannot be by-passed locally, and the electrical cabling between AHU rooms and FCC are fire-rated, the two-way emergency voice communication system can be exempted.

8.2.3 Standard

Where a one-way or two-way emergency voice communication system is required by this Code, it shall comply with the requirements stipulated in *SS 546*.

8.2.4 Fire Command Centre

a. Provision

A FCC shall be provided in any building, with the exception of buildings under PG I and II (PG II building having not more than two basement storeys used solely for car parking), which requires any of the following installations:

(1) Fire lift.

(2) Emergency voice communication system.

(3) Engineered smoke control system.

b. Supporting equipment

A FCC is a room within a building dedicated to the controlling and monitoring of fire protection systems during a fire emergency. As such, equipment/services not meant for this purpose shall not be located inside the FCC with exception of the following:

(1) Lift supervisory panel.

(2) Background music system connected to one-way emergency voice communication system rack.

(3) Workstation/server rack for security card access & CCTV system for security monitoring.

(4) Workstation/server rack for car park access control system.

(5) Workstation/server rack for fire alarm's colour graphics system.

(6) Workstation/server rack for BMS/BAS monitoring and controlling other ACMV system.

(7) Walkie-talkie charging stations.

(8) UPS system with totally sealed battery capacity not exceeding 750Amp-hr.

c. Size

A FCC shall be of adequate size to house all the terminals and supervisory/ control equipment etc. of the building's fire protection/detection systems, as well as a free working space (unobstructed by door swing) of at least $6m^2$ and minimum clear width of 2m.

d. Location

(1) The FCC shall be located at the same level as the fire engine accessway or fire engine access road and its entrance shall be located in the following order of priority:

(a) The travel distance between the nearest edges of the FCC door and fire lift lobby door at the designated storey of the building shall not exceed 5m.

(b) In the case where there is no fire lift lobby, it shall be located within vicinity of the fire engine accessway or fire engine access road. The travel distance between the nearest edges of the FCC door and entrance of one of the protected stairs serving all storeys of the development shall not exceed 5m.

(c) It shall be at any other location as may be designated by the SCDF.

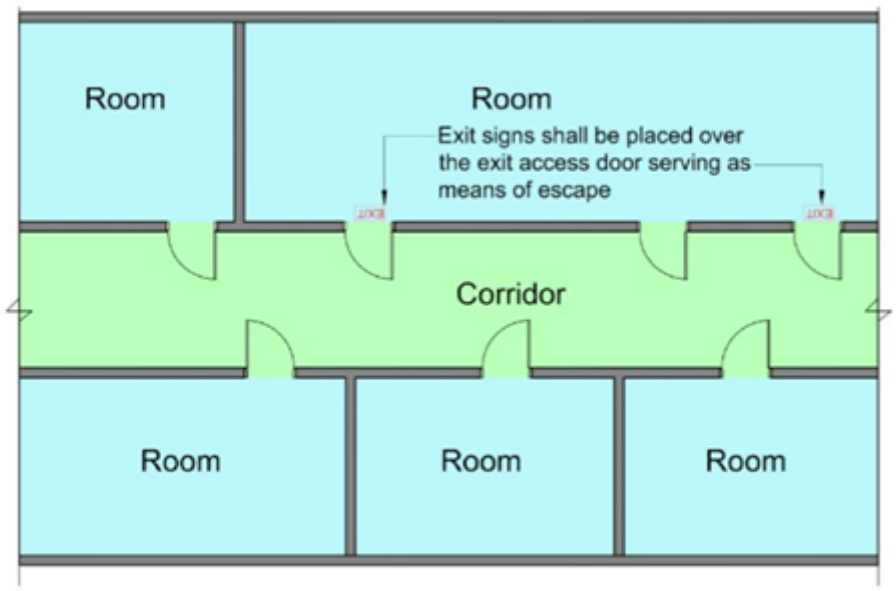
(2) In the case of a site consisting of more than one building which required FCC in accordance with *Cl.8.2.1*, there shall be more than one FCC. For such cases, the SCDF shall be consulted.

e. Construction

The construction of enclosure, facilities and lighting of a FCC shall comply with the *SS 546*.

