EGRESS

AZMIR SULTANA

NICOLAS CHAMORRO

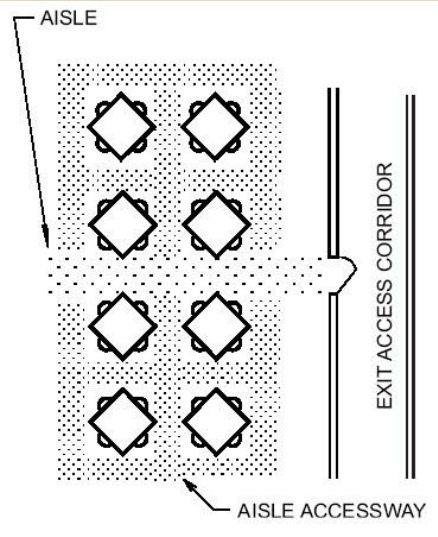
MIMU SAKUMA

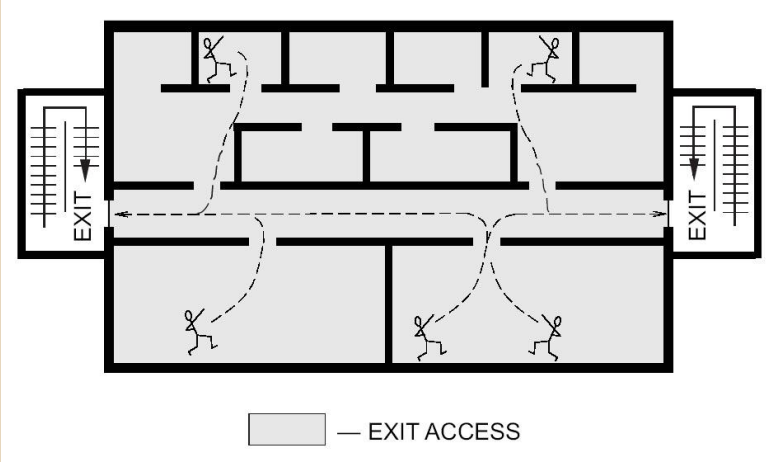
EDWIN VEGA

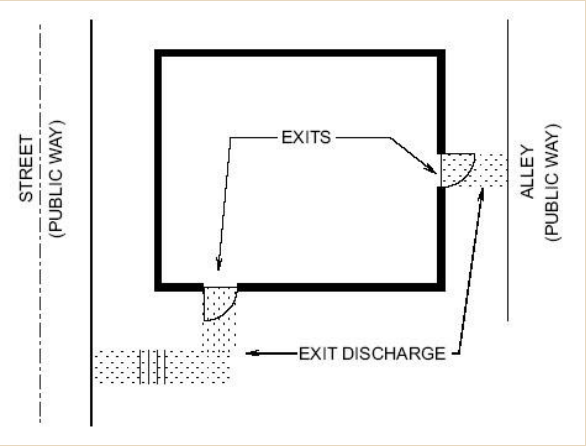
DEFINITIONS

NC

- **ACCESSIBLE MEANS OF EGRESS.** A continuous and unobstructed way of egress travel from any accessible point in a building or facility to a public way.
- **AISLE.** An unenclosed exit access component that defines and provides a path of egress travel.
- **AISLE ACCESSWAY.** That portion of an exit access that leads to an aisle.
- **EXIT ACCESS.** That portion of a means of egress system that leads from any occupied portion of a building or structure to an exit.
- **EXIT DISCHARGE.** That portion of a means of egress system between the termination of an exit and a public way.







http://www.nyc.gov/html/dob/downloads/pdf/cc_chapter10.pdf

GENERAL MEANS OF EGRESS

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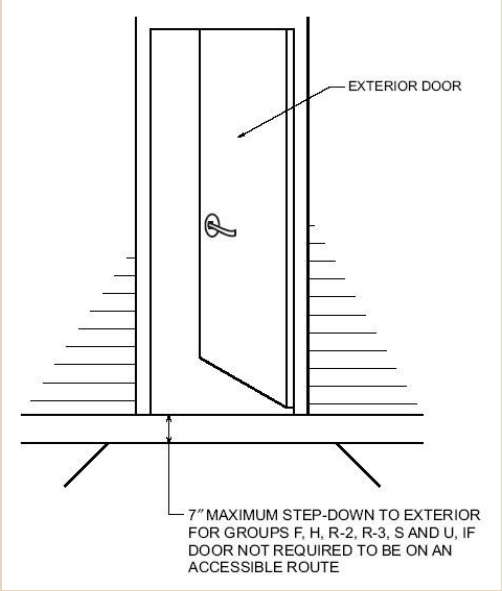
- A means of egress is the path available for a person to leave a building, structure, or space. This route must be unobstructed, and doors along this route cannot be subject to locking from the side that people will be leaving. For example, the rear exit door of a building could require use of a key to get in from the outside for security reasons, but the door must always be openable from the inside without a key so that people can get out in an emergency.
- **Ceiling height.** The means of egress shall have a ceiling height of not less than 7 feet 6 inches
    - Exceptions: sloped ceilings, dwelling ceilings, allowable projection, stair headroom, door height, ramp headroom, areas below and above mezzanine, and the clear height of floor level.
- **Elevation change.** Where changes in elevation of less than 12 inches (305 mm) exist in the *means of egress*, sloped surfaces shall be used. Where the slope is greater than one unit vertical in 20 units horizontal (5-percent slope).
- **Elevators, escalators and moving walks.** Elevators, escalators and moving walks shall not be used as a component of a required means of egress from any other part of the building.



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OCCUPANT LOAD

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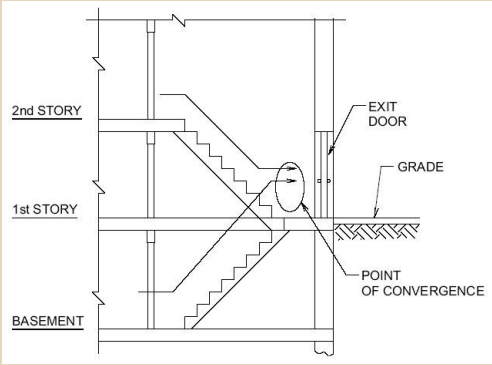
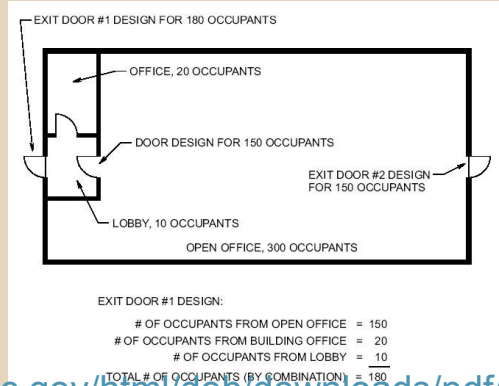
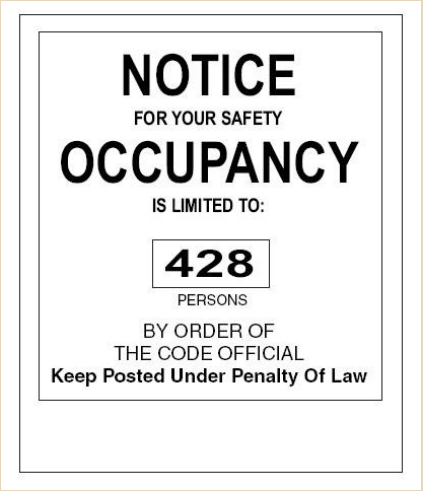
- **Design occupant load.** In determining means of egress requirements, the number of occupants for whom means of egress facilities shall be provided shall be determined in accordance with this section. Where occupants from accessory areas egress through a primary space, the calculated occupant load for the primary space shall include the total occupant load of the primary space plus the number of occupants egressing through it from the accessory area.
- Increasing the occupant load is possible as long as the building meets the code's requirement.
- Mezzanine occupants need to be added to the room's occupant load.
- Yards and patios that are used by the building need to have means of egress as well.
- Every room should have their occupancy notice.







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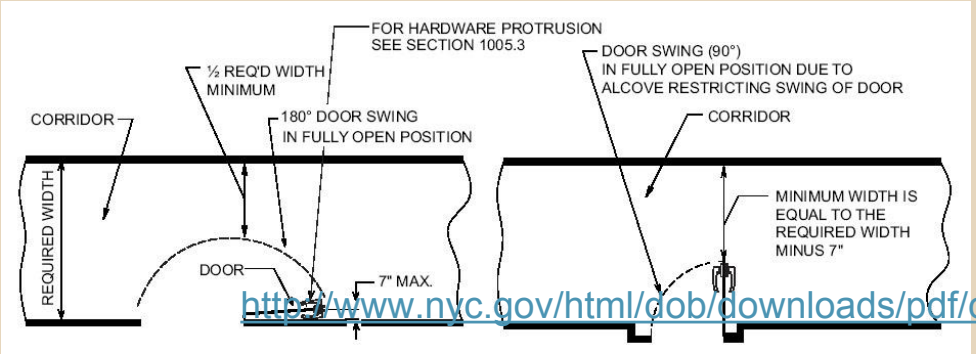
EGRESS WIDTH

NC

- **Minimum required egress width.** The means of egress width shall not be less than required by this section. The total width of means of egress in inches (mm) shall not be less than the total occupant load served by the means of egress multiplied by 0.3 inches (7.62 mm) per occupant for stairways and by 0.2 inches (5.08 mm) per occupant for other egress components. Multiple means of egress shall be sized such that the loss of any one means of egress shall not reduce the available capacity to less than 50 percent of the required capacity. The maximum capacity required from any story of a building shall be maintained to the termination of the means of egress.
- **Door encroachment.** Doors, when fully opened, and handrails shall not reduce the required means of egress width by more than 7 inches (178 mm). Doors in any position shall not reduce the required width by more than one-half. Other non structural projections such as trim and similar decorative features shall be permitted to project into the required width a maximum of $1^1/_2$ inches (38 mm) on each side.



