

# Life Safety Code – 2012

## Nursing Homes

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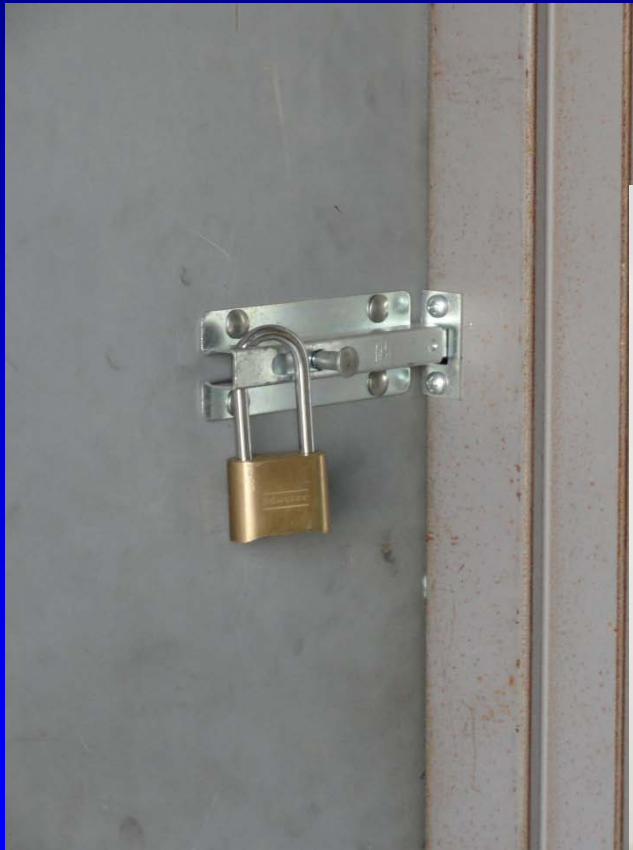
Fire Protection Engineers & Code Consultants

Warrenton, VA 20186

# *Topics*

1. Door latches & locks
2. Projections into Corridor
3. Equipment in Corridor
4. Furniture in Corridors
5. Cooking Open to Corridors
6. Alcohol Hand-Rub Dispensers
7. Corridor Separation
8. Fireplaces
9. Smoke Barriers
10. Combustible Decorations

# 1. Door Latches & Locks



# *Locks, Latches & Alarm Devices [7.2.1.5]*

- Doors readily opened from egress side when space occupied
- Locks not require key, tool, special knowledge or effort

# *Locks, Latches & Alarm Devices [7.2.1.5.10]*

- Releasing device obvious under all lighting conditions
- $\geq 34''$  to  $\leq 48''$  high
- One releasing operation

# *Locks, Latches & Alarm Devices - General*

- Doors from individual living units & guest rooms may have 1 additional operation
  - Existing may have 2 additional
- $\leq$  60" high for existing

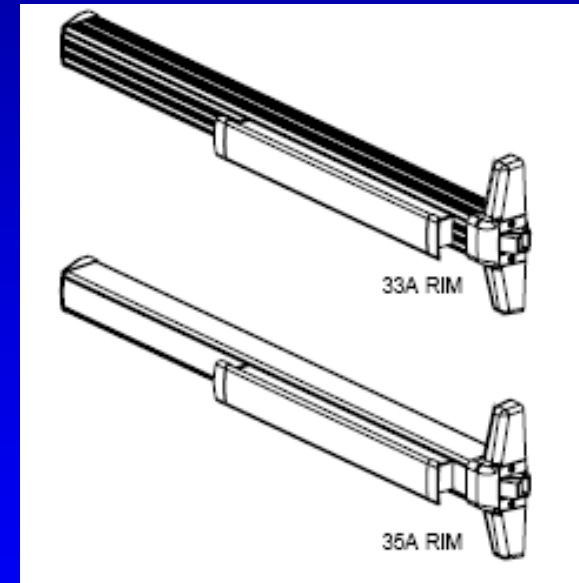
# *Locks, Latches & Alarm Devices cont'd*



- *Double cylinder key operated locks on exterior doors if:*
    - *Permitted*
    - *Lock status distinguishable*
    - *Sign*
    - *Key available*
    - *AHJ may revoke*
- [7.2.1.5.5]*

# *Electrically Controlled Egress Doors [7.2.1.5.6]*

- May be electrically locked w/built-in switch where:
  - Hardware affixed to door
  - Obvious method of operation
  - Operate w/ 1 hand in direction of egress
  - Loss of power unlocks
  - Listed per UL 294





# *Stairs Serving > 4 Stories*

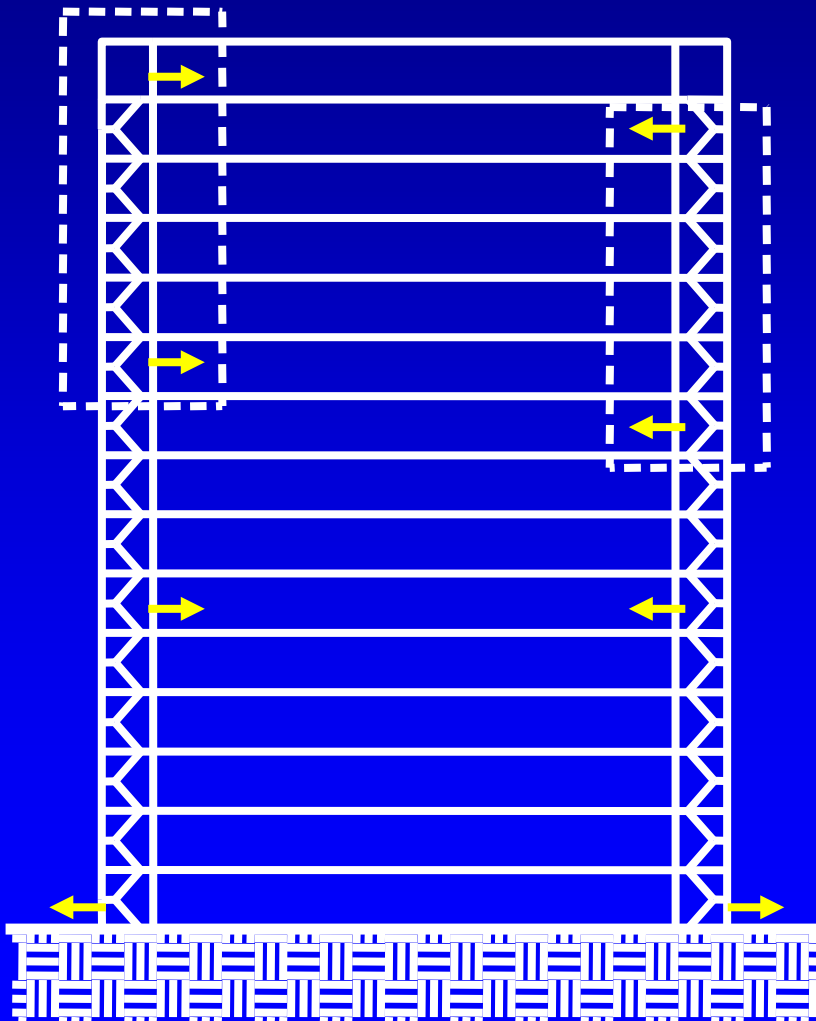
*[7.2.1.5.8]*

- Stairwell re-entry – 3 options:
  1. Each stair door permit re-entry, or
  2. All stair doors automatically unlock upon activation of fire alarm
  3. Selected door re-entry permitted  
if: ...

## *Stair Door Locking* cont'd

- Re-entry available on  $\geq 2$  levels
- $\leq 4$  floors intervening
- Re-entry on top or next to top floor
- Doors permitting re-entry identified
- Other doors provide direction to re-entry floors

# *Stair Door Locking – Option 3*



**Top floor, or next-to-top floor must allow reentry**

**No more than 4 floors intervening**

**Floors identified from stair side**

# *Stair Door Locking cont'd*

- Stair door locking not applicable to
  - Existing installations not high-rise per Occupancy Chap.
  - Existing approved stair reentry
  - Buildings w/1 exit
  - Health Care per Chap. 18
  - Detention & Correctional per Chap. 22

# *Pairs of Doors in Egress*

*[7.2.1.5.11]*

- Each door operate independently
- Doors w/ automatic flush bolts & no surface hardware



# *Locks, Padlocks, Etc.*

*[7.2.1.5.12]*

- Not installed on doors requiring panic or fire exit hardware
- Special locking per 7.2.1.6



# *Special Locking Arrangements*

- Delayed-Egress Locking [7.2.1.6.1]
- Access-Controlled Egress [7.2.1.6.2]
- Elevator Lobby Exit Access [7.2.1.6.3]

# *Delayed-Egress Locking*

[7.2.1.6.1]



- Delayed egress permitted if:
  - Occupancy Chapter permits
  - Building w/ SAS or complete detection .....



