Taming the Health Care Building Codes – NFPA vs. The International and Chicago Building Codes
Comparing the Codes:
• Chicago Building Code (2012) (CBC)
Comparing the Codes:


In addition, don’t forget:

- The Hospital Licensing Act (HLA)
- Guidelines for Design and Construction of Health Care Facilities (FGI)
Why do we need to do this?

"OK, LET'S SEE YOUR BUILDING PERMIT"
Challenge Question:
What is the REQUIRED rating for a corridor wall in NEW construction in a Hospital in the State of Illinois?
ANSWER: It Depends...
Factors:

• Where is the facility
  • Chicago needs to follow BOTH the Chicago Building Code (CBC) for local AND the 2000 NFPA 101 Life Safety Code (LSC) for IDPH/CMS/JCAHO or DNV.
  • Outside Chicago MOST municipalities follow the International Building Code (IBC), PLUS you must use the 2000 NFPA 101 Life Safety Code (LSC) for IDPH/CMS/JCAHO or DNV.
  • Beware of other local ordinances requiring other editions of NFPA or even local supplemental codes. **ALWAYS** use the most stringent requirement.
2000 NFPA 101:

- Section 18.3.6.2* for new construction (and facilities built or remodeled after March 2003) requires “Corridor walls shall form a barrier to limit the transfer of smoke. Such walls shall be permitted to terminate at the ceiling where the ceiling is constructed to limit the transfer of smoke. No fire resistance rating is required for corridor walls.”

- Section 18.3.6.3.1 “Doors protecting corridor openings shall be constructed to resist the passage of smoke…”
  - Door ratings for hazardous areas, stairs or other vertical openings must meet other required fire ratings.
For existing buildings, Section 19.3.6.2.1 requires “Corridor walls shall be continuous from the floor to the underside of the floor or roof deck above, through any concealed spaces, such as those above suspended ceilings, and through interstitial structural and mechanical spaces, and they shall have a fire resistance rating of not less than ½ hour.”

Exception: for smoke compartments which are fully sprinklered, NFPA allows the partitions to terminate at the ceiling, similar to chapter 18.

Section 19.3.6.3.1 requires that doors “…be substantial doors, such as those constructed of 1 ¾” (4.4-cm) thick, solid-bonded core wood or of construction that resists fire for not less than 20 minutes and shall be constructed to resist the passage of smoke…”
International Building Code:

- Table 1018.1 Allows zero (0) fire rating of corridor walls in fully sprinklered buildings.
- Section 407.3 requires “Corridor walls shall be constructed as smoke partitions in accordance with section 710.”
  - Section 710 allows the partition to terminate at “…the underside of the ceiling above where the ceiling membrane is constructed to limit the passage of smoke.”
- Section 407.3.1 does not require the corridor doors to be rated except for those in a wall required to be rated by section 509.4.
Chicago Building Code:

- Section (13-80-030) (a) Requires that corridor walls be one (1) hour fire rated that the doors to only have a 20 Minute Fire Rating in a minimum 18 gage steel frame.
Challenge Question:

• What is the exception for the one (1) hour fire rated corridor requirement in the Chicago Building code?
Chicago Building Code:

• The same section allows the partition to stop at the ceiling if the building is fully sprinklered INCLUDING THE CEILING SPACES.
Challenge Question:

- What is the difference between a SMOKE PARTITION and a SMOKE BARRIER?
Simple Answer:

• A Smoke Partition is an Assembly of Components that limits the passage of smoke.
• A Smoke Barrier is a rated partition that separates the building into compartments.
2000 NFPA 101: Smoke Partition

• NFPA uses the term “barrier to limit the passage of smoke” These types of partitions (such as corridor partitions) are allowed to stop at the ceiling.

• Section A18.3.6.2 “An architectural, exposed, suspended-grid acoustical tile ceiling with penetrating items such as sprinkler piping and sprinklers; ducted HVAC supply and return-air diffusers; speakers; and recessed lighting fixtures is capable of limiting the transfer of smoke.”

