Table 3.2: Doors (Door Assembly)	
ITEMS	**REQUIREMENTS**
18. FIRE RESISTANCE RATING OF DOORS	i. Fire resistance rating of Doors, which open into exit corridors, exit access corridors and into exit stairs shall comply with **Table 3.3.a.** and **Table 3.3.b.** unless specified in individual occupancies as per **Section 5.** ii. **Door fire rating is not required where located in non-fire rated walls.**

Table 3.3.a.: Fire Resistance Rating of Doors

DOOR LOCATION	DOOR FIRE RATING	SMOKE PROOF	SELF CLOSING	LATCHES AND LOCKS
1. Exit Stair	90 Minutes	Yes	Self Closing	Latches Only
2. Exit Passageway	90 Minutes	Yes	Self Closing	Latches Only
3. Exit Corridor of 1 hour fire rating	60 Minutes	Yes	Self Closing	Latches Only
4. Exit Corridor of no fire rating	None	Not required	Not required	Latches Only
5. Service corridor of 1 hour fire rating	60 Minutes	Not required	Self Closing	Table 3.2.
7. Service corridor of no fire rating	None	Yes	Not required	Table 3.2.
8. Elevator Lobby	60 Minutes	Yes	Self Closing	Table 3.2.10.
9. Garbage room	60 Minutes	Yes	Self Closing	Latches Only

Table 3.3.b.: Fire Resistance Rating of Unit Doors

MAIN DOORS OF UNITS IN ENCLOSED EXIT CORRIDOR	DOOR FIRE RATING	SMOKE PROOF	SELF CLOSING	LATCHES AND LOCKS
1. Apartment unit main door	60 Minutes	Not required	Not required	Table 3.2.7.
2. Residential unit main door	60 Minutes	Not required	Not required	Table 3.2.7.
3. Labor accommodation unit door	60 Minutes	Not required	Not required	Table 3.2.7.
4. Staff accommodation unit door	60 Minutes	Not required	Not required	Table 3.2.7.
5. Hotel unit main door	60 Minutes	Not required	Yes	Table 3.2.7.
6. Office unit main door	-None if sprinklered -60 Minutes, if not sprinklered	Not required	Yes	Table 3.2.
7. Kitchen door in residential/ Apartment	None	Not required	Not required	Table 3.2.7.
8. Unit doors in open external corridor	None	Not required	Not required	Table 3.2.7.
9. Education class room doors	-None if sprinklered -60 Minutes, if not sprinklered	Not required	Yes	Table 3.2.

3.3. Stair

3.3.1. Stairs can be used as a component in the means of egress, whether interior or exterior to a building, serve multiple functions, allowing normal occupant movement among floors of building, providing egress during emergencies and fires and facilitating rescue and fire control operations by Fire fighters.

3.3.1. Exit Stair is that part of the means of egress which is separated from all other spaces of a building by a fixed and permanent non combustible construction as required by **Chapter 1**, providing a protected way of travel to the Exit Discharge.

3.3.2. Stair shall comply with **Table 3.1** and **Table 3.5.** However, type of Stair allowed and modifications, if provided by individual occupancies as per **Section 5**, shall override the requirements of **Table 3.4.**

Table 3.4: Stair

ITEMS	REQUIREMENTS
1. STAIR WIDTH	i. The minimum required width of an exit stair serving up to 2000 persons shall not be less than 1200 mm and shall satisfy the egress capacity. ii. The minimum required width of an exit stair serving more than 2000 persons shall not be less than 1420 mm and shall satisfy the egress capacity. iii. Stair width shall not decrease in width along the direction of egress travel. iv. The required width of a stair shall be measured from wall to the clear available width of the step. (See **Figure 3.6.a.**). The maximum projections of handrails allowed in this required width is 100 mm on each side, at a height of 865 mm—965 mm.
2. STAIR RISER HEIGHT	i. Maximum height of riser shall not exceed 180 mm. ii. Minimum height of riser shall not be less than 100 mm. iii. Riser heights shall be uniform throughout each stair flight between landings. iv. Where riser heights are adjusted to comply with acceptable stair treads, flights and arrangements in accordance with **Figure 3.13.a.,** the maximum difference of dimension allowed in a flight is 10 mm.
3. STAIR TREAD DEPTH	i. Minimum stair tread depth shall not be less than 280 mm. ii. The tread slope shall not exceed 21 mm/meter (slope of 1 in 48) iii. Tread depth shall be uniform throughout the stair. The maximum difference of dimension allowed in a flight is 10 mm.
4. MINIMUM HEADROOM	i. Head room on stairs shall not be less than 2030 mm, measured vertically above a plane, parallel to the most forward projection of the stair tread.
5. LANDINGS	i. Maximum height between landings shall not be more than 3660 mm. ii. Every stair shall have landing at the door opening and landing width shall not be less than the required stair width. iii. Maximum landing area a stair door can encroach in its swing is one half of the required landing width. iv. Landing width shall not decrease in width along the direction of egress travel. Landing width shall not be required to exceed 1220 mm in the direction of travel, provided that the stair has a straight run. v. The landing slope shall not exceed 21 mm/meter (slope of 1 in 48).

Table 3.4: Stair	
ITEMS	**REQUIREMENTS**
6. SURFACES	i. Stair treads and landings shall be free of projections or lips that could trip stair users. ii. Stair treads and landings within the same stairway shall have consistent surface traction.