# *Delayed Egress Locks cont'd*

- Unlocks upon SAS or detection activation
  - 1 heat or 2 smoke detectors
- Unlock upon loss of power to lock mechanism
- Release w/in 15 seconds or *30 seconds per AHJ*
- $\leq 15$  lbf for  $\leq 3$  seconds to initiate

# *Delayed Egress Locks cont'd*

- Unlocks upon activation of SAS or detection activation
  - 1 heat or 2 smoke detectors
- Unlock upon loss of power to lock mechanism
- Release w/in 15 seconds or *30 seconds per AHJ*
- $\leq 15$  lbf for  $\leq 3$  seconds to initiate

# *Delayed Egress Locks cont'd*

- Manual relocking
- Local alarm
- Instruction sign

PUSH UNTIL ALARM SOUNDS

DOOR CAN BE OPENED IN 15 SECONDS

- Emergency lighting at door

# *Access Controlled Doors*

*[7.2.1.6.2]*

- Entrance & egress access control permitted if:
  - Occupancy Chapter permits
  - Door unlocks w/ motion sensor
  - Door unlocks upon loss of power
    - Sensor
    - System

# *Access Controlled Doors cont'd*

- Door unlocks w/ manual release
- Manual release
  - 40 to 48 in. high
  - $\leq$  5 ft from door
  - Identified "Push to Exit"
  - Directly interrupts power

# *Access Controlled Doors cont'd*

- Door remains unlocked for  $\geq 30$  seconds
- If provided, fire alarm or AS unlock doors & doors manually reset

# *Access Controlled Egress Door*

*cont'd*



Motion Sensor

Push button

# *Elevator Lobby Exit Access*

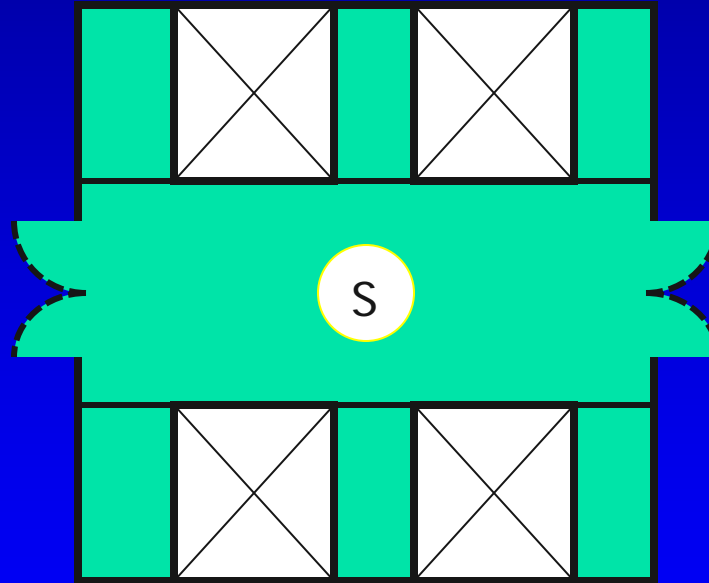
## *[7.2.1.6.3]*

- Where permitted, elevator lobby doors may be electronically locked where:
  - Electronic switch is listed per UL294
  - Building fire alarm system
  - Building AS
  - Elevator lobby w/smoke detection
  - Etc.....



# *Elevator Lobby Exit Access*

*cont'd*



# Panic & Fire Exit Hardware

[7.2.1.7]

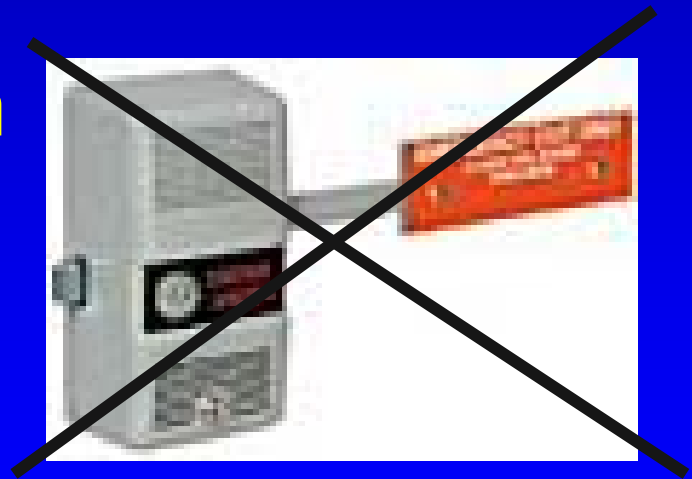


# *Panic Hardware*

- Where required:

Assembly, Educational, & Day Care where door serves area w/ > 100; & high hazard w/ > 5)

- Bar extend  $\geq \frac{1}{2}$  width of door



- Release in direction of egress

# *Panic Hardware cont'd*

- Push bar 34 - 48 in. high &  $\leq$  15 lbf to activate
  - Existing  $\geq$  30" to  $\leq$  48" high
- Panic hardware for non-fire doors
- Fire exit hardware for fire doors
- No locking device

# *Door Locking*

- Locks not permitted on patient sleeping rooms unless 1 of following [18/19.2.2.2.2]:
  - Key-lock to restrict access from corridor but operable from inside
  - Locks per 19.2.2.2.5  
(Will address)

# *Door Locking* *cont'd*

- Doors in egress not have lock or latch that requires key or tool from egress side unless [18/19.2.2.2.4]:
  1. Locks per 18/19.2.2.2.5
  2. Delayed egress locks per 7.2.1.6.1
  3. Access-controlled egress doors per 7.2.1.6.2

# *Door Locking* *cont'd*

- Doors in egress not have lock or latch that requires key or tool from egress side unless *cont'd.....*
  4. Elevator locking per 7.2.1.6.3
  5. Approved existing door locking

## (1) 18/19.2.2.5

- Where patient special needs require specialized security measures provided all of following:
  1. Staff can readily unlock doors at all times per 18/19.2.2.6
  2. Total smoke detection throughout locked space or, doors remotely unlocked from constantly attended location w/in locked space *cont'd*



## *18/19.2.2.5 cont'd*

3. Building protected throughout w/SAS
4. Locks are electric locks that fail safely (fail unlocked) upon loss of power
5. Locks release by each:
  - a) Activation of smoke detection
  - b) Sprinkler water flow

# *(2) Delayed-Egress Locking*

*[7.2.1.6.1]*



# *Delayed Egress Locks cont'd*

- NFPA 101 – 2000 had a limit of 1 delayed-egress lock per egress path
  - Limitation now removed

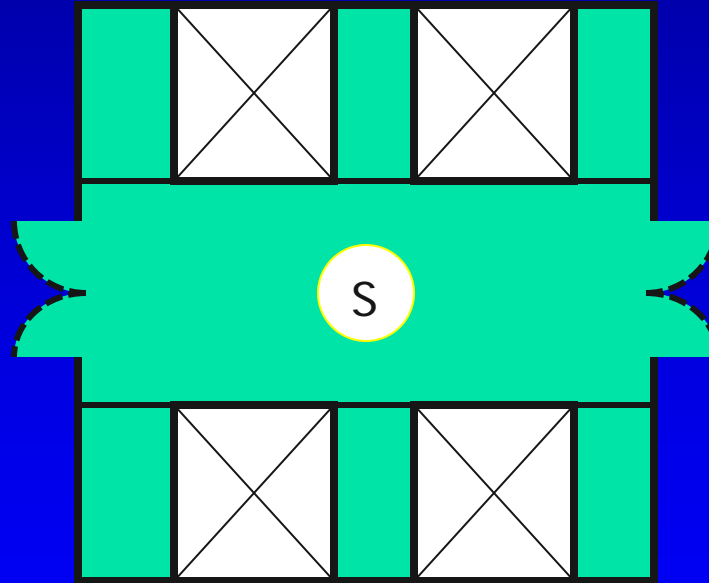
# *(3) Access Controlled Doors*

## *[7.2.1.6.2]*



# *(4) Elevator Lobby Exit Access*

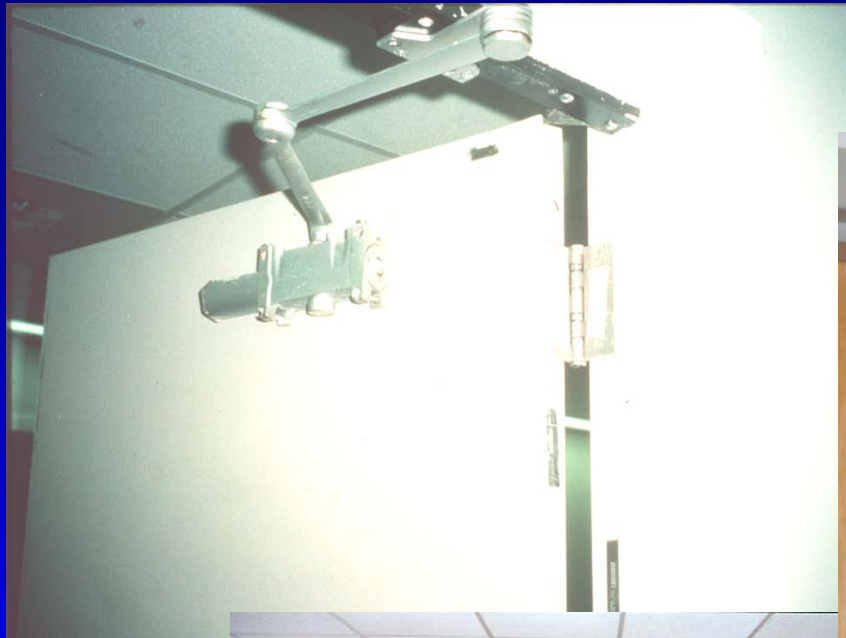
*cont'd*



## *(5) Approved Existing*

- Not code required, but documentation is probably needed to document previously approved

# *Self-Closing Devices* [7.2.1.8]



# *Self-Closing Devices* *cont'd*

- Doors intended to be closed:
  - Not held-open at any time
  - To be self-closing
  - Automatic closing if: ....



# *Auto-Closing Devices*

....

- Low or ordinary hazard or high hazard w/ AHJ approval
- Door becomes self-closing
- Door w/ manual release