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MEAN OF EGRESS ILLUMINATION

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- **Illumination required.** The means of egress, including the exit discharge, shall be illuminated at all times the building space served by the means of egress is occupied.
- **Illumination level.** The means of egress illumination level shall not be less than 1 foot-candle (11 lux) at the walking surface.
- **Illumination emergency power.** The power supply for means of egress illumination shall normally be provided by the premises' electrical supply. In case of power supply failure, there should be an emergency electrical system that illuminates area such as corridors, hallways, and other areas leading to exit the building

http://www.nyc.gov/html/dob/downloads/pdf/cc_chapter10.pdf

ACCESSIBLE MEANS OF EGRESS

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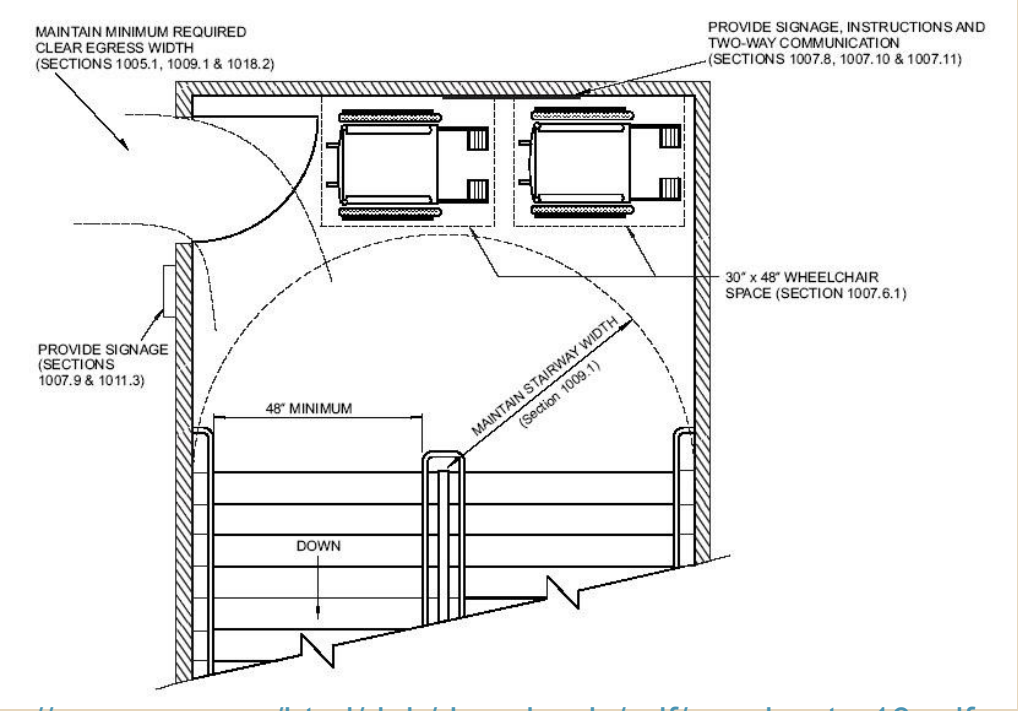
- An accessible means of egress is required to provide a continuous path of travel to a public way. This principle is consistent with the general requirements for all means of egress, as reflected in Section 1003.1 and in the definition of "Means of egress" in Section 1002. This section also emphasizes the intent that accessible means of egress must be available to a person with a mobility impairment, such as a person in a wheelchair.
- Each required accessible means of egress shall be continuous to a public way and shall consist of one or more of the following components: Accessible routes, Interior exit stairways, Exterior exit stairways, Elevators, Platform lifts, Horizontal exits, Ramps, and areas of refuge.
- Stairway should have a clear width of 48 inches.



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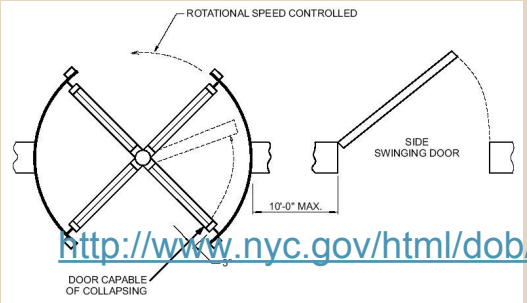
DOORS, GATES AND TURNSTILES

NC

- Mean of Egress doors should meet the requirement of leading to a route that will allow a path to a public street or alley.
- Gates are allowed to exceed 4 feet in width.
- Turnstiles can also be used as a means of egress component but it is limited to no more than 50 person capacity. But each turnstile must comply with the following:
    1. Each device shall turn free in the direction of egress travel when primary power is lost, and upon the manual release by an employee in the area.
    2. Such devices are not given credit for more than 50 percent of the required egress capacity.
    3. Each device is not more than 39 inches (991 mm) high.
    4. Each device has at least $16^1/_2$ inches (419 mm) clear width at and below a height of 39 inches (991 mm) and at least 22 inches (559 mm) clear width at heights above 39 inches (991 mm).



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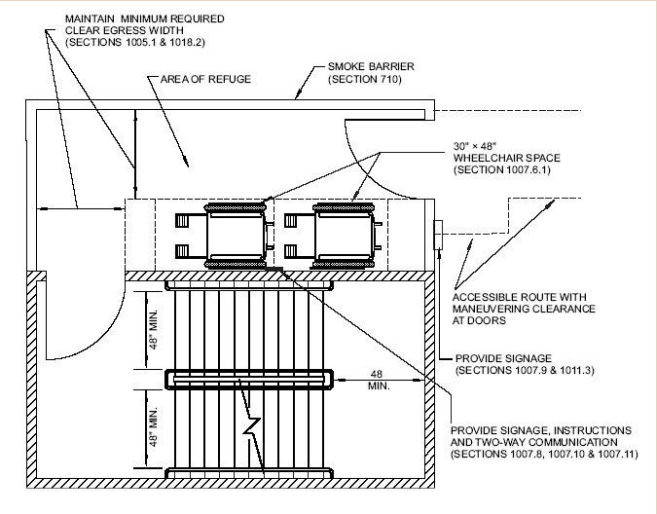
STAIRWAYS: Width

The width of stairways shall not be less than 44 inches.

Exceptions:

A width of not less than 36 inches can be allowed if the stairway serves an occupant load of 50 or less cumulative for all stories.



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E.V

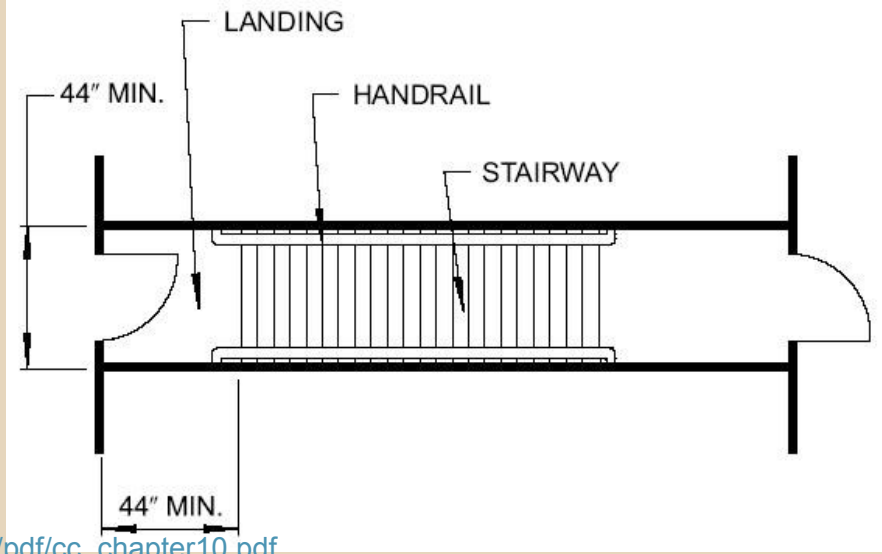
STAIRWAYS: Landing

The width of landings shall not be less than the width of stairways they serve.

Every landing shall have a minimum dimension measured in the direction of travel equal to the width of the stairway.

The door shall not project more than 7 inches into a landing.

There shall be a floor or landing at the top and bottom of each stairway.



