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Career Development

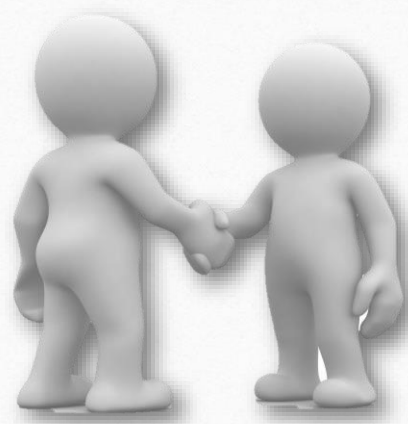
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# Inspection of Schools and Educational Occupancies

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## Introductions



## Outline and Objectives

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- Why do we inspect schools?
- Who should be involved when we inspect schools?
- When do we inspect schools?
- Which schools do we inspect?
- How do we inspect schools?

## Why Do We Do Inspections?

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# Fire Problem in Educational Occupancies

- 4,980 fires annually
  - 1 civilian death
  - 70 civilian injuries
  - \$70 Million in direct property loss
- Fires in educational properties have fallen by 67% since 1980
  - Civilian injuries in educational fires have fallen by 70% since 1980
- 38% of these fires involved cooking equipment
- 36% of these fires were intentionally set
- 15% of these fires were caused by a heat source
- 13% were in adult education/college occupancies, 11% were in day cares, and 69% were in pre-schools, elementary, middle, and high schools
- 25% started in a bathroom or locker-room, 20% started in a kitchen, only 2% started in a laboratory

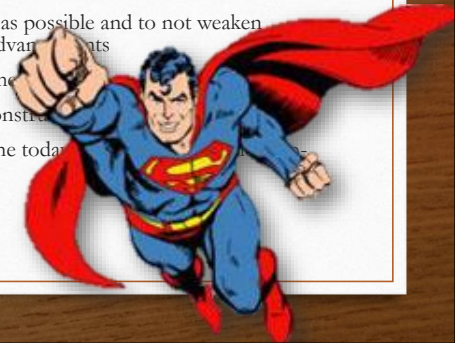


Sprinklers were present in 39% of fires in educational properties.

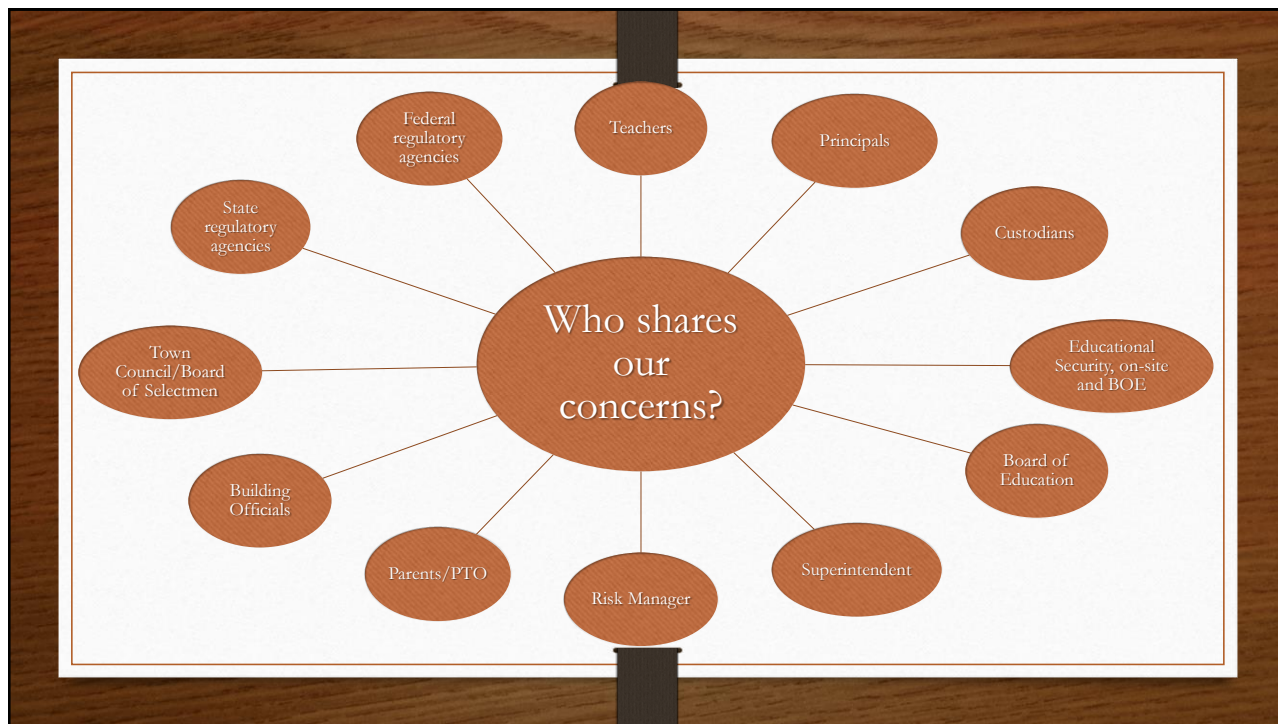
97% of fires in sprinkled buildings were contained to the room of origin, compared with 88% of fires were contained in un-sprinklered buildings.

