WHEA

Fire Compartments and Fire Door Requirements

ASSA ABLOY - The global leader in access solutions

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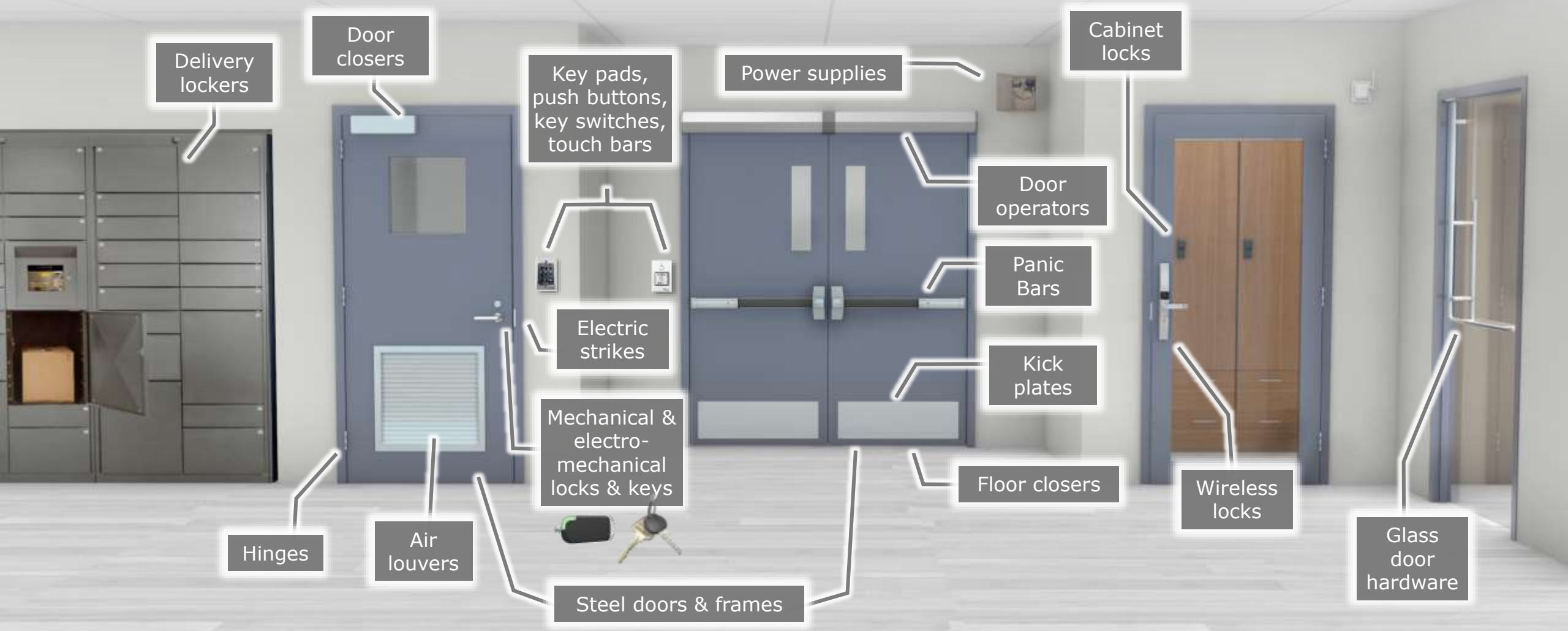
Our non-residential product offering

Securing from the **perimeter**…to **shell**…to **core**



Agenda

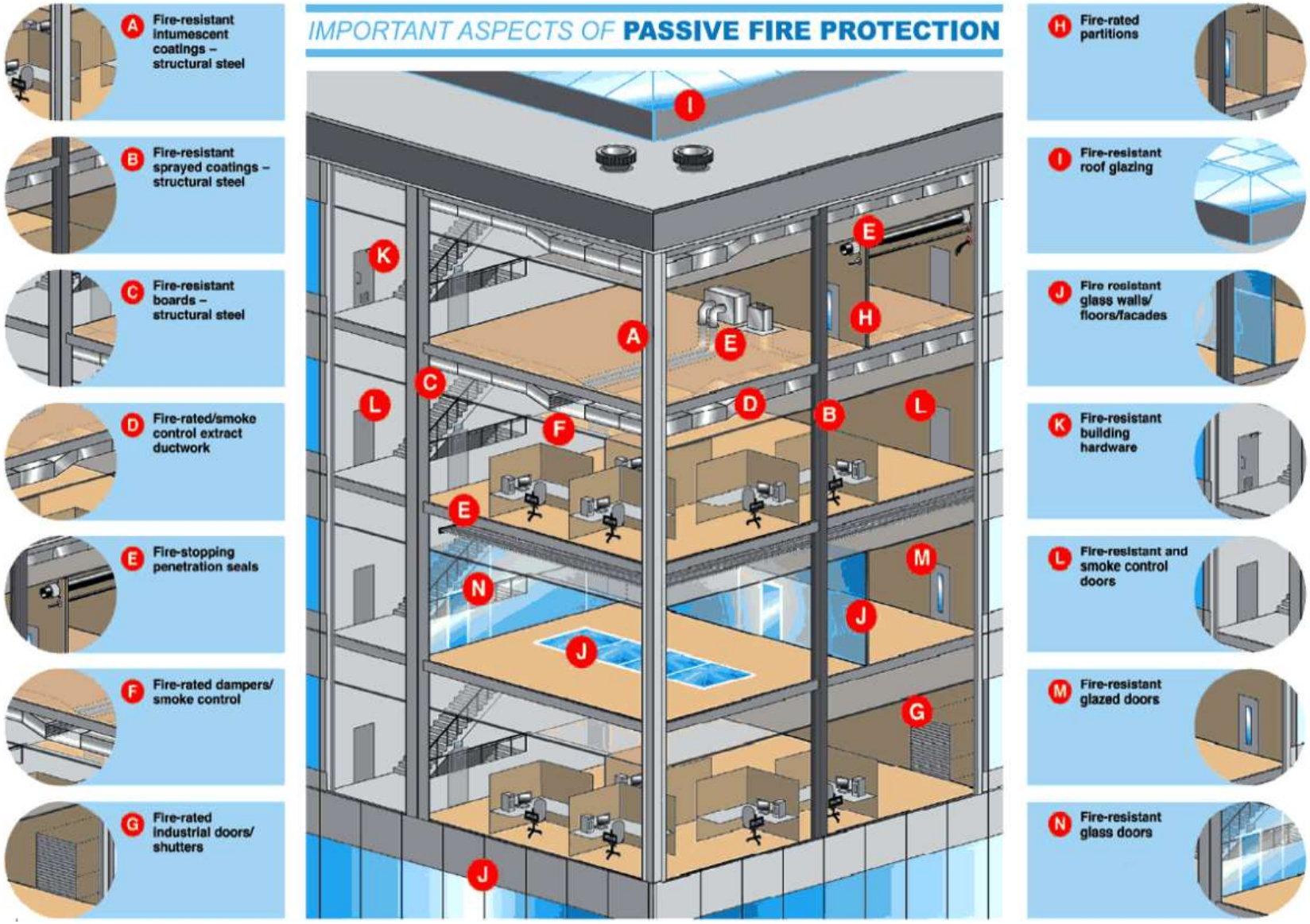
1. Passive fire protection systems
2. Annual fire door inspection requirements
3. How inspections are conducted
4. Common issues causing non-compliance
5. Reporting requirements
6. Remediation strategies

What is Passive Fire Protection?

Building components designed to passively prevent or stop the spread of fire and smoke.

- **Structural Fire Protection**
- **Compartmentation**
  - NFPA 101 – Life Safety Code:

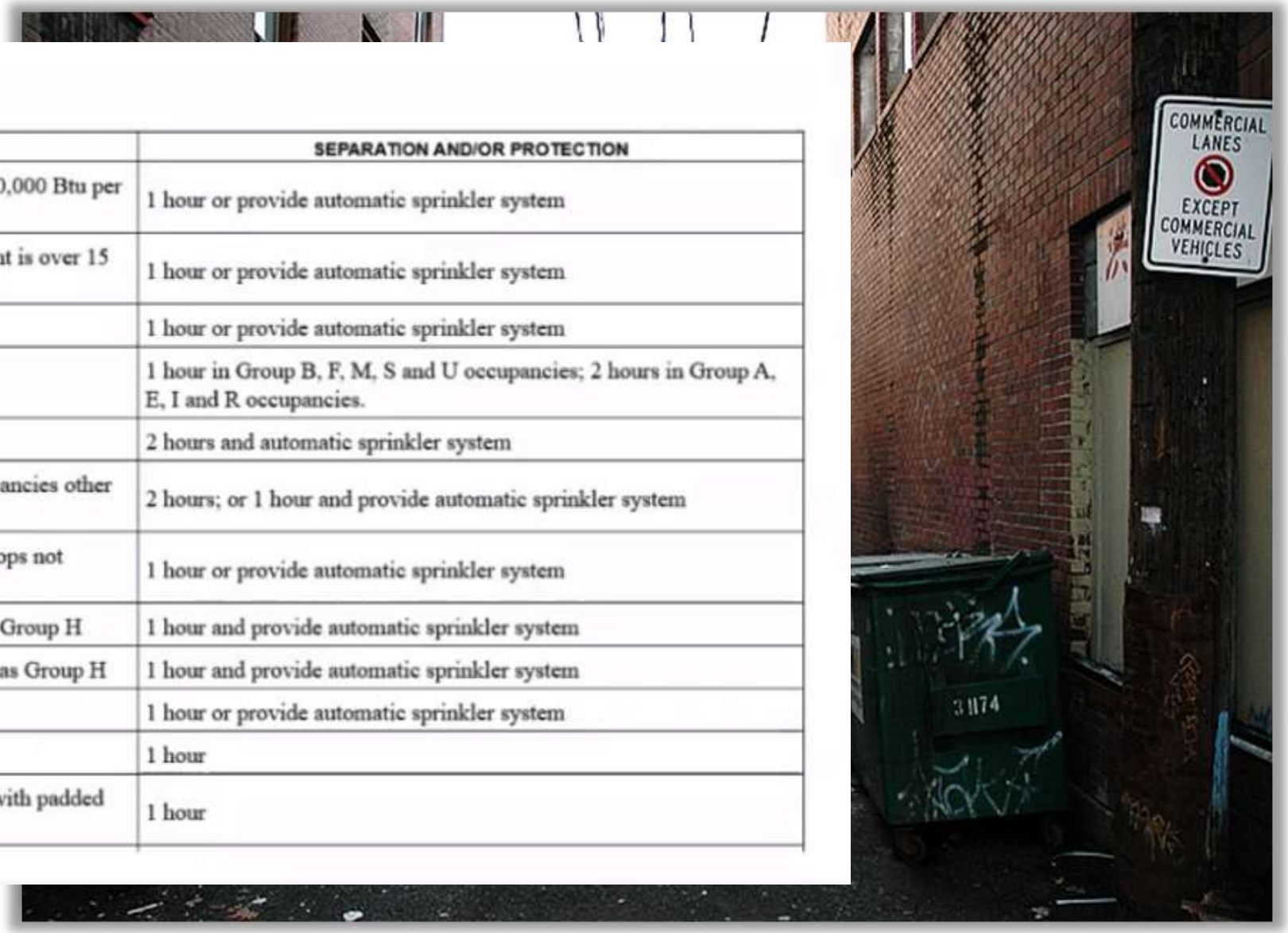
    8.2.2.1 Where required by other chapters of this Code, every building shall be divided into compartments to limit the spread of fire and restrict the movement of smoke.
- **Opening Protection**
- **Firestopping Systems**
  - International Firestop Council www.firestop.org
  - Firestop Contractors International Association
  - www.fcia.org



What is Passive Fire Protection?

