

# *Fire Doors Have One Job!*

# Presented By:

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# Today's Topics Include

- Introduction to NFPA 80
- Overview of changes in the 2022 edition of NFPA 80.
- Inspecting and maintaining older existing fire doors.
- Extended Q & A session



# Handouts

- Presentation slides (pdf file)
- Door Safety's publication ***Recommendations for Measuring Door Gap Dimensions*** (pdf file)



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## NFPA 80

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### Standard for Fire Doors and Other Opening Protectives

This standard regulates the installation and maintenance of assemblies and devices used to protect openings in walls, floors, and ceilings against the spread of fire and smoke within, into, or out of buildings.

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## Publications

### FAVORITES

2021  
NFPA 1  
Fire Code

2018  
NFPA 1  
Fire Code

2022  
NFPA 80  
Standard for Fire Doors and  
Other Opening Protectives

2019  
NFPA 80  
Fire Doors and Other  
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2016  
NFPA 80  
Standard for Fire Doors and  
Other Opening Protectives

2022  
NFPA 80A  
Recommended Practice for  
Protection of Buildings from  
Exterior Fire  
Exposures

2021  
NFPA 90A  
Installation of Air-  
Conditioning and  
Ventilating Systems

2021  
NFPA 101  
Life Safety Code

2018  
NFPA 101  
Life Safety Code

## Recent Bookmarks

- 3.3.5 Annual Frequency. *Added 3 months ago*
- A.3.3.51 Fire Door. *Added 3 months ago*
- A.6.3.1.1 *Added 3 months ago*

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# *Fire Doors Have One Job!*

- Fire doors prevent fires from spreading.
- Swinging fire doors, in general, also provide:
  - Convenience
  - Security
  - Privacy
  - Protection from equipment (e.g., lead-lined shielding)
  - Environmental control (e.g., heating and cooling, sterile/soiled conditions, and sound control)



***Preventing a fire from spreading takes precedence over all other functions; they must be kept in a Constant State of Readiness!***



# A Constant State of Readiness

- All swinging fire doors must:
  - Swing easily and freely
  - Close completely
  - Positively latch

*NFPA 80's functional requirements are the same for each level of fire ratings.*



***Every swinging fire door must have positive latching hardware; there are no exceptions!***

# A Constant State of Readiness

## ➤ Self-Closing Door Operation

- Doors are intended to be kept closed.
- Closing devices on swinging fire doors resist opening by occupants.
- Doors become obstacles to occupants.
  - Occupants block-open, disable, or otherwise tamper with closing devices and latching hardware.



***Self-closing doors must close completely from any partially opened position. ALWAYS!***

# A Constant State of Readiness

## ➤ ***Automatic-Closing Operation***

- Electrically held open self-closing doors
- Must close complete and latch
  - Upon actuation of smoke detectors
  - Upon signal from fire alarm system
  - Upon loss of power



***Automatic-closing swinging fire doors become self-closing upon release of the hold-open device.***

# A Constant State of Readiness

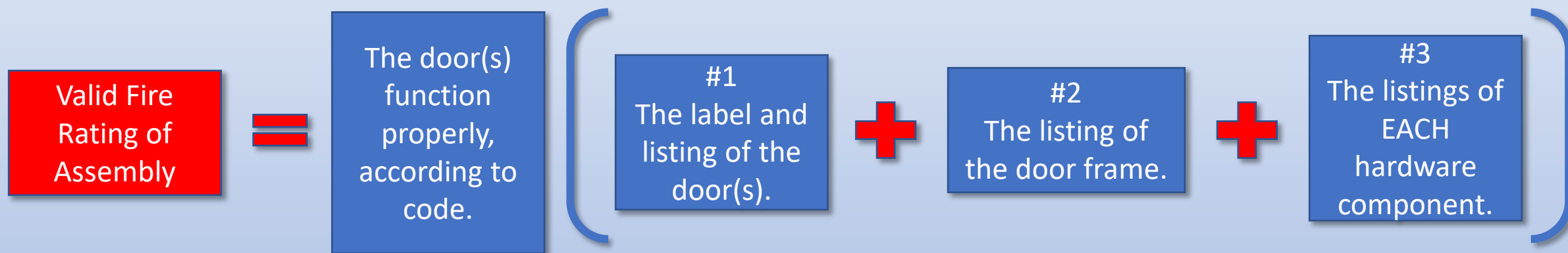
- The fire rating of an assembly is valid **ONLY** when:
  - All the required components are installed in accordance with their listings and installation instructions, and
  - The doors function as required by the codes.