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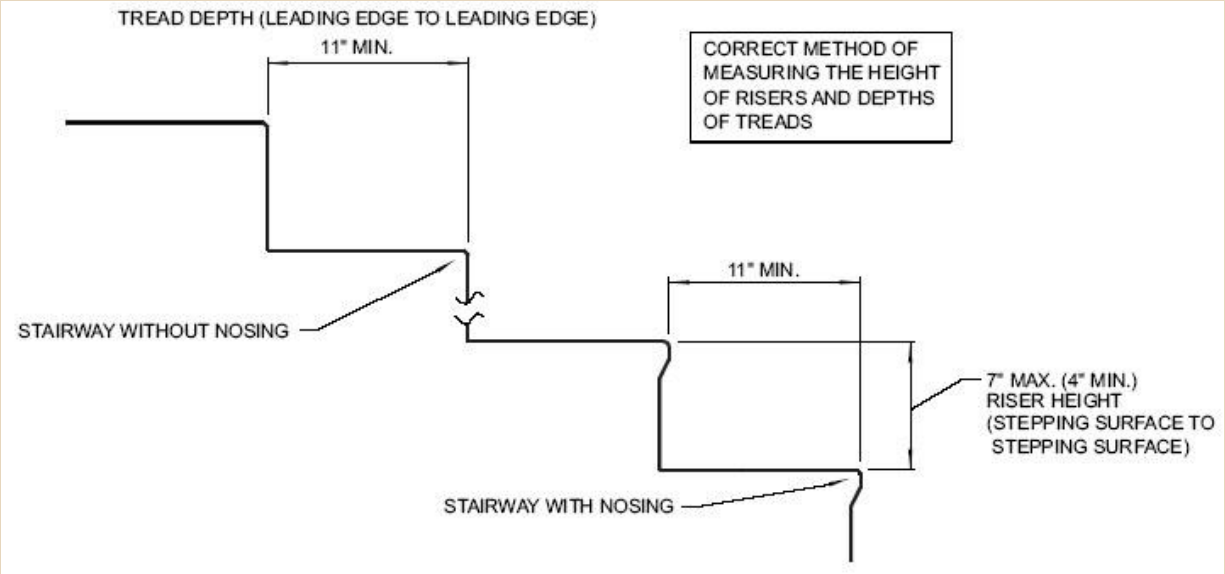
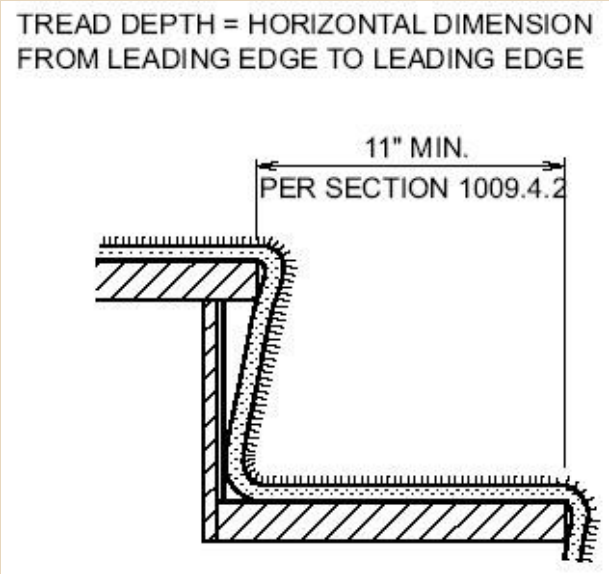
STAIRWAYS: Stair treads and risers

Stair riser heights shall be 7 inches maximum and 4 inches minimum. Stair tread depths shall be 11 inches minimum.





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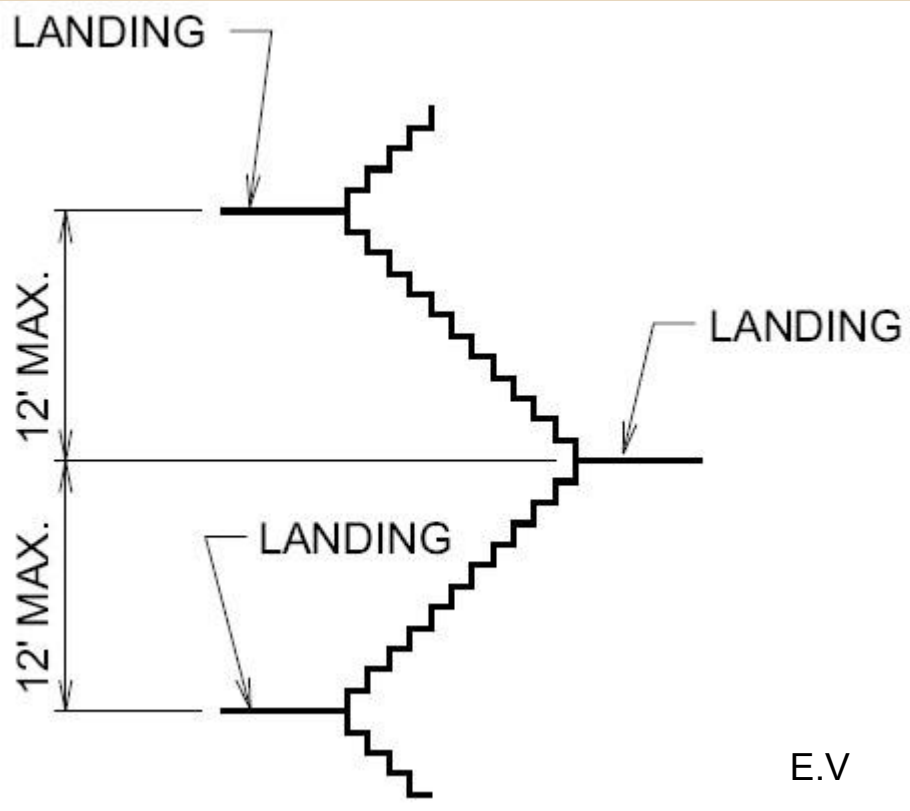
E.V

STAIRWAYS: Vertical rise

The vertical rise is measured from one landing to another and shall not be greater than 12 feet.



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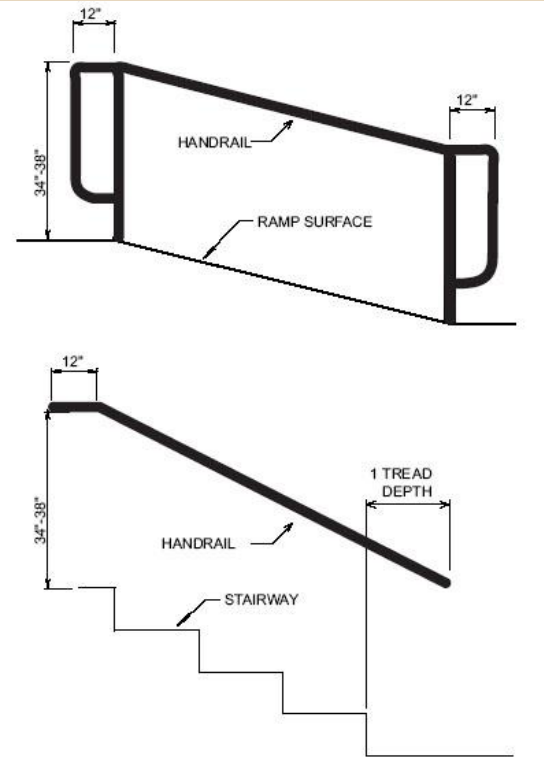
STAIRWAYS: Handrails

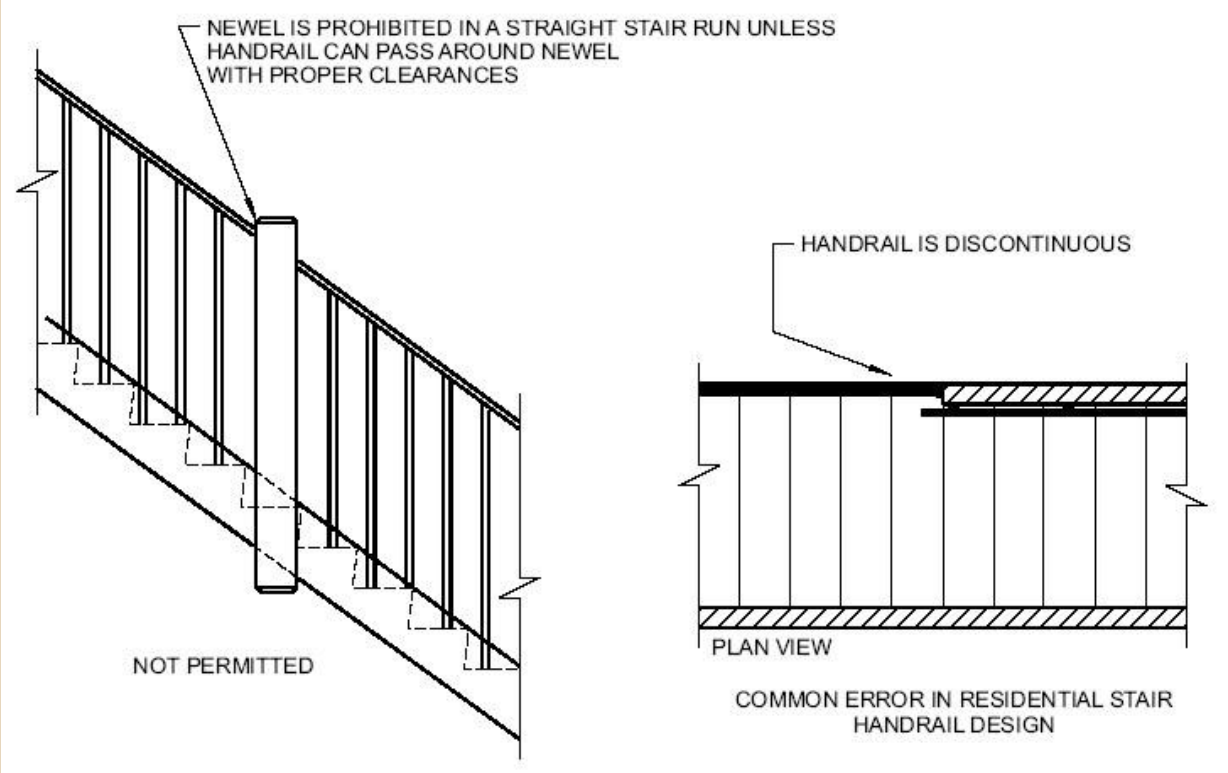
- Egress Stairways shall have handrails on each side.
- The height is measured above stair tread nosings, and shall not be less than 34 inches and not more than 38 inches.
- A circular handrail most have a diameter of at least 1.25 inches for graspability.
- A non circular handrail most have a perimeter dimension of at least 4 inches and not greater than 6.25 inches for graspability.
- Handrail-gripping surfaces shall be continuous, without interruption.

