Accessible Means of Egress/Emergency Evacuation

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Agenda

• What is the International Building Code (IBC)?
• Types of disasters to addressed in IBC
• Emergency evacuation from a fire
  – Planning
  – Notification & Communication
  – Means of Egress (MOE)
  – Accessible Means of Egress (AMOE)
  – New Technology
What are the International Codes?

• The **International Building Code** (IBC) is a model building code developed by the International Code Council (ICC).
• The ICC has a family of codes providing **minimum** requirements for public health and safety.
• It has been adopted throughout most of the United States at the state or local level as a referenced document. States do make **amendments**.
• Published every 3 years so that requirements stay current with industry advances.

What are the International Codes?

• The IBC addresses construction and design or **new** buildings and **alterations**.
• The IFC code addresses the **operation** of a completed building.
• For example, the building code sets criteria for the **number, size and location** of exits in the design of a building while the fire code requires the exits of a completed building to not be blocked.
• The building code also deals with access for persons with disabilities – both in and out.
Enforcement

- The architect, contractor and building owner are required to comply with federal and state regulations.
- The building code official and fire official enforce state/local laws. These laws reference the IBC for minimum building requirements.
- The building code official does not enforce federal laws, including the ADA.

Means of egress

- Refers to the ability to exit the structure, primarily in the event of an emergency, such as a fire.
- A means of egress is broken into three parts: the path of travel to an exit, the exit itself, and the path to a safe area outside.
Means of egress

Requirements are based on:

- The **number of exits** required for a structure based on its intended **use** and the **number of people** who could be in the place at one time as well as their **relative locations**.
- **Special needs**, such as hospitals, nursing homes, and prisons where evacuating people may have special requirements.
- Possible **hazards** (such as in industries) where flammable or toxic chemicals will be in use.

ADA & ABA Standards §207

Require compliance with the International Building Code (IBC) for accessible means of egress
ADA & ABA Standards

• What about compliance with later editions?

• Permitted where equivalent or better (“equivalent facilitation” in the ADA Standards Section 103)

Are you or your community prepared for this?
Types of hazards

• Fire
• Earthquake
• Wildfires
• Severe weather
  – Snow/Ice
  – Flood/Storm Surge
  – Tornado/Hurricane/High Winds

Prepare Yourself and Your Family

• *Although no one can prevent disasters from occurring, there are many things you can do to make the impact less devastating for your family.*
• Every home should have 3 key elements in place before a disaster strikes:
  – Evacuation Plan
  – Communication Plan
  – Emergency Supply Kit
Wildfires

Wildfire Potential

[Map of Wildland Fire Potential]
In Wildfire Areas

• ICC’s *International Wildland-Urban Interface Code®* contains detailed requirements to minimize the hazards.
  – Fire service access; premises identification; access to water and equipment.

In Wildfire Areas

• What you can do –
  – Plant fire prone trees and shrubs away from your home and far enough apart so they won’t ignite one another.
  – Install noncombustible 1/4 inch or smaller mesh screening on attic/soffit vents and around elevated wood decks to keep out embers.
  – Maintain a “defensible” space around your home by clearing all flammable vegetation a minimum of 30 feet around all structures.
  – Consider installing protective shutters or heavy fire-resistant drapes.
Earthquakes

Earthquakes

USGS

INTERNATIONAL CODE COUNCIL
In Earthquake Areas

• The IBC contains requirements for earthquake design
  – Seismic resistance systems to improve building resistance to earthquakes
  – Reduce the risk or life loss or injury of occupants

In Earthquake Areas

• What you can do –
  – Make sure your home is securely anchored to its foundation
  – Strap water heaters, appliances and TVs to wall studs.
  – Anchor bookshelves, heavy furniture, appliances and televisions to wall studs.
  – Secure pictures, mirrors and ornaments to the wall with appropriate fasteners.
  – Know where and how to shut off electricity, gas, and water services.
Floods/Storm Surge
In Flood/Storm Surge Areas

• The IBC contains requirements for building in flood and coastal areas.
• This is in cooperation with FEMA and the NFIP.
• Elevating your home above the base flood elevation (the elevation associated with the "100-year flood") is the best method of protecting your home, and is a requirement for new homes.

In Flood/Storm Surge Areas

• What you can do –
  – Don’t wait – evacuate!
  – Elevate mechanical equipment such as water heaters, furnaces, air conditioner units, circuit breaker boxes.
  – Anchor propane tanks.
  – Know where gas and water shutoffs are located.
Tsunami

Appendix M Tsunami-Generated Flood Hazard.

• Addressing a tsunami risk for all types of construction in a tsunami hazard zone through building code requirements would typically not be cost effective, making tsunami-resistant construction impractical at an individual building level.

