

Fire Inspector Certification Program

*New Jersey Uniform Fire Code
Inspector Training Program*

Module 9 Means of Egress- Part II



1

Welcome

Instructor introduction

- *Before we get started*
 - *Has everyone signed in?*
 - *Anyone have any questions?*

2

IFC 2015 NJ Edition Review

3

1001.2 Minimum Requirements

- *It shall be unlawful to alter a building or structure in a manner that will reduce the number of exits or the capacity of the means of egress to less than that required by the uniform construction code in effect at the time of construction or the uniform fire code as applicable*

1003.1 Owners Responsibility

- *The owner or lessee of every structure shall be responsible for the safety of all persons in or occupying such premises with respect to the adequacy of the means of egress*



1003.2 Egress Plan

- *“Where required by Section 404.2, a plan complying with Section 404.3 shall be submitted to the fire official and an approved copy shall be kept on the premises of assembly occupancies.”*

Section 404 Requires Fire Safety and Evacuation plans for required uses

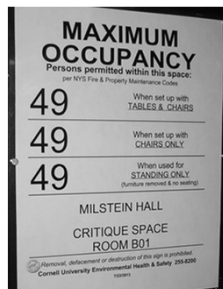
1003.3 Occupant Load

- *“The occupant load for structures shall be maintained pursuant to the New Jersey Uniform Construction Code provisions in effect at the time of construction. The occupant load for structures constructed under standards in force prior to adoption of the New Jersey Uniform Construction Code shall be calculated in accordance with N.J.A.C. 5:70-4.11(f)3.”*

1003.4 Posting

- *Requires occupant load posting shall be located near the main point of egress from the room or space*
- *The number of occupants permitted shall be in accordance with the current certificate of occupancy. Or N.J.A.C. 5:70-411(f)3*

Posting



1003.5 Overcrowding

This section prevents an individual from allowing over crowding and provides the Fire Official the ability to take corrective action

1003.6 Operators Responsibility

This section requires the owner or operator of an assembly or education use to assure that all means of egress are accessible and functioning. Further it prohibits occupancy if they are not available.

1008 Egress illumination

“1008.2 Means of egress serving a room or space shall be illuminated at all times that the room or space is occupied”



Specific exceptions noted

1010 Doors, Gates & Turnstiles

- *Shall be readily distinguishable from adjacent construction and finishes*
- *Mirrors or similar reflective materials shall not be used on means of egress doors*
- *Means of egress doors shall not be concealed by curtains drapes decorations or similar materials*

1010 Doors, Gates & Turnstiles



Decoration not permitted

1010 Doors, Gates & Turnstiles

1010.1.4.4 Security Grills

- *Sliding or vertical security grills are permitted at the main exit*
- *shall be operable from the inside without the use of the key or special knowledge*
- *Shall remain secured in the fully open position during periods of occupancy by the general public*

1010 Doors, Gates & Turnstiles



Security gate



Turnstile

1010 Doors, Gates & Turnstiles

1010.1.9 Door operations

“Egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort”



1010 Doors, Gates & Turnstiles

1010.1.9.11 Stairway Doors

Interior stairway means of egress doors shall be operable from both sides without a use of a key or special knowledge or effort

• Exceptions

- discharge door may be locked on the exterior*
- doors comply with the requirements of the uniform construction code*
- stairways serving not more than four stories, doors are permitted to be locked from the side opposite the egress side provided they can be unlocked simultaneously upon signal from a fire command center or signal by emergency personnel from a location at the main entrance of the building*

Stairway Door Exceptions

- *This section requires egress doors to be openable from both sides with out the use of a key.*
- *There are four specific exceptions that provide for locks on the discharge side of the door based on use and height*

1010.4 Locks permitted

- **Locks or fasteners shall not be installed on egress doors except under the following conditions:**
 - *Mental, penal and other institutions*
 - *In problem security areas special-purpose door alarms or locking devices shall be approved prior to installation*
 - *In compliance with Uniform Construction Code*



