



# ACCESSIBLE MEANS OF EGRESS: IBC AND LIFE SAFETY CODE REQUIREMENTS AND APPLICATIONS



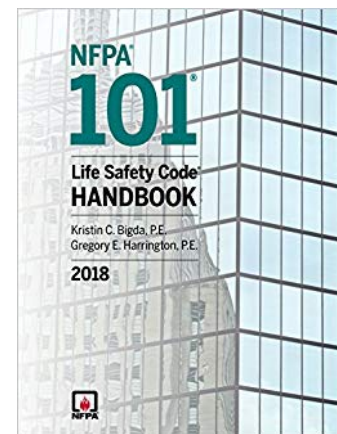
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# APPLICABLE CODES

- International Building Code (IBC), 2018 edition
- NFPA 101<sup>®</sup>, *Life Safety Code*<sup>®</sup> (LSC), 2018 edition



# OVERVIEW

- Outline general requirements of the International Building Code (IBC) and NFPA 101 (*LSC*)
  - Interior exit stairways, areas of refuge, two-way communication
- Highlight changes in the 2018 editions of the IBC and the *LSC*

# DEFINITION OF ACCESSIBLE MEANS OF EGRESS

- Per the IBC:

*“A continuous and unobstructed way of egress travel from any accessible point in a building or facility **to a public way.**”*

- Per the LSC:

*“A means of egress that provides an accessible route to an area of refuge, a horizontal exit, or a public way.”*

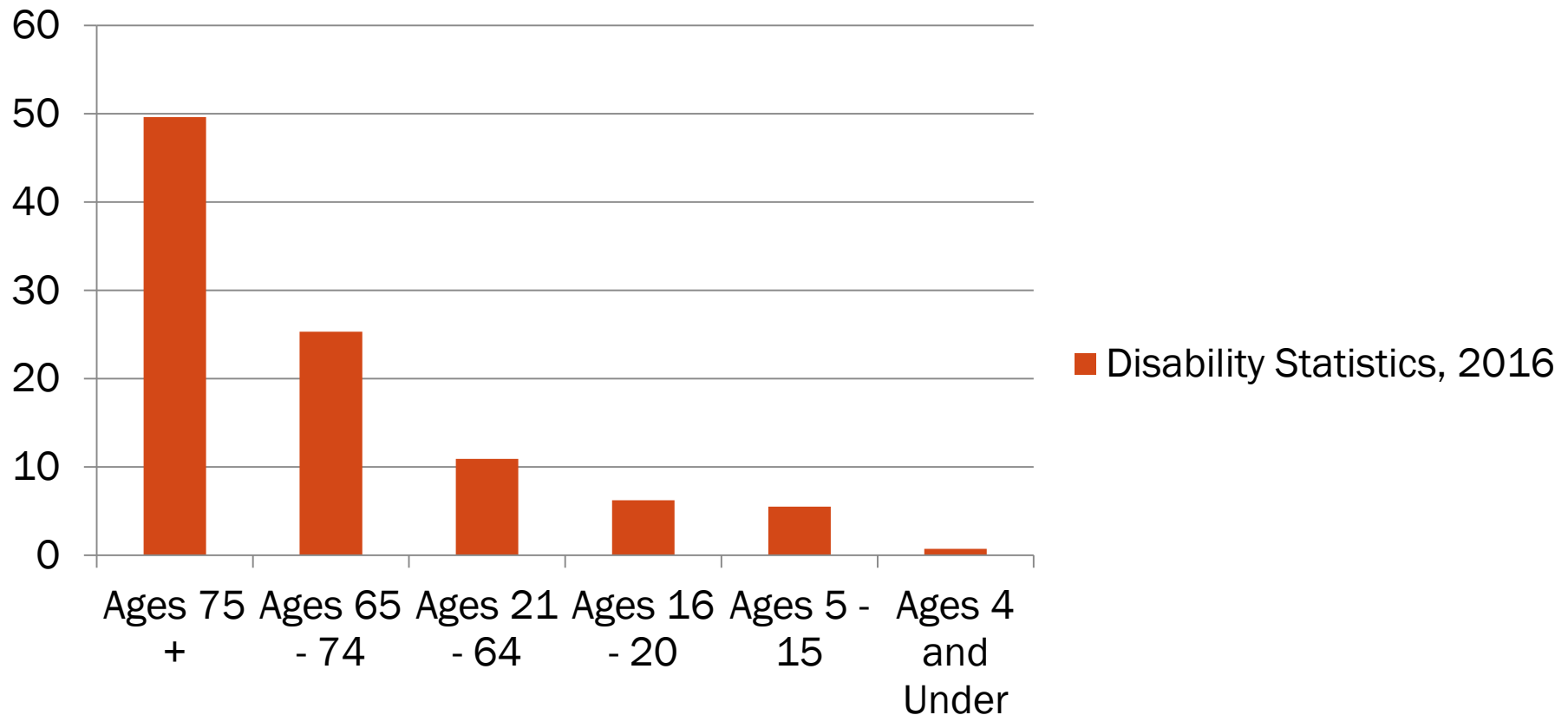
# BENEFITS – WHY??

- The requirements for accessible means of egress are derived from the Americans with Disabilities Act (ADA), except for federal facilities which are covered by the Architectural Barriers Act (ABA)
- To accommodate occupants in a building or space who have physical impairments, whether temporary or permanent
- Example - An employee who is able bodied at the time of hire has an accident and breaks a leg and will be on crutches for 6 weeks



# PREVALENCE OF DISABILITIES

## Disability Statistics, 2016





# CODE LANGUAGE – IBC §1009

- At least one accessible means of egress is required for accessible spaces. Accessible is defined as:

*“a site, building, facility or portion thereof that complies with Chapter 11, Accessibility”*

- Where more than one means of egress is required from an accessible space, at least, but not more than two accessible means of egress must be provided
  - Exceptions – Mezzanines and assembly areas with ramped or stepped aisles require one accessible means of egress



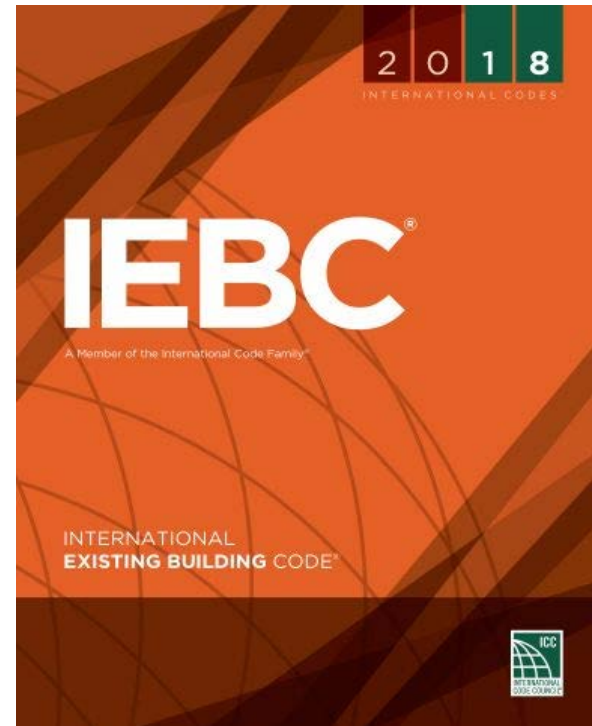
# IBC REQUIREMENTS CONT.