• The appendix does allow the adoption and enforcement of requirements for tsunami hazard zones that regulate the presence of high risk or high hazard structures.

Volcanoes

Not in the codes now.
Community planning similar to tsunamis?
High winds

• The IBC has requirements for high wind and weather protection.
• The requirements for high winds are not enough to protect your home or business from a tornado or hurricane.
High Winds

• What you can do –
  – Install permanent shutters, or plan to protect your windows and glass doors with plywood panels.
  – The roof of your house is very vulnerable to high winds. Reinforce the connection between the roof and walls with hurricane straps and bracing to resist uplift.
  – Reinforce double-entry front doors as well as garage doors.
  – Clear away dead or weak tree branches that may break off and damage your house in high winds.

Tornadoes and Hurricanes
Wind loads

- Wind load contour maps
- Hurricanes
  - Atlantic coast and Gulf of Mexico
  - Hawaii, Puerto Rico, Guam and Virgin Islands
- Tornado
  - Mid-west and eastern states
  - Alaska, American Samoa, Guam, Hawaii, Puerto Rico, Virgin Islands

Types of shelters

- Shelters used for hurricanes
- Shelters used for tornadoes
- The primary difference in these two types is the expected duration of the storm.
  - Hurricane shelters – 24 hours
  - Tornado shelters – 2 hours
Types of shelters

- **Community shelters**
  - Any shelter that is not a residential shelter

- **Residential shelters**
  - Limited to 16 occupants maximum
  - Limited to a residence or small group of residences

- **ICC/NSSA 500** – Standard for the Design and Construction of Storm Shelters

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Fires
Fire Protection

- The IBC contains requirements for fire rated construction, sprinklers, alarms and smoke detectors.
- What you can do –
  - Replace batteries in smoke detectors
  - Have a fire evacuation plan at work and at home and practice it.
  - Participate in the planning for fire and safety evacuation plans.

In case of fire

- Prepare yourself
- Participate in the planning where you live and work
Planning

Pre-Planning for Emergencies

- Fire evacuation plans
- Fire safety plans
- Lockdown plans
- Associated drills
- Worked out with the building owner/renter and the fire department
- Updated annually or when necessitated by changes
- Available for review
Pre-Planning for Emergencies

Required in:

• Assembly
• Churches over 2,000 occupants
• Educational
• College dormitories
• High Hazard
• Institutional
• Hotels
• Group homes

Pre-Planning for Emergencies

Required in:

• High-rise buildings
• Covered malls > 50,000 sq.ft.
• Mercantile & Factory (> 500 occupants on the 1st floor and basements or 2nd floor > 100 occupants)
• Underground buildings
• Assembly, Educational and Mercantile with atriums
Fire Evacuation Plans

• Emergency routes
• Strategy - Evacuation or defend in place
• Critical equipment operation
• Assisted rescue procedures
• Verifying full evacuation
• Emergency responders
• Notification of occupants
• Notification of fire department
• Emergency voice/alarm communication system

Fire Safety Plans

• Reporting emergency
• Evacuation or relocation of occupants
• Site plans – occupancy assembly point, fire hydrants, fire truck route
• Floor plans – exits, routes, areas of refuge, fire alarm, extinguishers, fire hoses
• Major fire hazards
• Persons responsible
Lock-down plans

- Occupant notification
- Emergency responders notification
- Accountability
- Recall
- Communication
- Coordination
- Training

Emergency Drills

- Assembly – quarterly
- Business – annually
- Educational – monthly
- Factory – annually
- Institutional – quarterly on each shift
- Hotel - quarterly on each shift
- Apartments/dorms – 4 times annually
- Group homes - quarterly on each shift
- High rise - annually
Notification & Communication

Signage

- Evacuation plans at elevators
- Signage at any non-accessible exits
Signage

• Visual exit signs at stairway entrances
• Tactile exit signs at stairway entrances
Two-way Communication

- Within areas of refuge
- At elevator lobbies in sprinklered buildings (2009, 2012 and 2015 IBC)
- Variety of options
- Allow for communication and feedback between emergency responders and people who need assistance

Audible and Visible alarms

- Installed in accordance with NFPA 72.
- Manual fire alarm pull stations must be accessible.
Visible Alarms

- All public spaces.
- All common spaces.
- Group I-1 (assisted living) and R-1 (hotel) units per Table 907.9.1.3.
- Future expansion for:
  - Individual employee work areas.
  - Smoke alarms in Group R-2 (apartments) units.

Sprinkler automatic notification

- Activation of the sprinkler system automatically notifies the fire department.
- Upon arrival the fire department can use the sprinkler panel to identify the floor where the fire is happening.
- Standby power on the elevators allow for the fire department to move to the fire floor so they can offer assistance.
Means of Egress (MOE)

A *means of egress* is an unobstructed path to leave buildings, structures, and spaces.