TABLE 509
INCIDENTAL USES

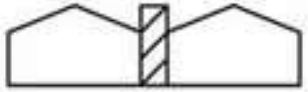
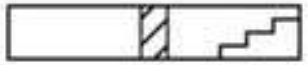
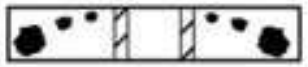
ROOM OR AREA	SEPARATION AND/OR PROTECTION
Furnace room where any piece of equipment is over 400,000 Btu per hour input	1 hour or provide automatic sprinkler system
Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower	1 hour or provide automatic sprinkler system
Refrigerant machinery room	1 hour or provide automatic sprinkler system
Hydrogen fuel gas rooms, not classified as Group H	1 hour in Group B, F, M, S and U occupancies; 2 hours in Group A, E, I and R occupancies.
Incinerator rooms	2 hours and automatic sprinkler system
Paint shops, not classified as Group H, located in occupancies other than Group F	2 hours; or 1 hour and provide automatic sprinkler system
In Group E occupancies, laboratories and vocational shops not classified as Group H	1 hour or provide automatic sprinkler system
In Group I-2 occupancies, laboratories not classified as Group H	1 hour and provide automatic sprinkler system
In ambulatory care facilities, laboratories not classified as Group H	1 hour and provide automatic sprinkler system
Laundry rooms over 100 square feet	1 hour or provide automatic sprinkler system
In Group I-2, laundry rooms over 100 square feet	1 hour
Group I-3 cells and Group I-2 patient rooms equipped with padded surfaces	1 hour



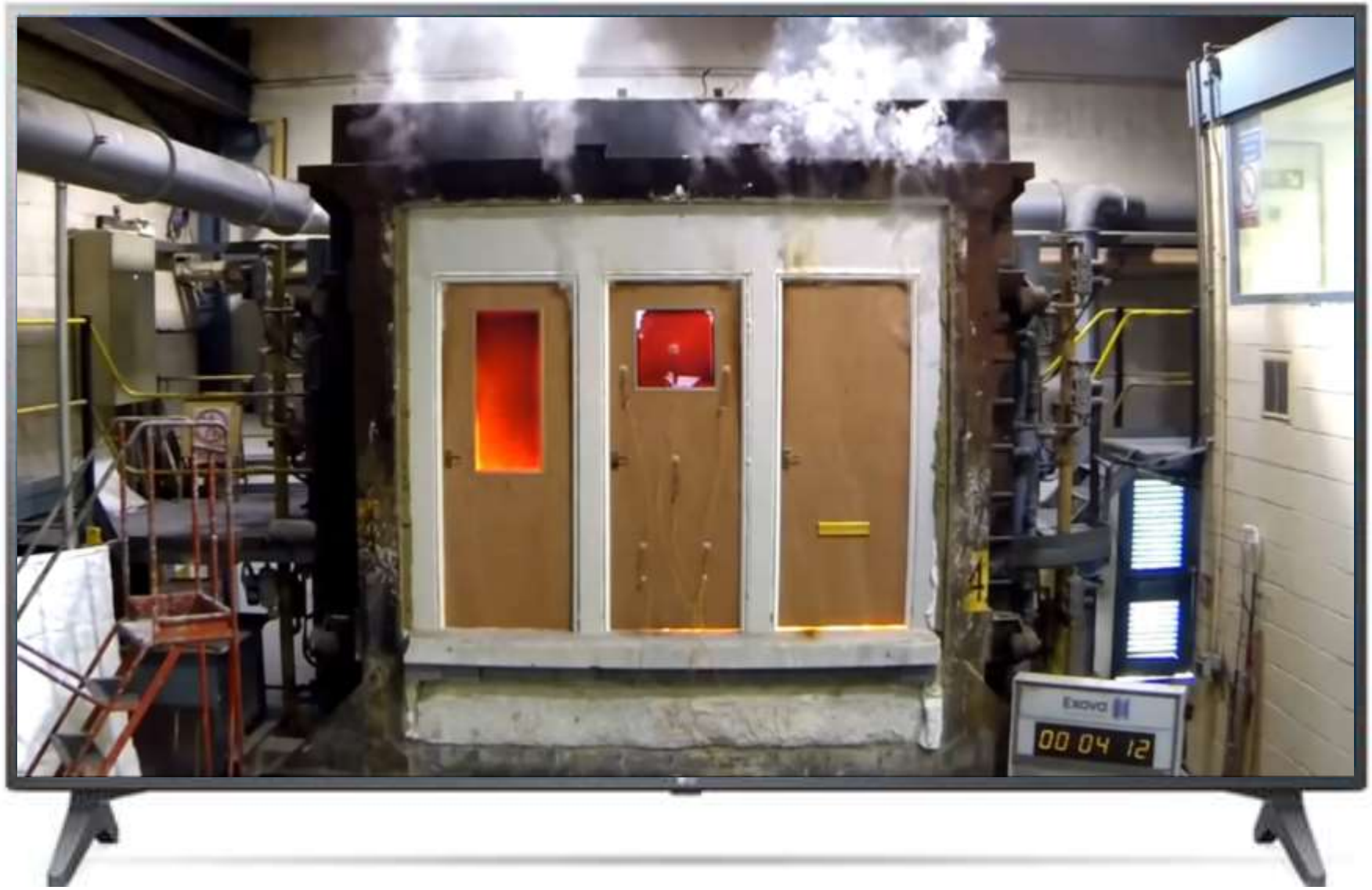
What is a Fire Door Assembly?

A fire door assembly (installed in a firewall) is used as part of a passive fire protection system to reduce the spread of fire or smoke between compartments and to enable safe egress.

Table 1 – Fire door openings

Opening	Wall Rating	Door and Frame Rating	Description and Use
	4 Hour	3 Hour (180 minutes)	These openings are in walls that separate buildings or divide a single building into designated fire areas.
	2 Hour	1-½ Hour (90 minute)	Openings of this type are used in enclosures of vertical communication or egress through buildings. Examples of these types of openings include stairwells and elevator shafts.
	1 Hour	1 Hour (60 minute)	These door and frame assemblies divide occupancies in a building.
	1 Hour	¾ Hour (45 minute)	For use where there are openings in corridors or room partitions.
	2 Hour	1-½ Hour (90 minute)	This opening is in a wall where there is the potential for severe fire exposure from the exterior of the building.
	1 Hour	¾ Hour (45 minute)	This opening is in an exterior wall that has the potential to be exposed to moderate to light fire from the exterior of the building.
	1 Hour	⅓ Hour (20 minute)	These openings are in corridors where smoke and draft control is required. The minimum wall rating is ½ hour.

What is a Fire Door Assembly?



Code Requirements

Hammurabi Code - 1755 BC

- 229: If a **builder** builds a house for someone, and does not construct it properly, and the house which he built falls in and kills its owner, then that **builder** shall be put to death.

Code Requirements

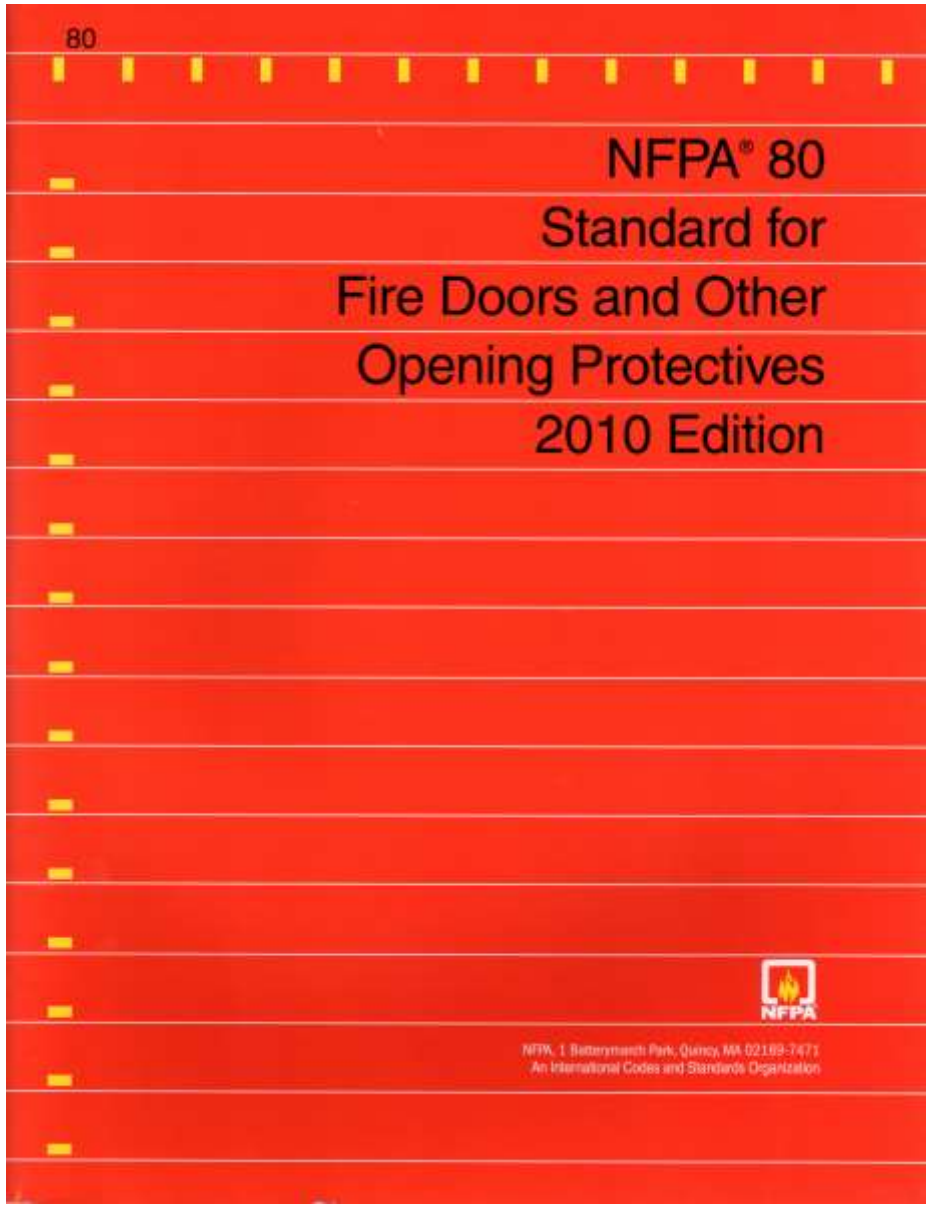
NFPA 101 Life Safety Code – 2012

- Chapter 8 – Features of Fire Protection
  - **8.3.5 Penetrations**
  - **8.3.5.1 Firestop Systems and Devices Required**

    Penetrations for cables, cable trays, conduits, pipes, tubes, combustion vents and exhaust vents, wires, and similar items to accommodate electrical, mechanical, plumbing, and communications systems that pass through a wall, floor, or floor/ceiling assembly constructed as a fire barrier shall be protected by a firestop system or device.