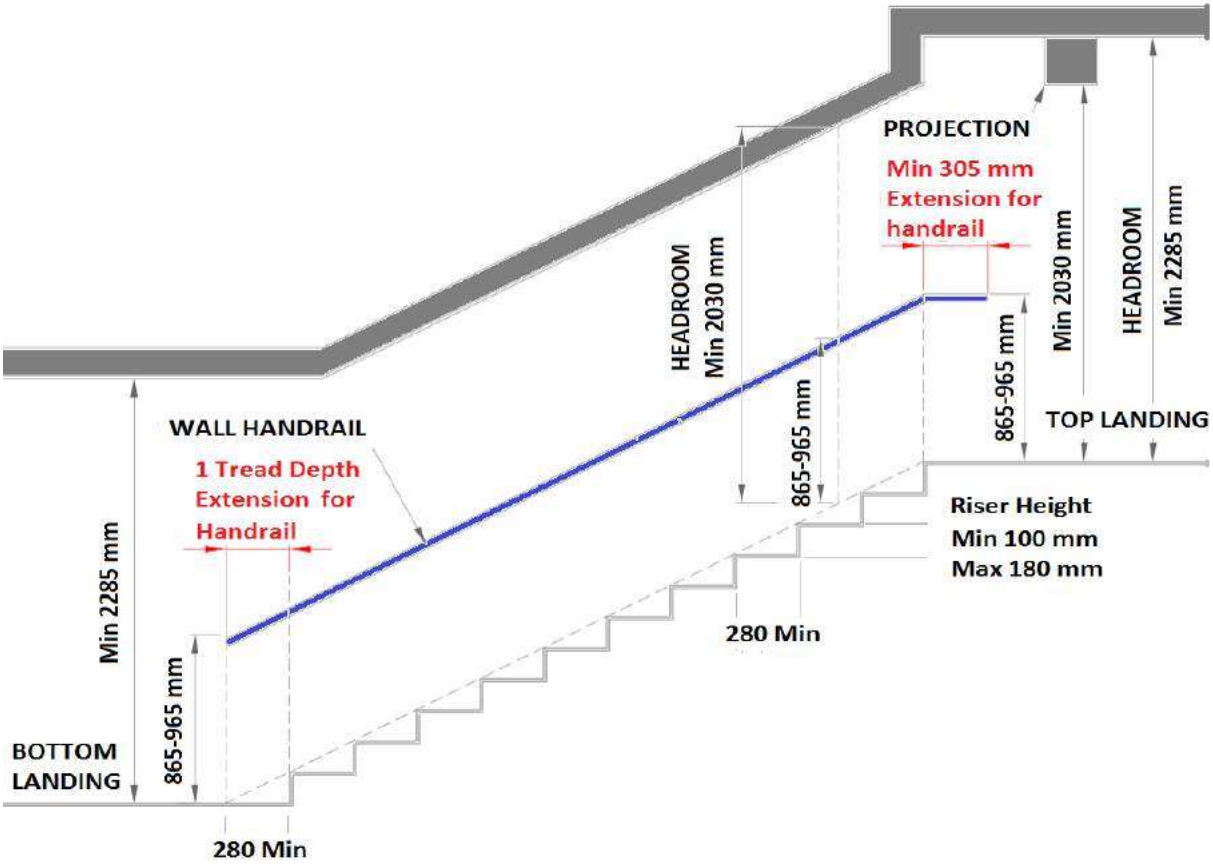
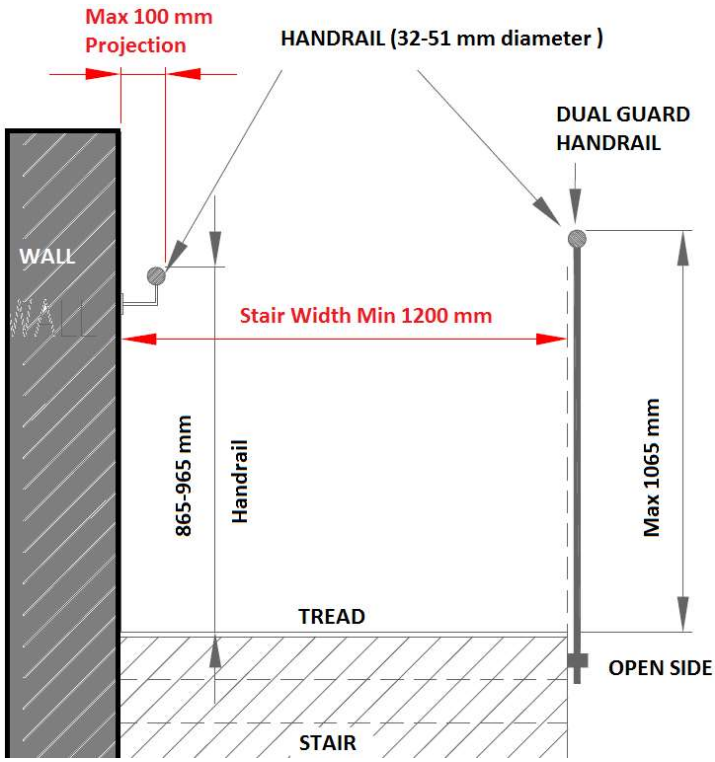


Figure 3.5.: Stair Specifications

Table 3.4: Stair	
ITEMS	**REQUIREMENTS**
6. SURFACES	i. Stair treads and landings shall be free of projections or lips that could trip stair users. ii. Stair treads and landings within the same stairway shall have consistent surface traction.



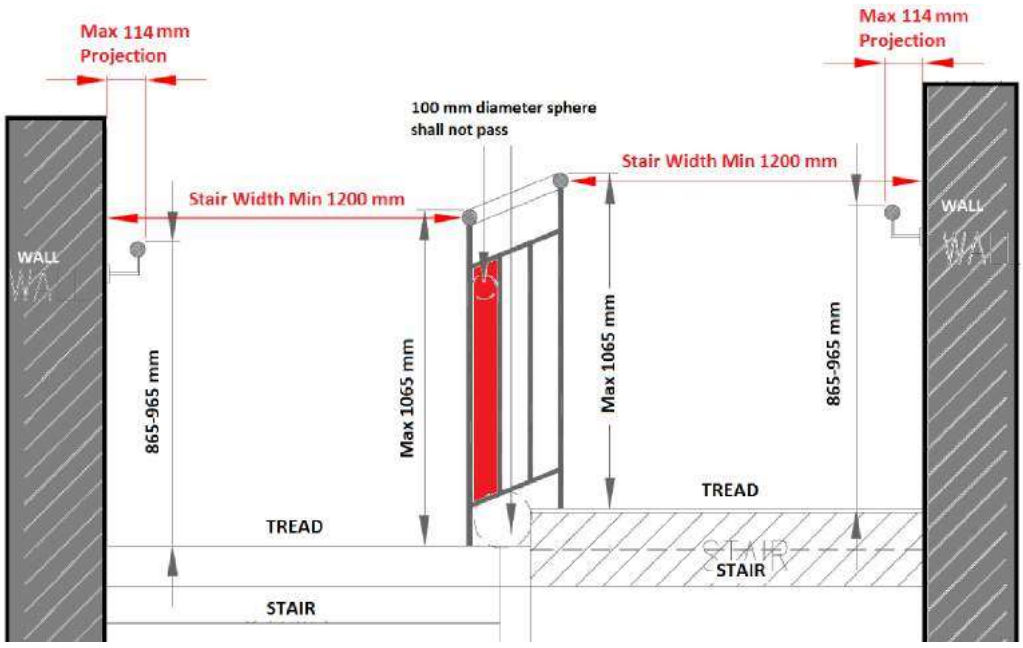
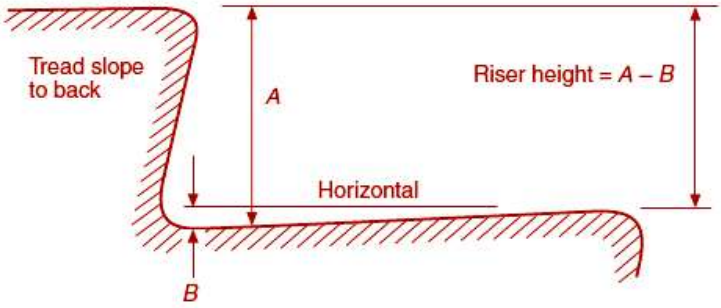
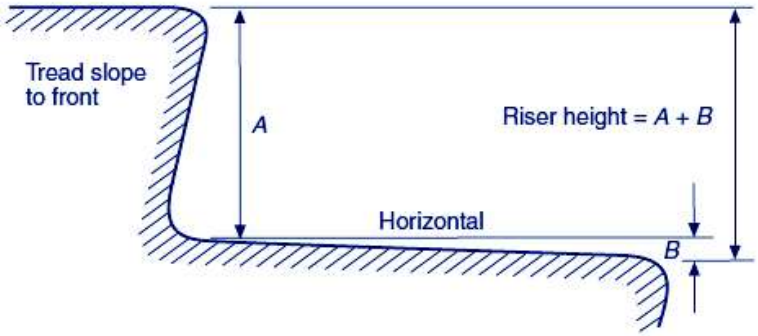