# Public Perception of Code Officials

- 81% of U.S. adults feel policy makers should prioritize fire safety, they expect policy makers to view keeping electrical and fire safety codes up-to-date with new information and research as a high priority
- 74% of U.S. adults trust their state and local leaders to adopt the latest fire and electrical safety codes for safety in residential construction. 77% agree that this is true for commercial construction
- 65% of U.S. adults trust their state and local leaders to keep codes as safe as possible and to not weaken them by removing provisions that apply the latest knowledge and safety advancements
- 55% of U.S. adults are concerned about fire causing damage or injury in the home
- 8 in 10 adults assume their homes met the most up to date codes when constructed
- 86% of U.S. adults believe that if they purchased a newly-constructed home today it would meet up-to-date codes



# Who should be involved when we inspect schools?



## How do we get people on our team?

- Find out who would like to attend the inspection
  - Who would like a copy of the inspection report?
- Would a pre-inspection checklist be helpful?
- Offer training on fire safety requirements to teachers and staff at the beginning of the school year
- Is there any fire safety equipment that while not “necessary” would be highly recommended? Could the PTO raise money?
- Are there safety committees or other groups who would like your input?

## School Security Teams and Plans



CGS §§ 10-222m & 10-222n

## Fire Drills Per CGS §10-231

- **Sec. 10-231. Fire drills. Crisis response drills.**
  - (a) Each local and regional board of education shall provide for a **fire drill to be held in the schools** of such board **not later than thirty days after the first day** of each school year and at **least once each** month thereafter, except as provided in subsection (b) of this section.
  - (b) Each such board **shall substitute a crisis response drill for a fire drill once every three months** and shall develop the format of such crisis response drill in consultation with the appropriate local law enforcement agency. A representative of such agency may supervise and participate in any such crisis response drill.

## Fire Drills Per NFPA 1

- 20.2.4.2.3
  - Once a month, but may be deferred due to inclement weather after 4 drills have been done
    - *Summer school needs a drill also*
  - Everyone must participate
  - The fire alarm shall be sounded during the drill

## Fire Alarm Options

- 907.2.3 Manual alarm system with occupant notification is required except:
  - <30 occupant load
  - If corridors have smoke detectors, assembly areas have approved detection devices, and shops and labs that involve dust or vapors are protected by approved detection devices
  - Manual fire alarm boxes not required in buildings with automatic sprinklers and emergency communication initiated by sprinkler and manual activation is provided from a normally occupied location





When do we inspect schools?

## How often should we be inspecting?

- Connecticut Fire Prevention Code § 105.1 (b)(1)
  - (1) **Annual inspections for the occupancy classifications;** All R Residential, Small I-2 homes, A-1, A-2, E, H-1, and I-1.