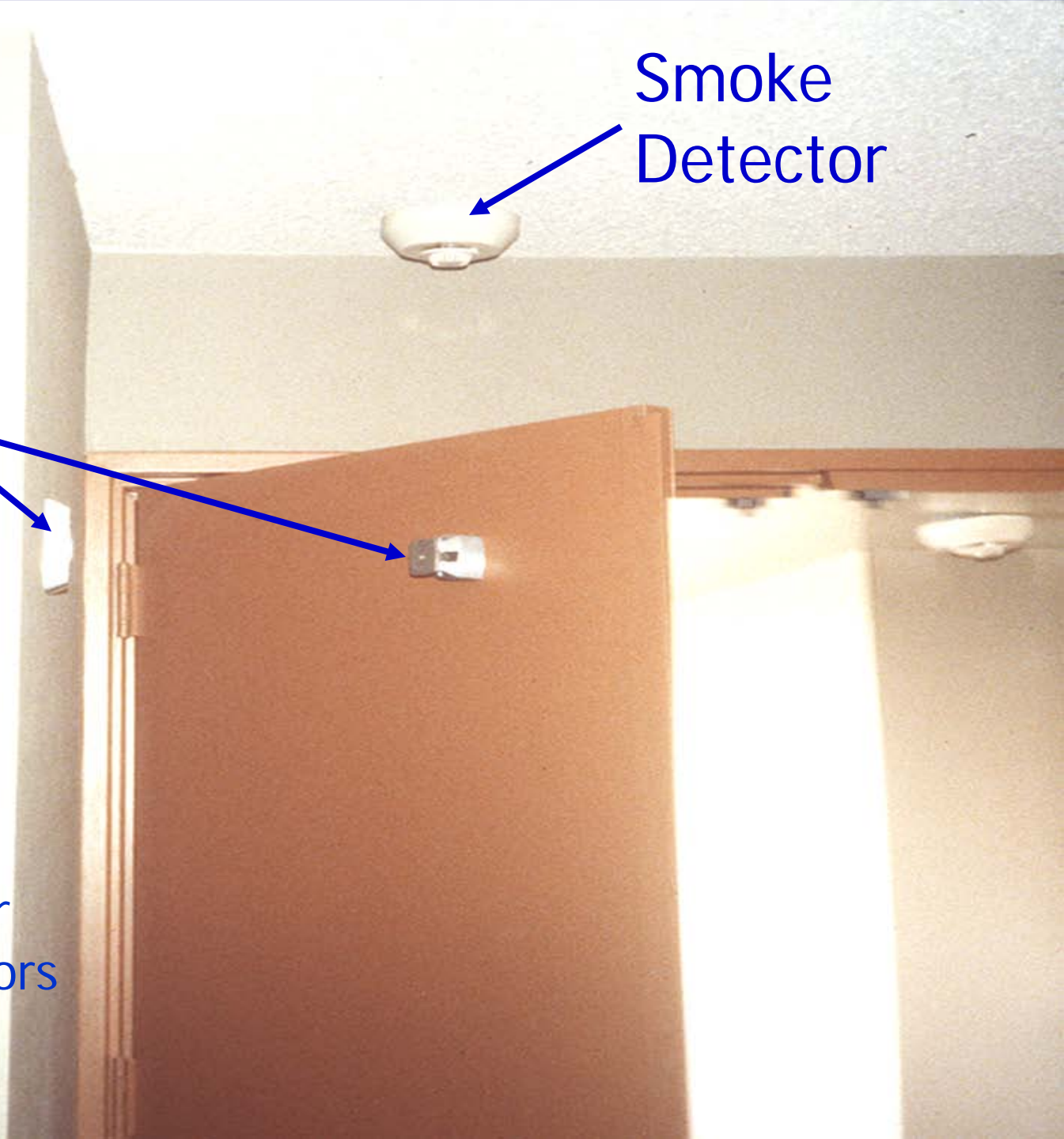
# *Auto-Closing Devices cont'd*

- Smoke detection activates release
  - Full area detection, OR
  - Smoke detection at door
- Detection supervised
- Smoke detection release of any stair door causes all doors in stair to close

Smoke  
Detector

Magnetic  
Hold-Open  
Device

Smoke detection  
release of any stair  
door causes all doors  
in stair to close



# *Power Operated Doors* [7.2.1.9]

- When in required means of egress:
  - Permit egress upon loss of power
  - Force to set in motion  $\leq 50$  lbf
  - Swing in direction of egress at any point in slide
  - Sign required

# *Powered Operated Doors cont'd*

- When serving < 50, may slide
- Opening in breakout mode of 2-leaf door may be  $\geq 30''$  per leaf
- Bi-parting sliding doors  $\geq 32''$  clear w/ both leafs in break-away mode
- Doors per 7.2.1.14

# *Powered Operated Doors Required to be Self-Closing*

- Doors can be opened manually
- Doors normally closed
- New doors remain open  $\leq 30$  seconds
- Doors held-open close by smoke detector activation
- Doors required to latch do so
- New per BHMA A156.19

## *2. Projections into Corridor*

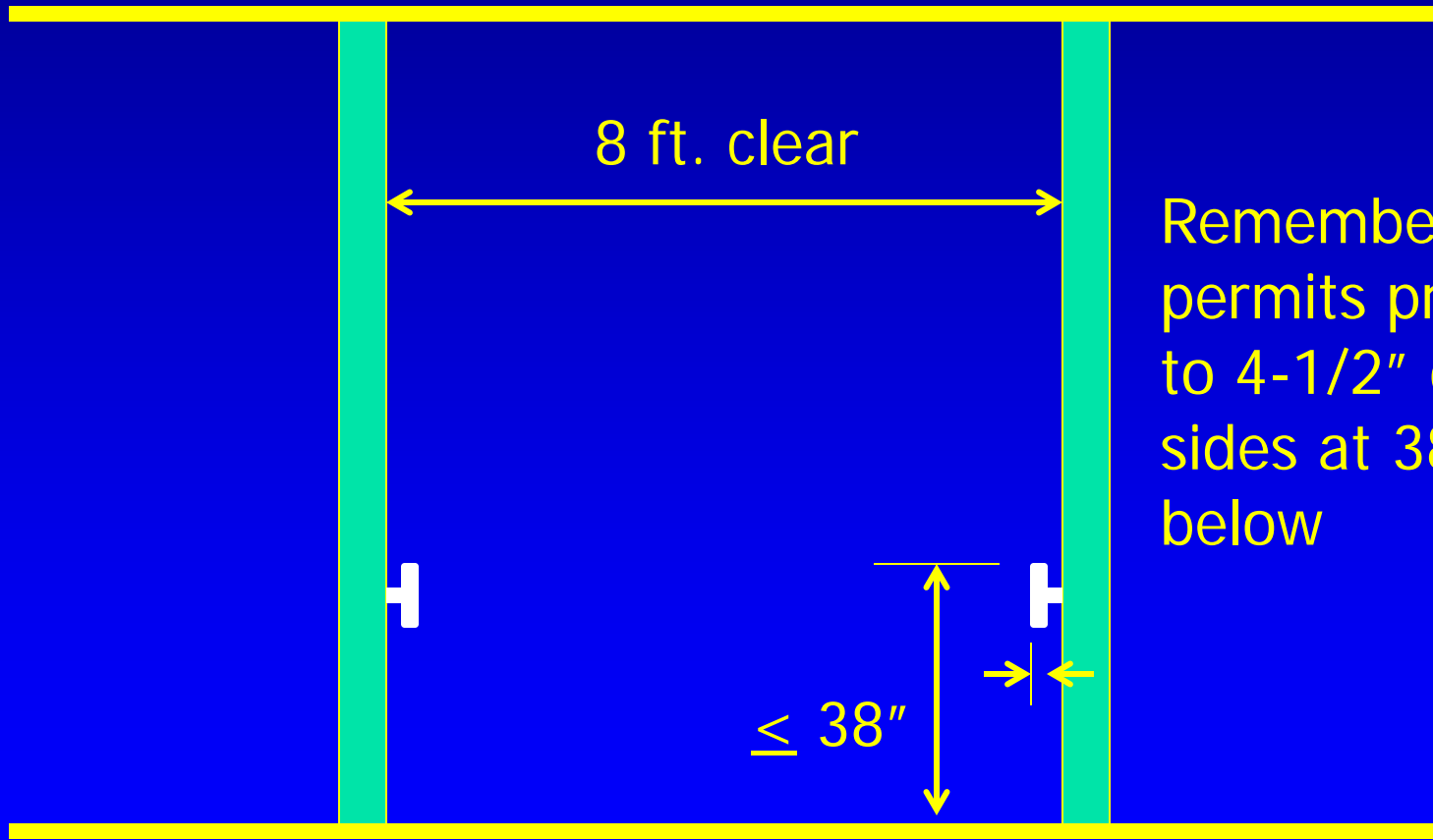


# *Corridor Width*

[18/19.2.3.4]

- Minimum width of aisles, corridors and ramps
  - (New)  $\geq$  8 ft.
  - (Existing)  $\geq$  4 ft.
  - Unless .....
  - Adjunct areas w/o patients may be 44"





Remember, 7.3.2.2 permits projections up to 4-1/2" on both sides at 38" and below

# *Corridor Width - Projections*

(1) Aisles, corridors, & ramps in adjunct areas not used for housing, treatment, or use of inpatients may be  $\geq 44''$

For example, office areas, maintenance areas, back-of-house areas

# Corridor Width - Projections

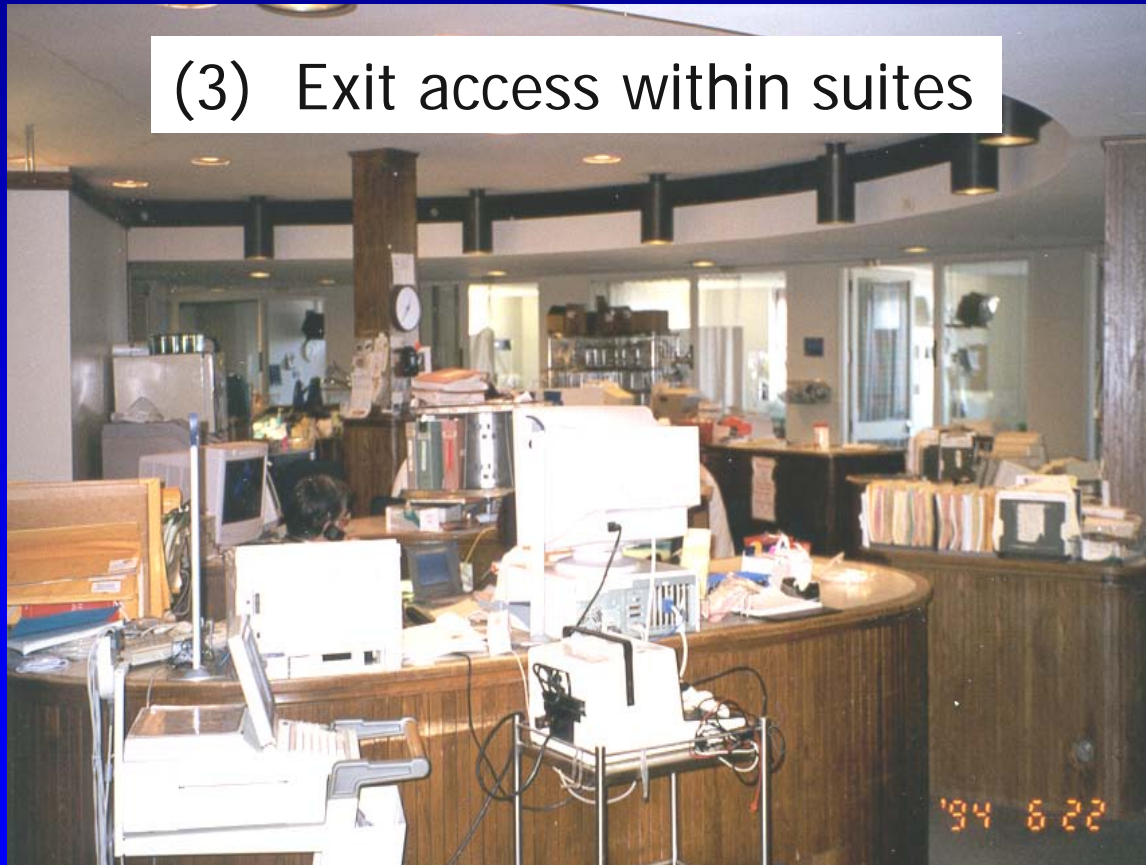
(2) Non-continuous projections  $\leq 6''$  from wall and above handrail height (38'') permitted

*Examples include nurse charting units, wall-mounted computers, telephones, fire alarm boxes, etc.*



# *Corridor Width - Projections cont'd*

(3) Exit access within suites



# 4. *Equipment in Corridors*



18/19.2.3.4 (4)

# *Corridor Width - Projections* *cont'd*

(4) Projections for wheeled equipment where:

- a) Does not reduce clear width to  $< 60''$
- b) Emergency plan addresses relocation of wheeled equipment
- c) Wheeled equipment limited to
  - Equipment in use
  - Medical emergency equipment
  - Patient lift & transport equipment

# *5. Furniture in Corridors*



[18/19.2.3.4 (5)]

## *Furniture in Corridors cont'd*

(5) Projections for fixed furniture where:

- Corridor  $\geq$  8 ft wide
- Furniture secured to wall or floor
- Furniture does not reduce width to  $<$  6 ft.
- Located on one side of corridor

*cont'd .....*



## *Furniture in Corridors cont'd*

(5) cont'd....