Figure 3.6.a.: Handrail projection, Stair Width Measurements





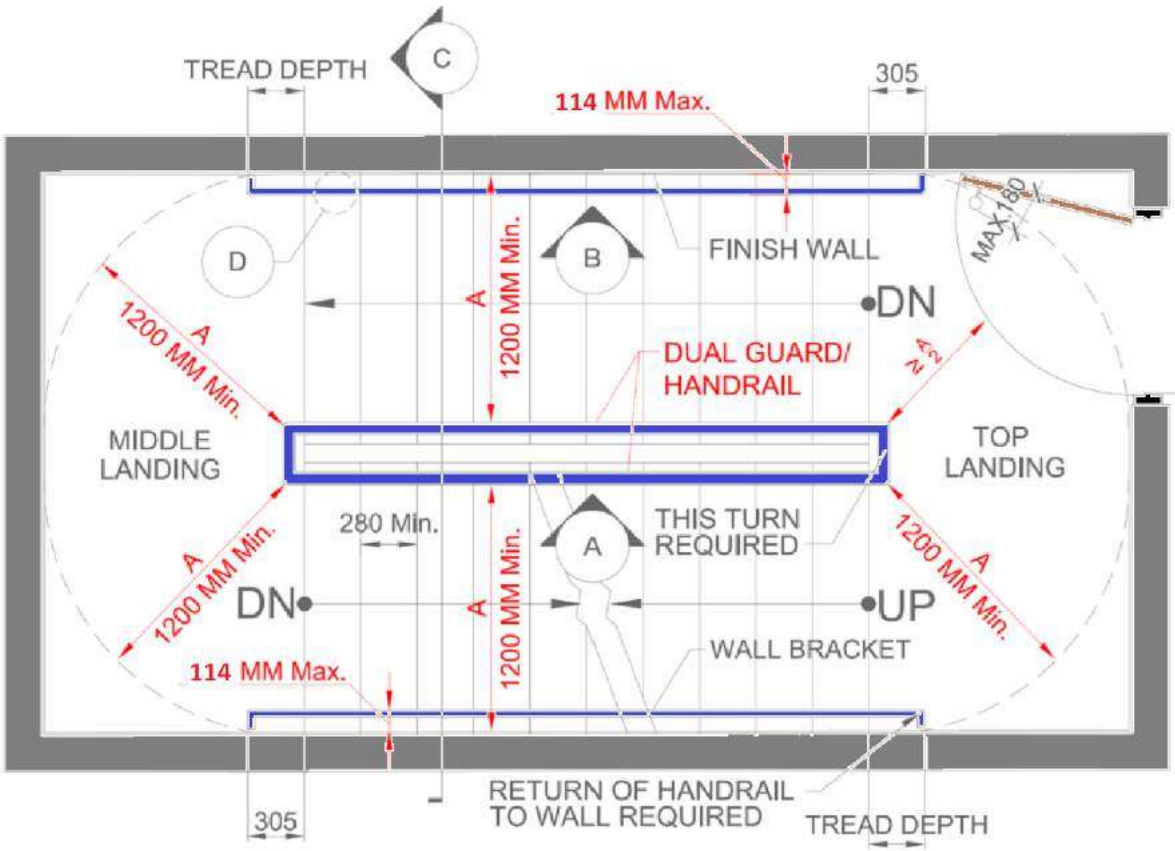


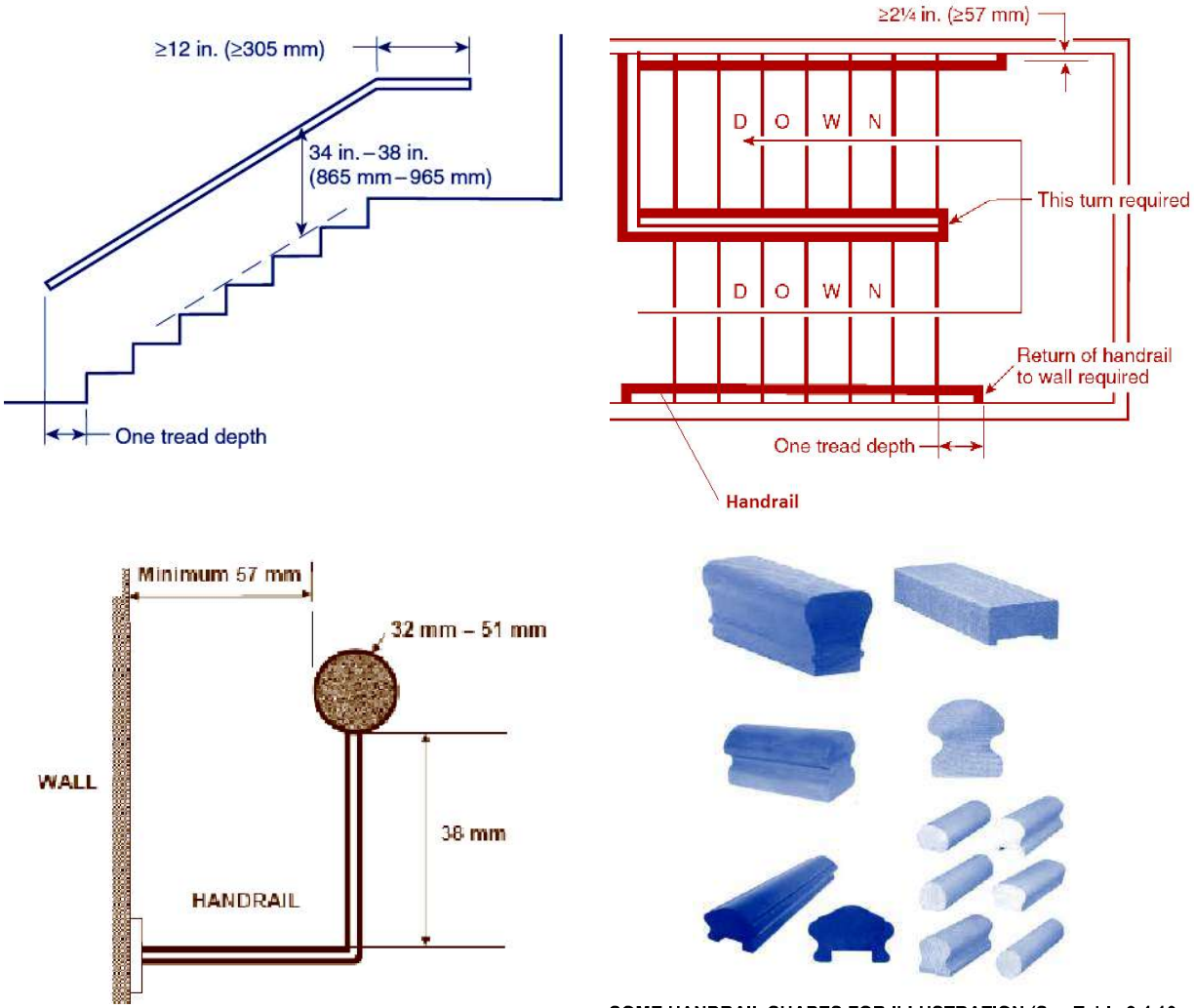
Figure 3.6.b.: Stair Risers, Stair Width, Door opening and Landing Measurements