## Is once a year enough?

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- Are there summer programs or other special events that may need an inspection?
  - Plays or concerts
  - Vendor fairs or farmers markets
  - Sports or scouts events
- Are there spaces that may need an additional certificate (i.e. dentist or other visits)

## When is the best time to inspect?

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|--|--|
| <ul style="list-style-type: none"> <li>• During School                     <ul style="list-style-type: none"> <li>• Pro: Get to see how the building is being used, opportunity for some additional pub. Ed., deterrent for malicious false alarms, can get housekeeping issues resolved immediately</li> <li>• Con: May not be able to be as thorough in the classrooms while they're in use, may not be able to enter a few rooms</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>• Off-hours or during vacation                     <ul style="list-style-type: none"> <li>• Pro: can view every room thoroughly without disrupting classes</li> <li>• Con: may be difficult to schedule, won't see how school is used normally, layouts and storage may be vastly different, housekeeping issues may not be resolved quickly, may disrupt summer school or other extra-curricular activities</li> </ul> </li> </ul> |
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**What has worked well for you?**

Which schools do  
we inspect?



## Definitions

- 3.3.183.10 (amd) **Educational Occupancy.** An occupancy used for educational purposes through the 12<sup>th</sup> grade by 6 or more persons for 4 or more hours per day or more than 12 hours per week. Training and skill development not within a school or academic program shall be classified as business occupancies.



## What book are we looking in?

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- When new work is done, renovations or new construction look at the CT Fire Safety Code and the applicable ICC Codes
- For annual inspections, focus on the CT Fire Prevention Code
- Are there any modifications on the building that need to be maintained?

## Interior Finish

- 20.2.3.2 Interior Wall and Ceiling Finish. New and existing interior wall and ceiling finish materials complying with Section 12.5 shall be permitted as follows:
  - (1) Exits — Class A
  - (2) In new educational occupancies other than exits — Class A or Class B
  - (3) In existing educational occupancies, corridors and lobbies— Class A or Class B
  - (4) Low-height partitions not exceeding 60 in. (1525 mm) and used in locations other than exits — Class A, Class B, or Class C



## 20.2.4.4 Furnishings and Decorations.

- 20.2.4.4.2 Clothing and personal effects shall not be stored in corridors, unless otherwise permitted by one of the following:
  - (1) This requirement shall not apply to corridors protected by an automatic sprinkler system in accordance with Section 13.3.
  - (2) This requirement shall not apply to corridor areas protected by a smoke detection system in accordance with 13.7.1.4.
  - (3) This requirement shall not apply to storage in metal lockers, provided that the required egress width is maintained.

## Artwork and Teaching Materials

- Shall not exceed 50% of wall area in sprinklered schools
- Shall not exceed 20% of wall area in unprotected schools
  - Also make sure décor is not impeding exiting, is not below the allowable ceiling projection height, is not hanging from sprinkler pipes



## Inspection Responsibility

- 20.2.4.3.1\* It shall be the duty of principals, teachers, or staff to inspect all exit facilities daily to ensure that all stairways, doors, and other exits are in proper condition.
- 20.2.4.3.3 Inspection of Door Openings. Door openings shall be inspected in accordance with 7.2.1.15 of NFPA 101.

## Room Locations 20.2.5.1-3

- Pre-K, K, 1<sup>st</sup> must be on the level of exit discharge
- 2<sup>nd</sup> shall not be more than 1 story above the level of exit discharge
  - Exceptions granted for rooms/areas with independent means of egress dedicated to the younger students

## 10.18 Storage of Combustible Materials.

- **10.18.1 General. Storage of combustible materials shall be orderly.**
- 10.18.3 Ceiling Clearance.
  - ≤ 2ft from ceiling in unprotected areas
  - ≤ 18 inches from the deflectors of sprinklers in protected areas



- **10.18.4 Means of Egress.**  
Combustible material shall not be stored in exits.



## 10.18.5 Equipment Rooms.



- **10.18.5.1 Combustible material shall not be stored in boiler rooms, mechanical rooms, or electrical equipment rooms.**
- 10.18.5.2 Materials and supplies for the operation and maintenance of the equipment in the room shall be permitted.