http://www.nyc.gov/html/dob/downloads/pdf/ec_chapter10.pdf

E.V

STAIRWAYS: Handrails





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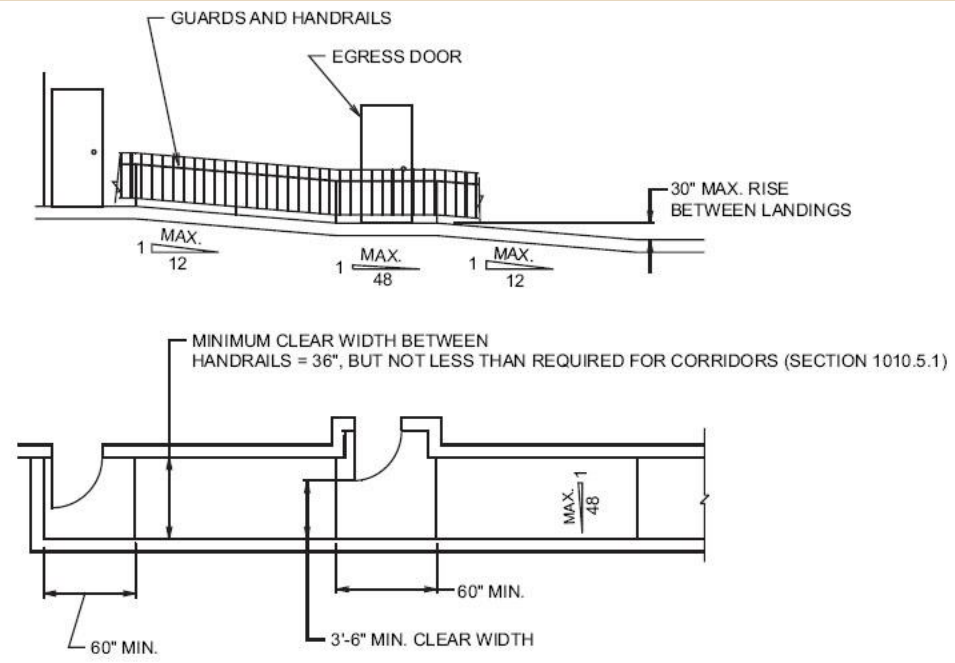
E.V

RAMPS

- Ramps are an alternative method of vertical means of egress.
- An accessible ramp shall have a running slope not steeper than one unit vertical in 12 units horizontal (8-percent slope).
- For pedestrian ramp shall not be steeper than one unit vertical in eight units horizontal (12.5-percent slope).
- There has to be a landing every 30 inches, so that the user can rest.
- The landing must be at least 60 inches.
- The cross slope shall not be steeper than one unit vertical in 48 units horizontal, so that the user won't pitch to one side
- Slip-resistant surface.



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E.V

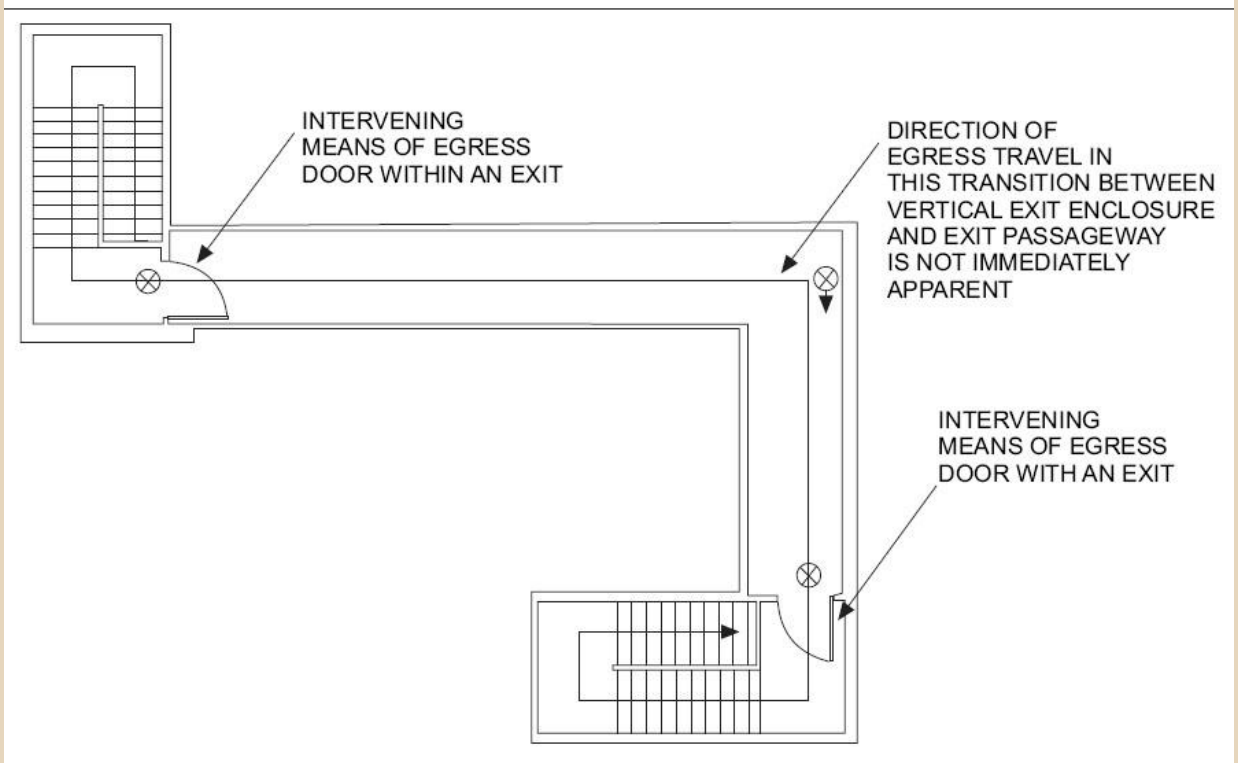
EXIT SIGNS

- Exits shall be marked by an approved illuminated exit sign.
- The letter “EXIT” must be in red.
- The sign shall be placed every 100 feet.
- The signs should be visible from all directions in the exit access route.

http://www.nyc.gov/html/dob/downloads/pdf/cc_chapter10.pdf

E.V

EXIT SIGNS



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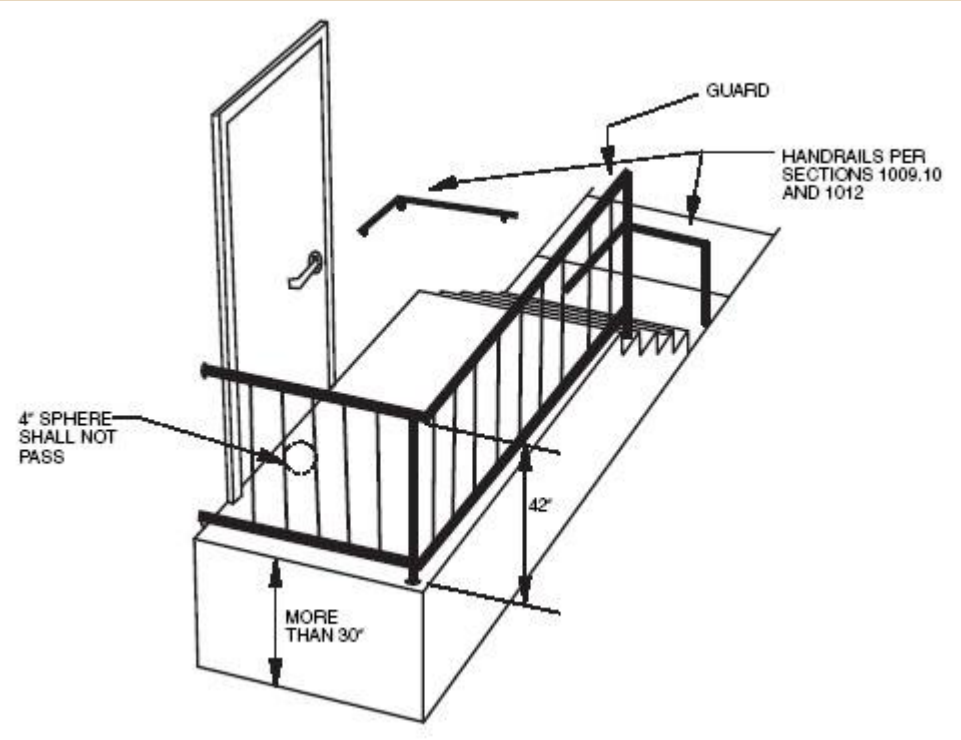
E.V