- Each grouping  $\leq 50 \text{ ft}^2$
- Groupings separated by  $\geq 10 \text{ ft}$ .
- Does not obstruct building service or fire protection equipment

*cont'd .....*

## *Furniture in Corridors cont'd*

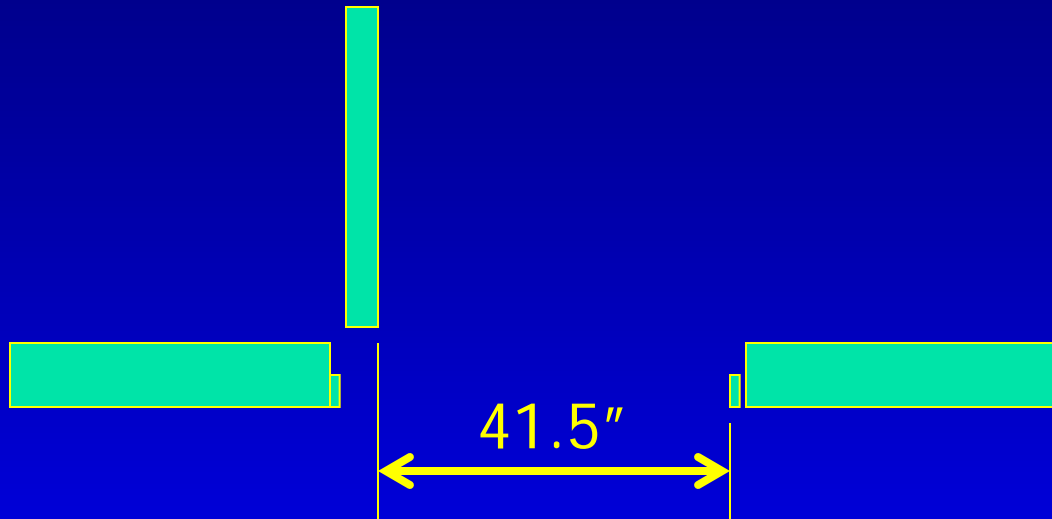
(5) cont'd....

- Smoke detectors in corridors of smoke compartment or have direct supervision by staff
- QRS throughout smoke compartment

## *Door Width – New [18.2.3.6]*

- Hospitals & Nursing Homes – 41.5"
- Psychiatric & Limited Care – 32"
- ≥ 32" *where no health care occupants*
- *Stair doors* ≥ 32"
- *Newborn nurseries* ≥ 32"
- *Pair of doors, ≥ 1 to be ≥ 32"*

# *Door Width* [18/19.2.9]



# *Door Width* *cont'd*

- 41.5" door width not required where:
  - Doors not subject to any health care occupant  $\geq 32"$
  - Doors to exit stairs  $\geq 32"$
  - Where pair of doors:

# 5. *Cooking Open To Corridors*

[18/19.3.2.5.3]



# *Cooking Facilities [18/19.3.2.5]*

- Cooking facilities protected per 9.2.3
  - Section 9.2.3 requires compliance with NFPA 96, *Standard for Ventilation Control & Fire Protection of Commercial Cooking Operations*

# *Cooking Facilities* *cont'd*

*18/19.3.2.5.2]*

- Where residential cooking equipment is used for food warming or limited cooking, no protection required & not considered a hazardous area



# *Cooking Facilities cont'd*

*[18/19.3.2.5.2]*

*Annex note references small appliances such as microwave ovens, hot plates, toasters, & nourishment centers*



# *Cooking*

- May be open to corridor per 18/19.3.2.5.3



# *Cooking* [18/19.3.2.5.3]

- W/in smoke compartment where cooking for  $\leq 30$  persons, 1 cooking facility may be open to the corridor where:
  1.  $\leq 30$  beds & separated by smoke barrier
  2. Range hood at least as wide as cooking surface
  3. Hood system w/air flow 500 cfm

# *Cooking cont'd*

4. Hood systems not ducted to exterior to have charcoal filters
5. Cooktop range have:
  - Fire suppression system per UL 300 or UL 300A
  - Manual release for extinguishing system
  - Interlock to turn off all sources of power under hood

# *Cooking cont'd*

6. Solid fuel cooking prohibited
7. Deep-fat frying prohibited
8. Portable fire extinguishers per NFPA 96 – Class K w/in 30 ft of cooking surface

# *Cooking cont'd*

9. Switch to turn off power
  - ▣ Locked or restricted access
  - ▣ Deactivate cooking unit when not under staff supervision
  - ▣ 120 minute timer

# *Cooking cont'd*

10. Procedures for use, inspection, testing, & maintenance per NFPA 96
11.  $\geq 2$  AC powered photoelectric smoke alarms w/silence feature in area not closer than 20 ft from cooking surface

# *Cooking*

*(separated by corridor walls)*

*[18/19.3.2.5.4]*

- W/in smoke compartment:
  - Residential or commercial cooking equipment
  - Used for preparing meals for  $\leq 30$
  - Space w/cooking not a patient room
  - Space separated by corridor wall



# *Cooking* *cont'd*

*(separated by corridor walls)*

- Requirements of 18/19.3.2.5.3(1) – (10) are met (previously covered)
- Transfer grilles not permitted

# *Cooking in Rooms*

*(separated by corridor walls)*

- Walls limit transfer of smoke
- Compliance with NFPA 80 not required
- Clearance at bottom of door  $\leq 1$ "
- Positive latching
- Dutch doors permitted provided:
  - Both leafs latch
  - Meeting edges have astragal, rabbet, or bevel

# *Cooking*

[18/19.3.2.5.4]

- Where cooking protected per NFPA 96 (e.g. cooking for > than 30):
  - Room or space not considered a hazardous area per the \_ 3.2 section
  - Space may not be open to corridor

# 6. Alcohol-Based Hand-rub Dispensers

[18/19.3.2.6]



# *Alcohol-Based Hand-rub Dispensers*

- (1) Corridor  $\geq$  6 ft.
- (2)  $\leq$  1.2L (0.32 gal) in rooms,  
corridors, areas open to corridors  
 $\leq$  2 L (0.53 gal) in suites
- (3) Aerosol containers  $\leq$  18 ozs. & be  
limited to Level 1 aerosols
- (4) Separated by  $\geq$  4 ft.

# *Alcohol-Based Hand-rub Dispensers* *cont'd*

- (5)  $\leq$  37.8 L (10 gals) or 1135 ozs. (32.2 kg) of Level 1 aerosols outside of cabinets in any smoke compartment
- (6) 1 dispenser per 18/19.3.2.6(2) or (3) per room not included in aggregate quantity

# *Alcohol-Based Hand-rub Dispensers cont'd*

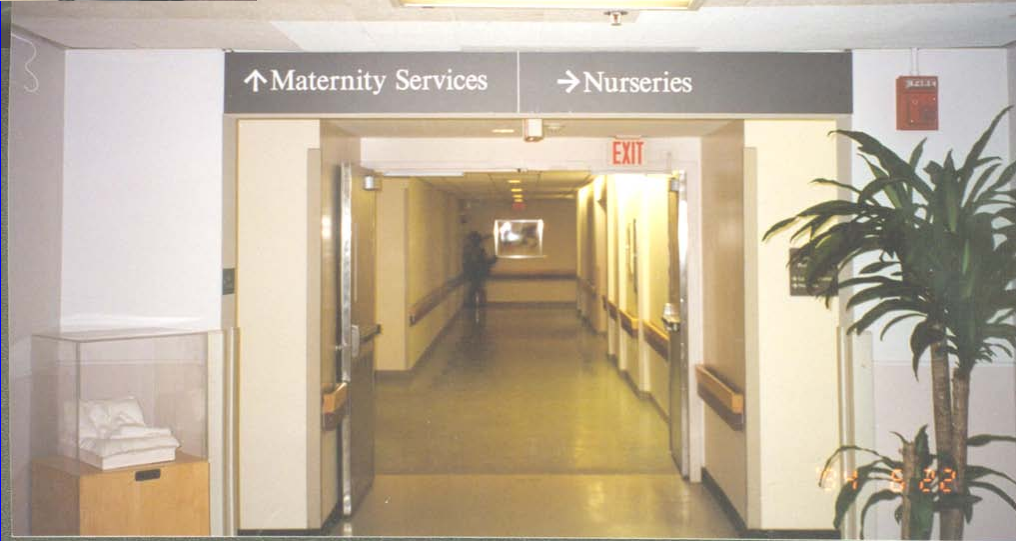
- (7) Storage > 18.9L (5 gal) in any 1 smoke compartment to be per NFPA 30
- (8) Dispensers not installed:
  - above ignition source ..  $\geq 1''$
  - to side of ignition source  $\geq 1''$
  - beneath ignition source ...  $\geq 1''$

# *Alcohol-Based Hand-rub Dispensers cont'd*

- (9) Dispensers over carpet only permitted in smoke compartments w/AS
- (10) Solution  $\leq$  95% alcohol
- (11) Operation of device regulated  
(6 rules)