1010.5 Special performance features

- ***“All hardware systems or assemblies utilized in the operation of a door, including special performance features, shall be inspected for proper operation. The inspection shall determine that the hardware operates as required by this code. 1010.6 Panic hardware. All doors equipped with latching”***

1010.6 Panic Hardware

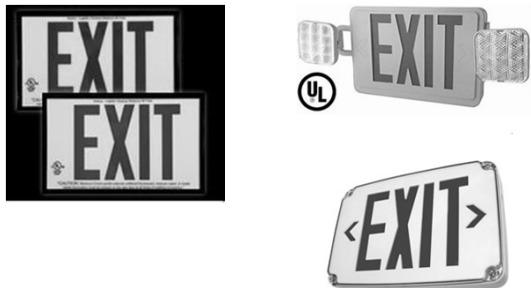
- *In assembly and education uses: all doors equipped with latching devices serving rooms are spaces with occupant loads greater than 100 shall have approved panic hardware*



1010.7 Closing

- *“All fire doors shall comply with Section 703”*

1013 Exit Signs



1013.1 Exit Signs

- *All exit signs shall be maintained visible and all illuminated exit sign shall be illuminated at all times the structure is occupied*
- *supplemental internally illuminated directional signs when necessary shall be installed in accordance with the technical requirements of the uniform construction code*

All signs are installed by UCC. We maintain what is there.

[illegible]

1013.2 Information Signs

- *Interior stairways more than three stories above grade shall have information signs.*
- *The signs shall indicate the floor level above and level of discharge.*
- *All elevator lobby call stations on all floor levels shall be identified by approved signs in accordance with the uniform construction code*

1013.2 Informational Signs



Stair sign



Elevator sign

1013.3 Mistaken Egress

- *Doors that are located or arranged so as to be mistaken for means of egress shall be properly identified as to their purpose*



1013.4 Sign Obstructions

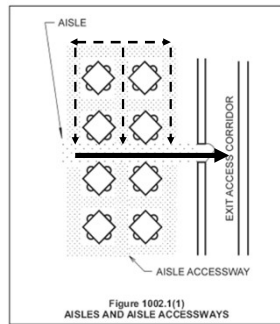
- *Decorations, furnishing and equipment, impairing the visibility of egress signs shall not be permitted.*
- *Brightly illuminated signs for other than egress purposes displays or objects shall not be located in or near the line of vision to the required egress sign when of the character so as to distract attention from the egress sign*

1018.1- Aisles

- *Provides guidance for minimum aisle width*
- *Use group A, E & I-2 shall be maintained in accordance with the construction code in effect at the time of first occupancy*
- *All other uses, shall have a minimum clear aisle width of 44" inches when serving and occupant load greater than 50*

Aisles shall not be obstructed

EXIT ACCESSWAY AISLES – TABLES & CHAIRS



1018 Aisles

1018.2 Aisles in assembly spaces

- Refers to section 1029

1018.3 Aisles in Groups B and M

- Provides guidance and reference to Table 1020.2

1018.4 Aisles access ways in Group M

- Provides guidance for size and travel

1018.5 Aisles in other than assembly spaces and Group B and M

This section provides requirements for aisles in all other uses. Table 1020.2 provides minimum aisle width.

1020 Corridors

- *The minimum corridor width shall be established in accordance with Table 1020.2*
- *The minimum width or required capacity of corridors shall be unobstructed*



Poor Corridor Storage



Good Corridor Storage

Table 1020.2

[BE] TABLE 1020.2 MINIMUM CORRIDOR WIDTH	
OCCUPANCY	MINIMUM WIDTH (inches)
Any facilities not listed below	44
Access to and utilization of mechanical, plumbing or electrical systems or equipment	24
With an occupant load of less than 50	36
Within a dwelling unit	36
In Group E with a corridor having a occupant load of 100 or more	72
In corridors and areas serving stretcher traffic in ambulatory care facilities	72
Group I-2 in areas where required for bed movement	96

For SI: 1 inch = 25.4 mm.