Table 3.4: Stair

ITEMS	REQUIREMENTS
7. STAIR SEPARATION FROM REST OF THE BUILDING AREAS	i. Every stair serving as an exit in Low depth and Low rise buildings (having height up to 15 m), shall be separated from rest of the building areas by a construction of at least block-work and ensure 2 hour fire resistance rating. ii. Every stair serving as an exit in High depth, Mid rise, (having height more than 15 m), High rise buildings and superhighrise buildings shall be separated from rest of the building areas by a construction of RCC (Reinforced Concrete) and ensure 2 hour fire resistance rating. iii. Separation shall extend vertically from the lowest level of the stair to a point 3 m above the top most landing of the stairs or to the roofline. iv. Elevators shall not be in a common shaft enclosure with stairway.
8. PENETRATIONS INTO STAIR SPACE	i. Space within the stair shall not be used for any other purpose than occupant exit and evacuation. ii. Space under the stair shall not be used for any other purpose unless such space is fully isolated from the stair with 2 hour fire resistance construction and entry/exit for such spaces shall not be through the stair enclosure enveloping that space. iii. Only penetrations allowed into Stair enclosure are Fire Hose and Sprinkler Piping, Fire protection piping valves, electrical conduits serving stair enclosure and fire detection and alarm system wiring enclosed in metal conduits. iv. Fire Hose Reel and Landing valve cabinets shall not be located in the stair enclosure. v. Pressurization ducting, AC units, Fan coil units, Ventilation ducts, water piping, heater piping, drainage piping etc., shall not be located in the stair enclosure.
9. ILLUMINATION FOR STAIR	i. Exit stair shall be illuminated at all times that the building is occupied. Lighting control devices that turn lighting on and off based on occupant movement or presence shall be permitted. ii. Lighting control devices that dim the lighting levels within the exit enclosure shall not be installed unless they provide a minimum of 1 ft-candle (10.8 lux) of illumination within the exit enclosure measured at the walking surface. iii. Where stair is provided with Photoluminescent strips or marking, the lighting used to charge such Photoluminescent materials shall not be controlled by motion sensors. iv. Where stair is provided with window for illumination, such window pane shall be fixed, 2 hour fire resistance rated and non-operable.
10. HANDRAILS	i. Stairs shall have handrails on both sides. ii. Handrails on stairs shall be not less than 865 mm and not more than 965 mm, above the surface of the tread, measured vertically to the top of the rail from the leading edge of the tread. iii. The height of required handrails that form part of a guard shall be permitted to exceed 965 mm, but shall not exceed 1065 mm, measured vertically to the top of the rail from the leading edge of the tread. iv. Handrails shall be installed to provide a clearance of not less than 57 mm between the handrail and the wall to which it is fastened. v. Handrails shall be available within 760 mm of all portions of the required egress width. vi. Where intermediate handrails are provided because of the stair width exceeding 1750 mm, the minimum clear width between such handrails shall be 510 mm. along the natural path of travel.

Table 3.4: Stair

ITEMS	REQUIREMENTS
10. HANDRAILS	vii. Handrails shall continue for the full length of each flight of stair. viii. Inside handrails shall be continuous, graspable between flights at landings. ix. Inside handrails shall be continuous between flights at landings. x. Handrails shall have circular cross section with an outside diameter of not less than 32 mm and not more than 51 mm. xi. Handrail shape that is other than circular shall be with a perimeter dimension of not less than 100 mm, but not more than 160 mm, and with the largest cross-sectional dimension not more than 57 mm, provided that graspable edges are rounded so as to provide a radius of not less than 3.2 mm. xii. Handrail brackets shall not project horizontally beyond the sides of the hand-rail within 38 mm of the bottom of the handrail and provided that, for each additional 13 mm of handrail perimeter dimension greater than 100 mm, the vertical clearance dimension of 38 mm is reduced by 3.2 mm. xiii. Handrail brackets shall have edges with radius not less than 0.25 mm.

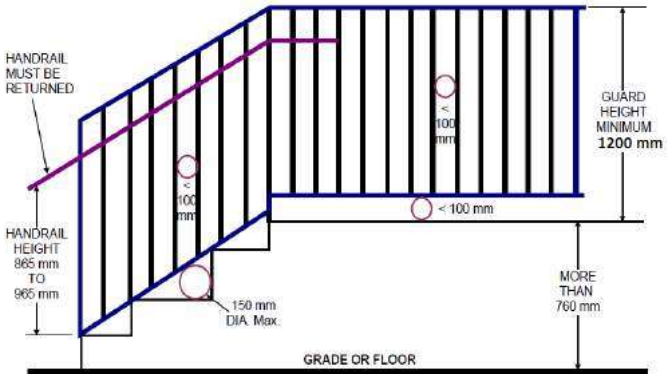


SOME HANDRAIL SHAPES FOR ILLUSTRATION (See Table 3.4.10.x.)

Figure 3.7.: Handrail Specifications

Table 3.4: Stair

ITEMS	REQUIREMENTS
11. GUARDS	i. Guards shall be provided for every elevated means of egress, open landing for stairs where elevated surface is more than 760 mm from finished ground level. ii. Such guards shall not encroach the required clear width of the stair. iii. The height of guards shall be measured vertically to the top of the guard from the surface adjacent thereto. iv. Guards shall be not less than 1200 mm high. In case of stair or ramp handrails that form part of a guard, the height of the guard can be reduced to 1065 mm. v. Open guards, other than approved existing open guards, shall have intermediate rails or an ornamental pattern up to a height of 865 mm, such that a sphere 150 mm in diameter is not able to pass through any opening. vi. The triangular openings formed by the riser, tread, and bottom element of a guardrail at the open side of a stair shall be of such size that a sphere 150 mm in diameter is not able to pass through the triangular opening. vii. See **Chapter 1, Section 2.17.** for balcony railings, balustrades and fencing.



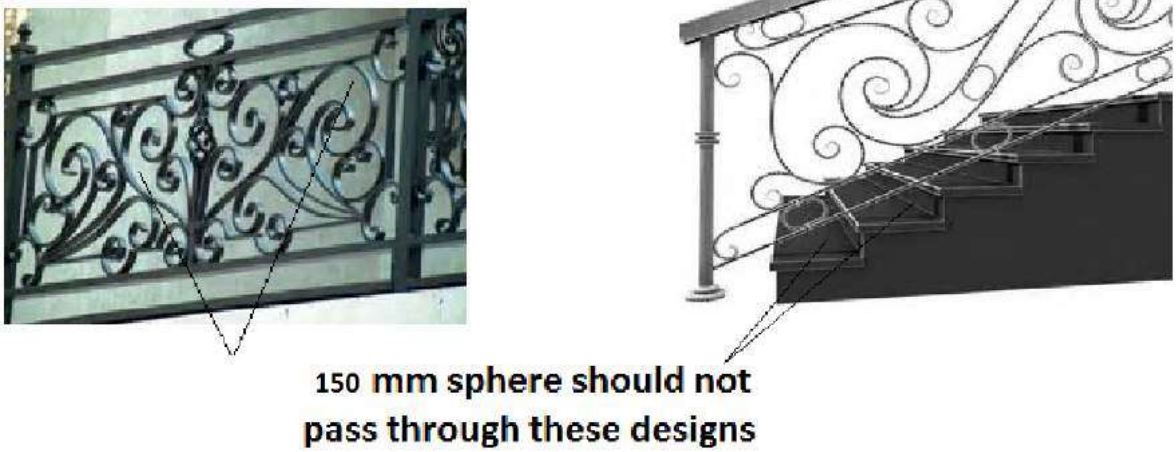


Figure 3.8.: Guard Specifications

Table 3.4: Stair

ITEMS	REQUIREMENTS
12. STAIR AND FLOOR SIGNAGE	i. Every building shall be provided with a signage, indicating the floor level, wing of the building if any, and direction of egress. ii. Signage shall be in English and Arabic. iii. Signage shall be provided inside the stair enclosure at floor landings (Not mid landings), clearly visible for stair users and shall be located a minimum of 1220 mm above the floor landing, and the top of the signage shall be located a maximum of 2135 mm above the floor landing. iv. Lettering shall be a minimum of 25 mm high. v. Signage shall not be provided on the door leaf.
13. TREAD MARKING	i. Where contrasting marking is applied to stairs, such marking shall comply with the following: a. Exit stair treads shall incorporate a marking strip that is applied as a paint/ coating or be a material that is integral with the nosing of each step. b. Surface-applied marking strips using adhesive-backed tapes shall not be used. c. The marking strip shall be installed along the horizontal leading edge of the step and shall extend the full width of the step. d. The marking strip shall have a minimum horizontal width of 25 mm and a maximum width of 51 mm. e. The marking strip shall be not more than 13 mm from the leading edge of each step and shall not overlap the leading edge of the step by more than 13 mm down the vertical face of the step.