- Change to the 2018 IBC for where an accessible means of egress is required
  - The 2015 edition included an exception that an accessible means of egress was NOT required in existing buildings
  - This language has been removed from the 2018 edition of the IBC
  - Now the requirements for accessible means of egress for existing buildings clearly come from the International Existing Building Code (IEBC)



# IBC REQUIREMENTS

- Per the IEBC §305.6, exception 2, accessible means of egress are not required in existing facilities that are undergoing alterations
- If a facility is undergoing a complete change in occupancy classification, accessible features are required; however, an accessible means of egress is NOT required.



# IBC REQUIREMENTS CONT.

- The accessible means of egress must be comprised of **one or more** of the following:
  - Accessible routes
  - Interior exit stairways
  - Exit access stairways
  - Areas of refuge
  - Exterior exit stairways
  - Elevators
  - Platform lifts
  - Horizontal exits
  - Ramps
  - Exterior areas for assisted rescue



# ACCESSIBLE ROUTE – IBC

Accessible Route is defined as:

“a continuous, unobstructed path that complies with Chapter 11, Accessibility”

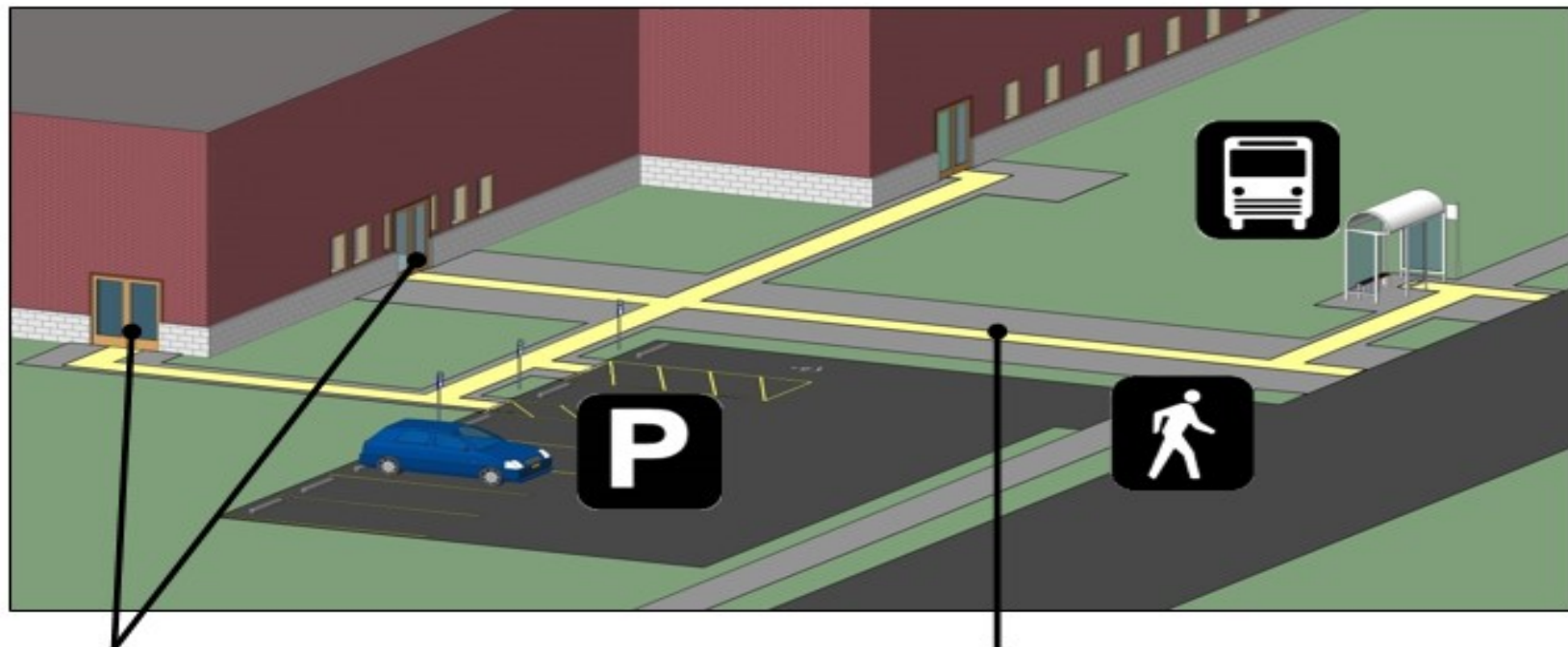
An accessible route is a path beginning at the point where an occupant enters the site to the building. It is also the path that connects accessible spaces within a site.

- Example:
  - The point where entry is made to the site may be a public street or sidewalk, public transportation stop or an accessible parking space or loading zone
  - The circulation path in an office building that connects the employee work area to the lunch room





*Site arrival points include accessible parking spaces and accessible passenger loading zones, public transit stops located on sites, and public streets and sidewalks.*



*An accessible route must connect site arrival points to each accessible entrance they serve.*