# 7. Corridor Separation



# *Corridors – New & Existing*

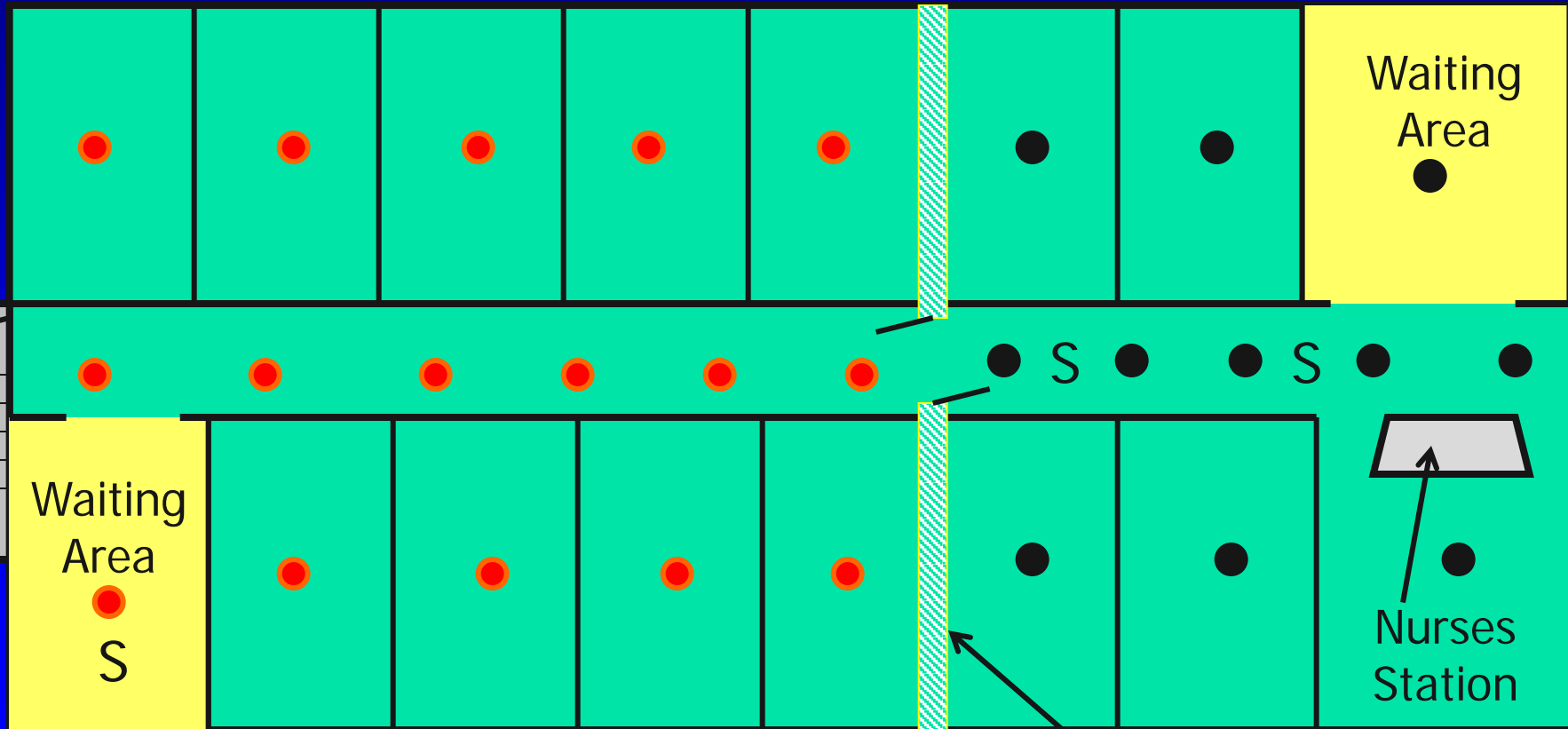
*[18/19.3.6]*

- Corridors separated from all use areas, unless:
  - 1) Unlimited size areas not used for patient sleeping, treatment, or hazardous area
  - 2) Waiting areas  $\leq$  600 sq.ft
  - 3) Nurses stations
  - 4) Gift Shop (existing w/AS in SC or gift shop)
  - 5) Limited Care, group meeting spaces
  - 6) Cooking facilities per 18/19.3.2.5.3

# *Corridors – Existing cont'd*

- 7) Spaces other than patient sleeping, treatment, or hazardous area:
  - Smoke Detection in SC
  - AS or control combustibility of contents
- 8) Waiting spaces  $\leq$  600 sq.ft:
  - SD in area
- 9) Group meeting or multipurpose therapeutic spaces under continuous supervision