GUARDS

- Should be placed along open-sided walking surfaces that are more that 30 inches above the floor.
- The guard must create a protective barrier not less than 42 inches in high, measured vertically above the leading edge of the tread
- 4-inch-diameter sphere cannot pass through any opening up to a height of 34 inch. From a height of 34 inches to 42 inches above the adjacent walking surfaces, a sphere 8 inches in diameter shall not pass.
-



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E.V

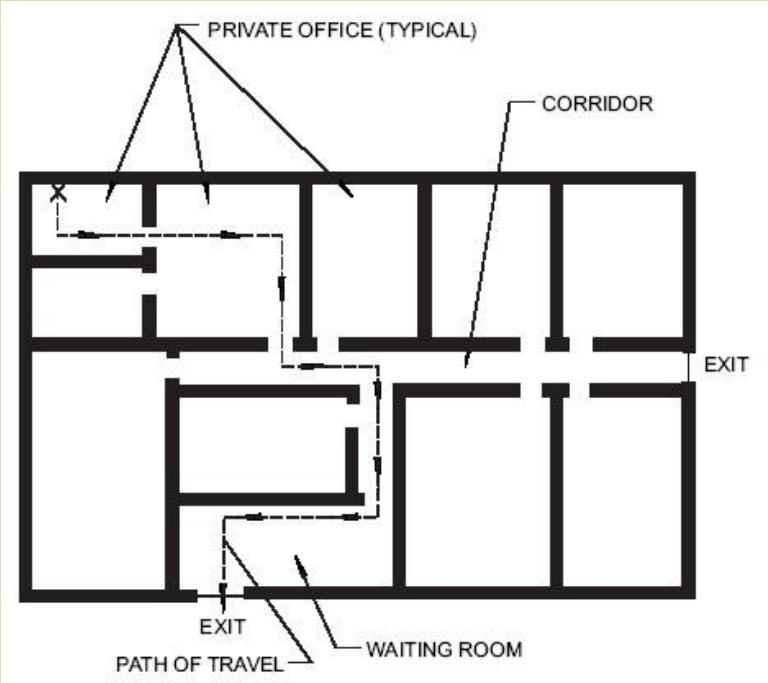
EXIT ACCESS

-Egress from a room shall not pass through adjoining or intervening rooms or areas, except where such adjoining rooms are accessory to the area served.

-An *exit access* shall not pass through a room that can be locked to prevent egress.

-*Means of egress* from dwelling units or sleeping areas shall not lead through other sleeping areas, toilet rooms or bathrooms.

-Egress shall not pass through kitchens, storage rooms, closets or spaces used for similar purposes.



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EV, MS

OCCUPANCY GROUP

*Assembly: Groups A-1, A-2, A-3, A-4 and A-5

Business: Group B

Educational: Group E

Factory and Industrial: Groups F-1 and F-2

High Hazard: Groups H-1, H-2, H-3, H-4 and H-5

Institutional: Groups I-1, I-2, I-3 and I-4

Mercantile: Group M

Residential: Groups R-1, R-2, R-3 and R-4

Storage: Groups S-1 and S-2

Utility and Miscellaneous: Group U

*Higher education such as college is included in Group B

AS, MS

EXIT AND EXIT ACCESS DOORWAYS

Two, three, four exits or exit access doorways

1. The occupant load
2. The common path of egress travel

MS, EV

EXIT AND EXIT ACCESS DOORWAYS

1. OCCUPANT LOAD

SPACES WITH ONE EXIT OR EXIT ACCESS DOORWAY	
OCCUPANCY	MAXIMUM OCCUPANT LOAD
A, B, E[a], M, U	74
F	49
H-1, H-2, H-3	3
H-4, H-5, I-1, I-3, I-4	10
I-2	See Sections 1014.2.2 through 1014.2.7
R	20
S	29

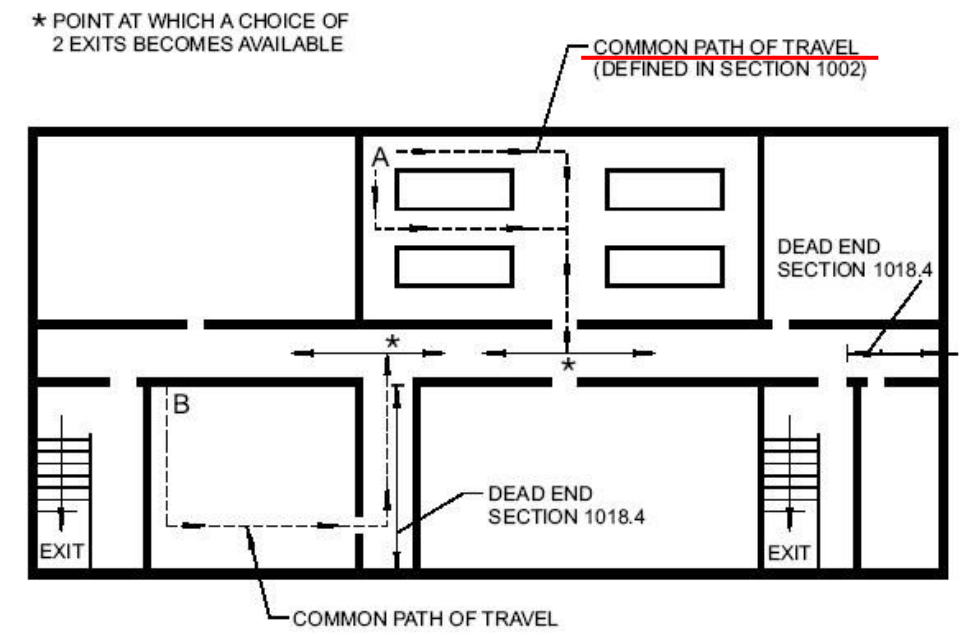
MINIMUM NUMBER OF EXITS FOR OCCUPANT LOAD	
OCCUPANT LOAD (persons per story)	MINIMUM NUMBER OF EXITS (per story)
1-500	2
501-1,000	3
More than 1,000	4

MS

http://www.nyc.gov/html/dob/apps/pdf_viewer/viewer.html?file=2014CC_BC_Chapte_10_Means_of_Egress.pdf&section=conscode_2014#page=7&zoom=auto,0,293

EXIT AND EXIT ACCESS DOORWAYS

2. COMMON PATH OF EGRESS TRAVEL



75’

Group H-1, H-2, H-3

25’

MS

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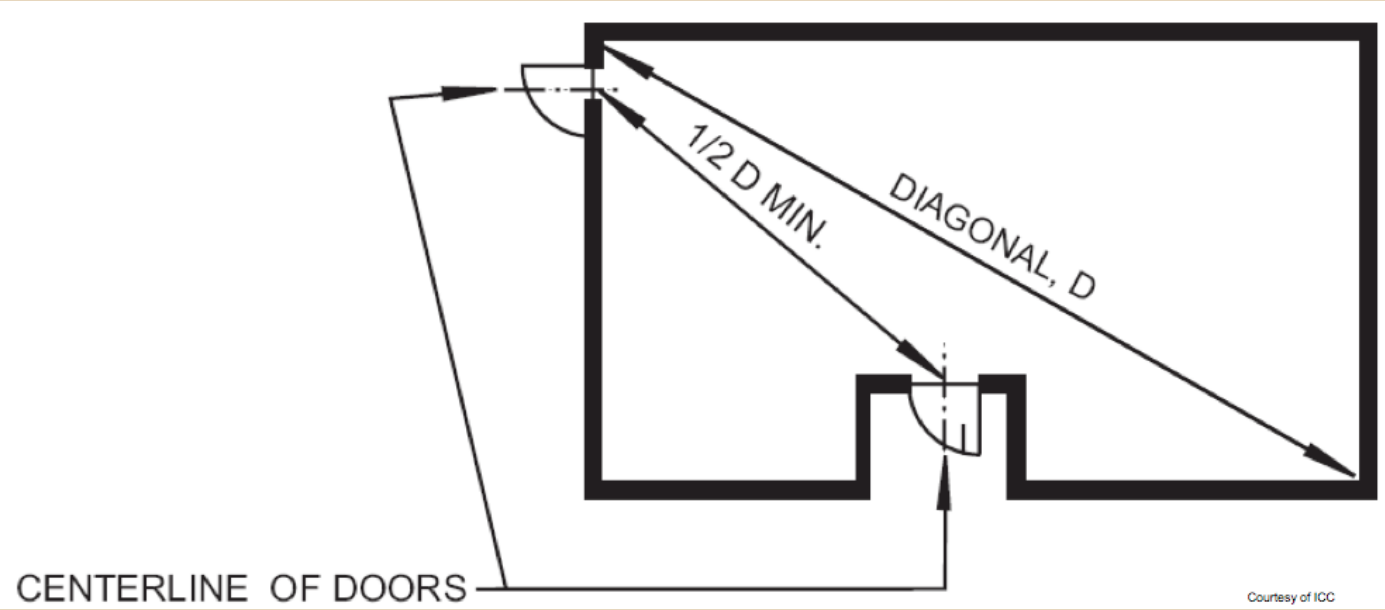
EXIT AND EXIT ACCESS DOORWAYS