## Attic, Under-Floor, and Concealed Spaces

- 10.18.6 Attic, Under-Floor, and Concealed Spaces. Attic, under-floor, and concealed spaces used for storage of combustible materials shall comply with the protection from hazards requirements for storage rooms in NFPA 101.



- 10.18.7 Fueled Equipment. Fueled equipment, including but not limited to motorcycles, mopeds, lawn-care equipment, and portable cooking equipment, shall not be stored, operated, or repaired within a building except under one of the following conditions:
  - (1) The building or room has been constructed for such use in accordance with the building code.
  - (2) The use is allowed by other provisions of this code



## 11.1 Electrical Fire Safety

- **11.1.2 Permanent Wiring, Fixtures, and Equipment.**
- **11.1.2.1** All new electrical wiring, fixtures, appliances and equipment shall be installed in accordance with *NFPA 70, National Electrical Code*.
- **11.1.2.2** Unless determined to present an imminent danger, existing electrical wiring, fixtures, appliances, and equipment shall be permitted to be maintained in accordance with the edition of *NFPA 70, National Electrical Code*, in effect at the time of the installation.
- **11.1.2.3** Permanent wiring abandoned in place shall be tagged or otherwise identified at its termination and junction points as “Abandoned in Place” or removed from all accessible areas and insulated from contact with other live electrical wiring or devices.

### 11.1.3 Multi-plug Adapters.

- **11.1.3.1** Multi-plug adapters, such as multi-plug extension cords, cube adapters, strip plugs, and other devices, shall be listed and used in accordance with their listing.
- **11.1.3.2** Multi-plug adapters shall not be used as a substitute for permanent wiring or receptacles.



## 11.1.5 Extension Cords

- **11.1.5.1** Extension cords shall be plugged directly into an approved receptacle, power tap, or multi-plug adapter and shall, except for approved multi-plug extension cords, serve only one portable appliance.
- **11.1.5.2\*** The ampacity of the extension cords shall not be less than the rated capacity of the portable appliance supplied by the cord.
- **11.1.5.3** The extension cords shall be maintained in good condition without splices, deterioration, or damage.
- **11.1.5.4** Extension cords shall be grounded when servicing grounded portable appliances.
- **11.1.5.5** Extension cords and flexible cords shall not be affixed to structures; extend through walls, ceilings, or floors, or under doors or floor coverings; or be subject to environmental or physical damage.
- **11.1.5.6** Extension cords shall not be used as a substitute for permanent wiring.

## 11.5.1.11 Clothes Dryers.

- **11.5.1.11.1** Clothes dryers shall be cleaned to maintain the lint trap and keep the mechanical and heating components free from excessive accumulations of lint.



## 11.5.3 Portable Electric Heater.

- **11.5.3.1** The AHJ shall be permitted to prohibit use of portable electric heaters in occupancies or situations where such use or operation would present an undue danger to life or property.
- **11.5.3.2** Portable electric heaters shall be designed and located so that they cannot be easily overturned.
- **11.5.3.3** All portable electric heaters shall be listed.



## Fire Protection: Chapter 13 Requirements

- **13.1.1** (Amd) Where a fire protection system is required by any other provision of this code or its referenced standards or installed to achieve compliance with this code, the system shall be maintained as provided by this chapter.
- **13.1.2** The property owner shall be responsible for the proper testing and maintenance of the equipment and systems.

- 13.1.3 Obstructions shall not be placed or kept near fire hydrants, fire department inlet connections, or fire protection system control valves in a manner that would prevent such equipment or fire hydrants from being immediately visible and accessible.



- 13.1.4 A minimum 36 in. (91 mm) of clear space shall be maintained to permit access to and operation of fire protection equipment, fire department inlet connections, or fire protection system control valves. The fire department shall not be deterred or hindered from gaining immediate access to fire protection equipment.

- 13.1.5 Detailed records documenting all systems and equipment testing and maintenance shall be kept by the property owner and shall be made available upon request for review by the AHJ.
- 13.1.7 All fire protection systems and devices shall be maintained in a reliable operating condition and shall be replaced or repaired where defective or recalled.



- 13.1.8 The AHJ shall be notified when any fire protection system is out of service and on restoration of service.