# *Spaces Open to Corridor*

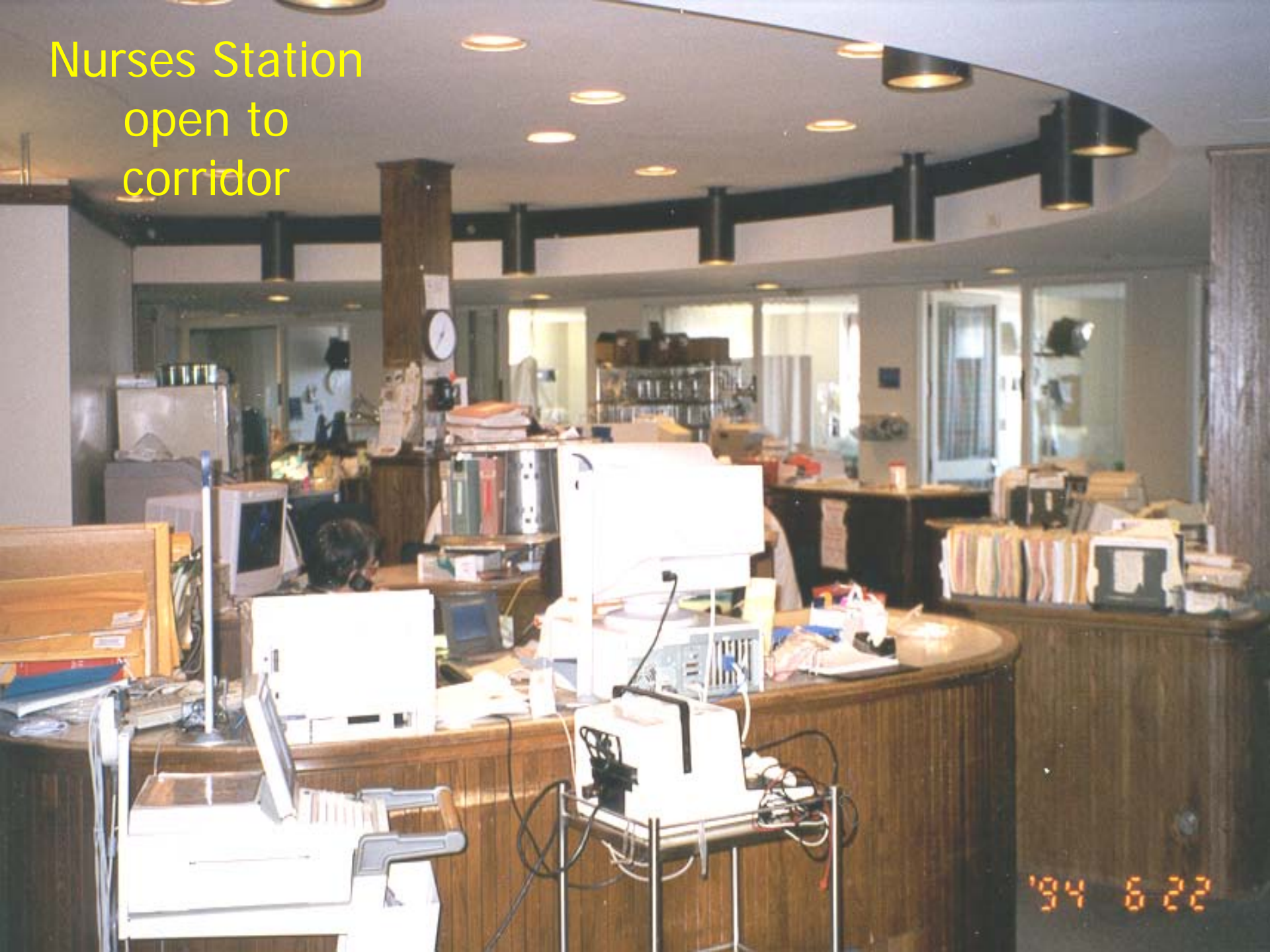


- Quick Response Sprinkler
- Standard Response Sprinkler

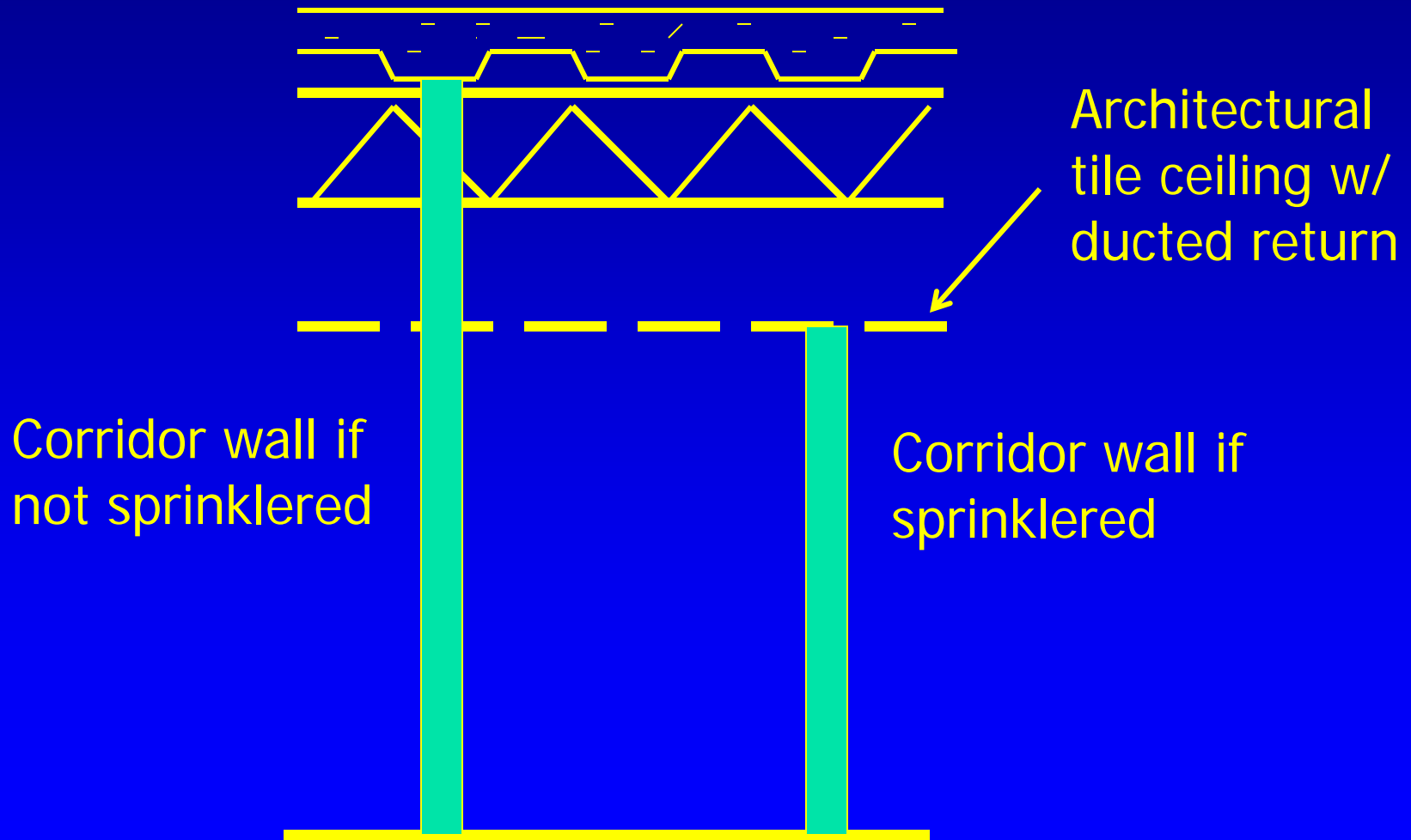
Smoke Barrier



Nurses Station  
open to  
corridor



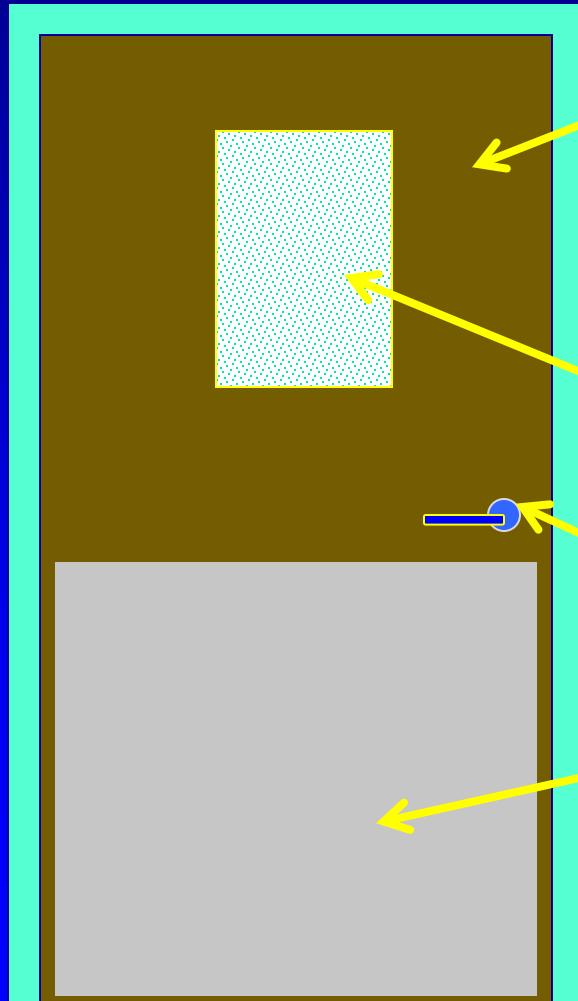
# Corridor Wall Construction



# Corridor Door

Door resist passage of smoke

- No rating required
- Does not have to comply with NFPA 80



Glazing unlimited size

Latching hardware

Kick plate - unlimited

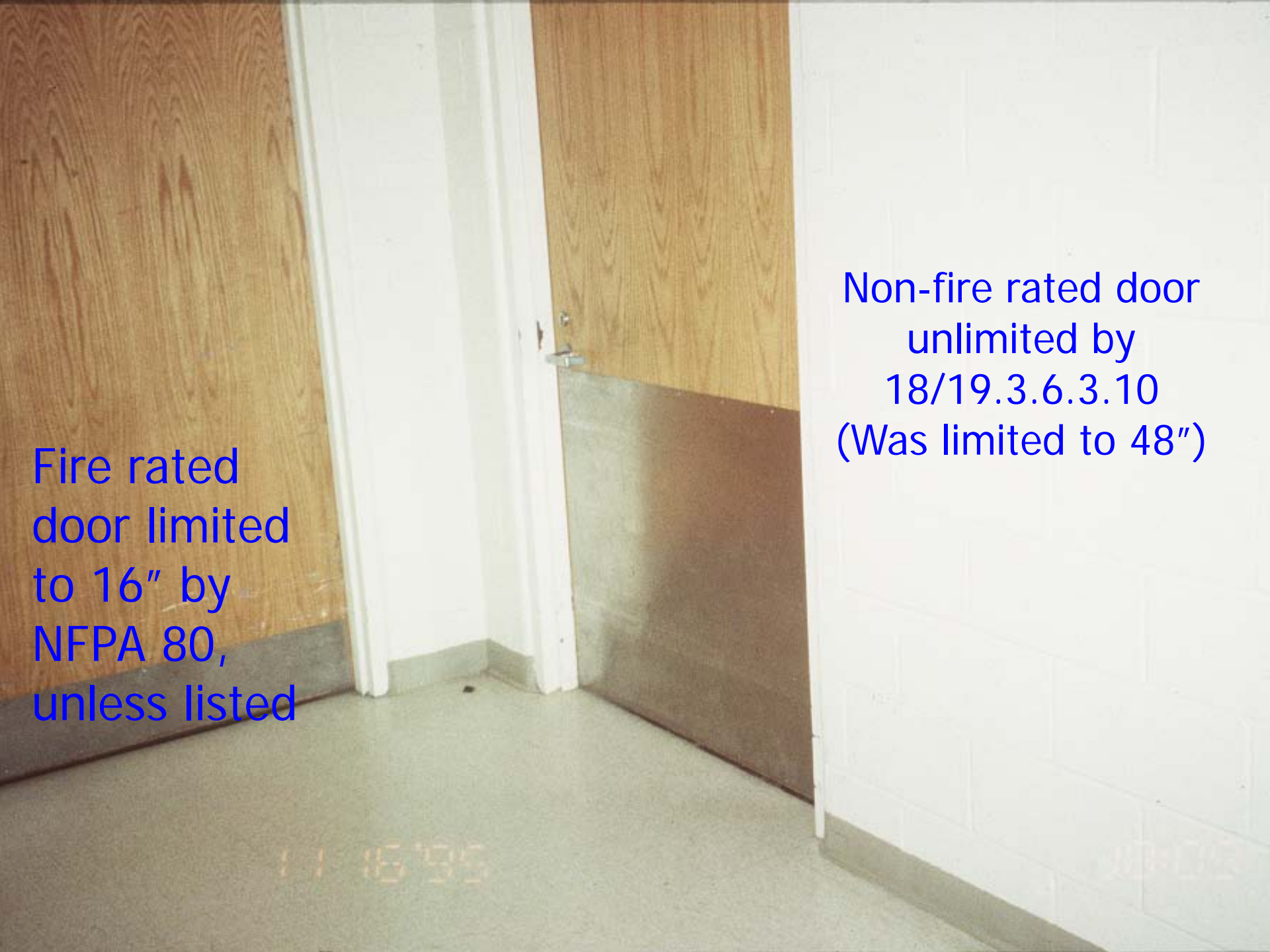
# Dutch Doors [18/19.2.6.3.11]



- Top half must latch into bottom half
- Meeting edge protected w/astragal, rabbet, or bevel







Fire rated  
door limited  
to 16" by  
NFPA 80,  
unless listed

Non-fire rated door  
unlimited by  
18/19.3.6.3.10  
(Was limited to 48")

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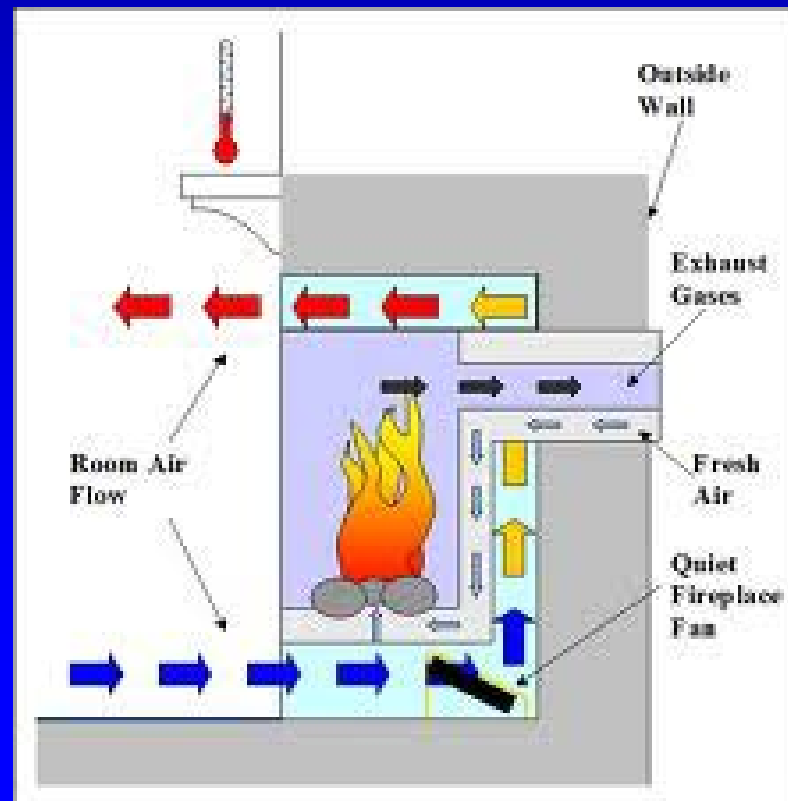
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# 8. Fireplaces [18/19.5.2.3(2)]