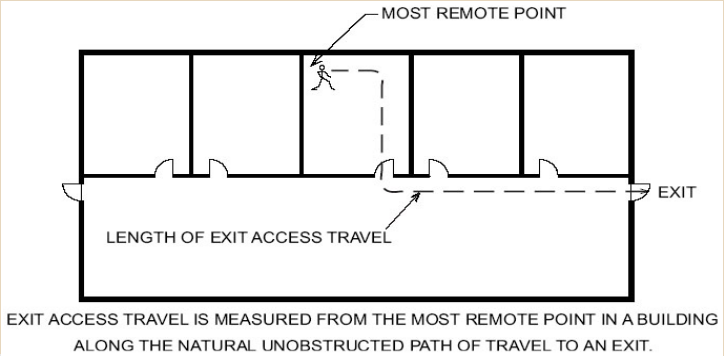
-ARRANGEMENT

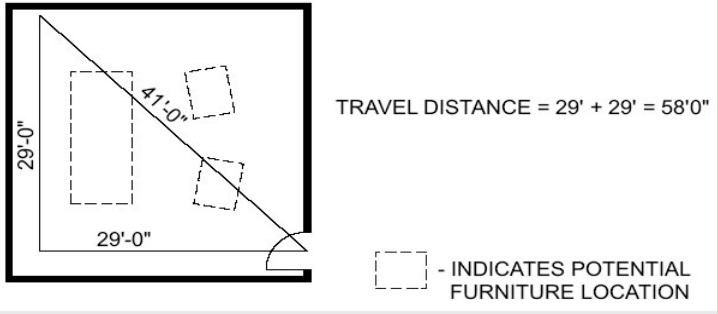


MS

EXIT ACCESS TRAVEL DISTANCE

The common path of egress travel, Corridor





OCCUPANCY	WITHOUT SPRINKLER SYSTEM (feet)	WITH SPRINKLER SYSTEM (feet)
A	See Section 1028.7	
E, F-1, M, R, S-1	150	200[b]
B	200	300[c]
F-2, S-2, U	200	250[b]
H-1	Not Permitted	75[c]
H-2	Not Permitted	100[c]
H-3	Not Permitted	150[c]
H-4	Not Permitted	175[c]
H-5	Not Permitted	200[c]
I-1, I-2, I-3, I-4	Not Permitted	200[c]

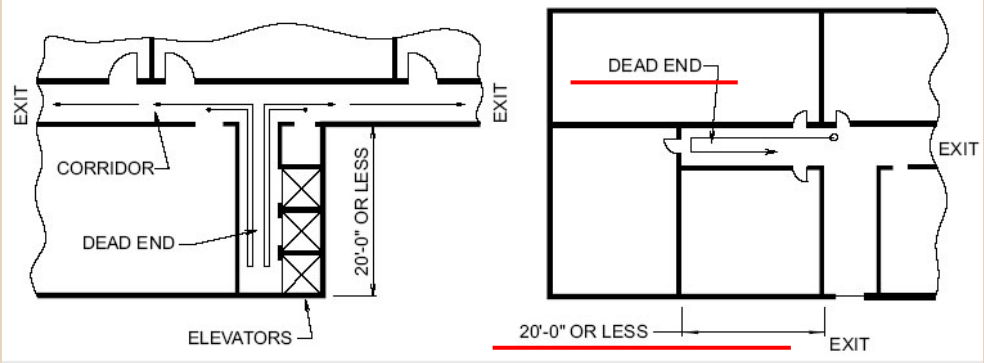
MS

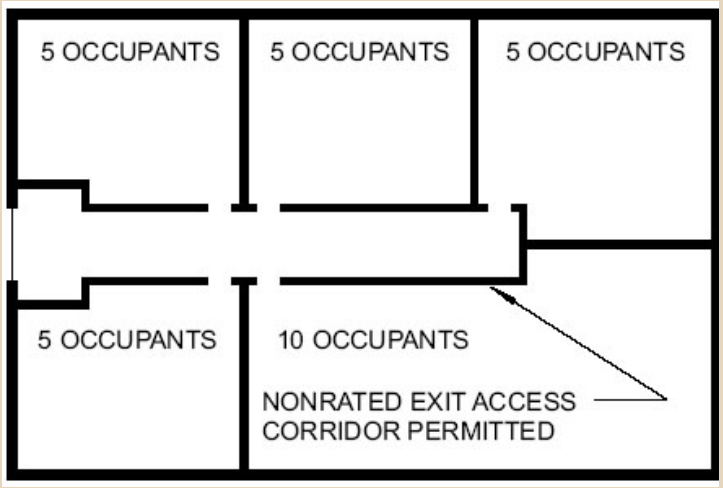
http://publicecodes.cyberregs.com/icod/ibc/2009f2cc/icod_ibc_2009f2cc_10_sec016.htm

CORRIDORS

-Width Occupant load × 0.2”(not less than 44”)

-Dead ends





MS

CORRIDORS

FIRE-RESISTANCE RATING

-INTERIOR vs PUBLIC CORRIDORS

INTERIOR CORRIDOR FIRE-RESISTANCE RATING

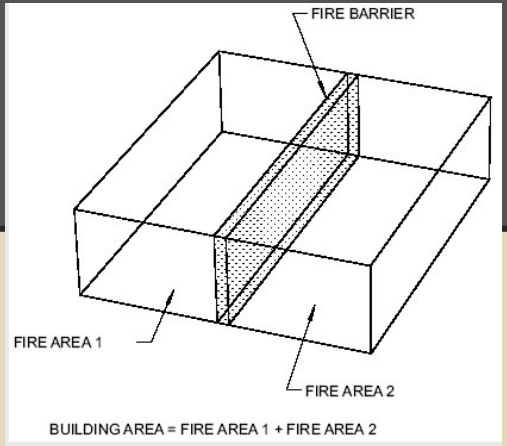
OCCUPANCY	OCCUPANT LOAD SERVED BY INTERIOR CORRIDOR	REQUIRED FIRE-RESISTANCE RATING (hours)	
		Without sprinkler system	With sprinkler system[c]
H-1, H-2, H-3	All	Not Permitted	1
H-4, H-5	Greater than 30	Not Permitted	1
A, B, E, F, M, S, U	Greater than 30	1	0
R	Greater than 10	1[d]	0
I-2[a], I-4	All	Not Permitted	0
I-1, I-3	All	Not Permitted	1[b]

PUBLIC CORRIDOR FIRE-RESISTANCE RATING

OCCUPANCY	REQUIRED FIRE-RESISTANCE RATING (hours)
H-1, H-2, H-3	2
H-4, H-5	1
A, E, F, M, S, U	1
B	1[a]
R (Noncombustible)	1
R (Combustible)	2[b]
I-1, I-2, I-3, I-4	1