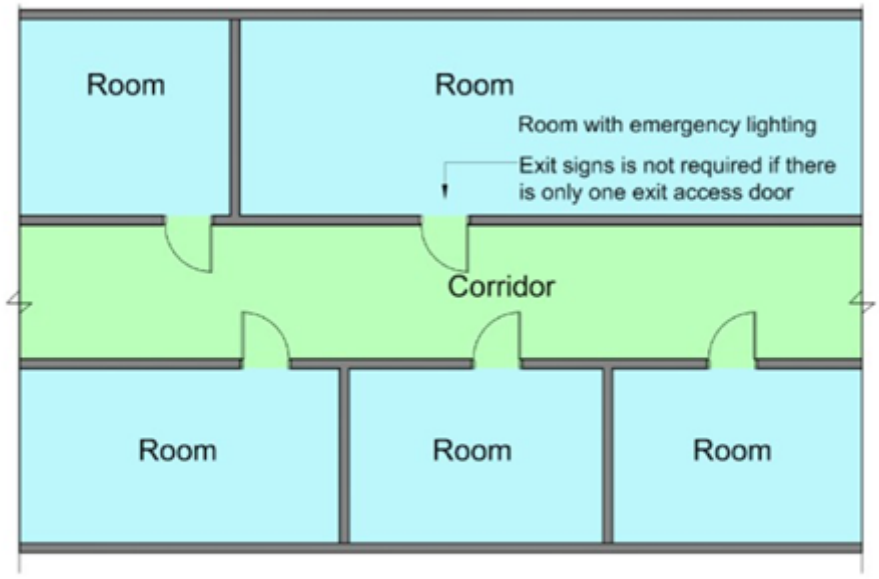
f. Air-conditioning and/ or mechanical ventilation

Air-conditioning and/ or mechanical ventilation where required for the FCC shall be provided with secondary power supply and shall have ductworks independent of any other ductwork serving other parts of the building.



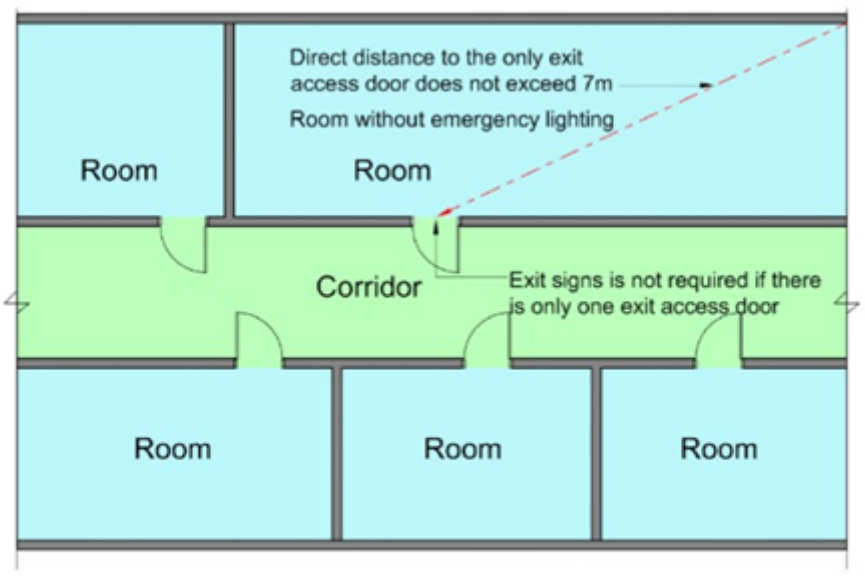
When a room is provided with more than one door, exit signs shall be provided over the exit access doors intended to be used as means of escape.

Diagram 8.1.7a.(2)