Figure 3.9.: Stair Signage

Points to Ponder

FLOOR THE 13th !

Many of the building owners do not want to name 13th floor in their building. Many of the buyers do not buy units on 13th floor. Floor signage after 12th floor is labeled as 14th floor.

Civil Defence strongly object to this practice and recommends naming all floors appropriately in sequence, not to hamper rescue and fire fighting operations.

Table 3.4: Stair

ITEMS	REQUIREMENTS
14. OUTSIDE STAIR	i. An open outside Exit stair shall not be allowed to be provided in any building at more than 15 m from finished ground level. ii. Outside stairs more than 11 m above the finished ground level, shall be provided with an opaque visual obstruction not less than 1220 mm in height. iii. Outside stairs shall be separated from the interior of the building by construction with the 2 hour fire resistance rating with fixed or self-closing opening protectives. **Figure 3.11.** iv. Such separation shall extend vertically from the finished ground level to a point 3 m above the topmost landing of the stairs or to the roofline, whichever is lower. And horizontally separation shall extend for not less than 3 m. See **Figure 3.11.** v. Roof shall extend horizontally to each side of the stair for not less than the stair width. vi. Outside stairs, other than existing outside stairs, shall be not less than 50 percent open on one side vii. Outside stairs and landings shall be designed to minimize water accumulation on their surfaces. viii. Outside stairs serving an exterior exit access balcony that has two remote outside stairways or ramps shall be permitted to be unprotected. See **Figure 3.10.** ix. Outside stairs serving not in excess of two adjacent stories, including the storey of exit discharge, shall be permitted to be unprotected where there is a remotely located second exit. See Note in **Figure 3.10.**