NFPA 80 – 2010

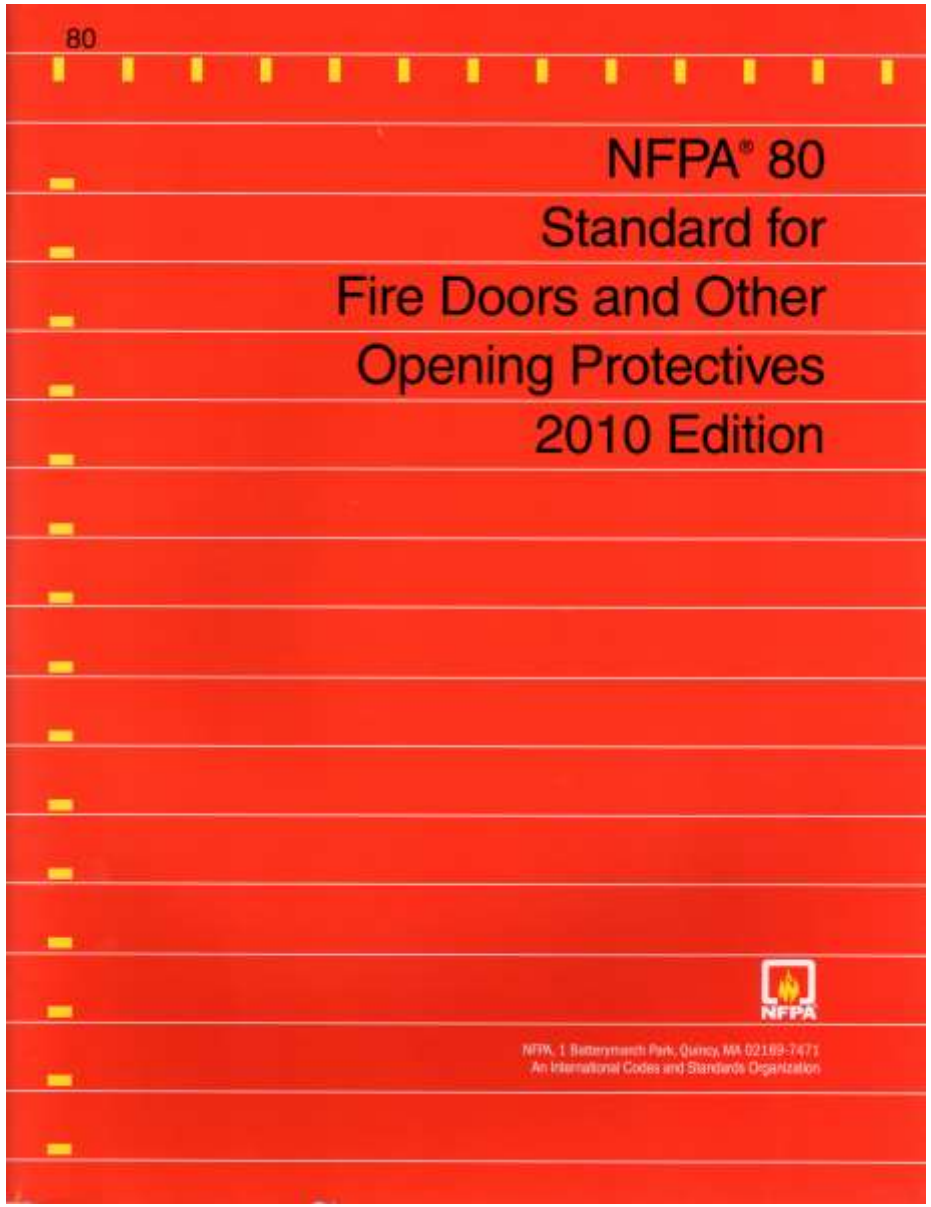
- Chapter 19 – Installation, Testing and Maintenance of Fire Dampers
  - **19.4.1** Each damper shall be tested and inspected 1 year after installation.
  - **19.4.1.1** The test and inspection frequency shall then be every 4 years, except in hospitals, where the frequency shall be every 6 years.



Code Requirements

Life Safety Code NFPA 101 – 2012

- Chapters 18 & 19 – Health Care Occupancies
  - References **7.2.1 Inspection of Door Openings**
  - **7.2.1.15.2** Fire rated door assemblies shall be inspected and tested in accordance with NFPA80, *Standard for Fire Doors and Other Protectives.* Smoke door assemblies shall be tested in accordance with NFPA 105, *Standard for Smoke Door Assemblies and Other Protectives.*



CMS Requirements

CMS
CENTERS FOR MEDICARE & MEDICAID SERVICES

The Joint Commission

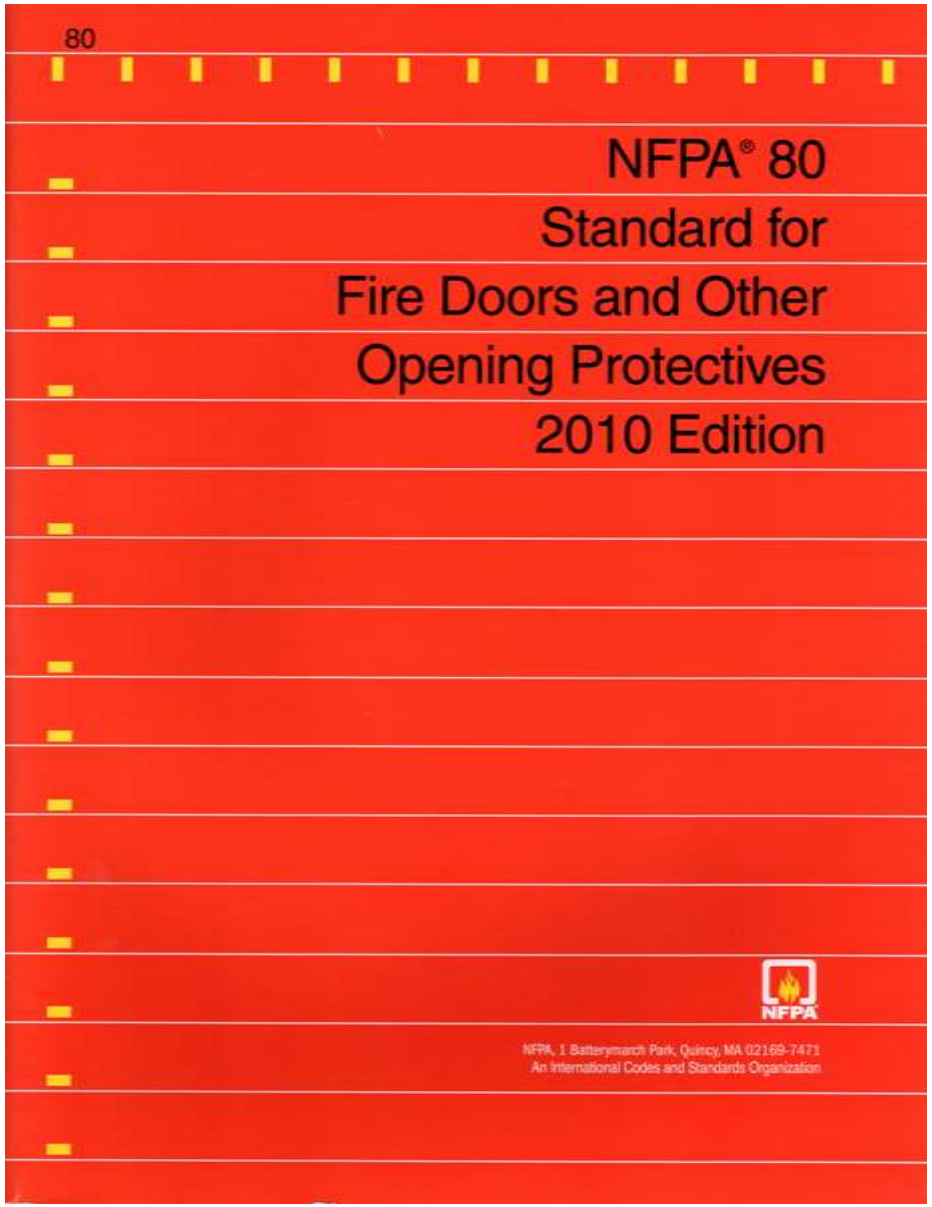
New Life Safety Code business occupancy requirements for BHC organizations
The Joint Commission is adding business occupancy standards to the Life Safety (LS) chapter for Behavioral Health Care and Human Services (BHC) organizations. This will go into effect on July 1.