***Listings refer to how the components were tested for use on fire door assemblies.***

# A Constant State of Readiness

The fire rating of an assembly starts with the door's rating and listing:



***ALWAYS in this order. Each component must be labeled or listed and be installed in accordance with it's listing and installation instructions.***

***The rating of an assembly is the rating of the door frame or door, whichever is less.***

# Introduction to NFPA 80

- NFPA 80, ***Standard for Fire Doors and Other Opening Protectives***
  - It's a **standard**, not a code
  - It defines what fire doors are, not where they are used
- Building, fire, and life safety codes require fire doors to comply with NFPA 80
  - Codes mandate the placement and minimum fire protection ratings of all types of fire doors.

# Introduction to NFPA 80

- Consists of 21 chapters and 12 annex sections
- *Base chapters (apply to all door types)*
  - *Chapter 1: Administration*
  - *Chapter 2: Referenced Publications*
  - *Chapter 3: Definitions*
  - *Chapter 4: General Requirements*
  - *Chapter 5: Inspection, Testing, and Maintenance*

# Introduction to NFPA 80

- *Opening protectives chapters*
  - **Chapter 6: Swinging Doors with Builders Hardware**
  - *Chapter 7: Swinging Doors with Fire Door Hardware*
  - *Chapter 8: Horizontally Sliding Doors*
  - *Chapter 9: Special-Purpose Horizontally Sliding Accordion or Folding Doors*
  - *Chapter 10: Vertically Sliding Doors*
  - *Chapter 11: Rolling Steel Doors*



# Introduction to NFPA 80

- *Opening protectives chapters*
  - *Chapter 12: Fire Shutters*
  - *Chapter 13: Service Counter Fire Doors*
  - *Chapter 14: Hoistway Doors for Elevators and Dumbwaiters*
  - *Chapter 15: Chute Doors*
  - *Chapter 16: Access Doors*
  - *Chapter 17: Fire Windows*
  - *Chapter 18: Glass Block Assemblies*
  - *Chapter 19: Fire Dampers*
  - *Chapter 20: Fabric Fire Safety Curtains*
  - *Chapter 21: Fire Curtains*

# Using NFPA 80 for Chapter 6 Doors

- Study these sections:
  - Chapter 4, *General Requirements*
  - Chapter 5, *Inspection, Testing, and Maintenance*
  - Chapter 6, *Swinging Doors with Builders Hardware*
  - *Annex A, Explanatory Material*