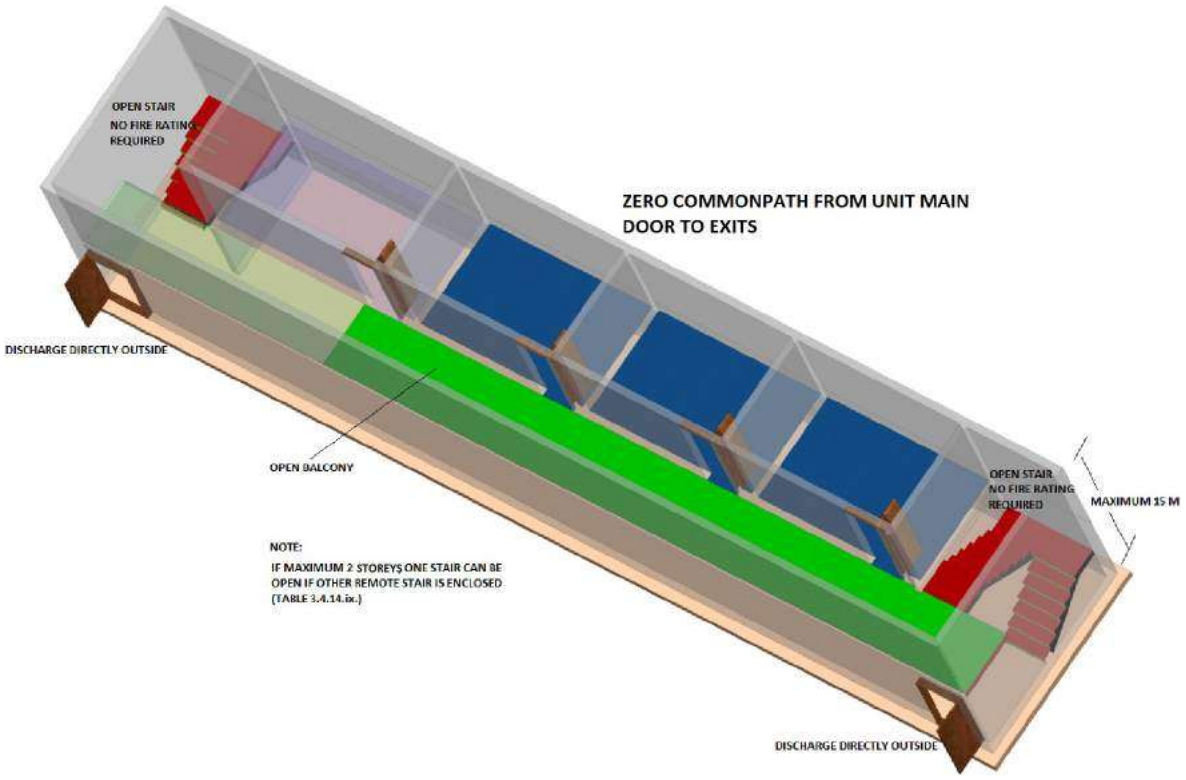


Figure 3.10.: Outside stair with exterior exit access balcony

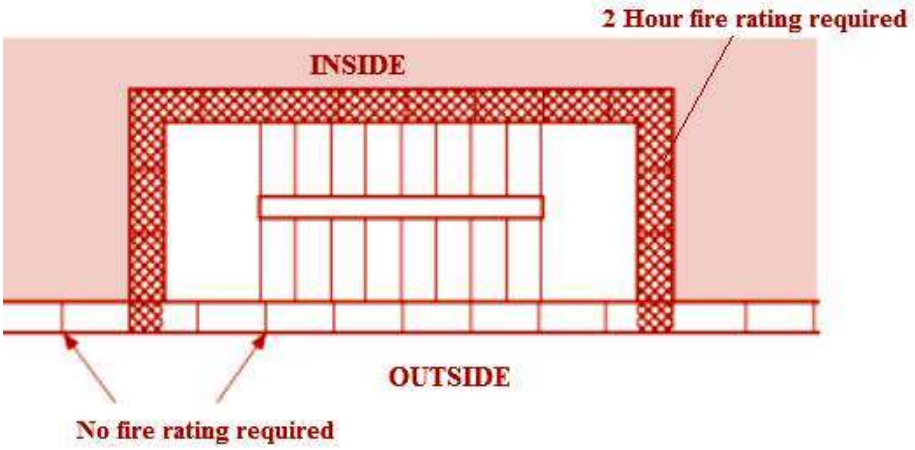


Figure 3.11.a.: Outside stair with exterior wall flushed with building wall

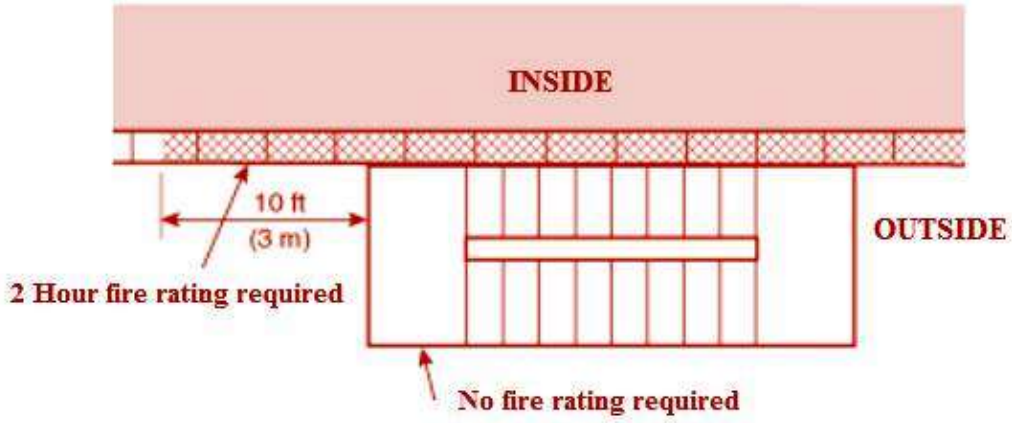


Figure 3.11.b.: Outside stair with exterior wall protruding outside the building

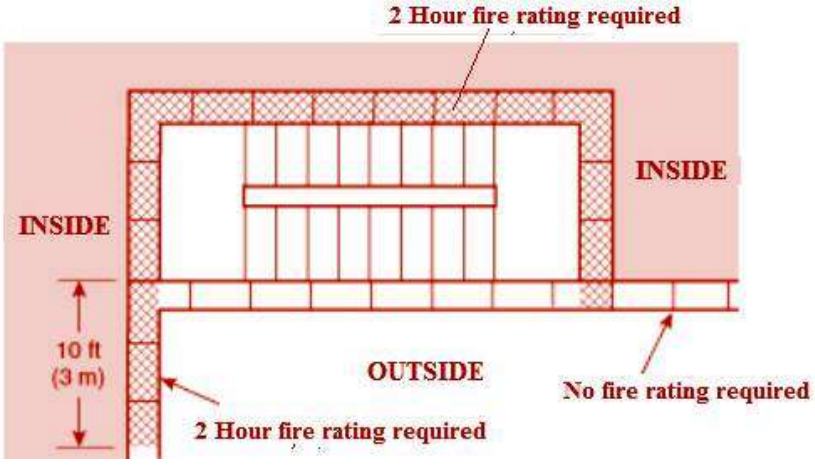


Figure 3.11.c.: Outside stair with exposed to adjacent building wall

Table 3.4: Stair

ITEMS	REQUIREMENTS
14. OUTSIDE STAIR	x. All openings below an outside stair shall be protected with an assembly having not less than a 45 minutes fire protection rating. xi. Openings to the side of an outside stair within 3m should have a fire protection rating of 30 minutes. xii. Outside stairs shall be arranged to avoid any impediments to the use of the stairs by persons having a fear of high places. Outside stairs more than three stories in height or 11 m in height, shall be provided with an opaque visual obstruction not less than 1220 mm in height.

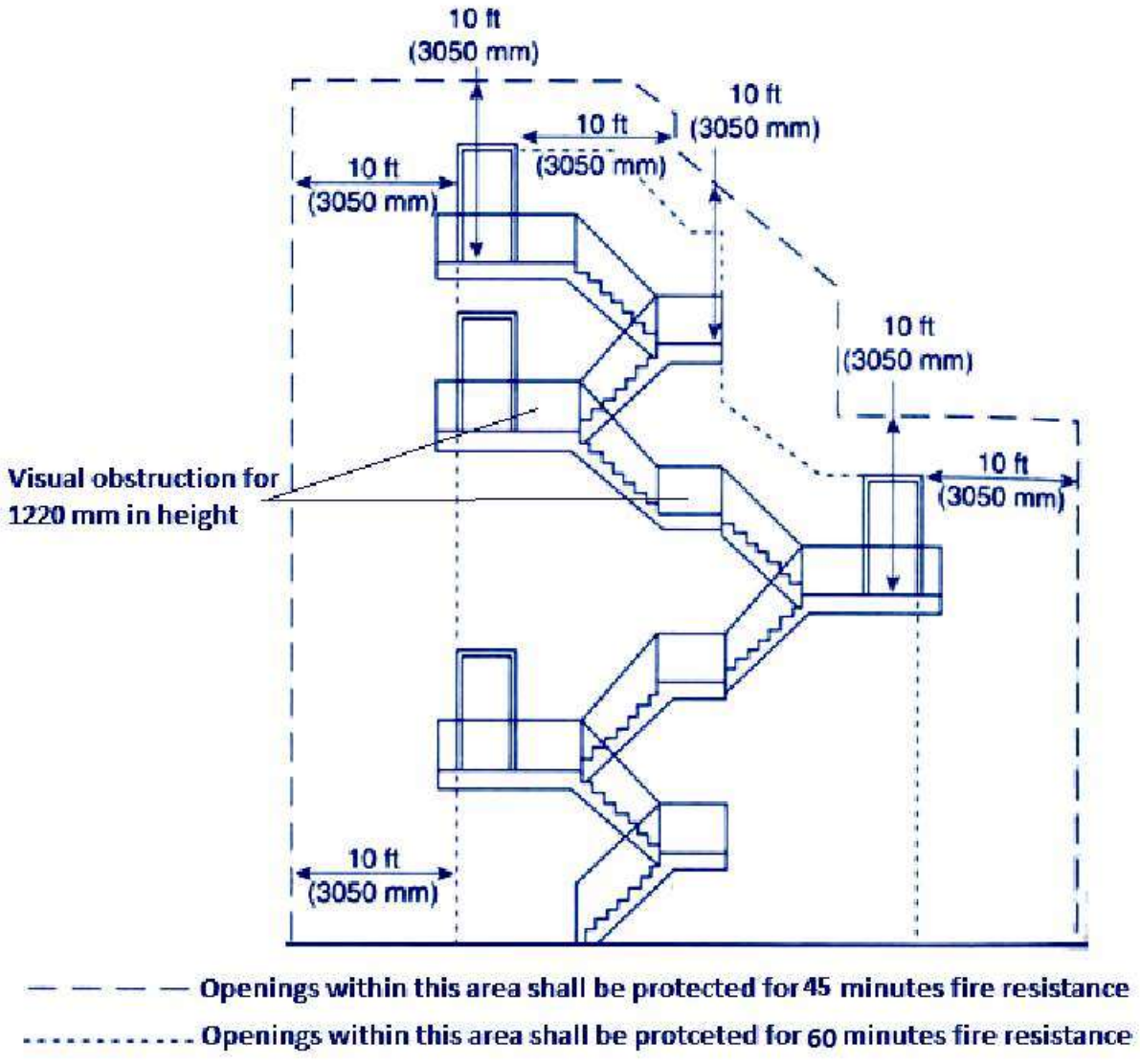
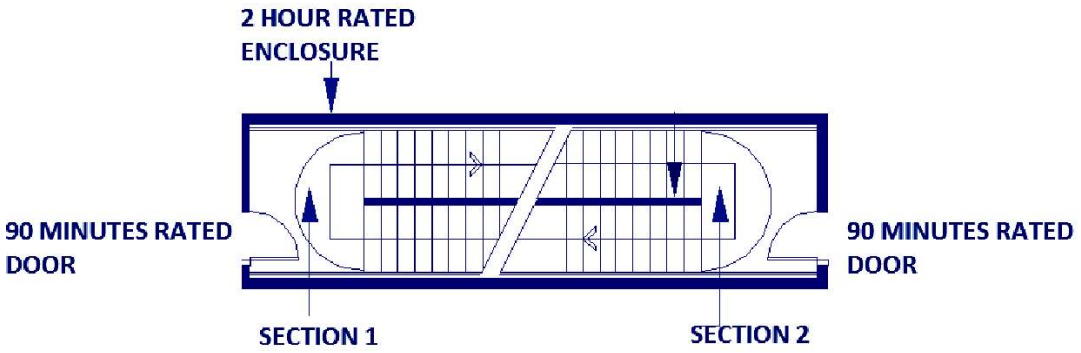