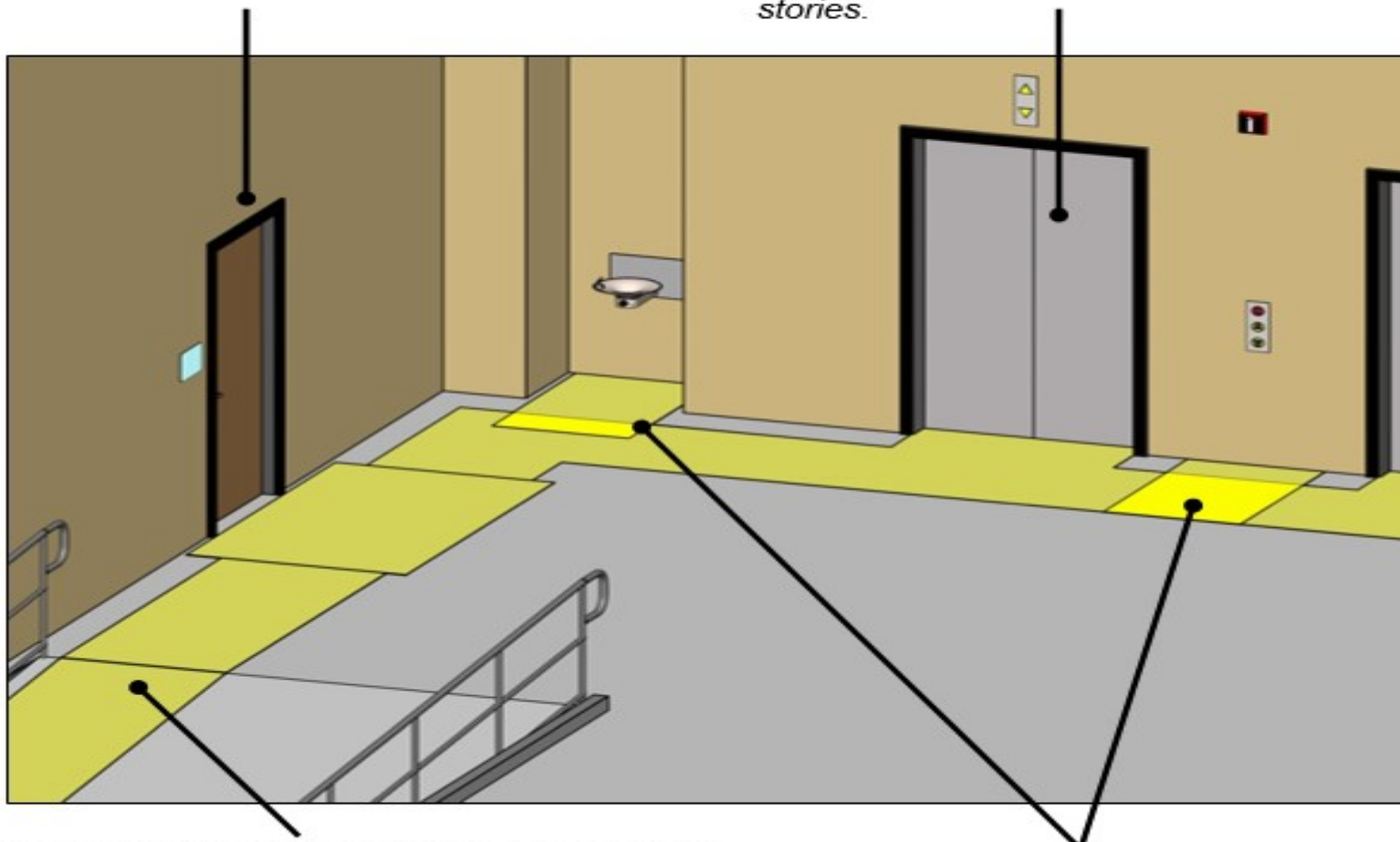
*Accessible routes must coincide with, or be in the same vicinity as, general circulation paths (§206.3).*



*If no pedestrian route onto a site is provided and site entry is by vehicle only, an accessible route from the site boundary is not required (§206.2.1, Ex. 2). Where a vehicular way does provide pedestrian access, such as a shopping center parking lot, an accessible route is required.*

*An accessible route from facility entrances is required to each accessible room, space, and element.*

*Vertical access between stories is required in most multi-story facilities, but exceptions are permitted for some non-governmental facilities under a certain size or number of stories.*



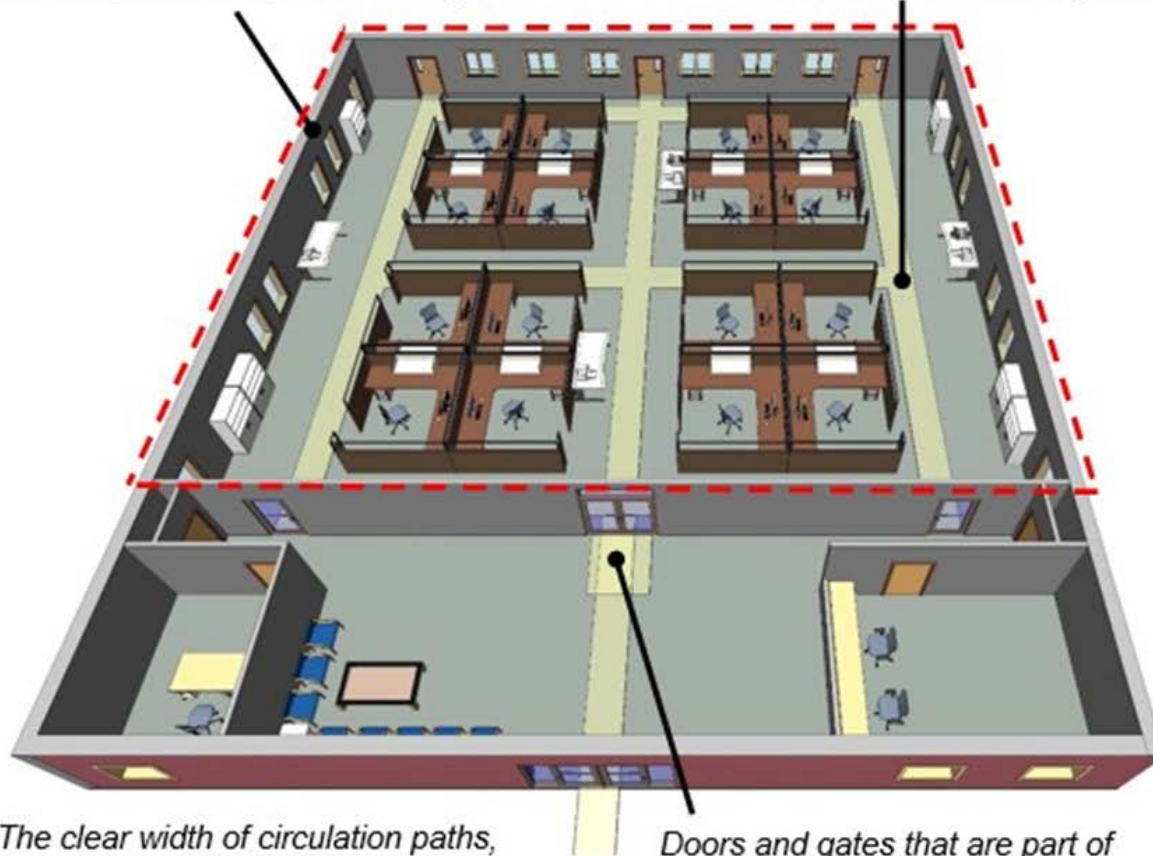
*Accessible routes must serve each level on a floor required to be accessible. Vertical access can be achieved by ramps, curb ramps, elevators or, where permitted, platform lifts.*

*Accessible routes must connect to an unobstructed side of the clear floor space required at accessible elements.*



*The requirement applies to employee work areas that are at least 1,000 sq. ft. in size as defined by permanently installed partitions, counters, casework, or furnishings.*

*Access is required for common use circulation paths. Portions of circulation paths that lead to individual work stations or to elements are not required to comply.*



*The clear width of circulation paths, including ramps, can be less than the minimum specified where it is essential to the function of the work being performed (§403.5, Ex., §405.5, Ex.).*

*Doors and gates that are part of common use circulation paths, including those leading to and from the work area, must fully comply.*

# ACCESSIBLE ROUTE – THRESHOLD

When evaluating the accessible route, keep in mind the threshold requirements of the ADA. The height of the threshold is limited to 1/2 inch in new construction



# STAIRWAYS – IBC

- Stairways:

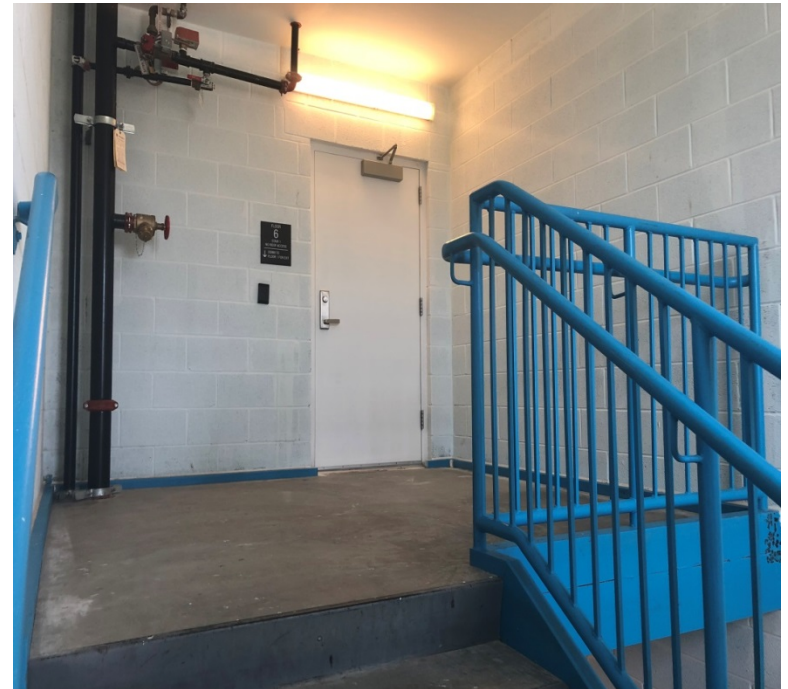
- This section has been changed in the 2018 edition
- Clear width between handrails must be at least 48 inches, unless the building is completely sprinkler protected per NFPA 13 or NFPA 13R OR the handrails are in an area of refuge that is a part of a horizontal exit
  - The reason is that an impaired occupant may need to be carried up or down the stairs to reach the level of exit discharge





# STAIRWAYS – IBC CONT.

- Must be fire rated for 1 hour where connecting 3 or less stories and 2 hours where connecting 4 stories or more
- Must be enclosed by fire barriers that are continuous to the roof deck or to a cap that is fire rated the same as the stair enclosure



# STAIRWAYS – IBC CONT.

- Interior exit stairways must contain an area of refuge or be accessed from an area of refuge UNLESS:
  - Two-way communication is provided at the elevator landing, or
  - The building is sprinkler protected per NFPA 13 or NFPA 13R, or
  - The stairway serves an open parking garage, or
  - The area is smoke protected or an open-air assembly seating area (used to read assembly seating), or
  - The occupancy is R-2, or
  - The stairway is accessed from a refuge area in conjunction with a horizontal exit



Open parking garage



# STAIRWELL AREA OF REFUGE



# AREA OF REFUGE – IBC DEFINITION

- Area of Refuge is defined in the IBC as:
- *“an area where persons unable to use stairways can remain temporarily to await instructions or assistance during emergency evacuation”*



# AREA OF REFUGE – IBC

- Area of refuge must comply with **all** of the requirements below:
  - Must accommodate one wheelchair space of 30 by 48 inches for each 200 occupants and fraction thereof, and
  - The maximum travel distance from any accessible space to an area of refuge may not exceed the values in §1017.1 depending on the occupancy classification, and
  - Must have direct access to a stairway or an elevator complying with §1009.4, and
  - Must be separated from the remainder of the floor by a 1-hour fire rated smoke barrier, unless located within an interior exit stairway, or by a horizontal exit, and
  - Must be provided with two-way communication



# TWO-WAY COMMUNICATION – IBC

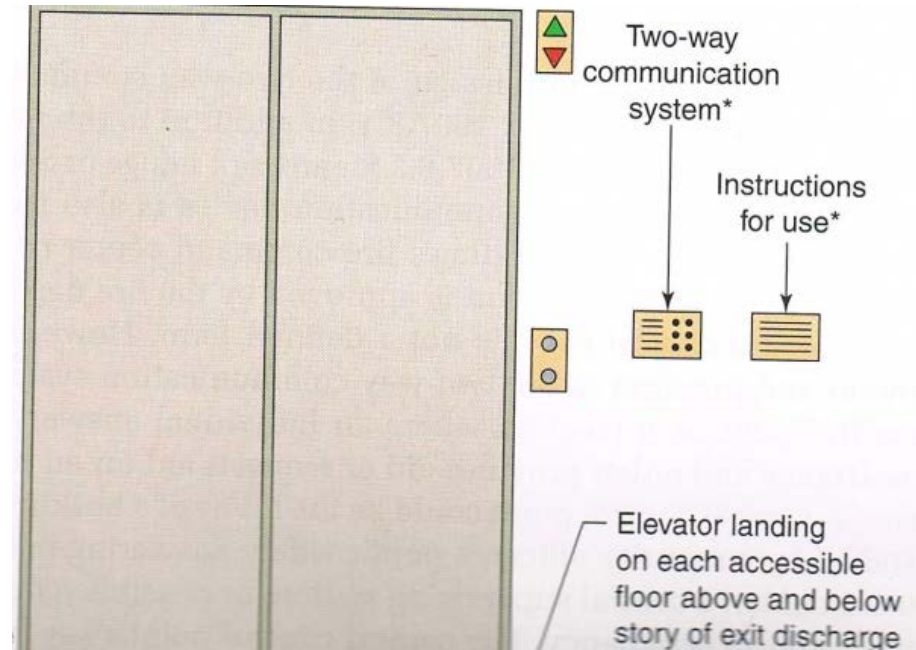
- Two-way communication
  - Required at the landing serving each elevator or bank of elevators on each accessible floor that is one or more stories above or below the level of exit discharge
    - Two-way communication is not required in the following instances:
      - ❖ At the elevator landing where provided in the area of refuge, or
      - ❖ On floors containing ramps per §1012, or
      - ❖ At the landing of service elevators that are not part of the accessible means of egress or accessible route, or
      - ❖ At freight elevators, or
      - ❖ At the landing serving a private residence elevator, or
      - ❖ I-2 or I-3 facilities





# TWO-WAY COMMUNICATION – IBC

- Directions for use must be posted adjacent to the two-way communication system.
- The directions must include instructions for summoning help and must indicate the location



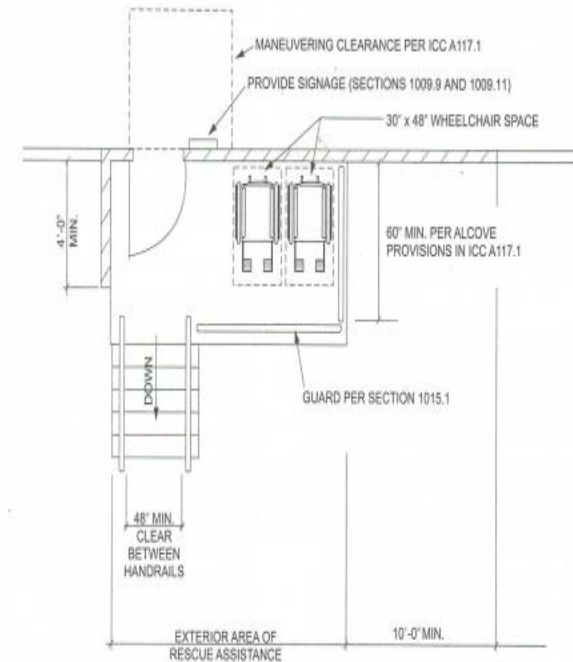


# LOBBY TWO-WAY COMMUNICATION SYSTEM



# EXTERIOR AREAS FOR ASSISTED RESCUE – IBC

- Exterior Areas for Assisted Rescue must comply with **all** of the following:
  - Must be accessed by an accessible route from the area being served, and
  - If the exit discharge does not include an accessible route, an exterior landing must provide the exterior area for assisted rescue, and
  - Must accommodate one wheelchair space of 30 by 48 inches for each 200 occupants or fraction thereof, and
  - Must be separated from the interior of the building by construction that is fire rated for at least 1-hour, and
  - Must be open to the outside air