1022 Exits

- *An exit shall not be used for any purpose that interferes with its function as a means of egress*
- *Once a given level of exit protection is achieved, such level of protection shall not be reduced*
- *Exits shall be continuous from the point of entry into the exit to the exit discharge*

1022 Exits



STORAGE SHALL NOT BLOCK EXITS

1031 Maintenance of the means of egress

- Sections 1031.1 to 1031.13 Provide details on requirements to maintain all exits for immediate and safe use



1031.1.1 Storage

- *Combustible or flammable materials shall not be placed stored in any portion of an exit, elevator car or hoist way, or at the bottom of a stairway, fire escape, or other means of escape unless such spaces are enclosed and protected as required by the construction code in effect at time of first occupancy*
- *Such storage shall be located so the presence or burning of the material will not obstruct or render hazardous conditions to the means of egress.*

1031.1.1 Storage



No storage below stairs unless
In fire rated closet



1031.2 Exit Capacity

- *The capacity of exits serving a floor shall be sufficient for the occupant load of that floor as determined by the construction code in effect at the time of first occupancy or NJAC 5:70 – 4.*

1031.3 Reliability

- *Required exit access, exits and exit discharge shall be continuously maintained free from obstruction or impediments for full instant use in the case of a fire or other emergency.*
- *Exits and exit passageways shall not be used for any purpose that interferes with the means of egress*

Section 1013.3.1 provides guidance
for locks and security devices
approved by the Fire Official

1031.4 Continued maintenance

- Provides that all required means of egress must be maintained

1031.5 Obstructions

- Provides that all required means of egress must be free from obstructions including snow and ice.

1031.5.1- Group I-2 (Hospitals)

- *The facility shall have a plan to maintain the required clear width during emergency situations*
 - *Exceptions: in areas required for bed movement equipment shall be permitted in the required width where all of the following provisions are met*
 - *Equipment is low hazard and wheeled*
 - *the equipment doesn't obstruct more than 5 feet of width.*
 - *The equipment is limited to necessary carts*
 - *equipment is located on one side of the corridor*
 - *equipment is limited to the number of patient rooms*

1031.5.1- Hospitals



Storage shall be kept to one side

I-2 Obstructions



What is wrong in the picture??

1031.6 Exterior Egress

This section focuses on exterior components including stairways and fire escapes. It requires they be kept free of ice and snow. It also provides for immediate repair and testing when deficiencies are found



1031.6 Exterior Egress



Fire escape repair & load testing

1031.7 Exit Signs

- *Exit sign shall be installed and maintained in accordance with this code*
- *Decorations furnishing or equipment or adjacent signage that impairs the visibility of the exit signs or creates confusion shall not be allowed*



1031.8 Nonexit identification

- *Where a door is adjacent to, constructed similar to and can be confused with a means of egress door, that door shall be identified with an approved sign that identifies the room name or use of the room.*

1031.9 Finishes, furnishings, decorations

- *Means of egress doors shall be distinguishable from adjacent construction and finishes to make the door easily recognizable.*
- *The hangings of drapery shall not be placed over exits or otherwise be located to conceal or obstruct an exit*
- *Mirrors shall not be placed in or adjacent to the exit in such a manner as to confuse the direction of the exit*



1031.10 Displays

- *Aisles passageways or stairways in any structure shall not be obstructed with tables, showcases, holiday displays, vending machines, or other obstructions during hours when it is open to the public*
- *Display boards, signs, coat racks, and any other movable equipment that obstruct the path of egress shall be prohibited*



Not permitted

1031.11 Emergency Escape & Rescue Openings

- *Required emergency exit and rescue openings shall be operational from inside the room without the use of the key or tool.*
- *Bars, grills and grates or similar devices are allowed to be placed over emergency exit escape and rescue openings provided the minimum net clear opening size complies with the code that was in effect at the time of construction*
- *Such devices shall release from the inside without the use of key tool or force greater than normal operation*