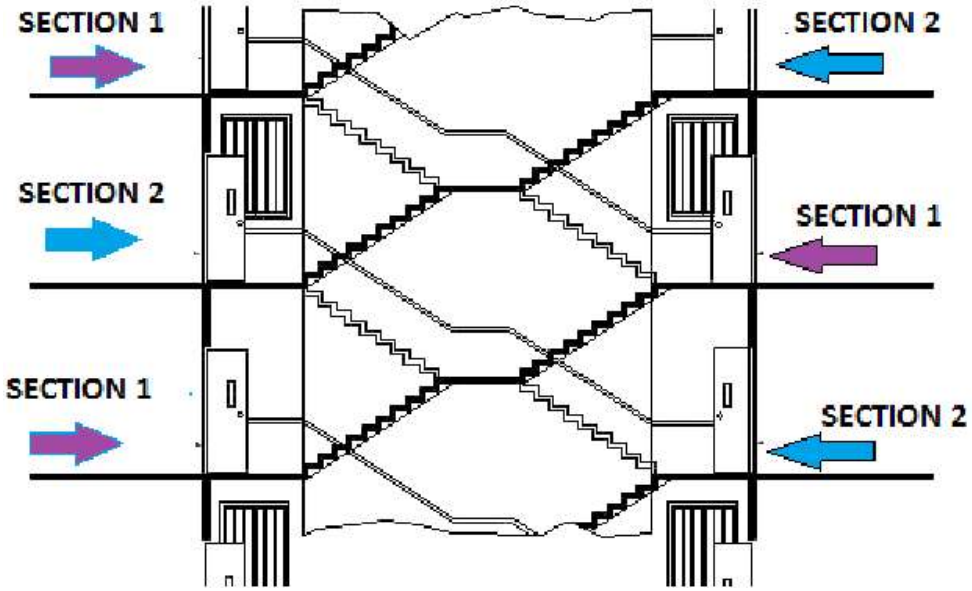
Figure 3.11.d.: Opening protection around Outside stair

Table 3.4: Stair

ITEMS	REQUIREMENTS
15. SCISSOR OR INTERLOCKED STAIR	i. Interlocking or scissor stairs shall be considered as a single exit. ii. Scissor Stairs shall be enclosed by a 2 hour fire resistance rated construction, with block wall for non high rise buildings and with RCC in Highrise buildings. iii. Both sections of a Scissor Stairs are not required to be fire separated from each other as the scissor stair is considered as a single exit. iv. Penetrations or communicating openings are allowed between two sections of Scissor Stairs. v. Doors shall be 90 minutes fire protection rated in Scissor Stairs.



PLAN



SECTION

Figure 3.12.: Scissor or Interlocked Stair

Table 3.4: Stair

ITEMS	REQUIREMENTS
16. SPIRAL STAIR	i. Spiral Stairs are not allowed in means of egress except for the following. a. In Industrial occupancy to access equipment, mezzanine where equipment access is required, Control room to access equipment and process line floor. b. In Storage occupancy to access mezzanine which is only for storage and not office space. c. In Retail areas to access mezzanines where goods are stored. d. Private and Commercial Villa ii. The clear width of the stairs shall be not less than 660 mm. iii. The height of risers shall not exceed 240 mm. iv. The headroom shall be not less than 1980 mm. v. Treads shall have a depth not less than 190 mm at a point 305 mm from the narrower edge. vi. All treads shall be identical. vii. Handrails shall be provided as per Table 3.4.10. viii. The turn of the stairway shall be such that the outer handrail is at the right side of descending users.
17. WINDERS	i. Winders are not allowed in Means of egress except for the following. a. In Industrial occupancy to access equipment, mezzanine where equipment access is required, Control room to access equipment and process line floor. b. In Storage occupancy to access mezzanine which is only for storage and not office space. c. In Retail areas to access mezzanines where goods are stored. d. Private and Commercial Villa. ii. Winders can be used in open stairs which are not exit stairs. iii. Winders shall have tread depth of not less than 150 mm and tread depth of not less than 280 mm, at a point 305 mm from narrowest edge.
18. CURVED STAIRS	i. Curved Stairs are not allowed in Means of egress except for the following. a. In Industrial occupancy to access equipment, mezzanine where equipment access is required, Control room to access equipment and process line floor. b. In Storage occupancy to access mezzanine which is only for storage and not office space. c. In Retail areas to access mezzanines where goods are stored. d. Private and Commercial Villa ii. Curved Stairs can be used as open stairs which are not exit stairs. iii. Curved Stairs shall have tread depth of not less than 255 mm at a point 305 mm from narrowest edge.


CURVED STAIR


SPIRAL STAIR


WINDERS

Table 3.4: Stair	
ITEMS	**REQUIREMENTS**
19. EQUIPMENT ACCESS	i. Industrial Equipment Access shall comply to the following. a. Minimum Horizontal dimension of walkway, landing or platform shall be 560 mm. b. Minimum stair or ramp width shall be 560 mm. c. Minimum tread width shall be 560 mm. d. Minimum tread depth shall be 255 mm. e. Maximum riser height shall be 230 mm f. Maximum height between landings shall be 3660 mm. g. Minimum head room shall be 2030 mm. h. Minimum width of door opening shall be 560 mm. i. Railings height shall be 865 mm to 965 mm and shall be permitted to terminate directly above top and bottom risers.
20. STAIR TREAD, FLIGHTS AND ARRANGEMENT	i. Exit stair designs is preferred to be as per **Figure 3.13.a**. (Refer to **Figure 3.13.a.**) a. Regular flights and consistent dimensions of steps is acceptable . b. Consistent flights and consistent dimensions on all sides are acceptable. c. Consistent flights and consistent dimensions of steps are acceptable d. Direct exit at discharge level from under the stair flight. e. Two doors on opposite sides are acceptable if each door swing does not obstruct more than half of the required landing width. f. RCC Stairs with separate core but common RCC divider is acceptable only in lowrise and midrise buildings provided whole stair complies with building construction type and separation distance. g. Straight run stairs are acceptable, provided maximum height between landings is 3660 mm. h. RCC Stairs with separate core but common RCC divider is acceptable only in lowrise and midrise buildings provided whole stair complies with building construction type and separation distance between exits. i. Consistent flights with consistent dimensions of steps on opposite sides are acceptable. j. RCC Stairs with separate core but common RCC divider is acceptable only in lowrise and midrise buildings provided whole stair complies with building construction type and separation distance between exits.

Table 3.4: Stair

ITEMS	REQUIREMENTS
20. STAIR TREAD, FLIGHTS AND ARRANGEMENT	ii. Exit stair designs shown in **Figure 3.13.b.** are not acceptable. (Refer to **Figure 3.13.b.**) a. Winders are not acceptable. b. Less than 3 steps at intermediate landings are not acceptable. c. Step riser height dimensions exceeding maximum variation of 10 mm within flight is not acceptable. d. Winders are not acceptable. e. Door in the middle of landing obstructing more than half of required landing width is not acceptable. f. Step riser height dimensions exceeding maximum variation of 10 mm within flight is not acceptable. g. Stair doors next to each other is not acceptable. h. Stair doors opening into each other and obstructing more than half of the required landing width is not acceptable. i. Stair doors next to each other is not acceptable j. Step riser height dimensions exceeding maximum variation of 10 mm within flight are not acceptable k. Stair doors next to each other is not acceptable l. Less than 3 steps not recommended but acceptable only from basement to ground floor or roof access from a floor below.