***Chapter 7, Swinging Doors with Fire Door Hardware are NOT USED in most buildings and occupancies!***

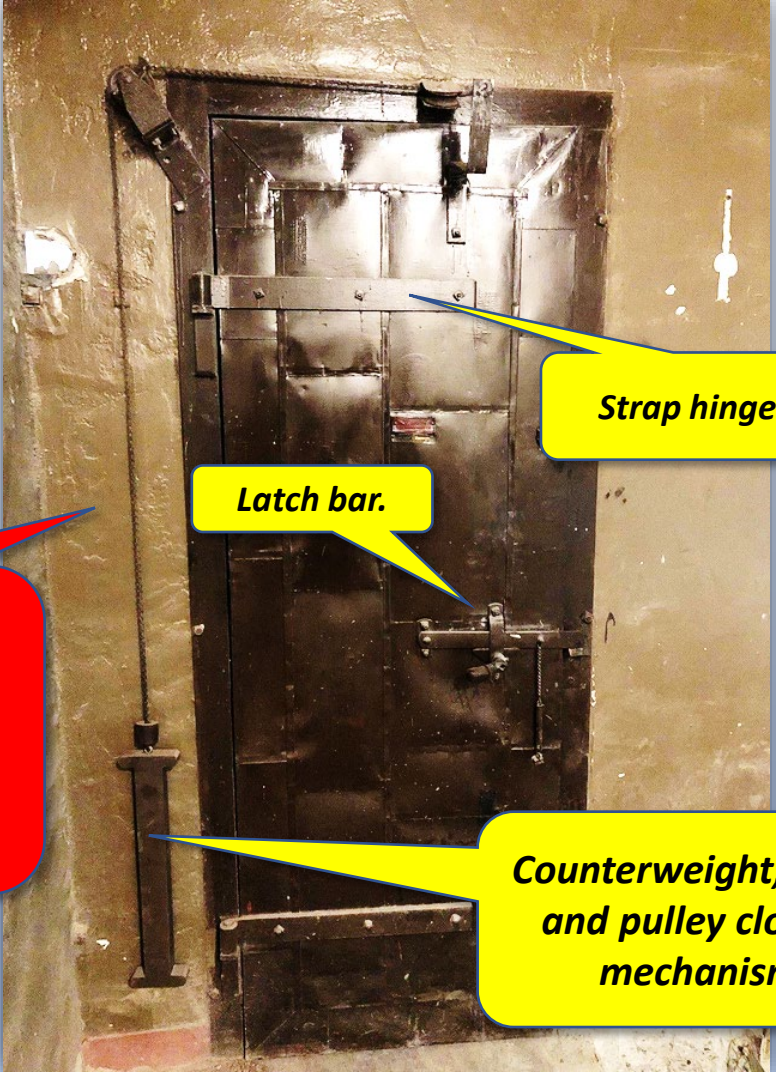


*Full mortise hinges and surface-mounted door closer (other side)*

*Fire exit hardware.*

*Swinging Door with Builders Hardware (Chapter 6)*

*Swinging Door with Fire Door Hardware (Chapter 7)*



*Strap hinges.*

*Latch bar.*

*Counterweight, rope, and pulley closing mechanism*

# NFPA 80: Changes in the 2022 edition



# Changes in NFPA 80, 2022

## ➤ Chapter 1 General

- New provision 1.1.5 acknowledges that some labeled fire door assemblies are used installed in locations where THE CODES do NOT require opening protectives.

***“This standard does not cover requirements for labeled fire door assemblies installed in openings not required to be fire rated.”***



***For example, labeled fire doors installed in non-fire-rated walls and partitions.***

# Changes in NFPA 80, 2022

## ➤ Chapter 1 General

- New provision 1.3 Application:

*"This standard regulates the periodic inspection, testing, and maintenance of all types of fire-rated opening protectives."*



***This has been true since the 2007 edition of NFPA 80.***

# Changes in NFPA 80, 2022

- New Definitions in Chapter 3
  - ***Annual Frequency*** (3.3.5)

*"Occurring once per year, with a minimum of 9 months and a maximum of 15 months between each occurrence."*



***This applies to NFPA 80's inspection cycles for fire door and fire window assemblies. Other NFPA standards have the same frequency.***

# Changes in NFPA 80, 2022

## ➤ Chapter 3 Definitions

- **Combination Fire and Smoke Damper (3.3.27)**—points to 3.3.37.2

*"A device that meets both the fire damper and smoke damper requirements."*

- **Corridor Damper (3.3.37.3)**

*"A device intended for use where air ducts or air transfer openings penetrate the ceilings of fire-resistance-rated corridors, where the corridor ceiling is permitted to be constructed using an assembly tested as a wall."*