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

Figure 1009.7.1  
EXTERIOR AREA OF RESCUE ASSISTANCE—PLAN VIEW

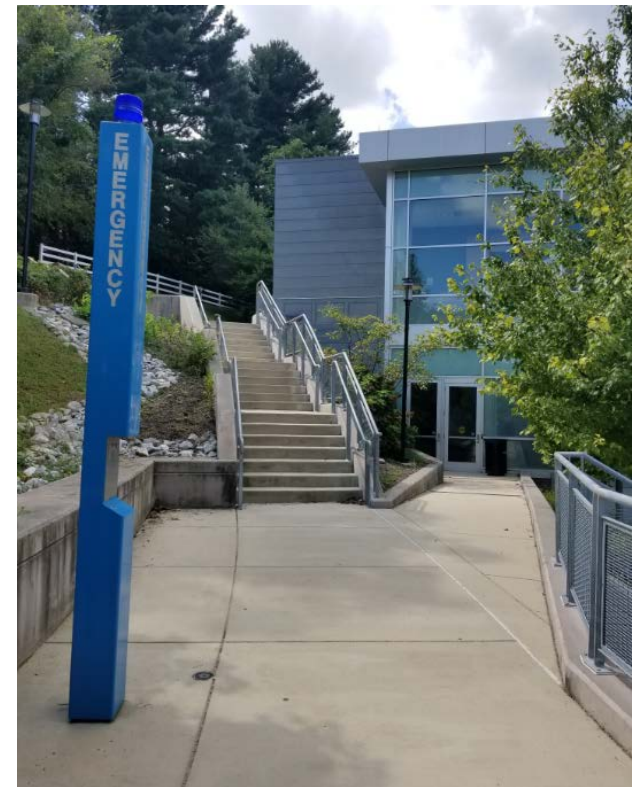


# EXTERIOR AREA FOR ASSISTED RESCUE



# EXTERIOR AREAS FOR ASSISTED RESCUE CONT.

- The stairway provisions have been changed – a new exception was added and a fire rated separation is no longer required at the exterior wall where the building is sprinkler protected per NFPA 13 or NFPA 13R



# ELEVATORS – IBC

- Elevators as an accessible means of egress must meet **all** of the following:
  - Required in buildings with an accessible floor 4 or more stories above or below the level of exit discharge UNLESS:
    - the building is sprinkler protected per NFPA 13 or NFPA 13R and a horizontal exit is provided on the floor – elevator not required on this floor or
    - the building is sprinkler protected per NFPA 13 or NFPA 13R and a ramp exit is provided on the floor – elevator not required on this floor
  - Must be provided with standby power, and





# ELEVATORS – IBC CONT.

- Elevators as an accessible means of egress must meet **all** of the following (cont.):
  - Must be accessed by an area of refuge except:
    - In open parking garages, or
    - In buildings equipped with an automatic sprinkler system per NFPA 13 or NFPA 13R, or
    - At elevators not required to be located in a shaft, or
    - At elevators serving smoke-protected or open-air assembly seating areas, or
    - At elevators accessed from a refuge area in conjunction with a horizontal exit



# PLATFORM LIFTS – IBC

- Platform Lifts

- Permitted where allowed per §1109.8 to be a part of an accessible route, except for #10
- Standby power per Chapter 27 is required
  - Power supply must be sufficient to run the platform lift for at least 5 round trips



# PLATFORM LIFTS – IBC CONT.

- When can a platform lift be used as a part of an accessible route?
  - To performing areas and speaker platforms, or
  - To wheelchair spaces required to comply with the wheelchair space dispersion requirements, or
  - To spaces not open to the general public with an occupant load less than 5 people, or
  - Within an individual dwelling or sleeping unit that is not required to be an Accessible unit, Type A unit or Type B unit, or
  - To areas in a courtroom such as jury boxes and witness stands, or
  - To unload and load areas serving amusement rides, or
  - To play components or soft play structures, or
  - In lieu of gangways serving fishing piers or platforms





# PLATFORM LIFTS – IBC CONT.

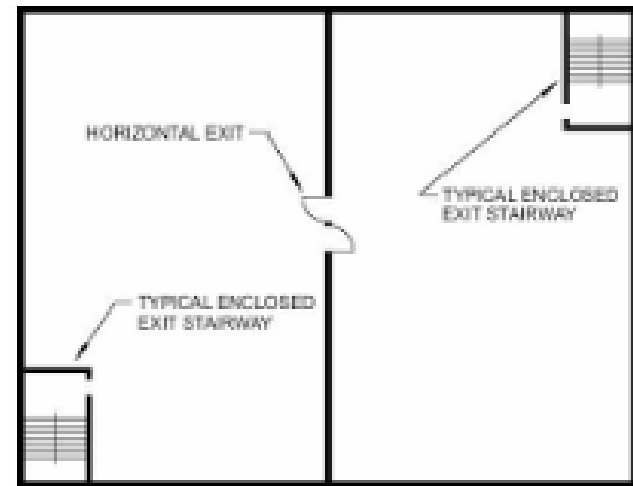
- When is a platform lift NOT permitted for use?
  - Item #10 to §1109.8
    - Where existing site constraints make it infeasible to provide a ramp or elevator





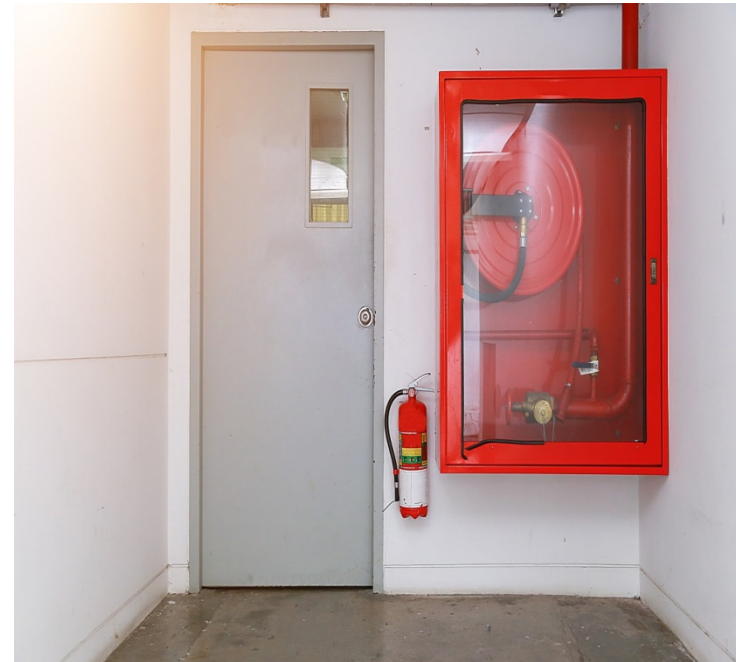
# HORIZONTAL EXITS – IBC

- Per the IBC, a horizontal exit is defined as:  
*“an exit component consisting of fire-resistance-rated construction and opening protectives intended to compartmentalize portions of a building creating refuge areas that afford safety from the fire and smoke from the area of fire origin.”*