• Be careful which partitions that you stop at the ceilings. The HLA and FGI have requirements for sound transmission into patient rooms and other areas.
2000 NFPA 101:
Smoke Barrier – Where Required 18.3.7:

• To divide every story used by inpatients for sleeping or treatment into not less than two smoke compartments
• To divide every story having an occupant load of 50 or more persons, regardless of use, into not less than two smoke compartments. (Look at 18.3.7.1 Exceptions for items specific to NFPA)
• To limit the size of each smoke compartment required above into an area not exceeding 22,500 square feet.
• Limit the travel distance from any point to reach a door in the required smoke barrier to a distance not exceeding 200 feet.
2000 NFPA 101:

• For Smoke Barriers:
  • Section 18.3.7.3 requires the smoke barrier to be constructed in accordance with section 8.3 and to have a “…fire resistance rating of not less than 1 hour.”
  • Section 18.7.5 requires that the doors in the smoke barrier “…be of 1 ¾” thick, solid-bonded wood core doors, or shall be of construction that resists fire for not less than 20 minutes…”
  • Section 8.3.2 “Smoke barriers required by this code shall be continuous from an outside wall to an outside wall, from a floor to a floor, or from a smoke barrier to a smoke barrier or a combination thereof. Such barriers shall be continuous through all concealed spaces, such as those found above a ceiling, including interstitial spaces.”
IBC:

Smoke Partition

• Essentially as discussed earlier for Corridor partitions – Just limit the passage of smoke per section 710.

Smoke Barrier

The requirements in 407.5 mirror those in NFPA, WITHOUT the exceptions.
Chicago Building Code:

- Every sleeping floor shall be divided into at least two smoke sections by a one (1) hour fire rated smoke stop partition. Doors shall be “C” Label (45 Minutes).

- IN ADDITION - every institutional unit “… over two stories in height, every floor over 12,000 square feet which contains bed rooms or wards shall be divided into two areas by a 3-hour fire-resistive separation…”
Challenge Questions:

- Are Smoke Dampers required in Smoke Barriers where ductwork penetrates the barrier?
- Are Fire dampers required in these partitions since they are also required to be fire rated?
ANSWER: It Depends...
Factors:

- Where is the facility?
- Is the smoke barrier ALSO being used as a Fire Wall with a rating of two (2) hours or greater?
Chicago Building Code:

• The City has NO requirement for smoke dampers.
• FIRE DAMPERS are required at the required three-hour barriers (or any other partition with a fire resistance rating of two (2) hours or more).
2000 NFPA 101:

• Section 18.3.7.3, *Exception No. 2* Allows smoke dampers to be omitted in fully ducted HVAC systems.

• If the Barrier is also a rated building separation, horizontal exit or other type of partition requiring a fire rating of two (2) hours or greater, a FIRE DAMPER must be installed.
BUT!!!
International Building Code:

• The International building code does **NOT** have an exception to delete smoke dampers except at Critical Exhaust Ducts.
  
  • Therefore, smoke dampers must be used in most locations outside of Chicago.
  
  • Combination Smoke/Fire dampers must be used at partitions with a fire rating of two (2) hours or greater.
Fire Barrier Locations:

- Mixed Use separations – All codes
- Fire compartment size restrictions in IBC and CBC due to a factor of construction type and building height.
- Horizontal Exits
Challenge Question:

• What is a Horizontal Exit?
ANSWER:

• A horizontal exit is a fire barrier that is used when the distance to another legal exit (stair or access to the exterior) is too great to meet code.
Components of a Horizontal Exit:

• It is a minimum Two (2) hour fire rated partition that spans from outside wall to outside wall to separate the building into fire compartments. The adjacent horizontal separations (floors below and above) also need to maintain the Two (2) hour rating.