Hmmmm....

- It is 1pm when you learn that the water main in front of the school has failed and the school has no water supply to its sprinklers. School regularly dismisses at 3pm. Estimated time for repair will be 3 hours
  - What would you do?
  - Would your answer be different at 9am?

## Fire Extinguishers

- 13.6.1.2.1 Portable fire extinguishers shall be required in all occupancies, outside and immediately adjacent to the entrance to all special hazardous areas except general storage areas. If the only entrance to a special hazardous area is from the exterior of the building, the fire extinguisher may be located just inside the entrance door
- 13.6.1.2.2 Portable fire extinguishers shall be required where commercial cooking equipment is utilized

## Fire Extinguisher Training

- Do you do it?
- Do 3<sup>rd</sup> parties do it?
- Who gets the training?
  - Custodians and maintenance staff?
  - Supervisory staff?
  - Tech/shop teachers?
  - Food service?
  - Everyone?



## 14.4 Means of Egress Reliability

- **14.4.1\* (Amd) Maintenance.** Means of egress and primary means of escape shall be continuously maintained free of all obstructions or impediments to full instant use in the case of fire or other emergency.
- **14.4.1.3 (Add)** Open space within the exit enclosure shall not be used for any purpose that has the potential to interfere with egress.
- **14.4.2 Furnishings and Decorations in Means of Egress.**
- **14.4.2.1** No furnishings, decorations, or other objects shall obstruct exits or their access thereto, egress therefrom, or visibility thereof.

## Occupant Load Factor

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- Classrooms: 20 net (ft<sup>2</sup>/person)
  - Shops, Laboratories, vocational rooms: 50 net (ft<sup>2</sup>/person)
  - Office (Business Use): 100 (ft<sup>2</sup>/person)
  - Concentrated Assembly : 7 net (ft<sup>2</sup>/person)
  - Less concentrated Assembly: 15 Net (ft<sup>2</sup>/person)
  - Bench –type seating Assembly: 1 person = 18 linear inches
  - Library Stack areas: 100 (ft<sup>2</sup>/person)
  - Stages: 15(ft<sup>2</sup>/person)
  - Exercise rooms: 50 (ft<sup>2</sup>/person)
  - Swimming pools: 50 (Water Surface) (ft<sup>2</sup>/person)

## 18.2 Fire Department Access (Fire Lanes)

- **18.2.1** Fire department access and fire department access roads shall be provided and maintained in accordance with Section 18.2.
- **18.2.3.1.1** Approved fire department access roads shall be provided for every facility, building, or portion of a building hereafter constructed or relocated.
- $\leq 50$  feet of at least one exterior door
- $\leq 150$  feet from any portion of the first floor
  - Sprinklers =  $\leq 450$  feet

- 18.2.4.1.1 The required width of a fire department access road shall not be obstructed in any manner, including by the parking of vehicles.
- 18.2.4.1.2 Minimum required widths and clearances established under 18.2.3.4 shall be maintained at all times.
- 18.2.4.1.3\* Facilities and structures shall be maintained in a manner that does not impair or impede accessibility for fire department operations.
- 18.2.4.1.4 Entrances to fire department access roads that have been closed with gates and barriers in accordance with 18.2.4.2.1 shall not be obstructed by parked vehicles.





## Other Areas To Keep An Eye On

- Bleachers and Grandstands – Chapter 25
- Laboratories – Chapters 26, 60, 61, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75
- TV/Movie Production Studios – Chapter 32
- Shop Classrooms – Chapters 40m 41, 43, 45, 50, and the HazMat chapters
- Auditorium/Stage – Assembly sections and stage requirements



## Checklists

## Sticky Situations

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- When is a school not a school?
- Security vs. Egress
- Night and Weekend activities (league sports, vendor fairs, church services, etc)
- Summer School (ages and changes in floor level, fire drills, etc.)
- Emergency Shelter

## New Projects

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- What needs a permit?
  - Who is responsible for getting the permit?
- Chapter 16, Safeguards during construction
- What code applies?

## Tall Wood Buildings and Other Issues

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## QUESTIONS

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- Thank you for Attending Today's Class