# HORIZONTAL EXITS – IBC

- Horizontal Exit must meet **all** of the requirements below
  - Must be a fire wall or fire barrier that is fire rated for at least 2 hours with 90 minute opening protectives, and
  - The refuge area must be a public space or a space occupied by the same tenant, and
  - Must be sized to accommodate the original occupant load plus the occupant load that is anticipated from the adjoining compartment and computed based on 3 sq ft per person, and
  - Standpipe hose valve connections may be required unless floor areas adjacent to the horizontal exit are reachable from an interior exit stair within 130 ft of a standpipe hose connection



# RAMPS – IBC

- Per IBC §1012:
  - Ramps used as a part of the means of egress must have a slope not steeper than 1 unit vertical in 12 units horizontal (which equates to an 8% slope)
  - The maximum rise is 30 inches between landings
  - A landing must be provided at the top and bottom of the ramp and all changes in direction
  - Handrails are required on both sides where the rise is greater than 6 inches



# SIGNAGE REQUIREMENTS – IBC

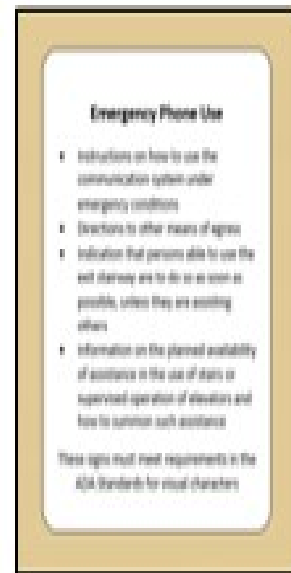
- Signage stating “area of refuge” must be provided at each door providing access to an area of refuge
- Each door providing access to an exterior area of assisted rescue must have a sign stating “Exterior Area of Assisted Rescue”





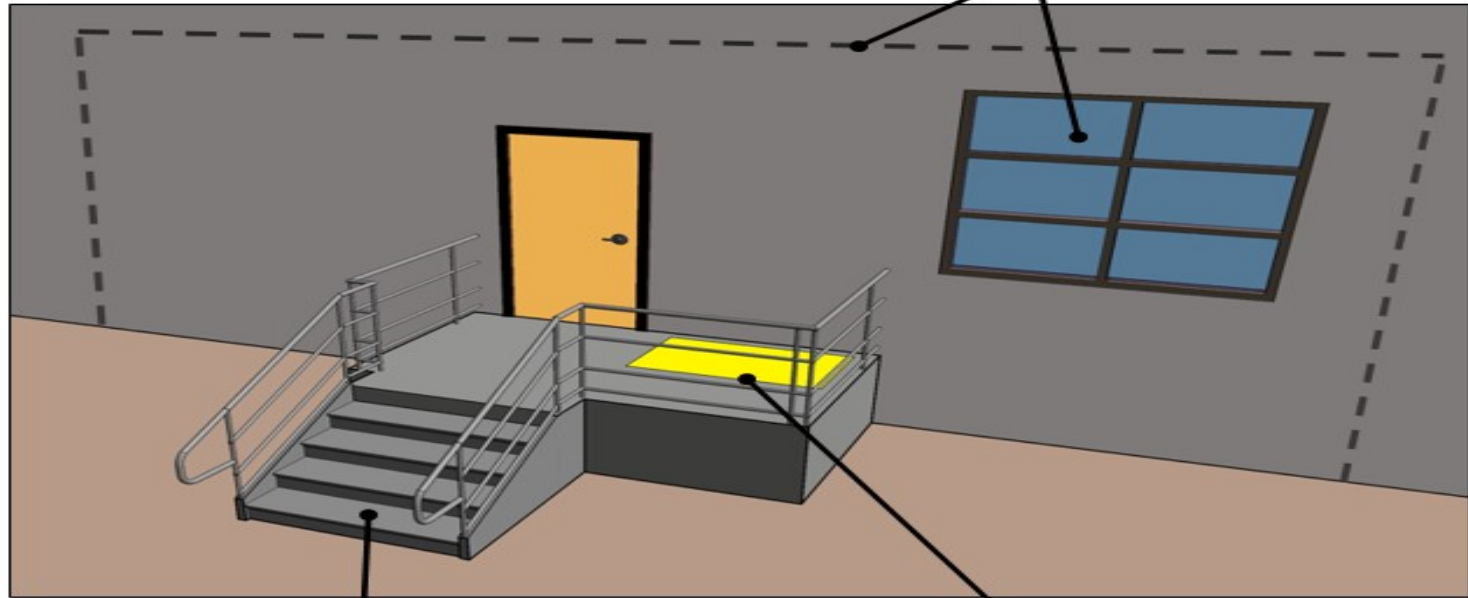
# DIRECTIONAL SIGNAGE – IBC

- Directional signage indicating all other means of egress and other accessible means of egress must be provided at **all** of the following locations:
  - At elevator landings, and
  - Within areas of refuge, and
  - At exits serving a required accessible space that is not an approved accessible means of egress



**Openness**  
Area must be at least 50% open to minimize accumulation of smoke or toxic gases.

**Fire-rated Separation**  
One hour min. fire-rated separation within 10' (horizontal and vertical) of the exterior area of assisted rescue (3/4 hour rating for opening protectives within this area).



**Exterior Exit Stairway**  
48" min, clear width  
between handrails

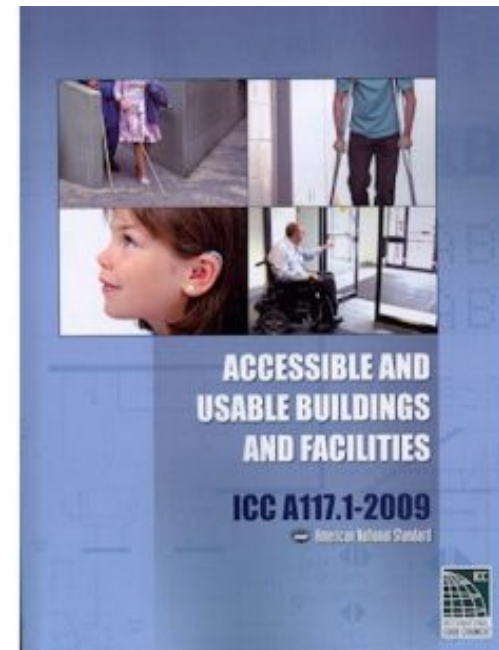
**Wheelchair Space**  
1 space (30" min. by 48" min.) for every 200 occupants or portion thereof served by the exterior area for assisted rescue. Spaces cannot reduce the required egress width and must be entered directly from an accessible route or one adjacent wheelchair space.



