

## Part III CFSC Requirements for Educational Occupancies



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## Course Objective

- Following this seminar, the attendee will have the ability to locate and apply the applicable provisions of Part III of the 2005 Connecticut Fire Safety Code to educational occupancy construction projects.

## Orientation

- Anytown Elementary School
  - Building Data Pages 9, 10
  - First Floor Diagram Page 11
  - Second Floor Diagram Page 12
- *Anytown School will be used as the subject of our review.*

## A. Use and Occupancy Data



## 1. Determine the Extent of Construction

- New (Part III-29-292-14e)
- Renovation (III-29-292-15e)
  - Treat as New or
    - International Existing Building Code
    - CT Bldg Code, Chapter 34
- Addition
- Change of Use (Part I-29-292-11e)



## 2. Classifying the Occupancy (202)

- What is the occupancy?
  - Church Schools
  - Day Care



## Mixed Uses

- Assembly
  - Gymnasiums (A-4)
  - Auditorium (A-1)
    - Stages
  - Cafeterias (A-2)
    - Kitchens
- Industrial (F-1)
  - Shops
- Business (B)
- Storage (S-1)



## Mixed Uses

- How is the design professional dealing with mixed uses?
  - Non-separated uses or,
  - Separated Uses
    - Will result in additional fire separation requirements.

## 3. Determine Building Data



*Anytown Elementary School*

### Specifications

*Construction Type: 2B*

*Height: 2 Stories*

*Area: 55,000 s.f. first*

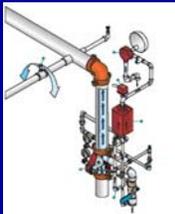
*47,000 s.f. second*

## 4. Special Detailed Requirements Based upon Use and Occupancy

(401)

- Are there any special requirements based upon the use?
  - Educational
  - Multiple Uses

## B. Fire Protection Systems



## Fire Protection Requirements

(901)



- Sprinkler Requirements
- Standpipes
- Fire Alarms
- Fire Extinguishers
- Special Systems
- *What fire protection systems are required in Anytown Elementary School?*

## C. Means of Egress



## 1. Determine Occupant Load

(1004)



- Determine floor area by use
- Determine occupant load factor per use
- Determine occupant load

## Exercise

- Using the floor plans on Page 11 and 12, determine the different use areas and occupant load factors.
- Using the area take-offs on page 9, what are the occupant loads per use.
- What is the total occupant load of the building?

## Exercise Answers

<u>Use areas</u>	<u>Factor</u>	<u>Area</u>	<u>Load</u>
- Classrooms	20 net		
- Assembly	7 net		
• Kitchen	200 gross		
• Stage	15 net		
- Business	100 gross		
- Storage	300 gross		
- Mechanical	300 gross		

## 2. Determine Required Number of Exits

- Determine the required number of exits for the building (1018).
- Determine the required number of exits or exit access from spaces (1014).

## Exercise

- Using the floor plans on Page 11 and 12, determine the spaces requiring more than one exit or exit access.

### 3. Determine Required Exit Capacity (1005)

- Exit capacity Factors (1005)
  - Stairs
  - Other Components
- Determine if means of egress is sized sufficiently.
- *Caution: Verify the sizes in the field during construction.*

### 4. General Egress Requirements (1003)

- Ceiling Height
- Protruding Objects
- Elevation Changes
- Egress Continuity
- Elevators, Escalators, Moving Walks

### 5. Doors, Gates and Turnstiles (1008)

- Visual Impairments
- Size
- Projections
- Swing
- Power Operated
- Access Controlled
- Floor Elevation
- Landings
- Door Arrangement
- Hardware
- Hardware Height
- Delayed Egress Locks
- Stair Doors
- Panic & Fire Exit Hardware
- Special Doors

### 6. Stairways and Handrails (1009)

- Stair Width
- Headroom
- Treads and Risers
- Stair Landings
- Handrails
  - Height
  - Intermediate
  - Graspability
  - Continuity
- Vertical Exit Enclosures
  - Enclosure Required
  - Building Code Reference
  - Openings
  - Penetrations
  - Enclosure Under Stairs
  - Discharge ID
  - Floor Number Signs
- Special Stairs

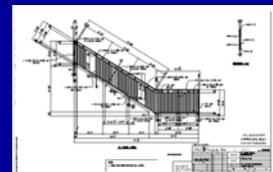
### 7. Ramps (1010)

- Slope
- Vertical Rise
- Width
- Landings
- Handrails



### 8. Guards (1012)

- Guards
  - Where
  - Height
  - Openings



## 9. Exit Access

(1013)