1031.12 Inspection, Testing & Maintenance

- *All two-way communication systems for areas of refuge shall be inspected and tested on a yearly basis to verify all components are operational*
- *Where required, the test shall be conducted in the presence of the fire code official.*
- *Records of inspection and testing shall be maintained*

1031.13 Floor Identifications

- *Interior stairways over three stories*
- *Designating the level of exit discharge*



Means Of Egress

*Subchapter 4
NJAC 5:70-4.11
Requirements*

5:70-4.11(a) Means of Egress

Occupant Load	Minimum Clear Width
1-4999	7'-6" min
5000 to 10000	8'-0" min
10001 and above	8'-6" min

Note: Most requirements same as IBC

5:70-4.11(b) Single Exit Buildings

- All "R-3"
- All uses <50 occupants and < 75'ft travel distance (Exception rooming house, "I" use, Child care centers)
- "R-1 & R-2" < 16' above grade
- "R-1 & R-2" > 16' above grade < 4 units < 50' travel distance through 1 hr corridor
- "B & S-2" < 2 stories & < 3000 SQ.. ft. in 1 hour corridor

Note: Most requirements same as IBC

NJ UFC Table 5:70-4.11(f)3

These factors are essentially the same as the IBC factors summarized in IFSTA Table 4.1

Use	Occupant Load Factor in square feet per occupant
Assembly	Note 1
Fixed seating	15 net
Tables and chairs	7 net
Chairs only	7 net
Dance floors	7 net
Standing space	5 net
Waiting space (Note 2)	5 net
Bowling centers	3 net

Use	Occupant Load Factor in square feet per occupant
Lobbies	5 persons
Other areas	per assembly above
Business	100 gross
Educational	Note 1
Fixed seating	20 net
Classrooms	20 net
Shops and vocational areas	50 net
Industrial	100 gross
Institutional	100 gross
Inpatient treatment	240 gross
Outpatient	140 gross
Sleeping rooms	120 gross
Library	50 net
Reading room	50 net
Stack area	100 gross
Musicians	100 gross
Grade floor or basement	30 gross
All other floors	60 gross
Storage, stock, shipping	200 gross
Parking garages	200 gross
Residential	200 gross
Storage areas, mechanical equipment room	200 gross

Note 1: The occupant load for that portion of an assembly area having fixed seats shall be determined by the number of fixed seats installed. Capacity of seats without seating areas is one person per 18 inches. For booths, one seat equals 24 inches. One person is allowed for each fixed seat with dividing rows or end seats above the stage.

Note 2: Waiting space means that space in an assembly occupancy where persons are admitted to the building at times when seats are not available to them and are allowed to wait in a lobby or similar space until seats are available. Such use of the lobby or similar space shall not encroach upon the required clear width of exit.

N.J.A.C. 5:70-4.11(f)3

Means Of Egress

Subchapter 4 NJAC 5:70-4.11 Requirements

- Sections 4.11 (c) through 4.11 (h) and section 4.11(l) through 4.11(m) will be reviewed in Module 14 – Retrofit as part of the overview of the Retrofit requirements
- Section 4.11(i), 4.11(j), 4.11(k) are commonly found violations and will be reviewed here

5:70-4.11(i) Artificial Lighting

- *Maintained when the building is occupied*
- *One foot candle at walking surface*
- *All elements illuminated*
- *May not be reduced below 0.2 Foot candles*
- *F,S,&H use group need not illuminate the Exit discharge*



5:70-4.11(j) Emergency Lighting



- *All means of egress lighting shall be connected to an emergency electrical systems complying with NFPA-70*
- *Illumination shall continue for 1 hour after primary power failure*