Code Requirements

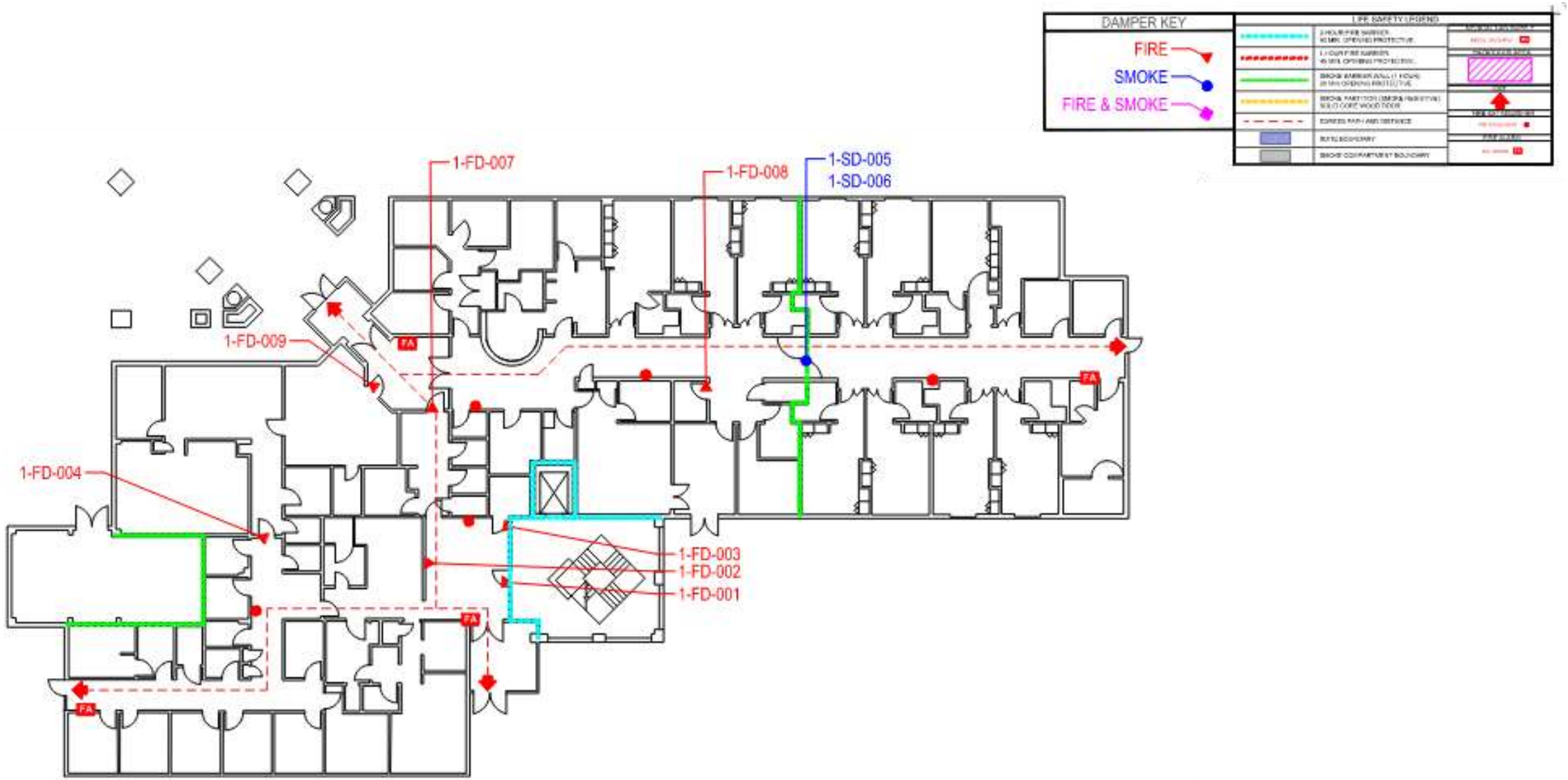
NFPA 80

- **5.2* Inspection and Testing**
- **5.2.1*** Upon completion of the installation, door, shutters, and window assemblies shall be inspected and tested in accordance with 5.2.4.

- **5.2.4 Periodic Inspection and Testing**
- **5.2.4.1*** Periodic inspections and testing shall be performed not less than annually.



Preparing for an Inspection – Life Safety Drawings



Preparing for an Inspection

NFPA 80

- **5.2.3 Acceptance Testing.**
- **5.2.3.1*** Acceptance testing of fire door and window assemblies shall be performed by a qualified person with knowledge and understanding of the operating components of the type of assembly being subject to testing.

NFPA 80 - 13 Points of a Fire Door Inspection

- **5.2.3.5.2** - As a minimum, the following items shall be verified:

  - **(1)** Labels are clearly visible and legible.
  - **(2)** No open holes or breaks exist in surfaces of either the door or frame.
  - **(3)** Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.
  - **(4)** The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order with no visible signs of damage.
  - **(5)** No parts are missing or broken
  - **(6)** Door clearances do not exceed clearances listed in 4.8.4 and 6.3.1.7
  - **(7)** The self-closing device is operational; that is, the active door completely closes when operated from the full open position.
  - **(8)** If a coordinator is installed, the inactive leaf closes before the active leaf.
  - **(9)** Latching hardware operates and secures the door when it is in the closed position.
  - **(10)** Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.
  - **(11)** No field modifications to the door assembly have been performed that void the label.
  - **(12)** Meeting edge protection, gasketing and edge seals, where required, are inspected to verify their presence and integrity.
  - **(13)** Signage affixed to a door meets requirements listed in 4.1.4

Fire Door Inspections

13 points of verification

(1) Labels are clearly visible and legible.

- **4.2* Listed and Labeled Products**
- **4.2.1*** Listed items shall be identified by a label.
- **4.2.2** Labels shall be applied in locations that are readily visible and convenient for identification by the AHJ after installation of the assembly.

wood door and hollow metal frame

plastic laminate door

hollow metal frame

steel mullion

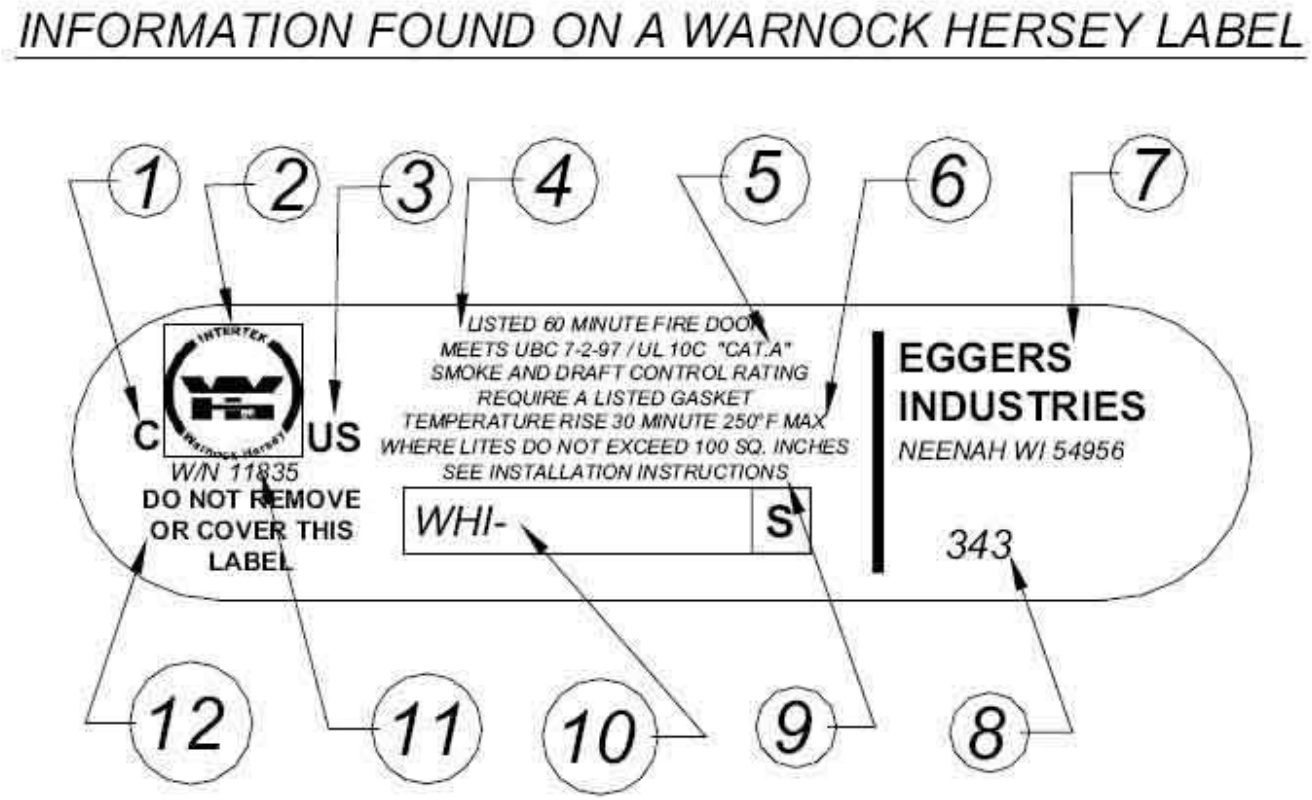
Fire Door Inspections

13 points of verification

How to read the label

Reading the label:

1. Country identifier
2. Certification mark
3. Country identifier
4. Fire rating
5. Test
6. Limitations
7. Manufacturer
8. Manufacturer's part number
9. Installation instructions
10. Serial number
11. Intertek part number
12. Special instructions



Fire Door Inspections

13 points of verification

Labels and listing for hardware components.

- Swinging Fire Doors with Builders Hardware
  - Marked with emblems and symbols
    - F, f, ff
    - UL
    - ETL
  - Embossed, stamped, or applied

exit device

door bolt

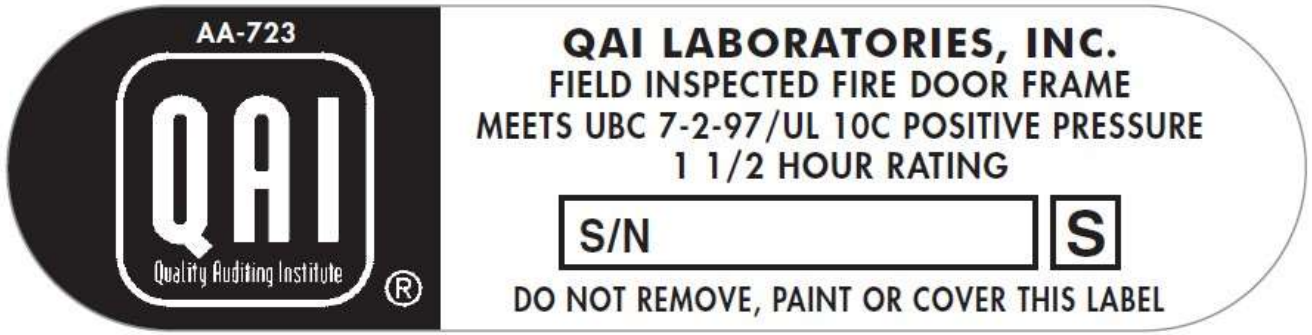
mortise lock

continuous hinge

Missing Fire Labels

- **NFPA 80 -2016**

- **5.1.4 Field Labeling**
- **5.1.4.1*** Field labeling shall be performed only by individuals or companies that have been certified or listed, or by individuals or companies that are representatives of a labeling service that maintains periodic inspections of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.