MS

CORRIDORS



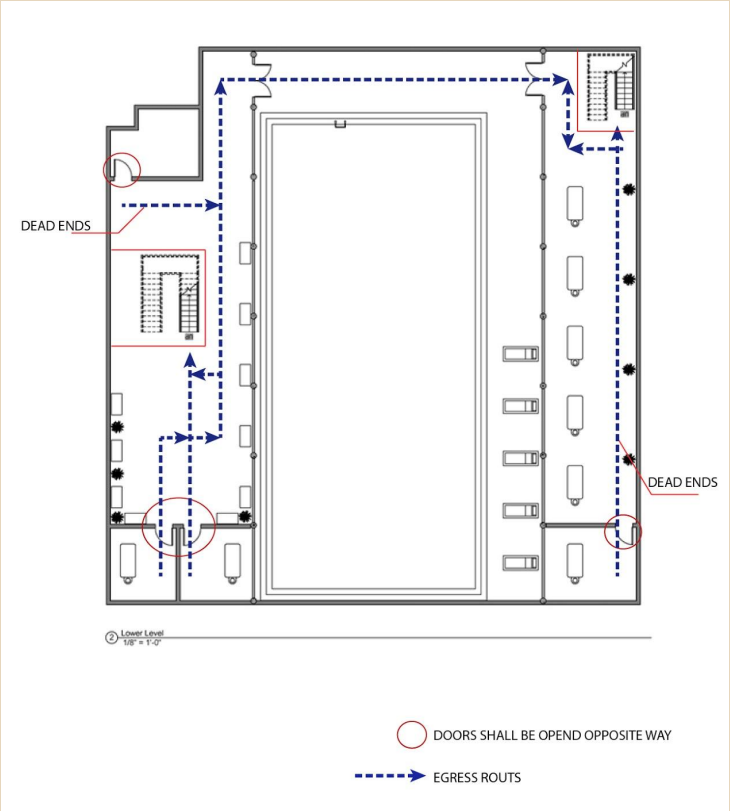
FIRE-RESISTANCE RATING

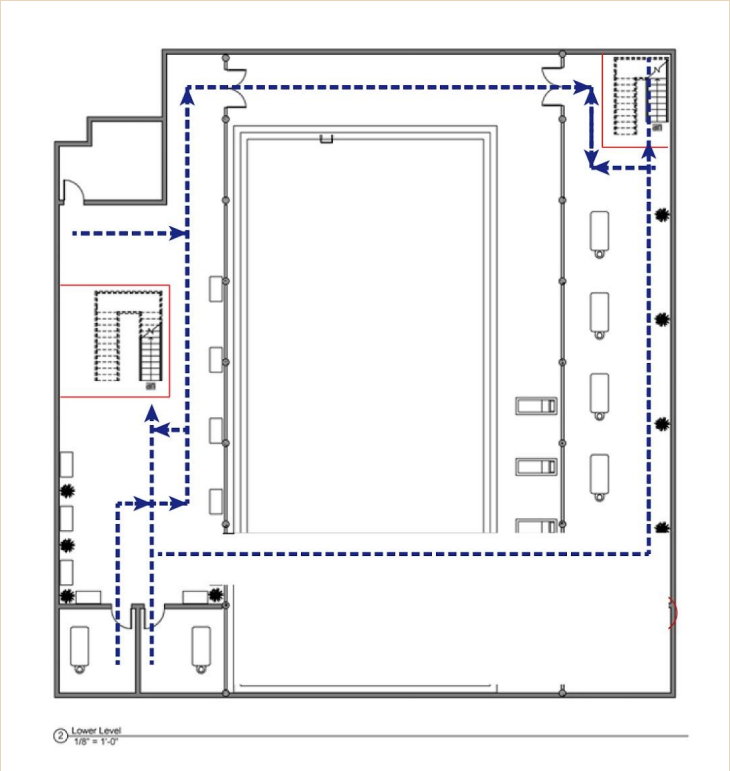
-INTERIOR vs PUBLIC CORRIDORS

INTERIOR CORRIDOR	PUBLIC CORRIDORS
Serves only one tenant Fire-rating reduced with sprinklers Occupant load is a factor Constructed as a fire partition	Serves more than one tenant Sprinklers is not a factor Occupant load is not a factor Constructed as a fire barrier

MS

VERTICAL EXIT ENCLOSURES

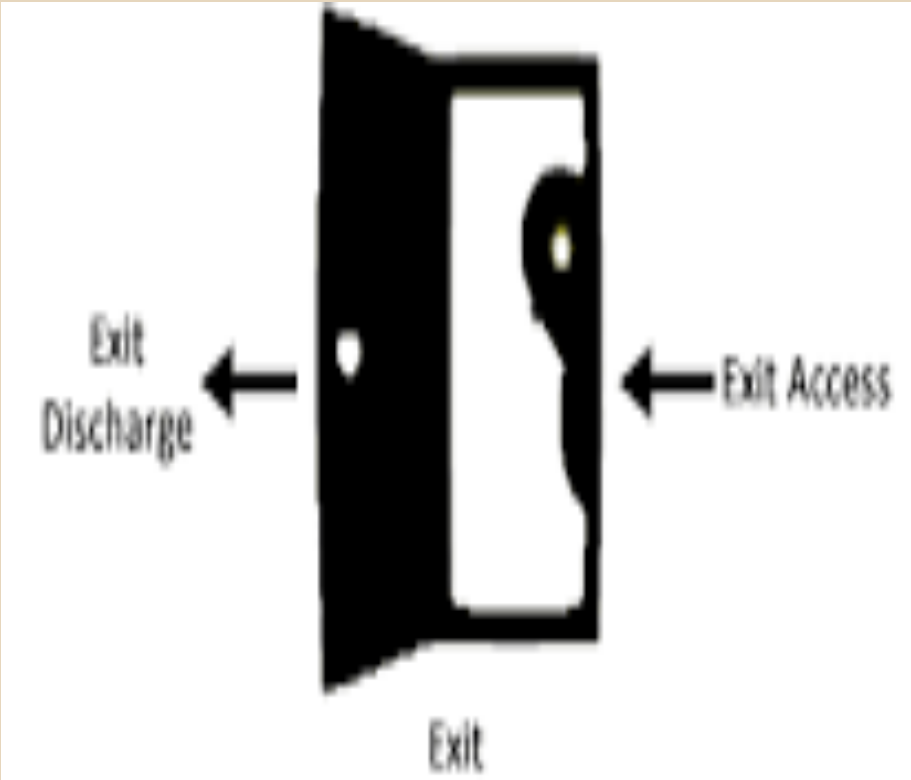




MS

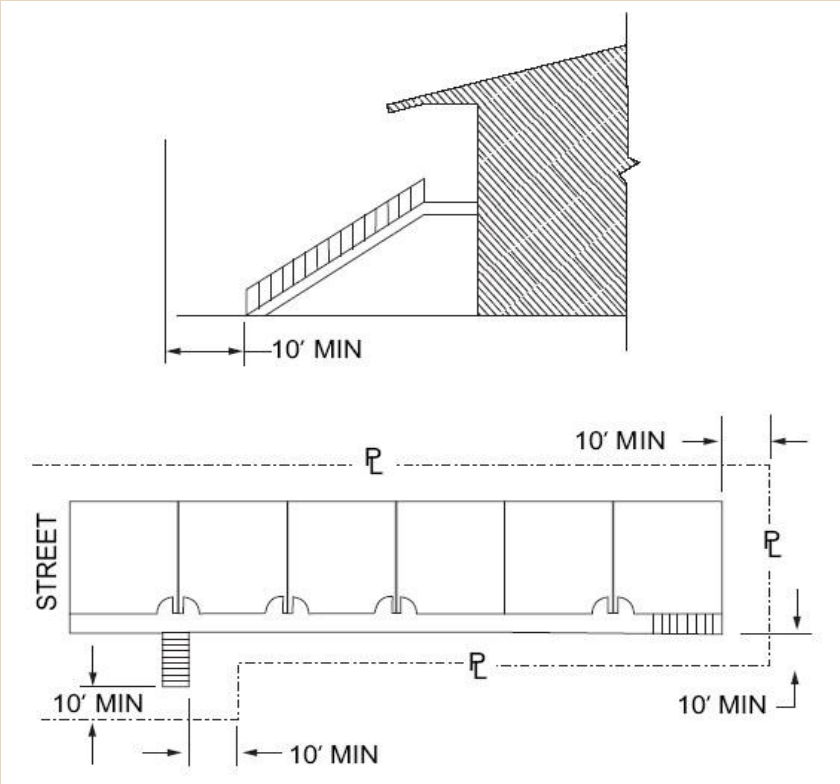
Exit Discharge

- Exits shall discharge directly to the exterior of the building. The exit discharge shall be at grade or shall provide direct access to grade.
- The capacity of the exit discharge shall not be less than the required discharge capacity of the exits being served.
- The width of egress courts shall not be less than 44 inches except as specified. Egress courts serving Group R-3 and U occupancies shall not be less than 36 inches in width. The required width of egress courts shall be unobstructed to a height of 7 feet 6 inches.



Exit discharge location

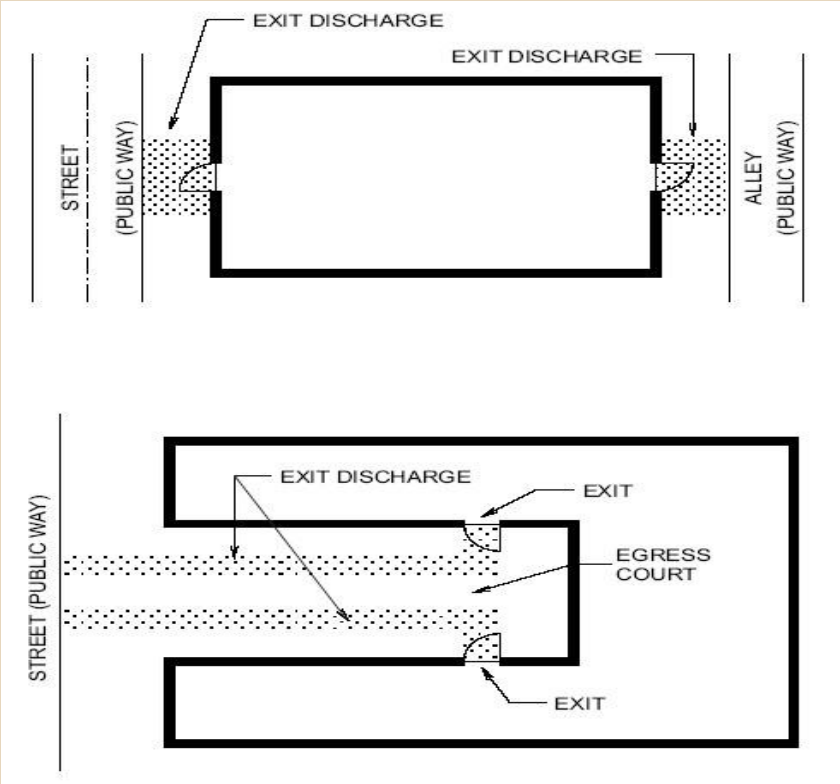
- Exterior balconies, stairways and ramps should be located at least 10 feet from adjacent lot lines and from other buildings on the same lot.
- The separation distance reduces the exposure to heat and smoke.
- There will be exception if the adjacent building is protected.
- buildings on the same lot can be considered one building for height and area limitations, they must be separated by a minimum of 10 feet if there is a path for exit discharge between them.
- Exit discharge components shall be sufficiently open to the exterior so as to minimize smoke and toxic gases.