# Fireplaces *cont'd*

- Direct-vent fireplaces as defined in NFPA 54, *National Fuel Gas Code*



# *Fireplaces* *cont'd*

- Not inside patient room
- SAS with QRS or residential sprinklers
- Sealed glass front with wire mesh panel or screen
- Controls locked or in secure location
- CO detection in room

# 9. "Smoke Barriers"

## *Subdivision of Building Spaces*

[18/19.3.7]

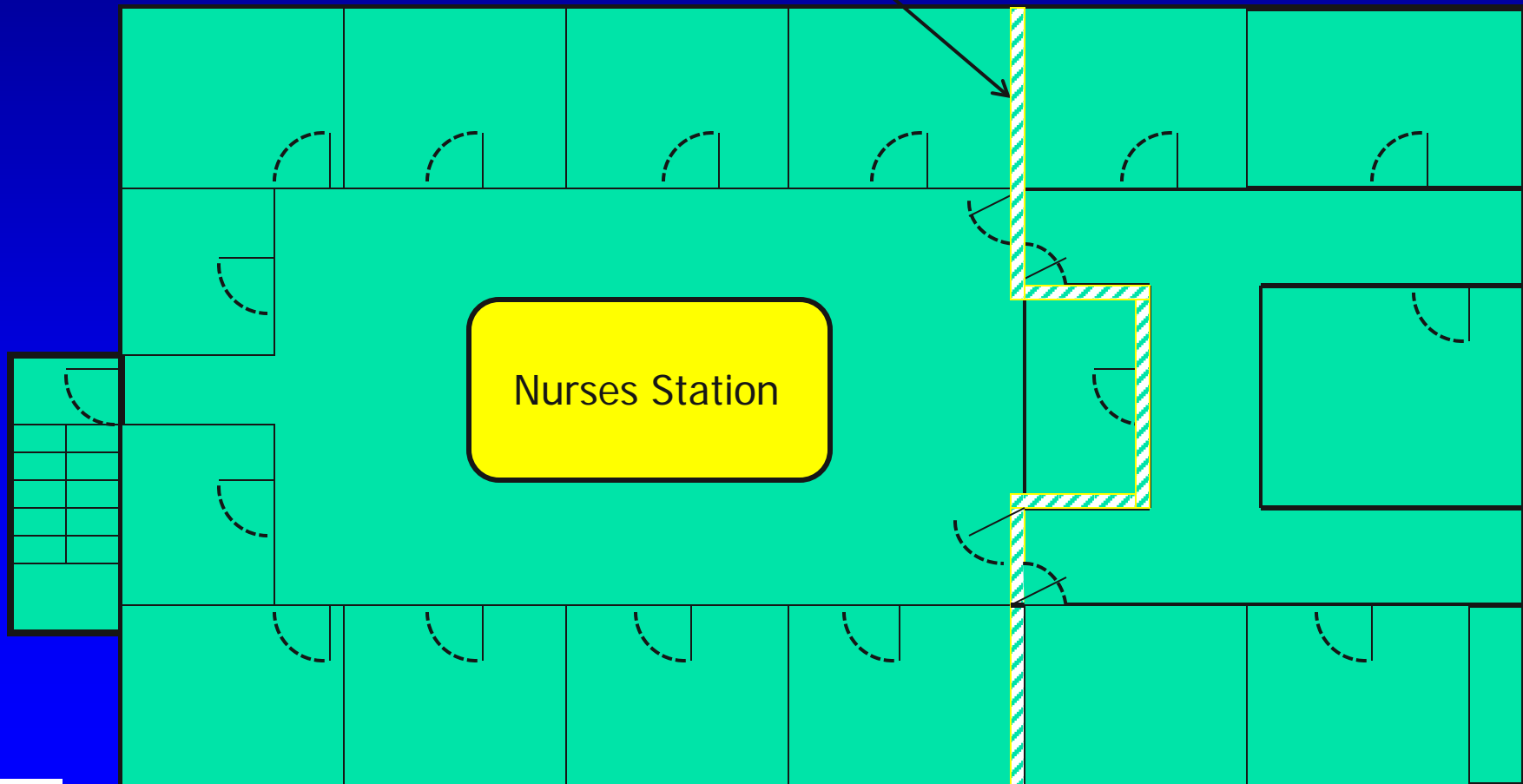
- Buildings housing Health Care to be subdivided by smoke barriers as follows:

## *Smoke Barriers - New cont'd*

- Divide every story used for sleeping or treatment
- Divide every story w/ $\geq$  50 persons
- Limit size to  $\leq$  22,500 sq.ft.
- Limit travel distance from any point to smoke barrier door to  $\leq$  200 ft.

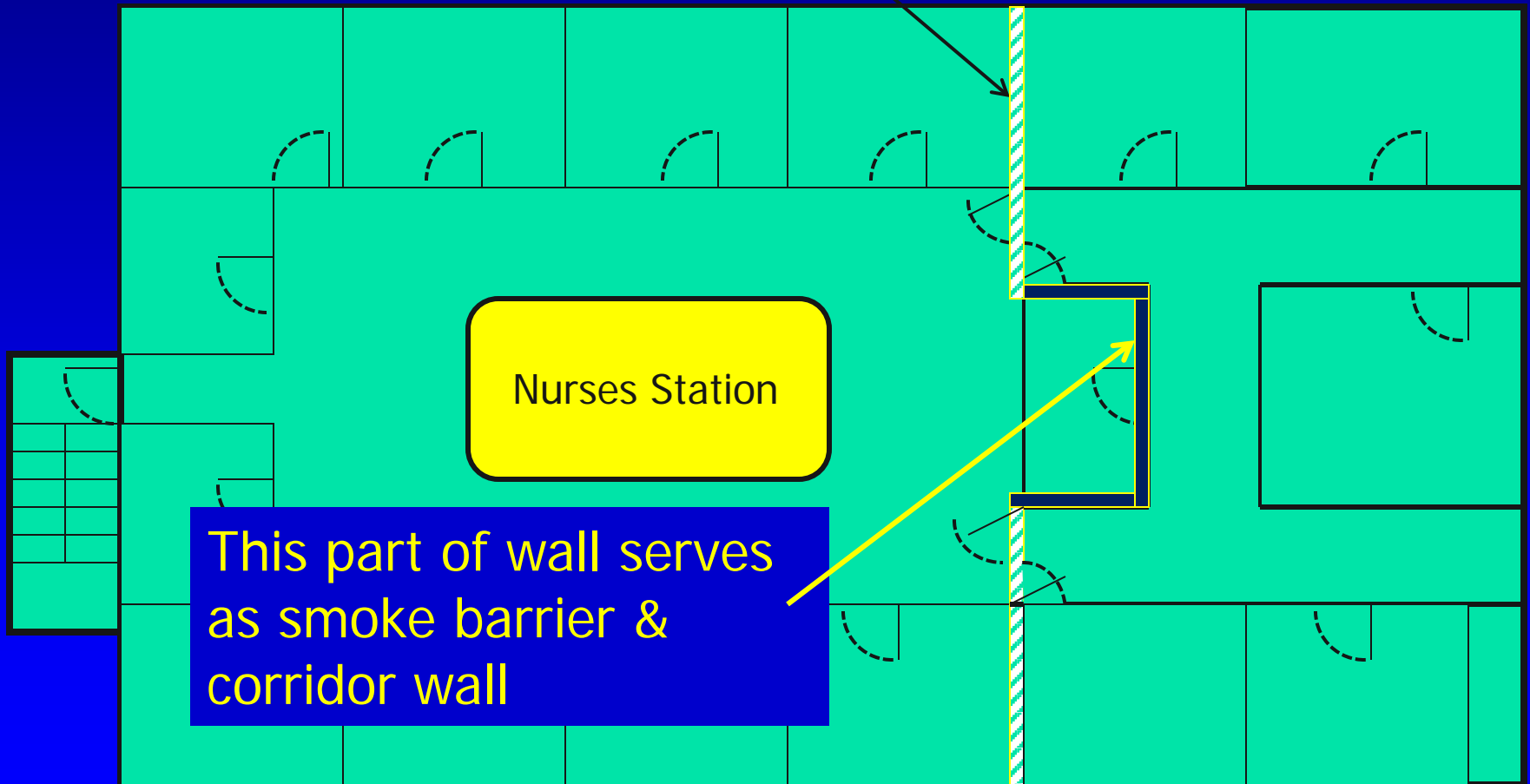
# *Smoke Barriers*

Smoke Barrier



# *Smoke Barriers*

Smoke Barrier



This part of wall serves as smoke barrier & corridor wall



# *Smoke Barriers* cont'd

- 1 hr. fire resistance (Existing ½ hr)
- Penetrations sealed
- Limit size of smoke compartment to 22,500 ft<sup>2</sup>
- Limit travel distance to smoke barrier door to  $\leq 200$  ft.