Fire Door Inspections

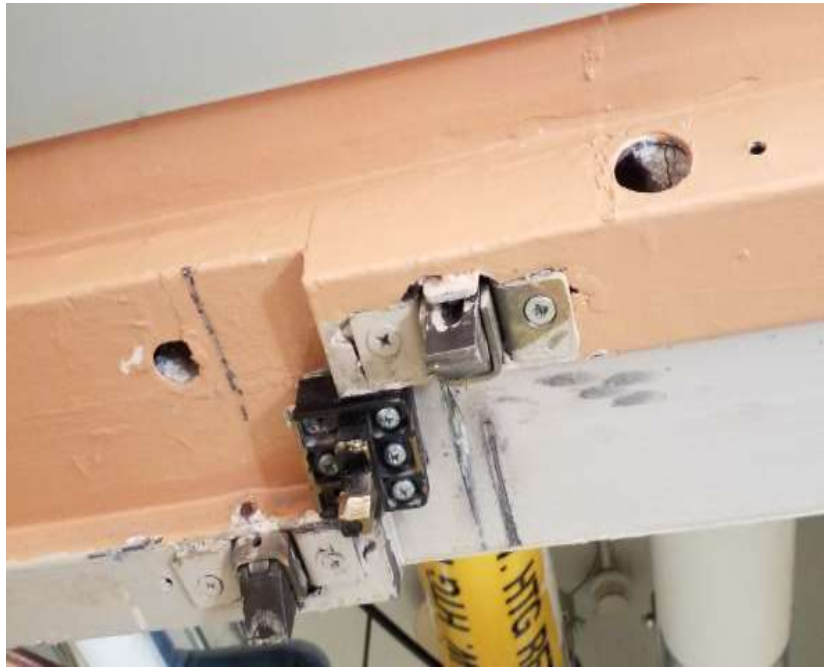
13 points of verification

(2) No open holes or breaks exist in surfaces of either the door or frame.

- **5.5.7** When holes are left in a door or frame due to changes or removal of hardware or plant-ons, the holes shall be repaired by the following methods.

- (1) Install steel fasteners that completely fill the holes.
- (2) Fill the screw or bolt with the same material as the door or frame.

relocated closer exposing original mounting holes



frame head section of cross corridor doors

deadbolt never installed on opening

??? 9mm? in random, but uniform pattern

Fire Door Inspections

13 points of verification

(3) Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped.

- **6.3.3.5** Only labeled fire protection glazing or fire resistance glazing shall be used to glaze light openings.

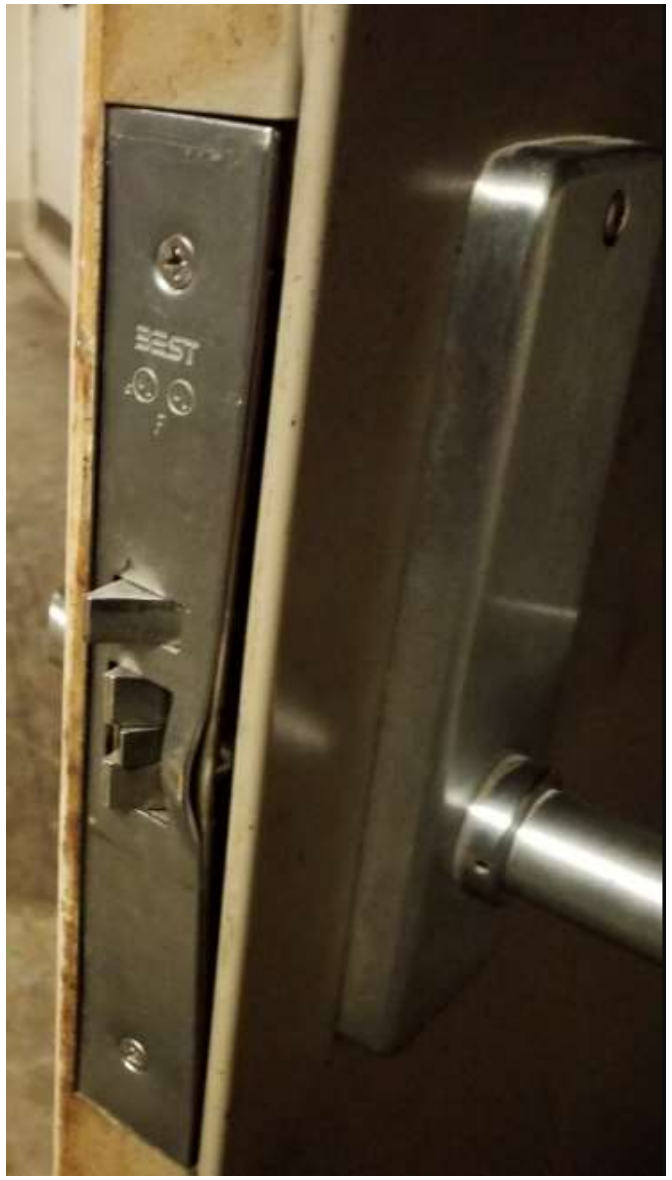
Fire Door Inspections

13 points of verification

(4) The door, frame, hinges, hardware, and noncombustible threshold are secured, aligned, and in working order with no visible signs of damage.

- **5.5.5** Where a fire door, frame, or any part of its appurtenances is damaged to the extent that it could impair the door's proper emergency function, the following actions shall be performed:
- (1) The fire door, frame, door assembly, or any part of its appurtenances shall be repaired with labeled parts or parts obtained from the original manufacturer.
- (2) The door shall be tested to ensure emergency operation and closing upon completion of the repairs.

exit device trim



mortise lock

Fire Door Inspections

13 points of verification

(5) No parts are missing or broken.

strike

exit device

removable mullion

Fire Door Inspections

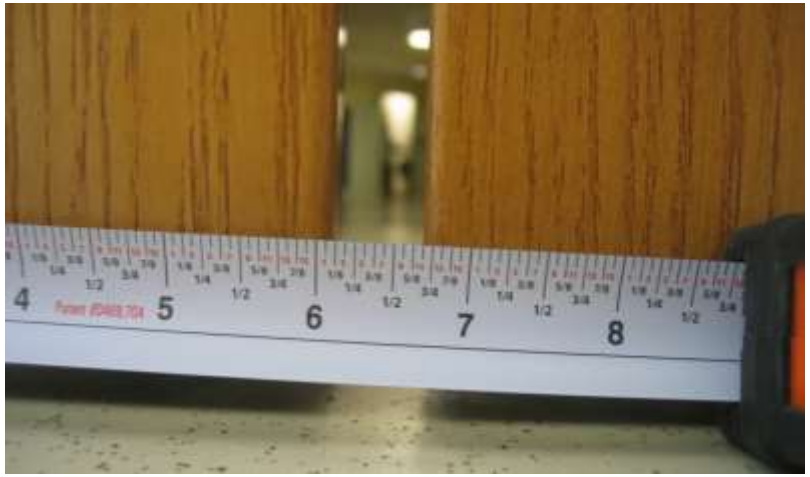
13 points of verification

(6) Door clearances do not exceed clearances listed in 4.8.4 and 6.3.1.7.

- **4.8.4 Clearance**
- **4.8.4.1*** The clearance under the bottom of a door shall be a maximum of ¾” in. (19mm).

- **6.3.1.7* Clearances**
- **6.3.1.7.1** The clearances between the top and vertical edges of the door and the frame, and the meeting edges of doors swinging in pairs, shall be 1/8 in. +-1/16 in. for steel doors and shall not exceed 1/8 in. for wood doors.

mechanical room (wood door and hollow metal frame)



cross corridor doors

Fire Door Inspections

13 points of verification

(6) Door clearances do not exceed clearances listed in 4.8.4 and 6.3.1.7.

- **Excessive gaps occur when:**
  - Frames are installed incorrectly (alignment – plumb, square, level)
  - Doors are improperly sized
  - Hardware or flooring changes
  - Door sags (improper hardware application, loose hardware, wear and tear, etc.)
  - A building settles over time

Excessive Door Gap Solutions

- Seals gaps and clearances that exceed the requirements of NFPA 80
- UL Certified for 90 minute fire doors
- No special preparation needed on existing doors
- Can be used on steel composite, hollow metal doors, wood and plastic-covered composite core doors

Fire Door Inspections

13 points of verification

(7) The self-closing device is operational; that is, the active door completely closes when operated from the full open positon.

(8) If a coordinator is installed, the inactive leaf closes before the active leaf.

Fire Door Inspections

13 points of verification

(9) Latching hardware operates and secures the door when it is in the closed position.

- **6.1.3 Operation of Doors** All swinging doors shall be closed and latched at the time of fire.

- **Common issues preventing closing and latching:**
  - Latching hardware is damaged or misaligned
  - Incorrect hardware application
  - Doors are propped open
  - Door closer is missing, damaged or incorrectly adjusted

classroom wood door in hollow metal frame

Fire Door Inspections

13 points of verification

(10) Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame.

- **Common issues with auxiliary hardware:**
  - Incorrect hardware application
  - Hardware is not listed/labeled.
  - Used to prop doors open

exterior mechanical door

Fire Door Inspections

13 points of verification

(11) No field modifications to the door assembly have been performed that void the label.

- **4.1.3.2** For jobsite preparation of surface applied hardware, function holes for mortise locks and holes for labeled viewers, a maximum ¾ in. (19mm) wood and composite door undercutting, and protection plates (see 6.4.5) shall be permitted.
- **4.1.3.3** Surface applied hardware shall be applied to the door or frame without removing material other than drilling round holes to accommodate cylinders, spindles, similar operational elements, and through-bolts in doors
- **4.1.3.4** The holes described in 4.1.3.3 shall not exceed a diameter of 1 in. (25.4mm),with the exception of cylinders.

electric strike with mortise lock

electric strike with cylindrical lock

Fire Door Inspections

13 points of verification

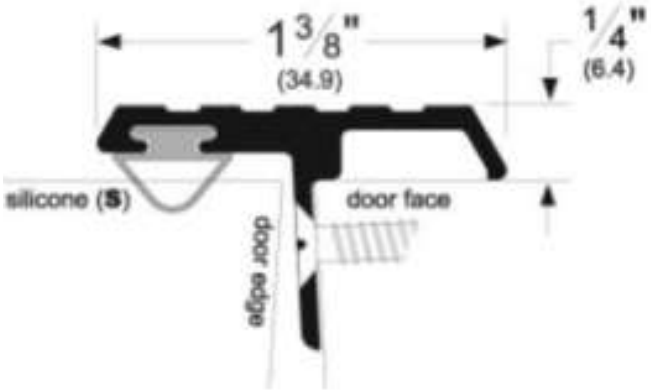
(12) Meeting edge protection, gasketing and edge seals, where required, are inspected to verify their presence and integrity.

fire/smoke gasketing

Ratings

- Air Infiltration Tested
- Intertek Testing (Warnock Hersey)
- Sound Tested - ASTM E90
- BHMA Certified
- Smoke Tested - UL1784
- Fire Rated - Edge Seals - UL10C - Positive Pressure
- Underwriters Laboratory 4L10
- GREENGUARD Gold Certified

- **Common issues gasketing:**
  - Hardware is not listed/labeled.
  - Incorrect modification during installation
  - damage



"T" astragal

Ratings

- Air Infiltration Tested
- Smoke Tested - UL1784
- Fire Rated - UL10C - Positive Pressure
- Underwriters Laboratory 4L10
- GREENGUARD Gold Certified

Fire Door Inspections

13 points of verification

(13) Signage affixed to a door meets the requirements listed in 4.1.4.