**Identification**  
Visual and tactile sign: "AREA OF REFUGE" with International Symbol of Accessibility located at door (interior side) leading to exterior area for assisted rescue.

# ACCESSIBLE MEANS OF EGRESS – LSC

- Must comply with ICC/ANSI A117.1, *Accessible and Usable Buildings and Facilities*
- At least two accessible means of egress are required to serve areas accessible to occupants with severe mobility impairments, unless the building is permitted to have a single exit
- Existing buildings are exempt unless required in the existing provisions of the specific occupancy chapter



# LSC REQUIREMENTS

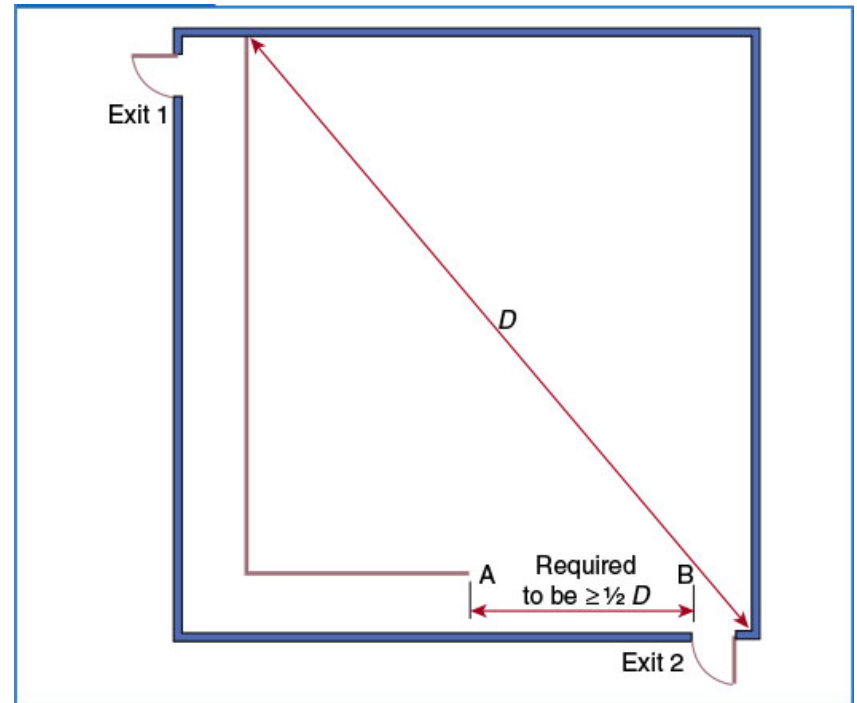
- Occupants must reach either the accessible area of refuge or an accessible exit within the maximum allowable travel distance for the occupancy type
- Health care occupancies are not required to contain an accessible means of egress if they are sprinkler protected





# LSC REQUIREMENTS CONT.

- The applicable common path of travel requirements, based on the occupancy classification, also apply to the travel path along the accessible means of egress
- The provisions for remoteness of exits also applies to the location of the accessible means of egress unless the building is sprinkler protected.
  - Where two accessible means of egress are required, they must be located at least  $\frac{1}{2}$  the diagonal of the maximum diagonal dimension of the building or area served



# LSC REQUIREMENTS CONT.

- The accessible means of egress must be continuous to the public way or to an area of refuge
  - Occupants must not have to travel back inside the building of origin once they have entered the area of refuge.



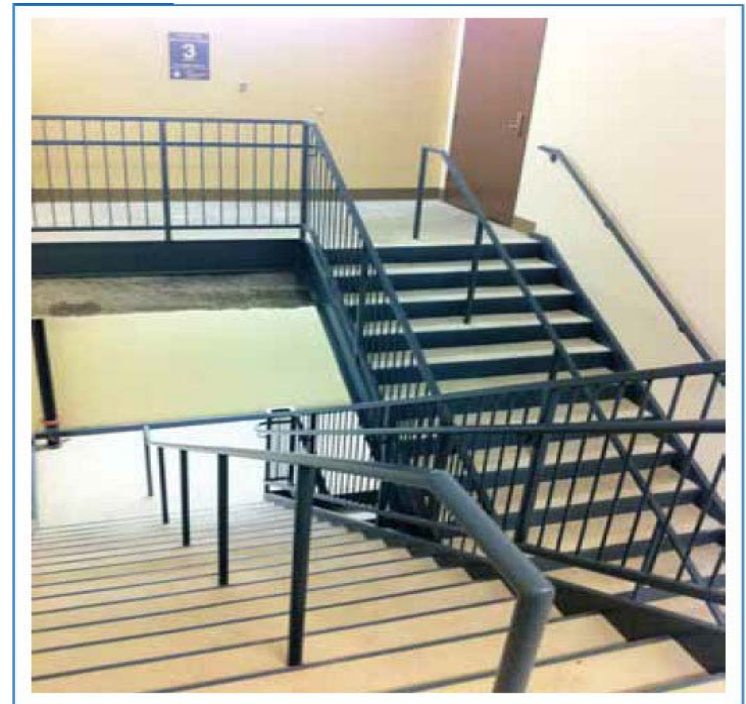
# LSC REQUIREMENTS CONT.

- The accessible means of egress must discharge to an area of refuge and be separated by a smoke barrier with a minimum of 1-hour fire rating OR a horizontal exit
- At least one elevator is required where accessible stories are **4 or more stories above or below the story of exit discharge**



# STAIRWAYS – LSC

- Per §7.5.4.4, stairways may be used as a part of the accessible means of egress.
  - Must have an area of refuge, per §7.2.12, within an enlarged story-level landing or be accessed from an area of refuge





# AREA OF REFUGE – LSC

Per §7.2.12,

- The building must be sprinkler protected per NFPA 13, NFPA 13R or NFPA 13D
  - Exempt from the general and accessibility requirements of 7.2.12.2.1 and 7.2.12.2.2
- The building must have an accessible story that is one or more stories above or below the level of exit discharge
- Two-way communication required in each elevator lobby that is not on a level of exit discharge



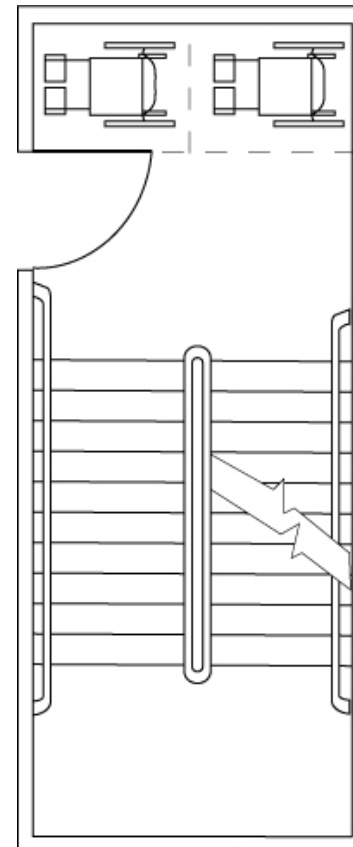
# AREA OF REFUGE – LSC

- If the building is NOT sprinkler protected:
  - The area of refuge must meet the general requirements of §7.1 **AND**
  - The area of refuge must meet the accessibility and construction details requirements of §7.2.12.2 and §7.2.12.3, respectively