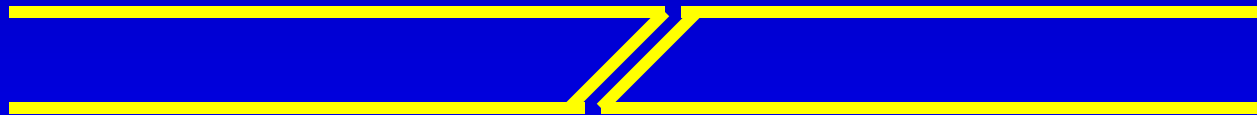
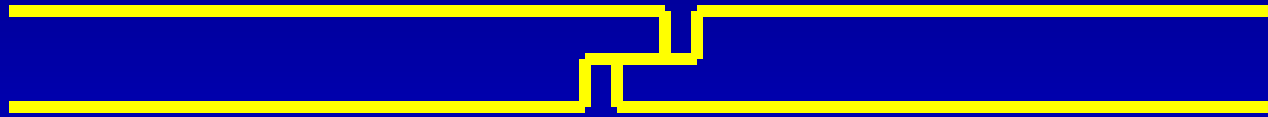
# *Smoke Barrier Doors*

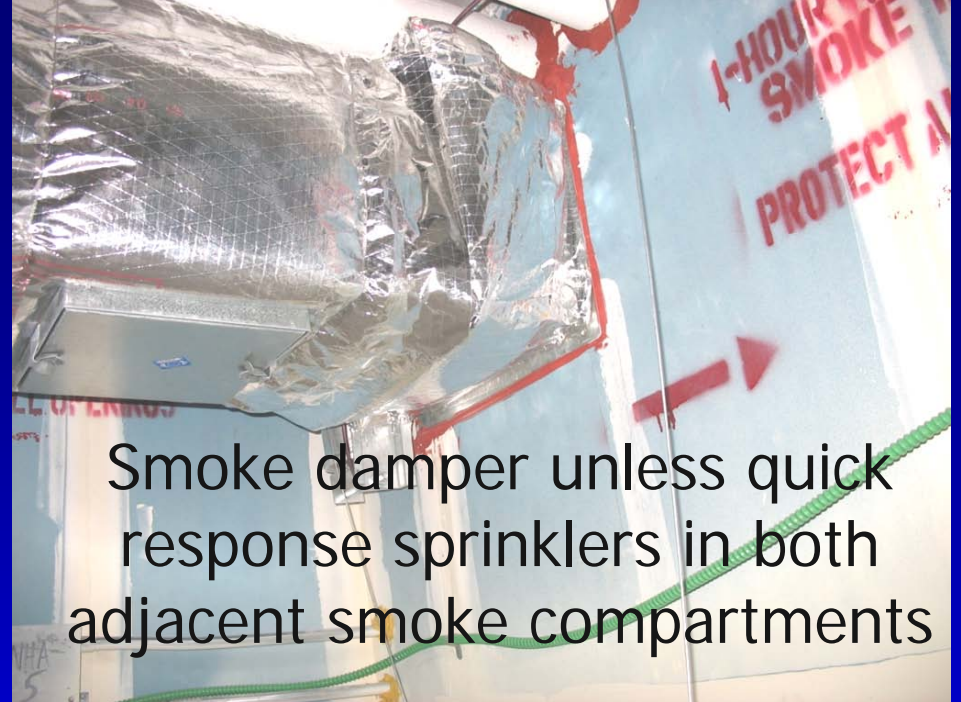
- Doors “.. substantial doors, such as 1¾” thick, solid-bonded wood-core doors, or shall be of construction that resists fire for a minimum of 20 minutes,..”
- New to have a pair of doors
- Doors 41-1/2” (existing 32”)
-

# *Smoke Barrier Doors* *cont'd*

- Clearance under bottom of door  $\leq$   $\frac{3}{4}$ "
- Self-closing or automatic closing
- Latching hardware not required
- Stops required
- New: Clearance under door  $\leq$   $\frac{3}{4}$ "
- New: rabbets, bevels, or astragals

# *Rabbets, Bevels, Astragals*

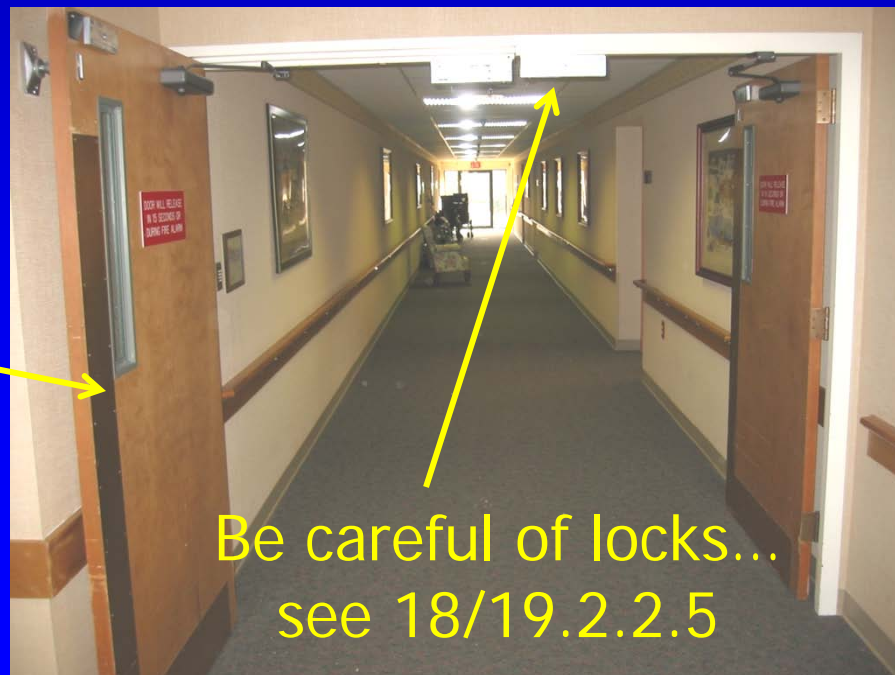




Smoke damper unless quick response sprinklers in both adjacent smoke compartments

Doors not required to:

- Be rated
- To have a latch



Be careful of locks... see 18/19.2.2.5

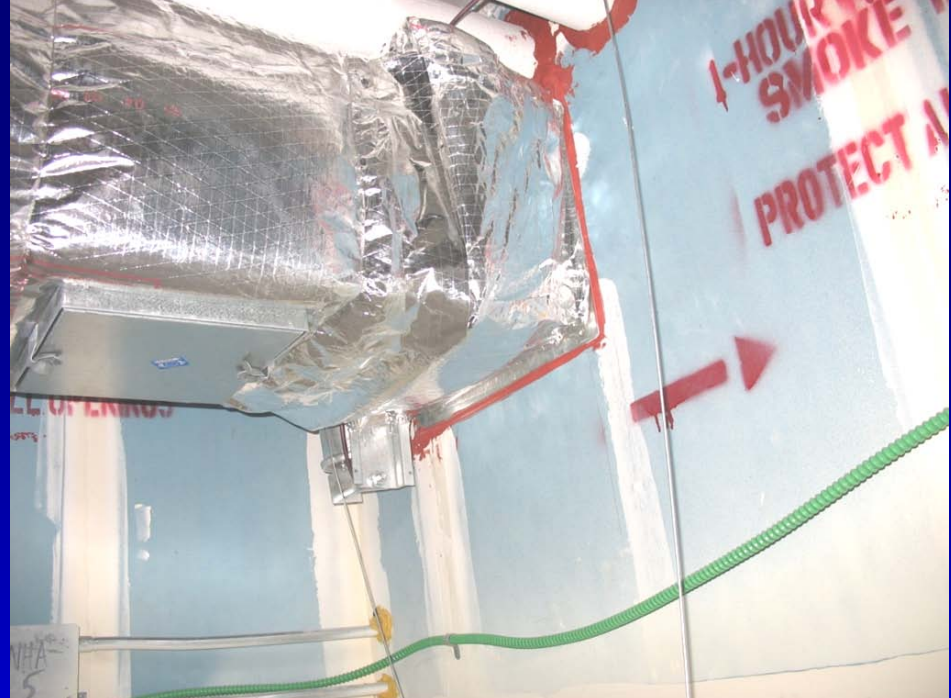
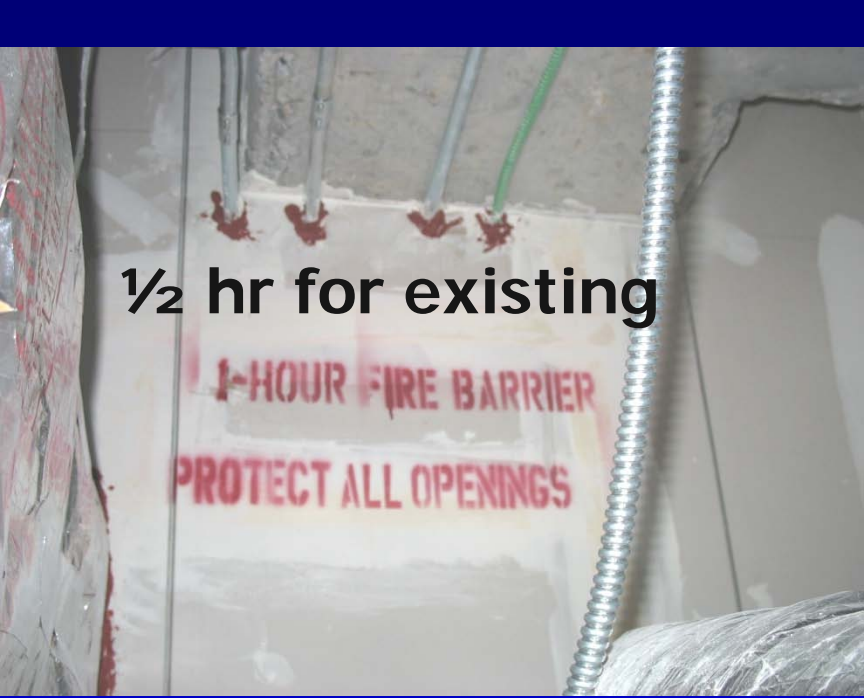
# *Subdivision of Building Spaces – EXISTING [19.3.7]*

- Buildings housing Health Care to be subdivided by smoke barriers as follows:

## *Smoke Barriers cont'd*

- Divide every story used for sleeping for  $> 30$  patients
- Limit size to  $\leq 22,500$  sq.ft.
- Limit travel distance from any point to smoke barrier door to  $\leq 200$  ft.







# *10. Combustible Decorations*

Draperies, curtains, & other  
loosely hanging fabrics and films  
to meet requirements of NFPA  
701, *Standard Methods of Tests for Flame  
Propagation of Textiles and Films*

*cont'd .....*

# *Combustible Decorations* *cont'd*

- Does not include:
  - Shower curtains
  - Curtains within patient rooms
  - Curtains in other rooms where  $\leq 48 \text{ ft}^2$  and  $\leq 20\%$  of area of wall on which mounted

# *Combustible Decorations* *cont'd*

- Combustible decorations prohibited unless:
  - Flame-retardant or treated with approved fire-retardant
  - Meet NFPA 701
  - Exhibit heat release rate  $\leq 100$  kW
  - Photos, artwork, paintings attached to walls

# *Combustible Decorations* *cont'd*

- Photos, artwork, paintings attached to walls and ceiling and:
  - $\leq 20\%$  of wall or ceiling area inside any room in smoke compartment w/o sprinklers
  - $\leq 30\%$  of wall or ceiling area inside any room in smoke compartment w sprinklers .....

# *Combustible Decorations* *cont'd*

- Photos, artwork, paintings attached to walls and ceiling and:
  - $\leq 50\%$  of wall or ceiling area inside any patient sleeping room w/ $\leq 4$  persons in smoke compartment w/o sprinklers

*End*