- **4.1.4.1** The total area of all attached signs shall not exceed 5 percent of the area of the face of the fire door to which they are attached .
- **4.1.4.2.1** Signs shall be attached to fire doors by use of an adhesive.
- **4.1.4.2.2** Mechanical attachments such a screws or nails shall not be permitted.
- **4.1.4.3** Signs shall not be installed on glazing material in fire doors.

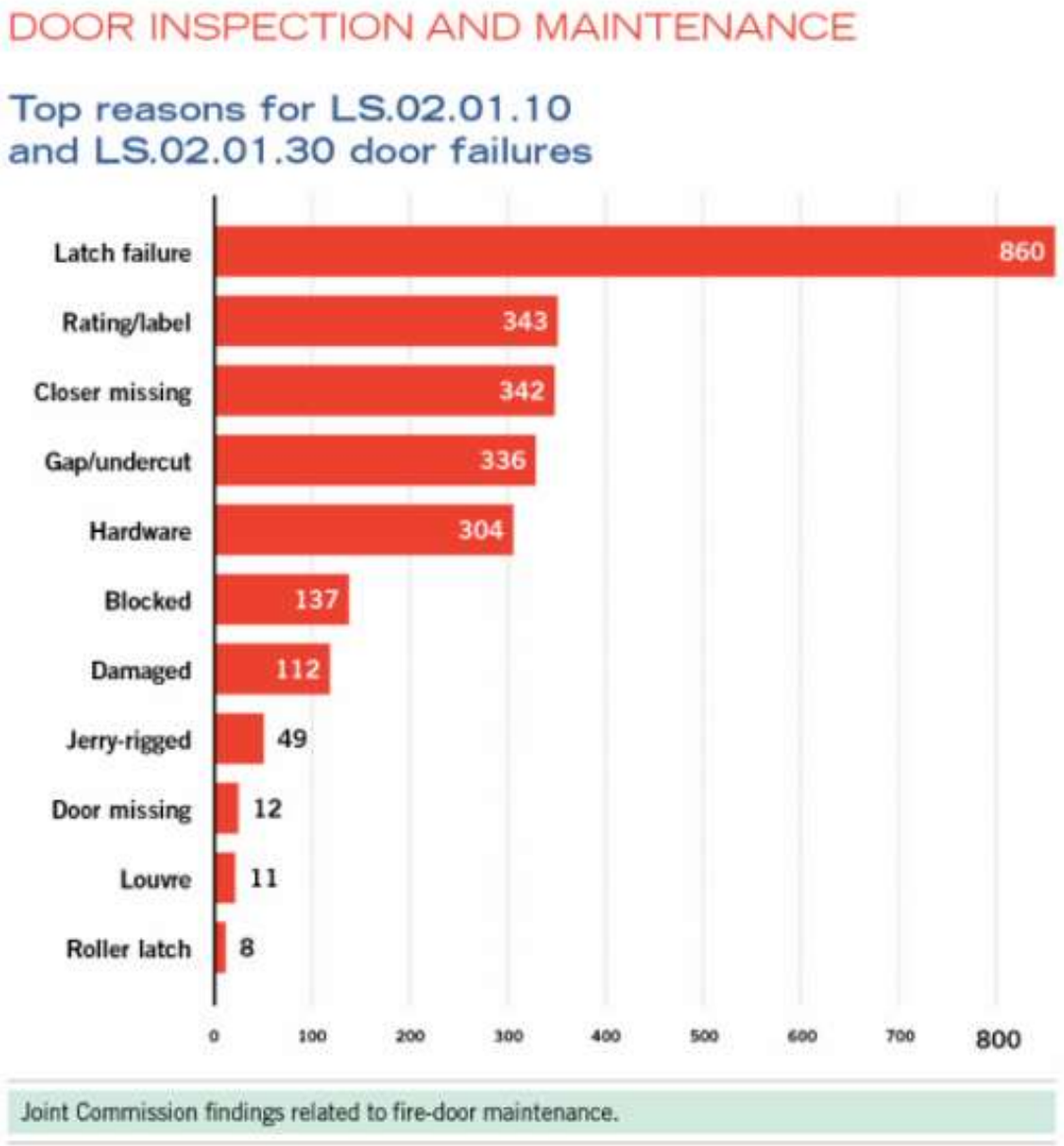
- **Common issues with auxiliary hardware:**
  - Exceeds 5% of door surface area
  - Decorations
  - Signage on fire rated glazing

office door off corridor

Fire Door Inspections

"ASHE has contracted with the Center for Health Design (CHD) to research why the failure rate of fire doors in hospitals is as high as is being documented during accreditation surveys."

- **Possible contributing factors:**
  - Inaccurate or lack of fire door inspection at time of construction
  - Inaccurate annual fire door inspections
  - Non-compliant field modifications to openings
  - Lack of regular maintenance program

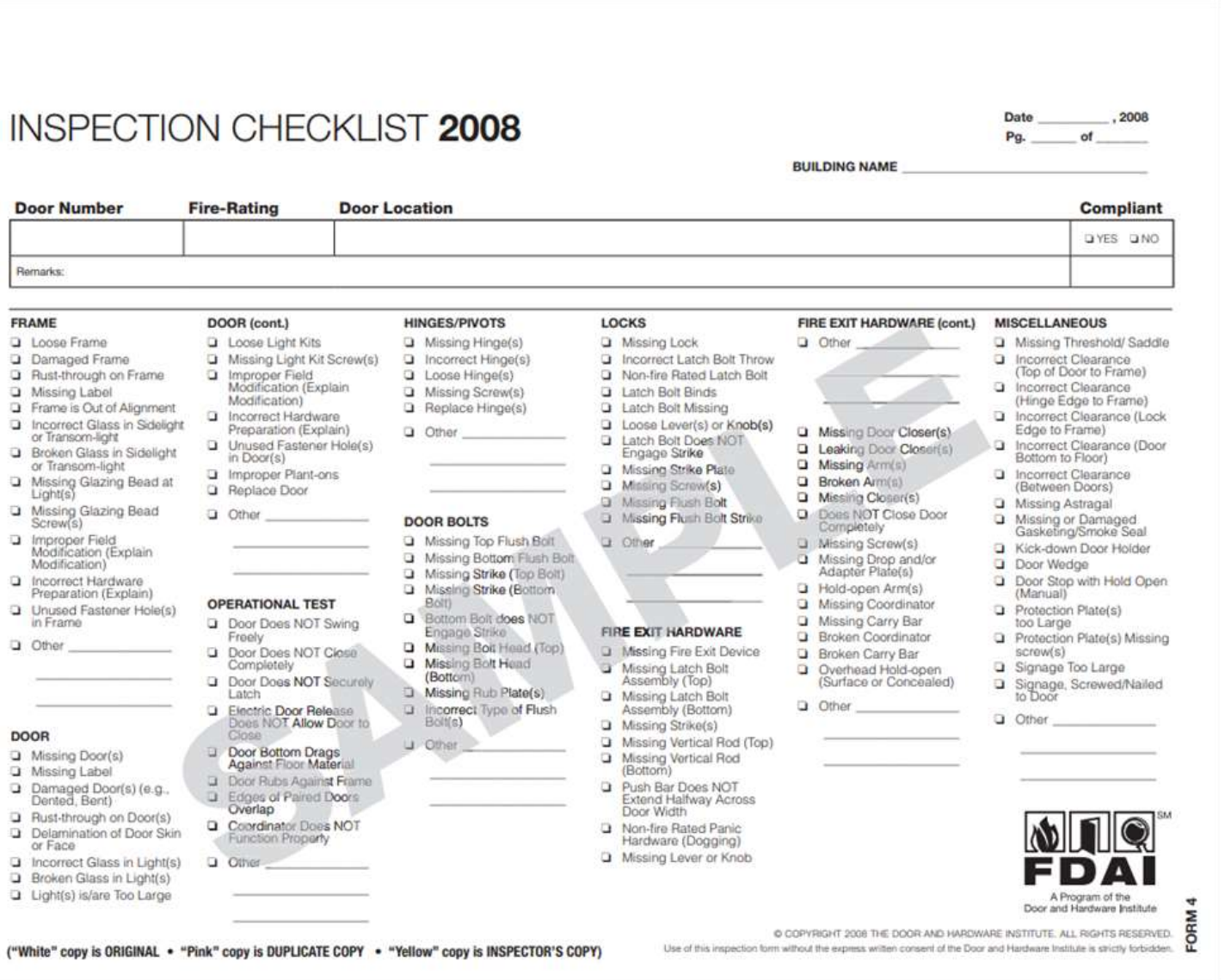


NFPA 80 Reporting Requirements

- **5.2.2.4** A record of all inspections and testing shall be provided that includes, but is not limited to, the following information:
  - **(1)** Date of inspection
  - **(2)** Name of facility
  - **(3)** Address of facility
  - **(4)** Name of person(s) performing inspections and testing
  - **(5)** Company name and address of inspecting company
  - **(6)** Signature of inspector of record
  - **(7)** Individual record of each inspected and tested fire door assembly
  - **(8)*** Opening identifier and location of each inspected and tested fire door assembly
  - **(9)*** Type and description of each inspected and tested fire door assembly
  - **(10)*** Verification of visual inspection and functional operation
  - **(11)** Listing of deficiencies in accordance with 5.2.3, Section 5.3, and Section 5.4

NFPA 80 Record Keeping Requirements

- **5.2.2.2**
  - Unless a longer period is required by section 5.4, records shall be retained for a period of at least 3 years.
- **5.2.2.3**
  - The records shall be on a medium that will survive the retention period. Paper or electronic media shall be permitted.