5:70-4.11(k) Exit Signs



6" letters in either Red or Green
 5 Ft candles if electric and 0.06 lamberts if self luminous
 One hour emergency back up power
 Supplemental and directional as needed

5:70-4.11(k) Exit Signs

- Exit sign exceptions:
 - I-1, R-2 & R-3 with occupant load < 20 excluding staff
 - Not required on fire escapes accessed from bedrooms
 - Approved main exterior doors that are clearly identified
 - Building with one entrance and exit

Fire Inspection Points

- Fire Inspectors should inspect the following aspects of the means of egress:
 - When was the building constructed?
 - Before or after 1/1/1977
 - Is the occupant load posted?
 - If not who must determine occupant load
 - Does it match the LHU registration?
 - LHU's are based on occupant load.

Fire Inspection Points

- **Rooms:**

- Occupant load per space
 - > 50 –two exits
 - Travel distance > 75 feet
- Swing of exit access doors
 - > 50 must swing in direction of egress travel
- Exit signs
 - Internally illuminated or UL compliant
- Emergency Lighting
 - Single units or emergency generator
- Aisles & aisle access ways
 - Based on occupants served



Fire Inspection Points

- **Corridors:**

- Travel distance to exits:
 - Common path, dead end travel distance
- Width of corridor:
 - Minimum width UCC, required width based on occupant load
- Exit signs:
 - Directional and exit locations
- Obstructions:
 - Can not encroach required egress width



Fire Inspection Points

- **Stairway Exit Doors:**

- Do they they have the proper label?
- Are they self closing & tight fitting?

- **Hardware:**

- Is it UL listed and properly installed?

- **Special locking devices**

- Signage, emergency lighting, manual release and installed by UCC building permit.

Fire Inspection Points

- **Exits:**
 - *Proper fire ratings and opening protection*
 - *Remoteness based on fire protection*
 - *Illuminated properly*
 - *Hand rails and guard rails*
 - *Emergency lighting*
 - *No obstructions*
 - *Check base for improper storage*

Fire Inspection Points

- **Exit Discharge:**
 - *Clear path to the public way*
 - *No obstructions*
 - *Parking, fences, trash cans etc*
 - *Illumination & emergency lighting*
 - *Rescue & assembly areas of refuge*