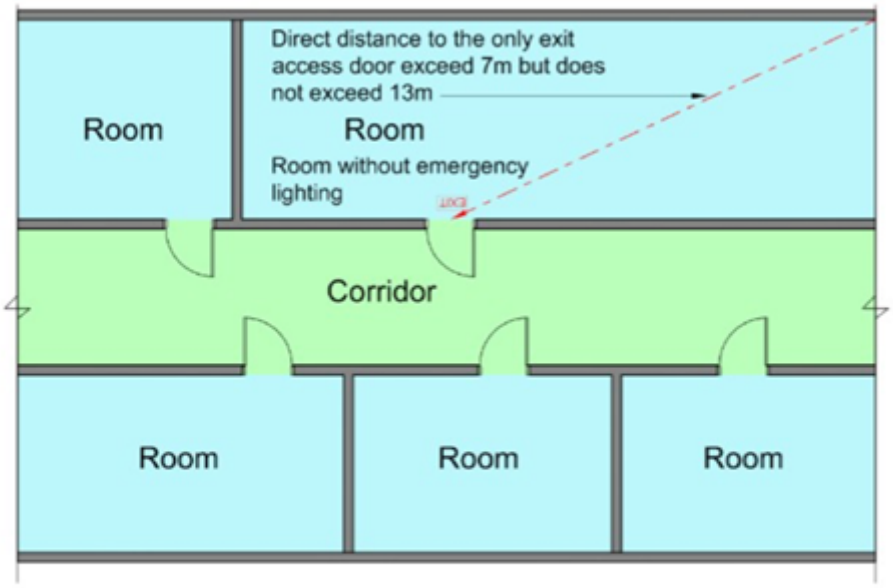
When an occupied space is provided with emergency lighting, exit sign is not required if there is only one exit access door

Diagram 8.1.7a.(4)(b)



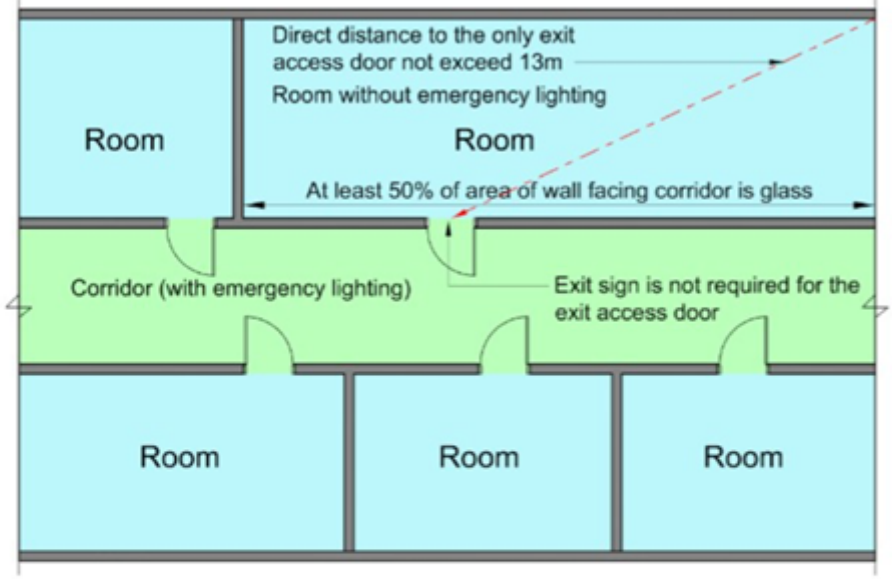
In a room without emergency lighting where the room is provided with only one door and the direct distance from the furthest distance in the room to the exit access door is 7m or less, exit sign is not required if there is only one exit access door.

Diagram 8.1.7a.(4)(c)(i) - 1



In a room without emergency lighting where the furthest point in the room to the exit access door exceeds 7m but does not exceed 13m, exit sign shall be provided over the door. Alternatively, the room can be provided with emergency lighting.

Diagram 8.1.7a.(4)(c)(i) - 2



In a room without emergency lighting where the furthest point in the room to the exit access door is 13m or less and wall of the room comprises not less than 50% clear glazing facing:

- an internal corridor covered by emergency lighting
- an external corridor, or
- the external of the building.

Exit sign is not required to be provided over the exit access door.

Diagram 8.1.7a.(4)(c)(ii)

Diagram 8.1.7a.(3)