INSPECTION CHECKLIST **2008**

Date _____, 2008
Pg. _____ of _____

BUILDING NAME _____

Door Number	Fire-Rating	Door Location	Compliant
			❑ YES ❑ NO
Remarks:			

FRAME
- ❑ Loose Frame
- ❑ Damaged Frame
- ❑ Rust-through on Frame
- ❑ Missing Label
- ❑ Frame is Out of Alignment
- ❑ Incorrect Glass in Sidelight or Transom-light
- ❑ Broken Glass in Sidelight or Transom-light
- ❑ Missing Glazing Bead at Light(s)
- ❑ Missing Glazing Bead Screw(s)
- ❑ Improper Field Modification (Explain Modification)
- ❑ Incorrect Hardware Preparation (Explain)
- ❑ Unused Fastener Hole(s) in Frame
- ❑ Other _____

DOOR
- ❑ Missing Door(s)
- ❑ Missing Label
- ❑ Damaged Door(s) (e.g., Dented, Bent)
- ❑ Rust-through on Door(s)
- ❑ Delamination of Door Skin or Face
- ❑ Incorrect Glass in Light(s)
- ❑ Broken Glass in Light(s)
- ❑ Light(s) is/are Too Large

DOOR (cont.)
- ❑ Loose Light Kits
- ❑ Missing Light Kit Screw(s)
- ❑ Improper Field Modification (Explain Modification)
- ❑ Incorrect Hardware Preparation (Explain)
- ❑ Unused Fastener Hole(s) in Door(s)
- ❑ Improper Plant-ons
- ❑ Replace Door
- ❑ Other _____

OPERATIONAL TEST
- ❑ Door Does NOT Swing Freely
- ❑ Door Does NOT Close Completely
- ❑ Door Does NOT Securely Latch
- ❑ Electric Door Release Does NOT Allow Door to Close
- ❑ Door Bottom Drags Against Floor Material
- ❑ Door Rubs Against Frame
- ❑ Edges of Paired Doors Overlap
- ❑ Coordinator Does NOT Function Properly
- ❑ Other _____

HINGES/PIVOTS
- ❑ Missing Hinge(s)
- ❑ Incorrect Hinge(s)
- ❑ Loose Hinge(s)
- ❑ Missing Screw(s)
- ❑ Replace Hinge(s)
- ❑ Other _____

DOOR BOLTS
- ❑ Missing Top Flush Bolt
- ❑ Missing Bottom Flush Bolt
- ❑ Missing Strike (Top Bolt)
- ❑ Missing Strike (Bottom Bolt)
- ❑ Bottom Bolt does NOT Engage Strike
- ❑ Missing Bolt Head (Top)
- ❑ Missing Bolt Head (Bottom)
- ❑ Missing Rub Plate(s)
- ❑ Incorrect Type of Flush Bolt(s)
- ❑ Other _____

LOCKS
- ❑ Missing Lock
- ❑ Incorrect Latch Bolt Throw
- ❑ Non-fire Rated Latch Bolt
- ❑ Latch Bolt Binds
- ❑ Latch Bolt Missing
- ❑ Loose Lever(s) or Knob(s)
- ❑ Latch Bolt Does NOT Engage Strike
- ❑ Missing Strike Plate
- ❑ Missing Screw(s)
- ❑ Missing Flush Bolt
- ❑ Missing Flush Bolt Strike
- ❑ Other _____

FIRE EXIT HARDWARE
- ❑ Missing Fire Exit Device
- ❑ Missing Latch Bolt Assembly (Top)
- ❑ Missing Latch Bolt Assembly (Bottom)
- ❑ Missing Strike(s)
- ❑ Missing Vertical Rod (Top)
- ❑ Missing Vertical Rod (Bottom)
- ❑ Push Bar Does NOT Extend Halfway Across Door Width
- ❑ Non-fire Rated Panic Hardware (Dogging)
- ❑ Missing Lever or Knob

FIRE EXIT HARDWARE (cont.)
- ❑ Other _____
- ❑ Missing Door Closer(s)
- ❑ Leaking Door Closer(s)
- ❑ Missing Arm(s)
- ❑ Broken Arm(s)
- ❑ Missing Closer(s)
- ❑ Does NOT Close Door Completely
- ❑ Missing Screw(s)
- ❑ Missing Drop and/or Adapter Plate(s)
- ❑ Hold-open Arm(s)
- ❑ Missing Coordinator
- ❑ Missing Carry Bar
- ❑ Broken Coordinator
- ❑ Broken Carry Bar
- ❑ Overhead Hold-open (Surface or Concealed)
- ❑ Other _____

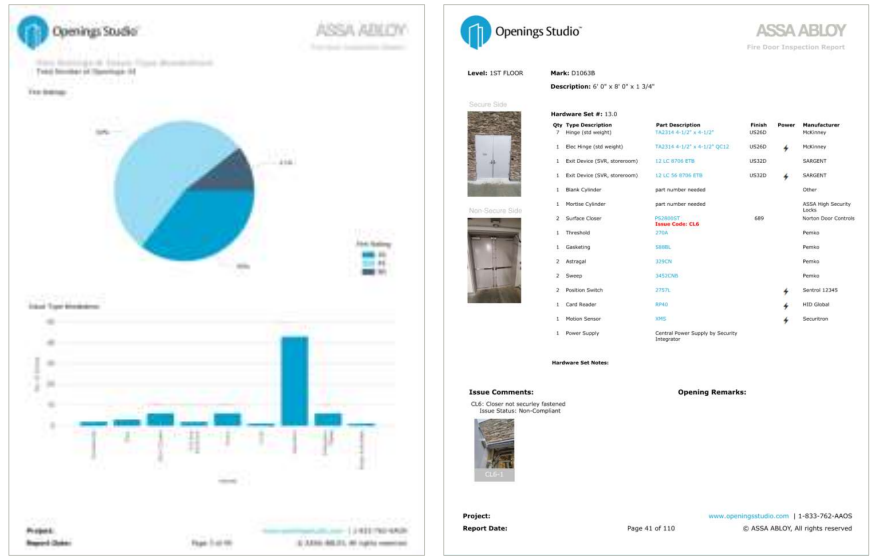
MISCELLANEOUS
- ❑ Missing Threshold/ Saddle
- ❑ Incorrect Clearance (Top of Door to Frame)
- ❑ Incorrect Clearance (Hinge Edge to Frame)
- ❑ Incorrect Clearance (Lock Edge to Frame)
- ❑ Incorrect Clearance (Door Bottom to Floor)
- ❑ Incorrect Clearance (Between Doors)
- ❑ Missing Astragal
- ❑ Missing or Damaged Gasketing/Smoke Seal
- ❑ Kick-down Door Holder
- ❑ Door Wedge
- ❑ Door Stop with Hold Open (Manual)
- ❑ Protection Plate(s) too Large
- ❑ Protection Plate(s) Missing screw(s)
- ❑ Signage Too Large
- ❑ Signage, Screwed/Nailed to Door
- ❑ Other _____

FDAI
A Program of the Door and Hardware Institute

("White" copy is ORIGINAL • "Pink" copy is DUPLICATE COPY • "Yellow" copy is INSPECTOR'S COPY)

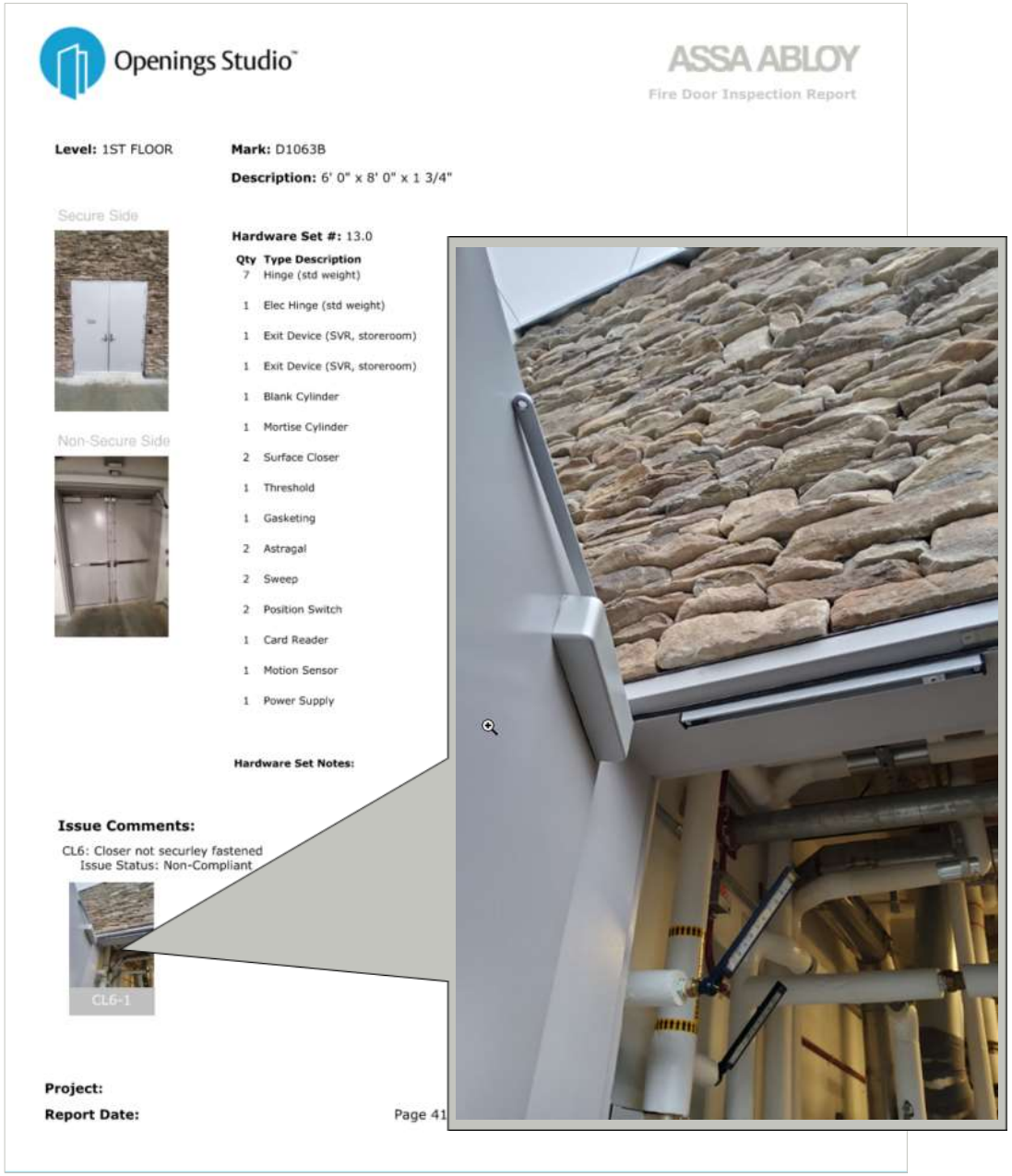
FORM 4

Fire Door Inspection Reporting



Fire Door Inspection Reporting

- Actionable reporting
- Complete record of opening
  - Detailed information on installed door, frame, hardware components
  - Images of opening from secured/unsecured sides
- Issues clearly identified
- Customizable link-outs to product collateral information
  - Default links to non-proprietary database of product catalogs



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Openings Studio™

ASSA ABLOY

Fire Door Inspection Report

Level: 1ST FLOOR **Mark:** D1063B

Description: 6' 0" x 8' 0" x 1 3/4"

Part Description	Finish	Power	Manufacturer
TA2314 4-1/2" x 4-1/2"	US26D		McKinney
TA2314 4-1/2" x 4-1/2" QC12	US26D	ϟ	McKinney
12 LC 8706 ETB	US32D		SARGENT
12 LC 56 8706 ETB	US32D	ϟ	SARGENT
part number needed			Other
part number needed			ASSA High Security Locks
PS2800ST **Issue Code: CL6**	689		Norton Door Controls
270A			Pemko
S88BL			Pemko
329CN			Pemko
3452CNB			Pemko
2757L		ϟ	Sentrol 12345
RP40		ϟ	HID Global
XMS		ϟ	Securitron

Central Power Supply by Security Integrator

Opening Remarks:

Project:

Report Date:

Repairs

- **5.5 Maintenance**
- **5.5.1*** Repairs shall be made, and defects that could interfere with operation shall be corrected without delay.