Comprised of:
- Exit Access
- Exits
- Exit Discharge
MOE: Exit Access

The path from any location in a building to an exit

Accessible Exit Access

- Ramps
- Horizontal surfaces
- Platform lifts with standby power
MOE: Exits

Exits include doors to the outside, enclosed exit stairways, or horizontal exits

Accessible Exit

Exit Door

Horizontal Exit

Exit Stairs

Elevator with standby power
MOE: Exit Discharge

The path from an exit to a public way (i.e., street or alley)

Accessible Exit Discharge
Accessible Means of Egress

An accessible means of egress is:

A continuous and unobstructed accessible route of egress travel from any accessible point in a building or facility to a public way.
Accessible MOE

Allow for self evacuation when possible

• Assisted rescue when necessary
• Defend in place (i.e., hospitals, jails)
• Assisted evacuation at stairways
• Assisted evacuation at elevators with standby power
AMOE: Minimum Number

Minimum number of AMOE required:

1 - where 1 MOE required
2 - if more than 1 MOE required

Exceptions:
• Existing facilities
• Areas not required to be accessible

MOE: Minimum Number

IBC requires 2 or more MOE in most facilities with few exceptions

Drawing courtesy of Access Board
MOE: Minimum Number

MOE required from each space and room

Drawing courtesy of Access Board

MOE: Minimum Number

Required MOE must be maintained under all conditions, including temporary divisions of space

Drawing courtesy of Access Board
MOE: Minimum Number
At least 2 MOE required

Example: 1 MOE/AMOE
1 MOE & 1 AMOE allowed under these conditions:
- mercantile occupancy; and
- 49 or fewer occupants; and
- 75’ max. travel distance from farthest point

Drawing courtesy of Access Board
Exit Discharge

- Accessible route to a public way or
- Interior area of refuge or
- Exterior area for assisted rescue

No exceptions for sprinklered buildings
Exit Discharge
Interior Area of Refuge

Exit Discharge
Exterior Area for Assisted Rescue

Drawing courtesy of Access Board
Exterior Area for Assisted Rescue

2012 IBC: New provision for alternative protection from opening on one side

Drawing courtesy of Access Board
Exit Access: Upper Floors

AMOE on floors above or below level of exit discharge connect to exit stairs

Drawing courtesy of Access Board
Elevator with Standby Power

Required in buildings 5 stories or higher

Counts as 1 of 2 accessible MOE

Drawing courtesy of Access Board
Elevator with Standby Power

Required in buildings with 4 or more stories above or below the level of exit discharge

Exceptions for standby power:

- Sprinklered buildings with horizontal exits
- Ramps from each level
Exit Access: Upper Floors

Areas of refuge required in non-sprinklered buildings

Areas of Refuge

- on accessible route
- separated by a smoke barrier
- direct access to exit stairway, elevator with standby power
- 48” min. stairway width
- 30” x 48” space (1 for every 200 occupants) located outside general MOE path
- two-way communication system
- identification and instructional signage
- alternative: horizontal exit
Areas of Refuge

[Diagram of areas of refuge with wheelchair spaces outside exit width and communication device with posted instructions]

Drawing courtesy of Access Board
Areas of Refuge

Not required in:

- buildings fully equipped with an automatic sprinkler system
- open parking garages
- open exit access stairways between stories
Stairway Width (48” min)

Stairway width 48” min. (measured between handrails) not required:

- in buildings fully equipped with an automatic sprinkler system
- where horizontal exits are provided

New Technology

2009 & 2012
International Building Code
Fire Service Access Elevators

• Required in buildings with floor >120 ft. above fire department vehicle access

• Must open into a fire service access elevator lobby and have direct access to an exit enclosure

• Numerous requirements: lobby protection, minimum lobby size, standby power, monitoring of elevator, protection of wiring, etc.
Occupant Evacuation Elevators

- Used for occupant self evacuation prior to emergency recall
- Must open into an elevator lobby and have direct access to an exit stairway
- Numerous requirements: lobby protection, minimum lobby size, elevator status indicators in lobby, standby power, monitoring of elevators, protection of wiring, etc.

Occupant Evacuation Elevator Lobby

- One wheelchair space per 50 occupants
- Enclosed by 1-hour smoke barrier
- Direct access to an exit enclosure
- Two-way communication system and instructions
- Signage and lobby status indicator
Questions?

Technical Assistance

- ADA – Access Board, 800-872-2253(v), 800-993-2822(TTY), www.access-board.gov or email at ta@access-board.gov
- ADA – ADA Technical Assistance Centers (DBTAC) (800)949-4232; wwwadata.org
- Fair Housing – Fair Housing Accessibility First, (888)341-7781; www.fairhousingfirst.org.
Thank you for attending.