# Changes in NFPA 80, 2022

## ➤ New Definitions in Chapter 3

- ***Trained Rolling Steel Fire Door Systems Technician***  
(3.3.131)

*"A technician employed in the rolling steel fire door industry with documented training by a recognized industry organization or by a manufacturer of a listed rolling steel fire door."*

# Changes in NFPA 80, 2022

- **New Signage requirements in Chapter 4.**
  - Focuses on signage materials
  - Painted/stenciled signage is not limited!
  - Vinyl signage materials (aka wraps) cannot be more than 0.008 in (0.2 mm) thick
  - Metal signage up to 20 gauge cannot exceed 200 in<sup>2</sup>



***Remember, these requirements apply to all types of doors specified in chapters 6 through 16.***

# Changes in NFPA 80, 2022

- **Means of Attachment (for Signage Materials)**
  - Screws can be used for metal signs (4.1.3.2.3)

# Changes in NFPA 80, 2022

- Job site preparation work moved from Chapter 4 to Chapter 5.
  - Formerly **Section 4.1.3 Appurtenances**
  - Now **Section 5.1.5.2 Job Site Preparation** (Its new title)
- No technical changes were made to these provisions.



***Anyone can perform this work for installation and ongoing maintenance. No special training or certification is needed.***

# Job Site Preparation

- Covers installation/maintenance work that anyone can do
  - Drilling round holes for fasteners
  - Drilling round holes for surface-mounted hardware
  - Drilling round holes for mortise lock trim and cylinders
  - Prohibits certain types of work
    - Any work ***other than*** drilling round holes for fasteners

# Changes in NFPA 80, 2022

- New inspection and testing requirements for Swinging Doors with Fire Door Hardware (5.2.3.6)

# **It's time to talk about the REALLY BIG CHANGES!**

Are you ready?

# Changes in NFPA 80, 2022

- Chapters 6 through 16 (the door chapters) apply to NEW and EXISTING installations!



# Changes in NFPA 80, 2022

- NEW installations must be installed in accordance with the door chapter (e.g., 6 through 16) AND Chapter 4.
- Acceptance testing of NEW doors must be performed upon completion of installation in accordance with 5.2.3. (e.g., 6.1.1.1.2)

# Changes in NFPA 80, 2022

- EXISTING installations must be inspected and tested in accordance with 5.1.1.3 and 5.2.4.

# Changes in NFPA 80, 2022

➤ 5.1.1.3 (it's new)

“Where inspection criteria for door assemblies are not listed in this chapter, door assemblies shall be inspected in accordance with all of the following:

- (1)\* The requirements of this standard that were in effect at the time of installation.
- (2) The manufacturers' published listings and installation instructions.
- (3) The requirements of the respective door chapter, Chapter 4, and Chapter 5, as applicable, where the manufacturers' published listings and installation instructions are not available.”



***This is the first principle of NFPA 80's door safety inspections!***

# Changes in NFPA 80, 2022

- Maintenance of NEW and EXISTING installations must be maintained in accordance with Section 5.5.
  - AND,
  - NEW and EXISTING installations must be inspected and tested upon completion of maintenance work that affects the OPERATION and PERFORMANCE of the doors.
- ✓ ***Let's look at how this works in NFPA Link...***

# Inspecting Older Existing Fire Doors

# Principles of Door Safety Inspections

- 1. Swinging door assemblies, regardless of fire-rating, were installed in accordance with the codes that were in effect at the time of construction.***
- 2. Fire-rated door assemblies provide the appropriate level of fire protection ratings for the openings in which they serve.***

# Principles of Door Safety Inspections

- 3. Door assemblies are required to be maintained in working condition throughout the life of their installation.*
- 4. Capabilities and limitations of today's door assembly components should not be ascribed to older existing components.*
- 5. AHJs and code officials determine when something is acceptable under the codes.*



***Fire doors must be maintained in a CONSTANT STATE OF READINESS to prevent the spread of fire.***

# Chapter 4: General Requirements

- Other topics covered in this chapter:
  - Components
    - Each component must be labeled or listed
    - Components can be products from different manufacturers
    - Components can be labeled by different certification and testing labs (e.g., FM, Intertek/Warnock Hersey, QAI Labs, and UL)
    - Unmarked components are permitted where they comply with NFPA 80's specifications
    - Components must be used according to their installation instructions and listings (how they were tested).
    - Components cannot be used on assemblies requiring higher ratings.