Means Of Egress

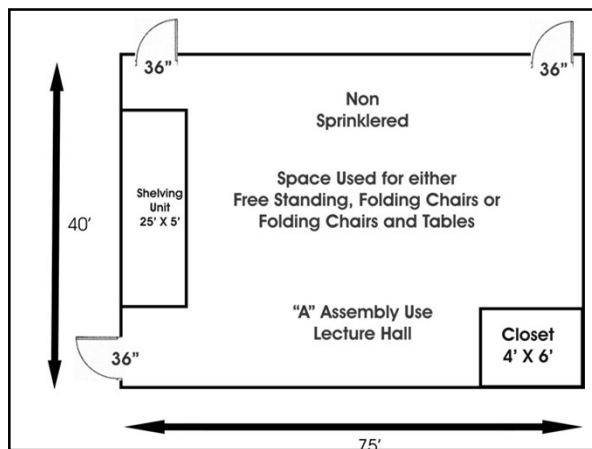
Occupancy Load Calculations 5:70-4

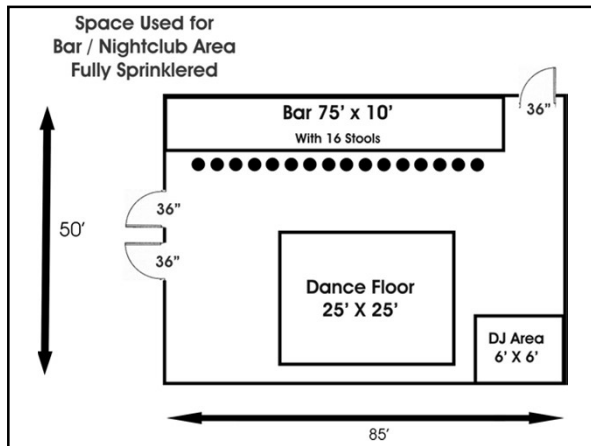
Calculating occupant loads

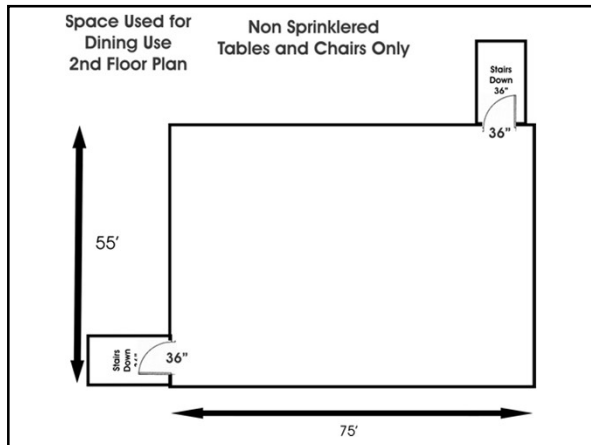
- **Step 1** determine use group factor
 - Net or gross square feet
- **Step 2** determine the square footage and divide by the factor in table 5:70-4.11(f)3 to determine occupant load of room, space or floor
- **Step 3** Measure clear width of egress components
 - Doors, corridors and ramps and stairs
- **Step 4** determine the limiting width for each egress component.

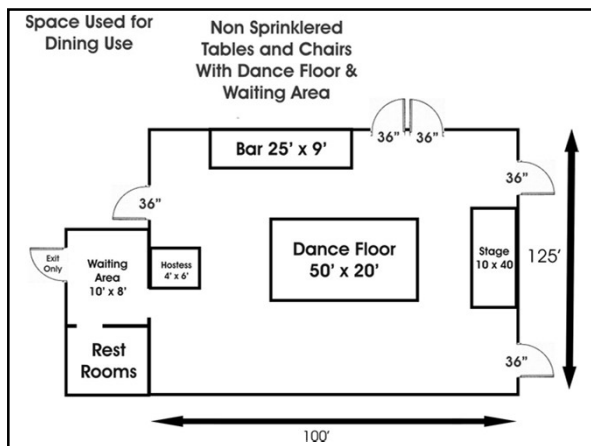
Calculating occupant loads

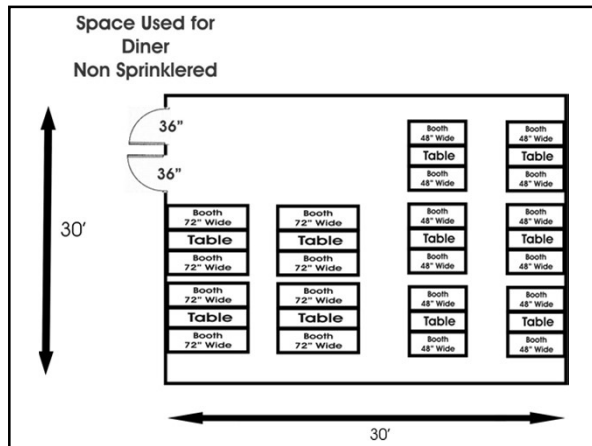
- **Step 5** determine the number of UEW for each component.
- **Step 6** Multiply the factor in table 5:70-4.11(f)2. by the available UEW
- **Step 7** determine if the egress has capacity for the occupant load
- **Step 8** check for travel distance, convergence, single path of travel, and remoteness of exits.











Occupancy Loads/Mean of Egress

In this module we discussed...

- Chapter 10 of the NJ IFC 2015 provisions
- Sub-chapter 4 retro fit code provisions
- Means of egress components,
- Calculating occupancy loads,
- Application of sub-chapter 4.

Homework Assignments

For next module as stated in the syllabus

Next Lesson

Module 10

Fire Protection Systems Code Requirements

82