- Egress through intervening spaces (1013.2)
- Common Path of Travel (1013.3)
- Exit & Exit Access Doorways (1014)
  - Spaces with 1 means of egress
  - Remoteness (1014.2.1)
  - Boiler, Furnace Rooms
- Travel Distance (1015)

## 10. Corridors

(1016)

- Rating
  - CSBC Referral
- Corridor Width
- Dead End Corridor
- Air Movement
- Corridor Ceiling
- Corridor Continuity

## 11. Number of exits

- Covered in #2

## Other Egress Components

- 12. Exit Passageways
- 13. Horizontal Exits
- 14. Exterior Ramps and Stairs



## 15. Exit Discharge

(1023)

- Discharge
  - Through LED
  - Foyer
- Discharge Location
- Construction & Openings
- Access to the public way

## 16. Exit Signs

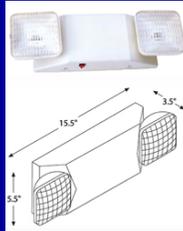
(1011)

- Not required from areas permitted to have a single exit or exit access.
- Floor proximity exit signs required in Group A occupancies greater than 300.
- Accessible exit markings.
- Internal or external illumination.
- Tactile Exit Signs
  - Adjacent to each stair, passageway or discharge

## 17. Egress Illumination

(1006)

- Normal Illumination
  - Means of egress including discharge
  - Continuous during occupancy
- Emergency Lighting
  - Required in exit access corridors, passageways, aisles, stairways where two or more exits are required.
  - Required at the exterior of exit discharge

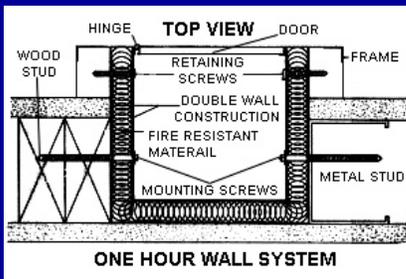


## 18. Accessible Egress

(1007)

- Accessible exits required from accessible spaces.
- May be:
  - Enclosed exit stair with clear width of at least 48" that includes an area of refuge.
  - Elevator with standby power.
  - Area of Refuge.

## D. FIRE RATED CONSTRUCTION



## 1. Maintenance

(703)

- Fire resistance rating of fire rated elements shall be maintained, including all openings and penetrations.
- Includes:
  - Hold-open devices and closers
  - Door latching assemblies.
  - No hanging of decorative materials from fire rated acoustical ceiling assemblies.

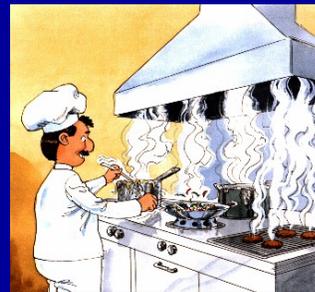
## 2. Incidental Uses

- Incidental Uses (Section 704)
  - Table 704.1 requires either segregation or sprinklers.
  - Note
    - Storage room size
    - Furnace input rating



## E. Building Services & Systems

(601)



## References

- Fuel fired appliances
- Emergency/Standby Power
- Electrical Equipment, Wiring & Hazards
- Mechanical Refrigeration
- Elevator Recall & Maintenance
- Commercial Kitchen Hoods
- Fuel fired appliances installed in accordance with International Mechanical Code and applicable NFPA Standards per statutes.

## F. Interior Finish, Decorations, Furnishings (801)



- Furnishings (803)
  - Clothing & Personal Effects prohibited in corridors unless:
    - In metal lockers, or
    - Corridor is sprinkler protected, or
    - Corridor is provided with smoke detection.
- Artwork and Teaching Materials
  - 20% of wall area
- Decorations/Trim (805)
- Ceilings, Floors Walls (806)
  - See Table 806.3

## G. Vertical Openings & Shafts (701.1)



- Requirements found in Chapter 7 of the building code.
- 703: Fire ratings & Tests
- 706: Fire Barriers
- 707: Shaft Enclosures
  - Includes 2 story unprotected floor openings
  - See Building Code Section 404 for Atriums
- 708: Fire Partitions
- 709: Smoke Barriers
- 710: Smoke Partitions
- 712: Penetrations
- 713: Joint Systems

## H. Special Provisions

- Stages: See Section 410 Building Code
  - Construction
  - Catwalks
  - Prosceniums
  - Ventilation
  - Fire Protection
- Assembly Provisions (CFSC 1024)
  - Exit Capacities
  - Aisles
  - Aisle Accessways
  - Ramped and stepped aisles

# I. Part V Requirements (V-20.2)

- Pre-K, K and 1<sup>st</sup> grades @ LED
- 2<sup>nd</sup> grade may be 1 story above LED
- Fire Drills required
- Furnishings, decorations and artwork mirror part III
- Unvented fuel-fired equipment prohibited.