# Chapter 4:

## Labels on Door Frames

- Hollow metal door frames
  - Most labels do not list the hourly rating.
  - Frames in masonry construction can be rated up to 3 hours.
  - Frames in drywall partitions can be rated up to 1-1/2 hours.
  - Standard sidelight frames are rated up to 3/4-hour (fire protection-rated), regardless of wall construction.
  - Special sidelight frames are rated up to 1-1/2 hours (fire resistance-rated), provided they pass ASTM E119 or UL 263 fire tests.
- ***Door frame of other construction include the hourly ratings on their labels (e.g., 20 minutes, 45 minutes, and 90 minutes).***

# Chapter 4:

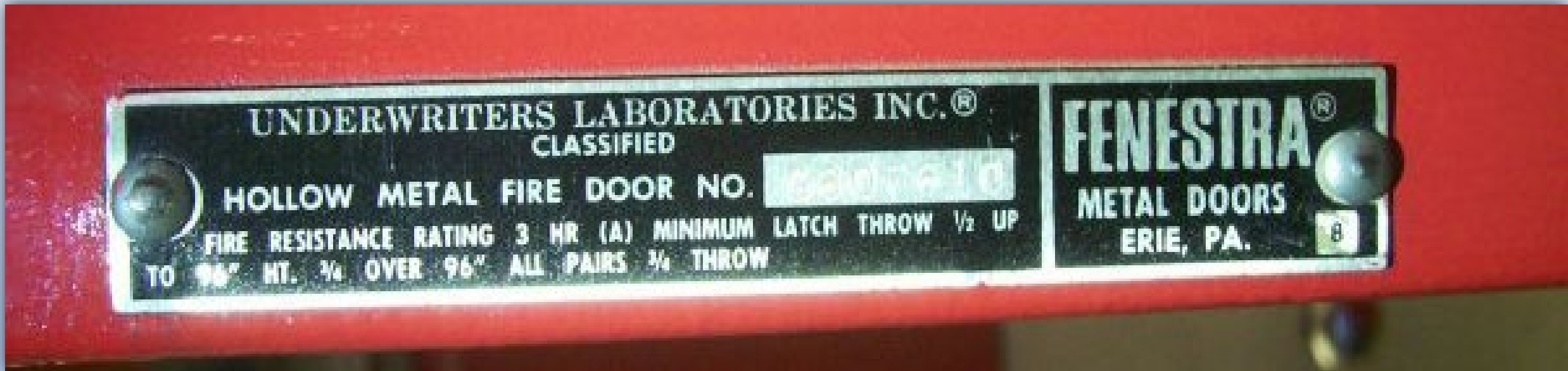
## General Requirements

- Requirements for labels on door frames, doors, and hardware components
- Labels on door frames and doors are not required to match!
- An assembly's rating is the rating of the door frame or door, whichever is less.

# Chapter 4: General Requirements

- There are no standard labels!

# Fire Door Labels





AMERICAN STEEL PROD. CORP.  
FARMINGDALE, N.Y.  
1-1/2 HOUR RATED FIRE DOOR  
BY ASTM E 152  
LATCH THROW 1/2 IN.  
SERIAL NO. 05494

FACTORY MUTUAL



APPROVED





AMERICAN STEEL PROD. CORP.  
FARMINGDALE, N.Y.