"PDF.js Viewer." *PDF.js Viewer*. N.p., n.d. Web. 01 Mar. 2015.

- It is essential that exterior egress courts that serve occupants from an exit to a public way be sufficiently open to prevent the accumulation of smoke and toxic gases in the event of a fire.

- It should also provide a direct and unobstructed access to a public way.



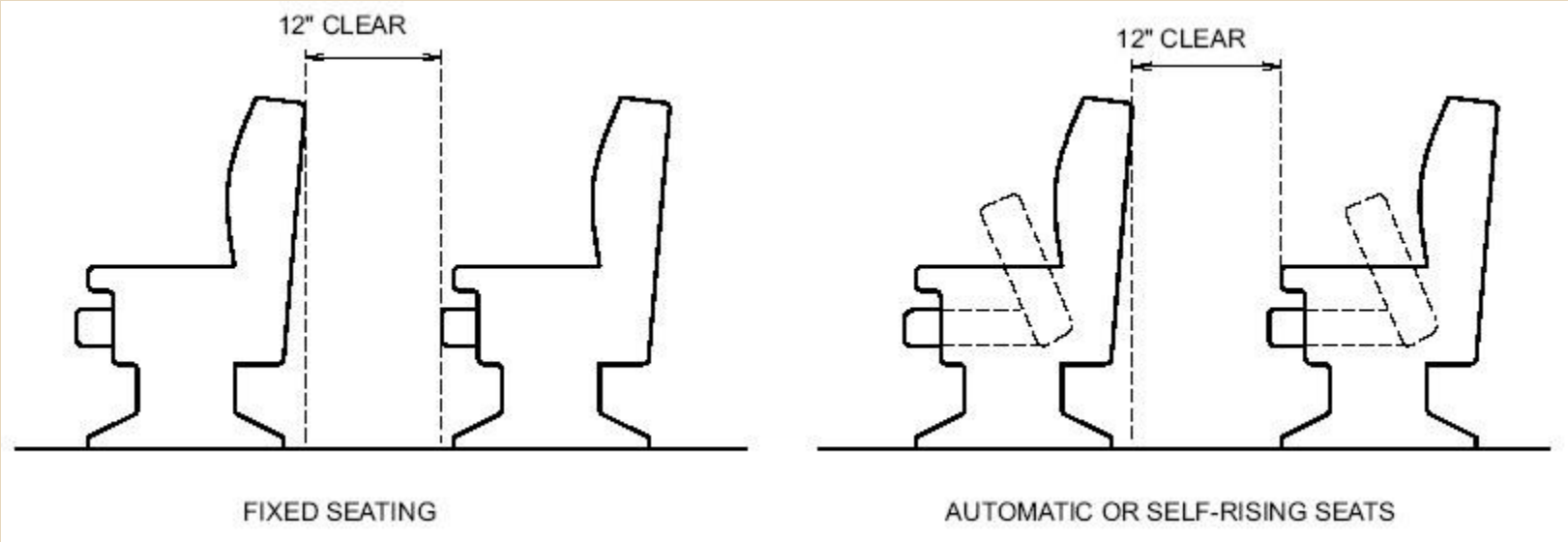
Egress assembly

- Occupancies in Group A and assembly occupancies accessory to Group E which contain seats, tables, displays, equipment or other material shall comply with egress assembly.Assembly spaces that contain elements that would affect the path of travel for the means of egress must comply. Assembly spaces require special consideration due to the large occupant loads and possible low lighting.

- Signs shall be posted in all assembly spaces, indicating the number of persons who may legally occupy the space. Signs shall not be required where seating is fixed in place in accordance with an approved plan and no provision is made for stand spaces.
- Signs shall be at least 12 inches wide and 16 inches high. The lettering shall be red on a white background. The letters shall be at least 1 inch high and the numerals at least 1¼ inches high. Signs shall be framed under a transparent protective cover.

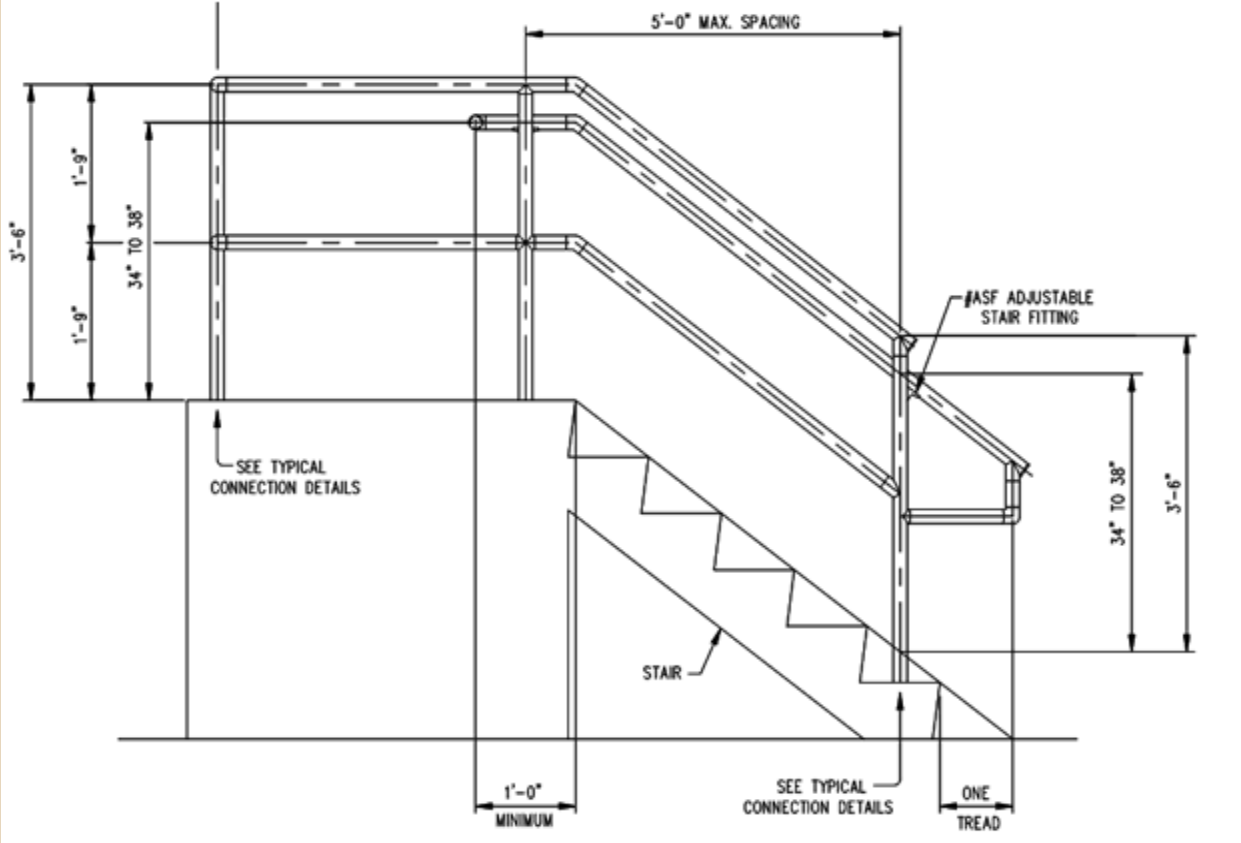
Width of Means of Egress for Outdoor Smoke Protected Assembly

TOTAL NUMBER OF SEATS IN THE SPACE EXPOSED TO THE SAME SMOKE PROTECTED ENVIRONEMENT	INCHES OF CLEAR WIDTH PER SEAT SERVED			
	Stairs and aisle steps with handrails within 30 inches	Stairs and aisle steps without handrails within 30 inches	Passageways, doorways and ramps not steeper than 1 in 10 in slope	Ramps steeper than 1 in 10 in slope
Equal to or less than 5,0000	0.200	0.250	0.150	0.165
10,000	0.130	0.163	0.100	0.110
15,0000	0.096	0.120	0.070	0.077
20,000	0.076	0.095	0.056	0.062
Equal to or grater than 25,000	0.060	0.075	0.044	0.048



Where seating rows have 14 or fewer seats, the minimum clear aisle accessway width shall not be less than 12 inches measured as the clear horizontal distance from the back of the row ahead and the nearest projection of the row behind

Each step shall have a steplight



Ramped aisles having a slope exceeding one unit vertical in 15 units horizontal (6.7-percent slope) and aisle stairs shall be provided with handrails located either at the side or within the aisle width

EMERGENCY ESCAPE AND RESCUE

- In addition to the means of egress required by this chapter, provisions shall be made for emergency escape and rescue in Group R and Group I-1 occupancies.
- Emergency escape and rescue openings shall have a minimum net clear opening of 6 square feet.
- calculation: 20”X24”=480”=40 SQ.FT.