- Replacing worn out hardware
  - Hinges, locks/latches, door closers, gasketing, etc.
- Replacing broken glazing
- Tightening/replacing fasteners
  - Builders hardware requires special fasteners
- Filling unused fastener holes in doors and frames
  - Steel/stainless steel screws, fire door caulk
- Monitoring/adjusting door clearances
  - Steel shims, gap filling solutions
- Replacing small parts
  - Strike plates, end caps, covers, gasketing, etc.

Managing Opening Maintenance

- Detailed inventory of openings
- Accurate identification of fire rated, smoke rated and egress doors
- Reporting capabilities
  - Meeting CMS and NFPA 80 requirements
  - Actionable for remediation
  - Record storage
- Tools to access opening data remotely or at the opening

Design Standards

Openings Studio

VDG - HEALTHCARE (SARGENT)

Get ready to communicate standards faster with the ASSA ABLOY Virtual Design Guide.

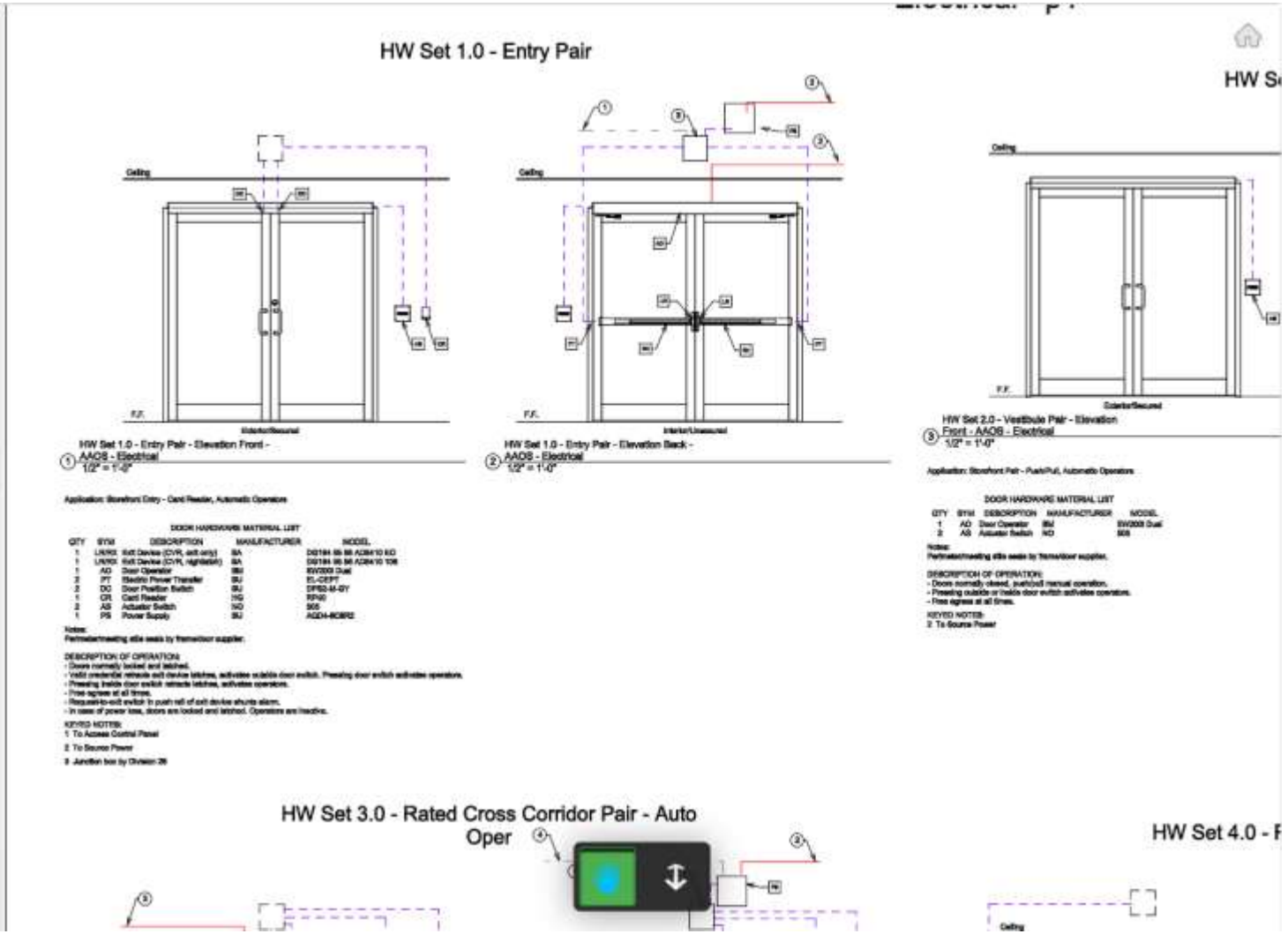
To get started, click on an opening. >>

Standards

- Standard Openings
- AAOS - HS1 - Hardware Sets - p1
- AAOS - TO1 - Typical Openings - p1
- AAOS - TO2 - Typical Openings - p2
- AAOS - TO3 - Typical Openings - p3
- AAOS - E1 - Electrical - p1
- AAOS - E2 - Electrical - p2
- AAOS - E3 - Electrical - p3
- AAOS - DFT1 - Door/Frame Types - p1

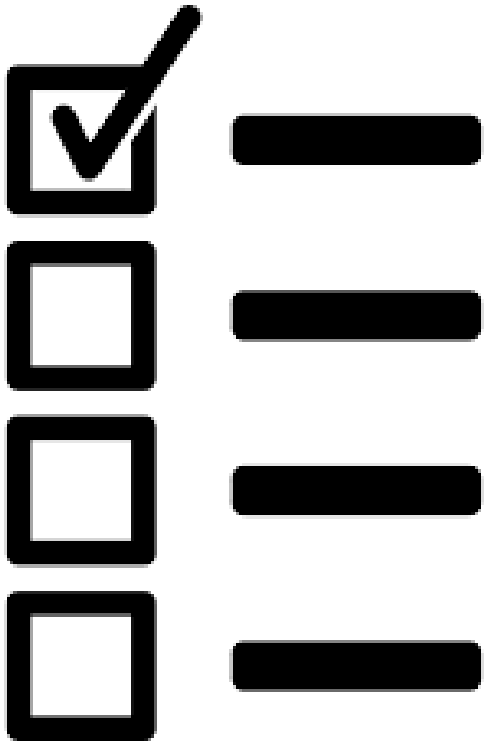
Guide Specs

Experience a safer and more open world

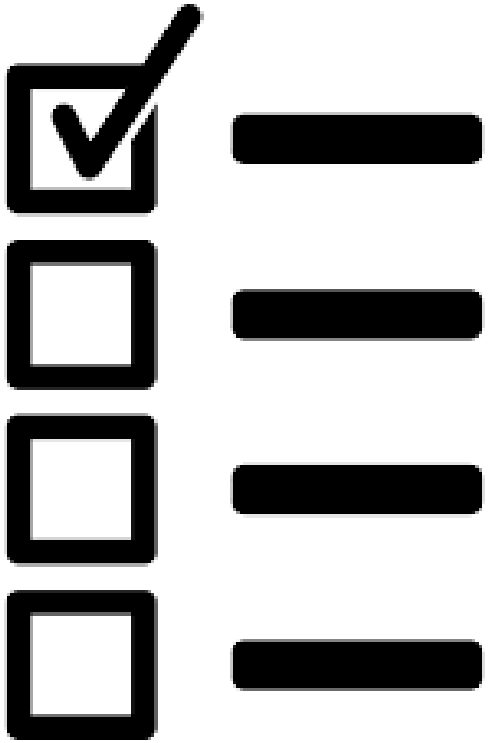


Q&A

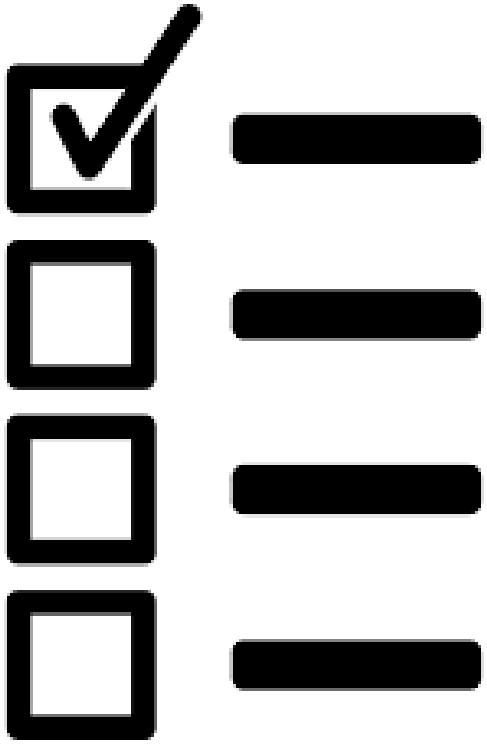
Fire Door Inspections...



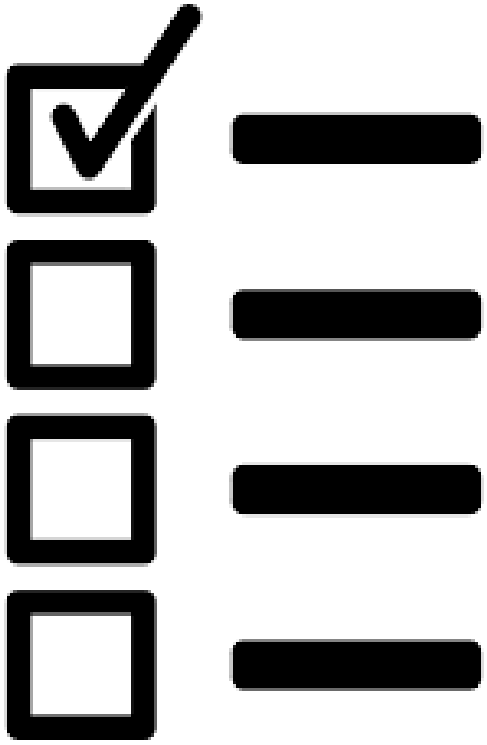
Reporting…



Remediation…



Design Standards…



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