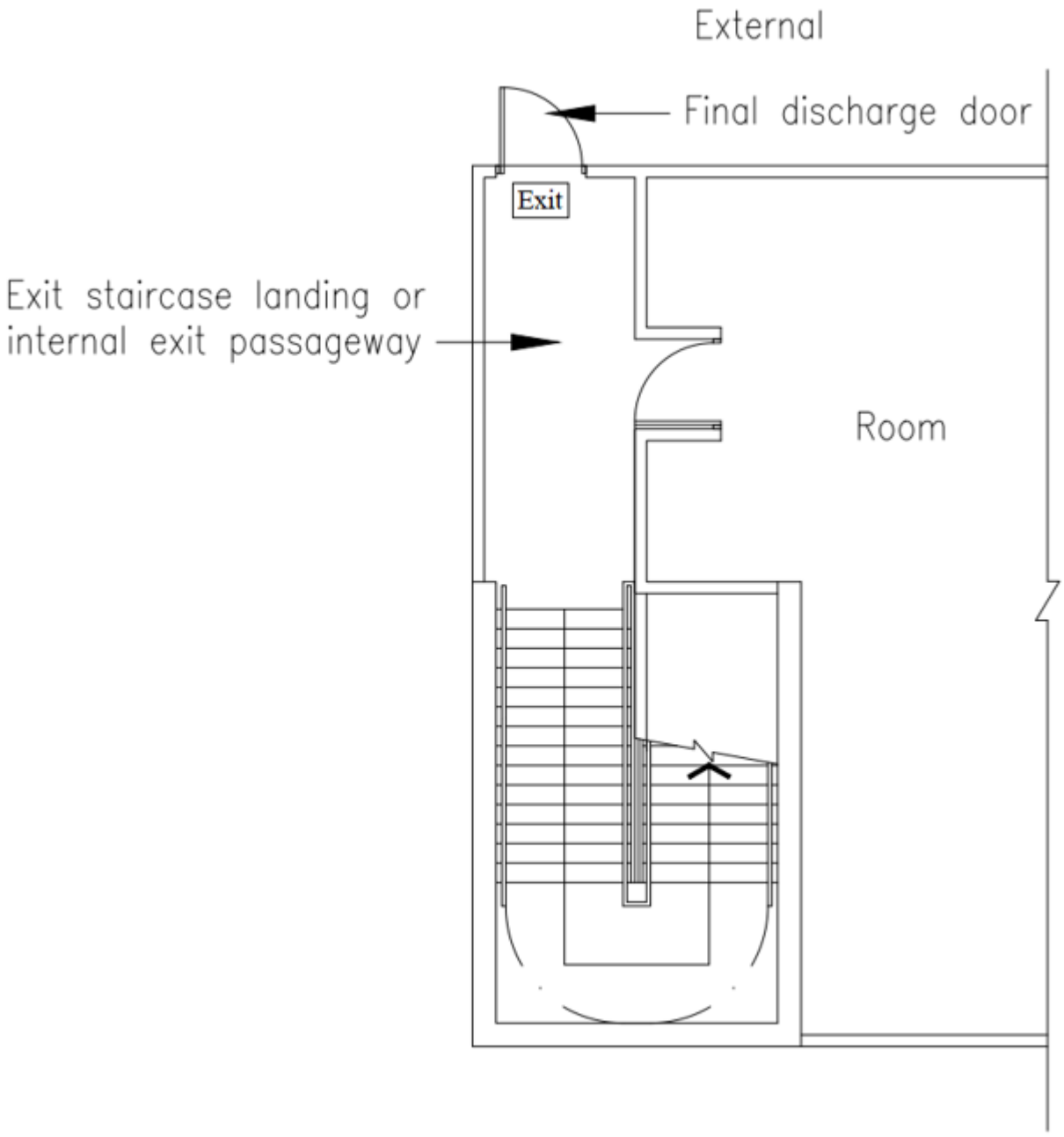


Diagram 8.1.7a.(4)(f)

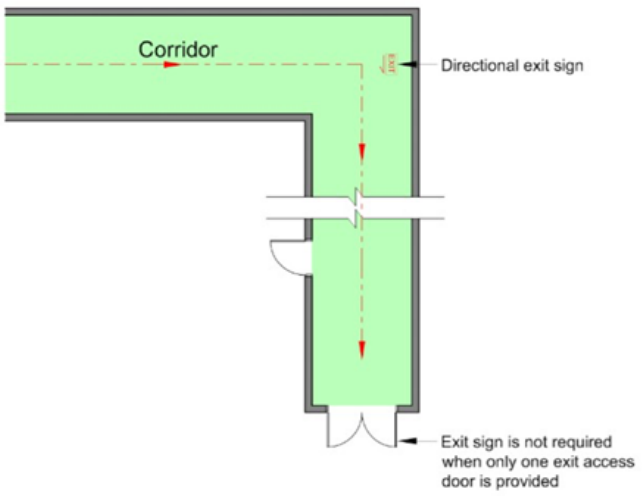


Diagram 8.1.7b.(1)