FIRE DOOR FRAME

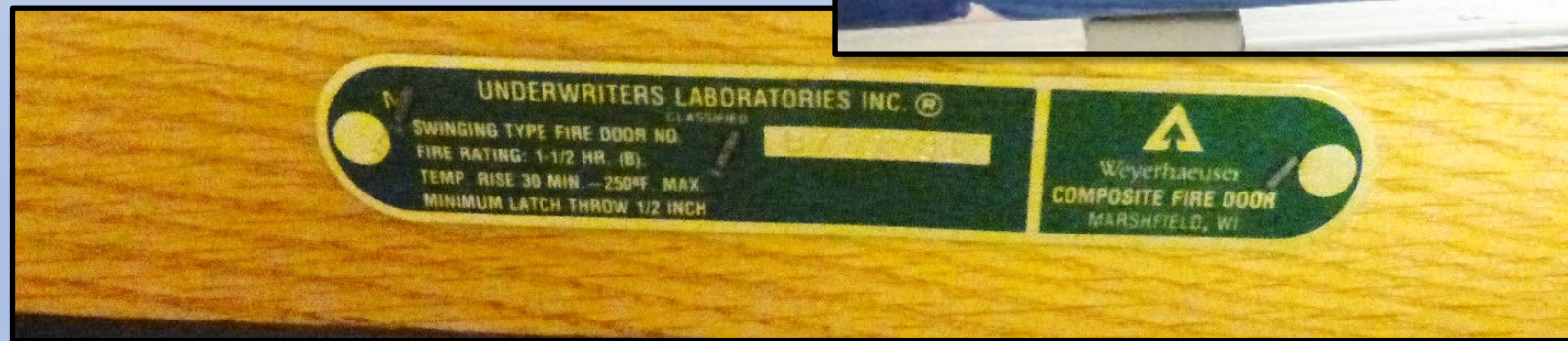
SERIAL NO. 10292

FACTORY MUTUAL



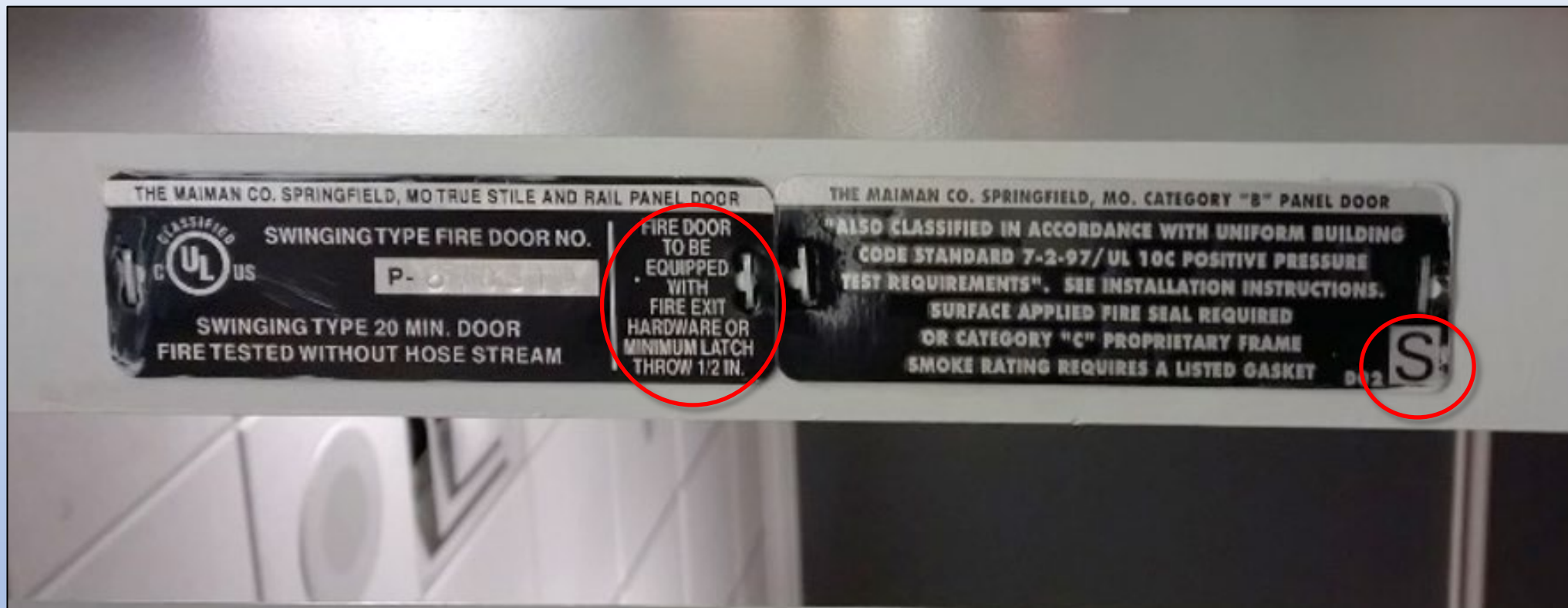
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# No Standard Fire Door Label