• For Healthcare, horizontal exits can account for up to 2/3 of the total exiting.

• It is important to read ALL of section 7.2.4 for ALL requirements.

• VERY IMPORTANT – A fire alarm pull station must be within five (5) feet of the horizontal exit doors.
Delayed Egress Locks:

- Used to help limit movement into or out of areas that must still be used as a means of egress.
  - Obstetric Units
  - Pediatric Units
  - Secondary exits through restricted areas such as surgical suites
  - ICU’s
  - Geriatric units
  - Sometimes Psychiatric units
Delayed Egress Locks:

- Allows the door(s) to remain locked for 15 seconds after someone tries to exit the door.
  - Outside of Chicago, the authority having Jurisdiction can allow an increase of up to 30 seconds. DON’T FORGET to apply to ALL AHJ’s involved.
- Section 7.2.1.6.1 has all of the requirements for NFPA
- For IBC, see section 1008.1.9.7
- For CBC, see (13-160-269)
- All three Codes require that the building be fully sprinklered, and that the locks drop out upon activation of the fire alarm.
- Don’t forget to make sure that you have emergency lighting at the door so that the signage can be read.
Challenge Question:

• How many Delayed Egress Locks can you have in the path of Egress?
ANSWER:

• NFPA and IBC allow only ONE (1) delayed egress lock in the path of travel to the public way.
Psychiatric Units:

- Can be locked down, and have multiple locks in the path of egress.
- Staff MUST have keys or keycards on them at all times! And be trained for fire situations.
Electronic Locks:

• Be Careful with electric strikes on Fire Rated Doors, especially Stair Doors.

• It is acceptable to use FAIL SECURE on room doors (as long as ALL staff have keys) and occupants can gain access to the means of egress without a key or keycard.

• On stair doors, and rated cross corridor doors, use with caution. If you need access to all floors during an emergency situation, the strikes will be set for FAIL SAFE. This will DISABLE the latching function of the rated door creating a hazard. It is usually best to use magnetic locks or electric locksets in these locations.
Suites: Purpose:

- Allows for “open” areas, not every room is required to have a smoke tight, latching door, or even have a door.
- Can help alleviate a dead end condition.
- Can be used in an area where access to two exits is not desirable or feasible.
- Can allow operations to “store” carts and items in the “Passageway” (BEWARE of what is being “stored” so that it is not considered open storage).
Suites: Requirements:

• All codes limit size of suites for patient sleeping rooms to 5,000 square feet.
• NFPA and IBC allow non-patient sleeping areas to be 10,000 square feet.

SEPARATION OF SUITES:

• NFPA – Not specifically called out in the 2000 version. The interpretation from NFPA is to have a partition that limits the passage of smoke.
• IBC – 407.4.3.2 Smoke partition complying with 710
• CBC – One (1) hour construction with solid wood doors.
Suites:

Question:

• Can a suite exit into another suite?
Suites:

Answer:

• It Depends...
Suites:

• IBC allows one of the exits in a two exit suite to pass through another complying suite.
• CBC does not address one way or the other.
• NFPA does not specifically allow it...but it also doesn’t prohibit it.
• The official interpretation from NFPA is to check at the 2006 code which they state “Clarifies the intent of the 2000 Code...BUT...
Suites:

- Beware, IDPH and CMS do not “officially” accept this interpretation.
- IDPH interpretation:
  - “Any suite must comply with the travel distance rules for suites (50’ or 100’) to a corridor door, to a door directly to the outside at the level of exit discharge, and/or in some cases an exit from the most remote point in a suite. Once this item is met, a second path, where required may pass through an adjoining suite.”
  - Verify specific conditions with IDPH PRIOR to implementing.
Suites:
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David Dastur AIA, NCARB, Senior Principal
Jensen & Halstead, Ltd
358 west Ontario Street
Chicago, Illinois 60654
312-664-7557
ddastur@jensenandhalstead.com