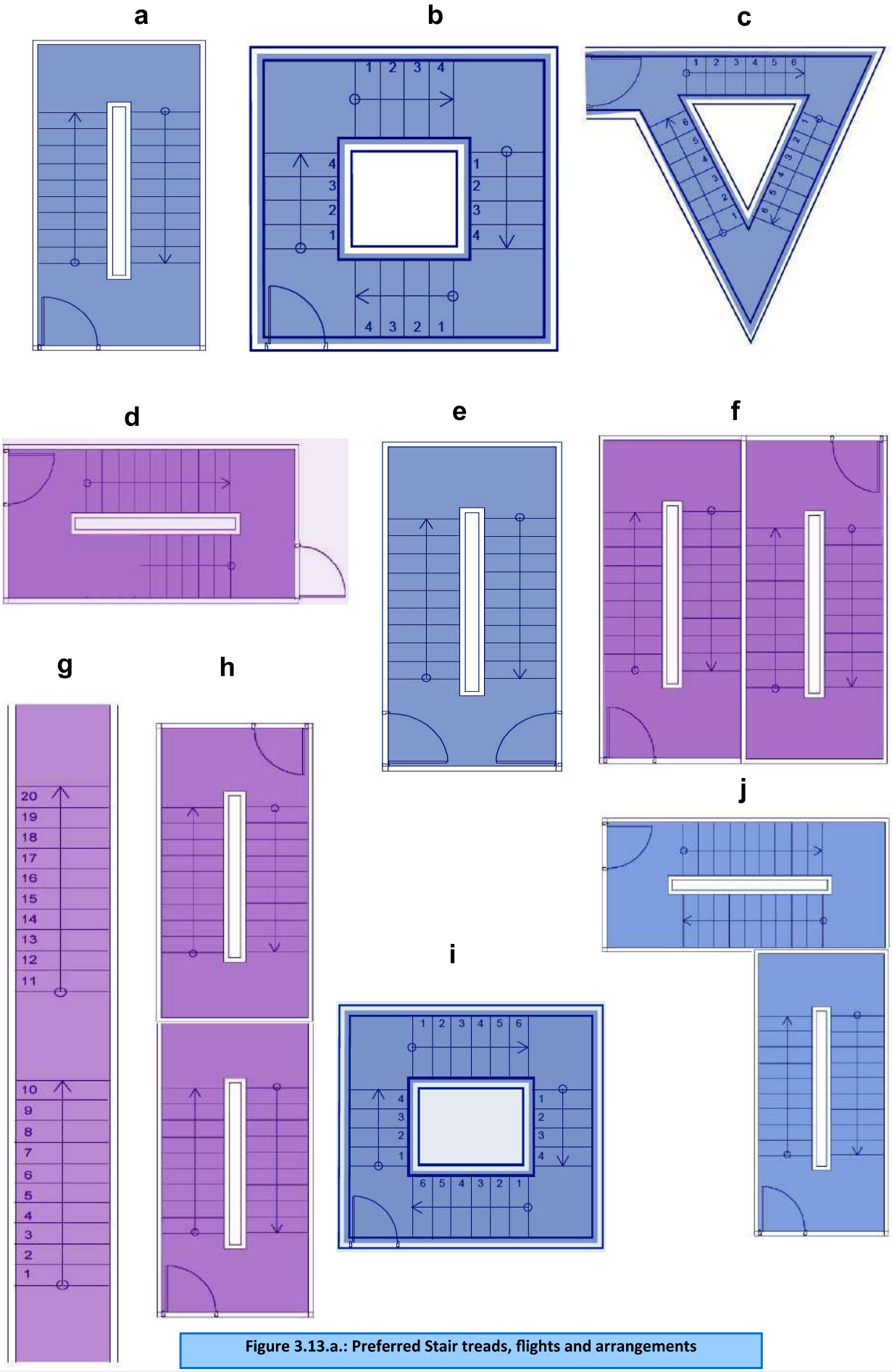


Figure 3.13.a.: Preferred Stair treads, flights and arrangements

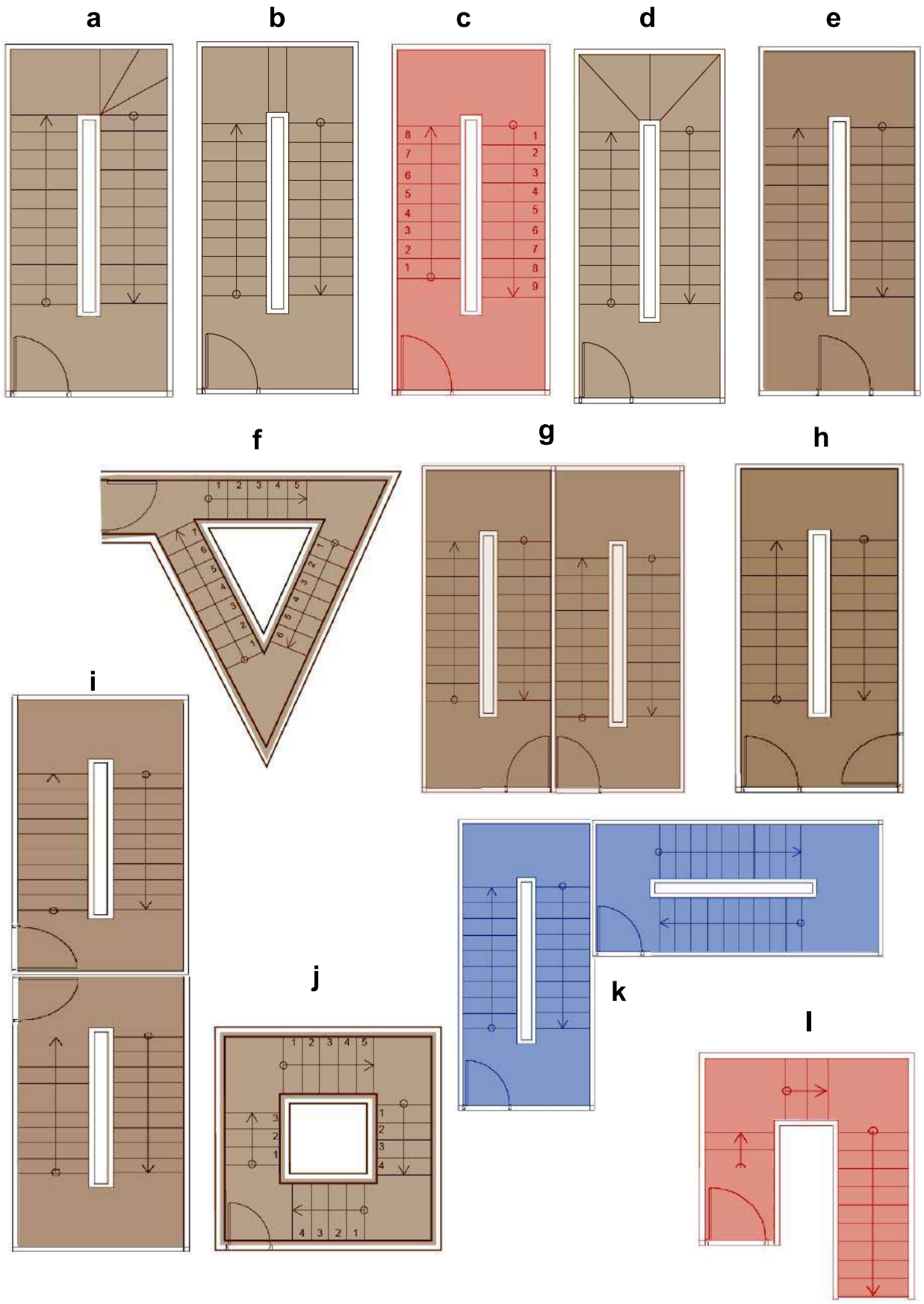


Figure 3.13.b.: Not acceptable Stair treads, flights and arrangements