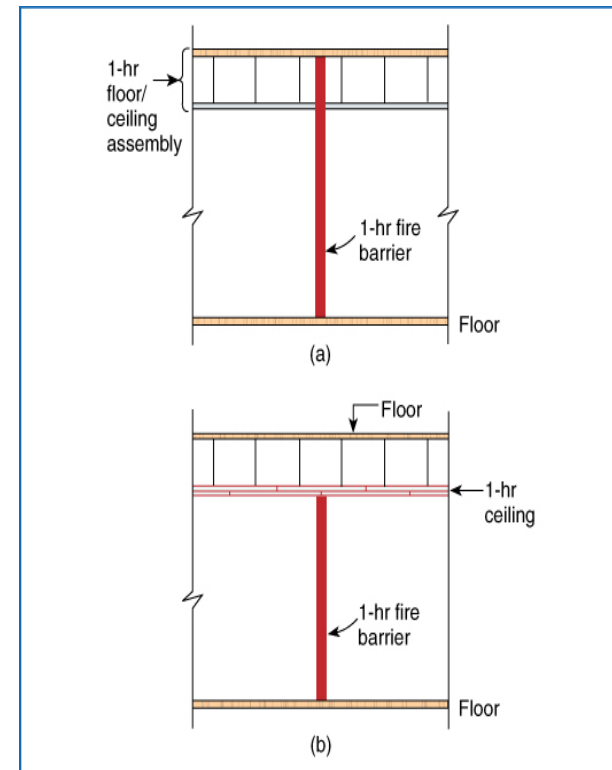
# AREA OF REFUGE – LSC

- Must accommodate one wheelchair space of 30 by 48 inches for each 200 occupants and fraction thereof
- At least 36 inches of clear egress width required
- For areas of refuge < 1000 sq ft, calculations or tests are required to prove that tenable conditions are maintained in the area of refuge for at least 15 minutes when the space on the other side of the fire rated wall separating the area of refuge is exposed to the maximum expected fire conditions



# AREA OF REFUGE – LSC

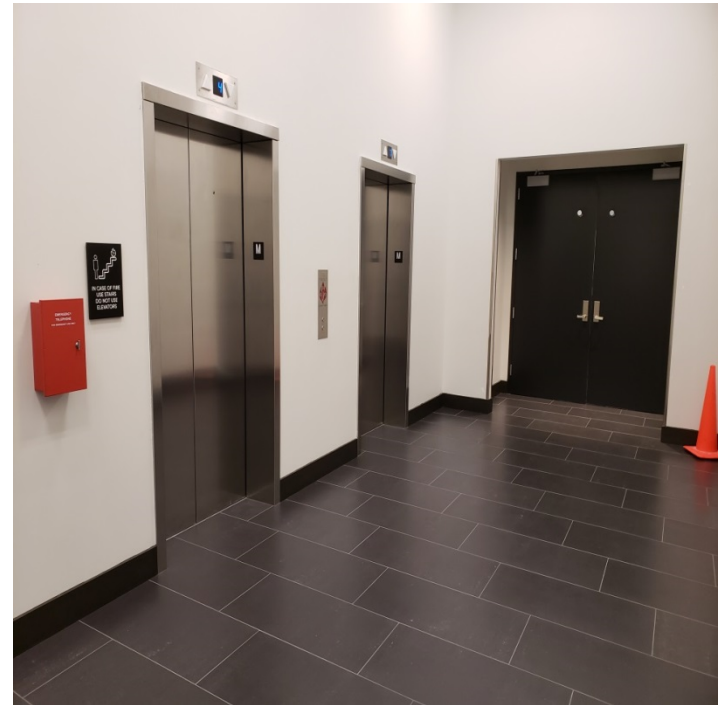
- According to *LSC Annex A*, tenable conditions are those that:
  - maintain the temperature of any smoke in the area of refuge at less than 200°F if the smoke is more than 60 in. above the floor and at less than 120°F if the smoke descends below the 60 in. level in the area of refuge.
- Each area of refuge must be separated from the remainder of the story by fire barrier that is fire rated for at least 1-hour with 20-minute opening protectives





# ELEVATORS – LSC

- Elevators are required if there are accessible stories that are 4 or more stories above or below a story of exit discharge
- Elevators may serve as a part of the accessible means of egress IF:
  - The elevator is approved for fire fighters' emergency operations per ASME A17.1, *Safety Code for Elevators and Escalators*, and
  - The power supply must be protected against interruption that occurs in the building but outside of the area of refuge



# ELEVATORS – LSC CONT.

- The elevator is enclosed by a shaft that meets the requirements for a smokeproof enclosure unless:
  - The area of refuge is more than 1000 sq ft and is created by a horizontal exit with a minimum 2-hour fire rated separation, **or**
  - The elevator complies with §7.2.13, Elevators in Towers
    - Applicable to areas such as air traffic control towers
    - It serves areas that are not to be used by the general public



# SIGNAGE – LSC

- The area of refuge must be identified by a tactile sign that reads “AREA OF REFUGE”
  - Signage must comply with ICC/ANSI A117.1
  - Required at each door opening that provides access to the area of refuge
  - At all exits not providing an accessible means of egress
  - Required where necessary to clearly indicate the direction to an area of refuge



# SUMMARY OF DIFFERENCES

## LSC

- No provisions for an exterior means of rescue assistance
- Contains provisions for the elevator shaft to be in a smokeproof enclosure unless the building is sprinkler protected
- Contains provisions for smoke management within the area of refuge
- Area of refuge must be separated in a building that is NOT sprinkler protected must be separated from the remainder of the building by 1-hour barriers with 20 minute opening protectives

## IBC

- Area of refuge must be separated from the remainder of the building by a smoke barrier with a minimum 1-hour rating with 20 minute opening protectives, regardless of presence of sprinkler system



# SUMMARY OF DIFFERENCES – CONT.

## LSC

- Exempts healthcare occupancies that are fully sprinkler protected
- Includes provisions for buildings that are sprinkler protected per NFPA 13, NFPA 13R or NFPA 13D
- Does **NOT** specifically discuss ramps or platform lifts as an acceptable accessible means of egress, but the referenced ICC/ANSI A117.1 does
- Elevator must be accessed from an area of refuge regardless of presence of sprinkler protection in the building
  - Floors are considered an area of refuge in a sprinkler protected building

## IBC

- Includes provisions for buildings that are sprinkler protected per NFPA 13 or NFPA 13R, **NOT** NFPA 13D
- Where elevators are used, an area of refuge is not required to access the elevator if the building is fully sprinkler protected



# QUESTIONS AND DISCUSSION

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