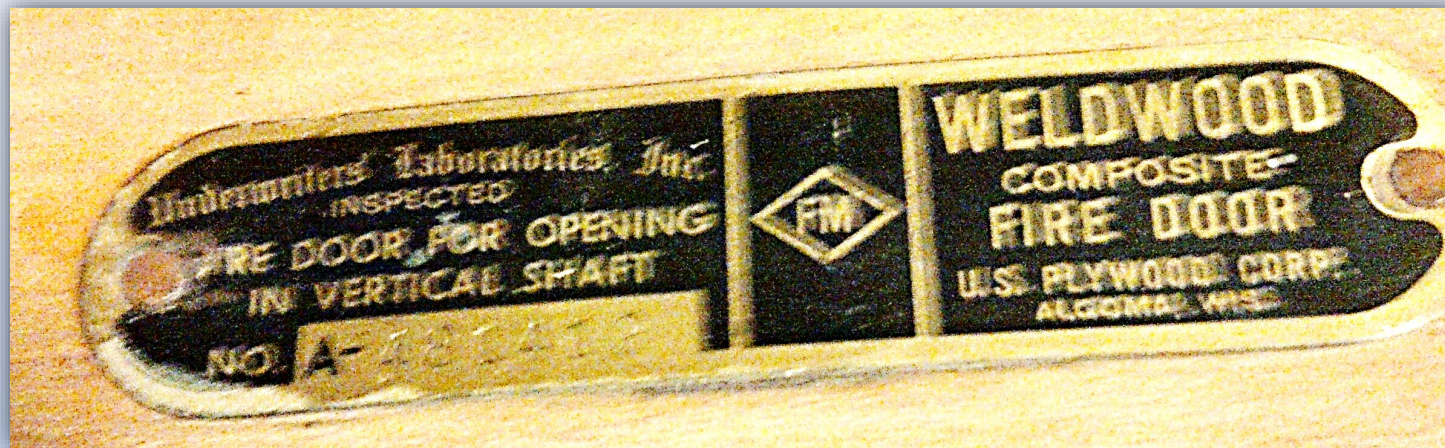




# No Standard Fire Door Label



# What's Wrong With This Label?



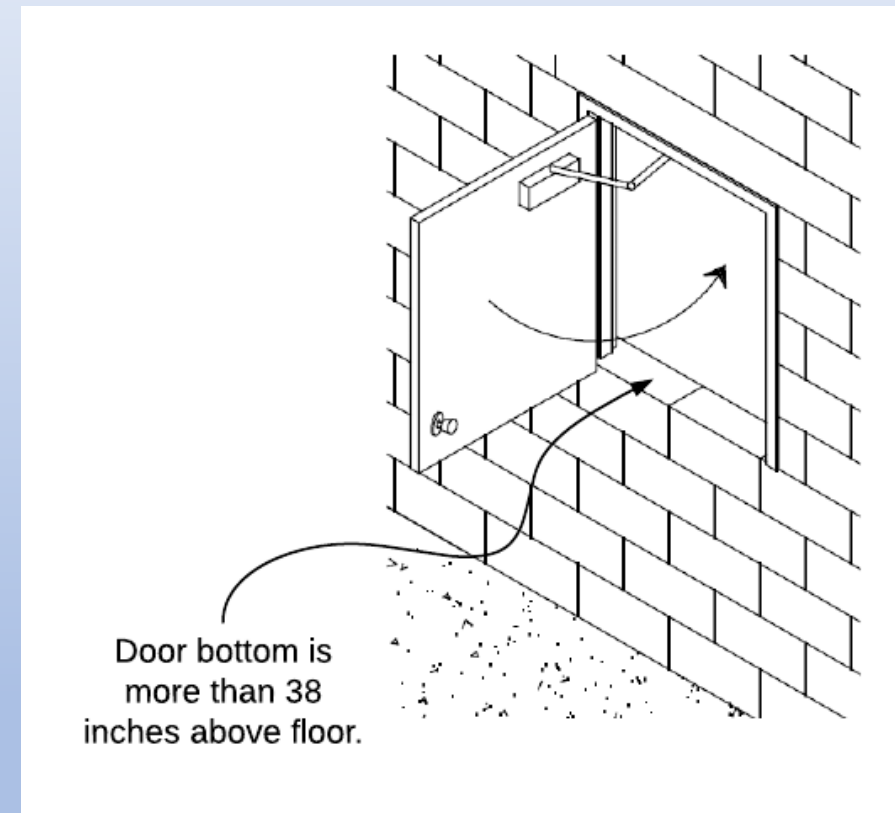
Underwriters' Laboratories Inc  
INSPECTED  
FIRE DOOR FOR OPENING  
IN VERTICAL SHAFT  
No. A-489419



WELDWOOD  
COMPOSITE  
FIRE DOOR  
U.S. PLYWOOD CORP.  
ALGOMA, WI

# Chapter 4: General Requirements

- Clearance dimensions UNDER swinging fire doors.
  - 3/4-inch (19 mm) maximum, unless hardware requires LESS clearance
  - 3/8-inch (9 mm) maximum when the bottom of the door is more than 38 inches above the floor.



# Chapter 5: Inspection, Testing, and Maintenance

- Applies to all types of fire door and window assemblies
- New and existing installations
- Covers repair and replacement of fire door assemblies
- Includes inspection checklist for some types of doors
  - **Chapter 6: Swinging Doors with Builders Hardware**

# Chapter 5: Inspection, Testing, and Maintenance

- Acceptance Testing
  - Visual Inspection and Functional Testing
    - Upon Installation
    - Upon Maintenance Affecting Operation
  - Records retained for life of installations
    - Each fire door and fire window assembly
  
- Periodic Safety Inspections
  - Same process as above
  - Records retained for at least three years

# Chapter 5: Inspection, Testing, and Maintenance

- Replacement of door assemblies
  - New doors in existing door frames
  - New door assemblies
  - New glass and glazing in existing door assemblies
  
- Repairing door frames and doors
  - Filling fastener holes
  - Filling other types of holes

# Chapter 6: Swinging Doors with Builders Hardware

- Component-based systems and hybrid assemblies (unit-based systems)
  - Fire protection-rated assemblies
  - Fire resistance-rated assemblies

**2-hour Fire Resistance-Rated** Assembly:  
it's tested to **ASTM E119** or **UL 263** as  
part of the wall construction.

*It's also an NFPA 80, Chapter 6-Type  
Assembly*

Frame, Doors, Glass, and Hinges/Pivots  
are covered by the door label. Mortise  
lock and door closer are added  
separately.





# Chapter 6: Swinging Doors with Builders Hardware

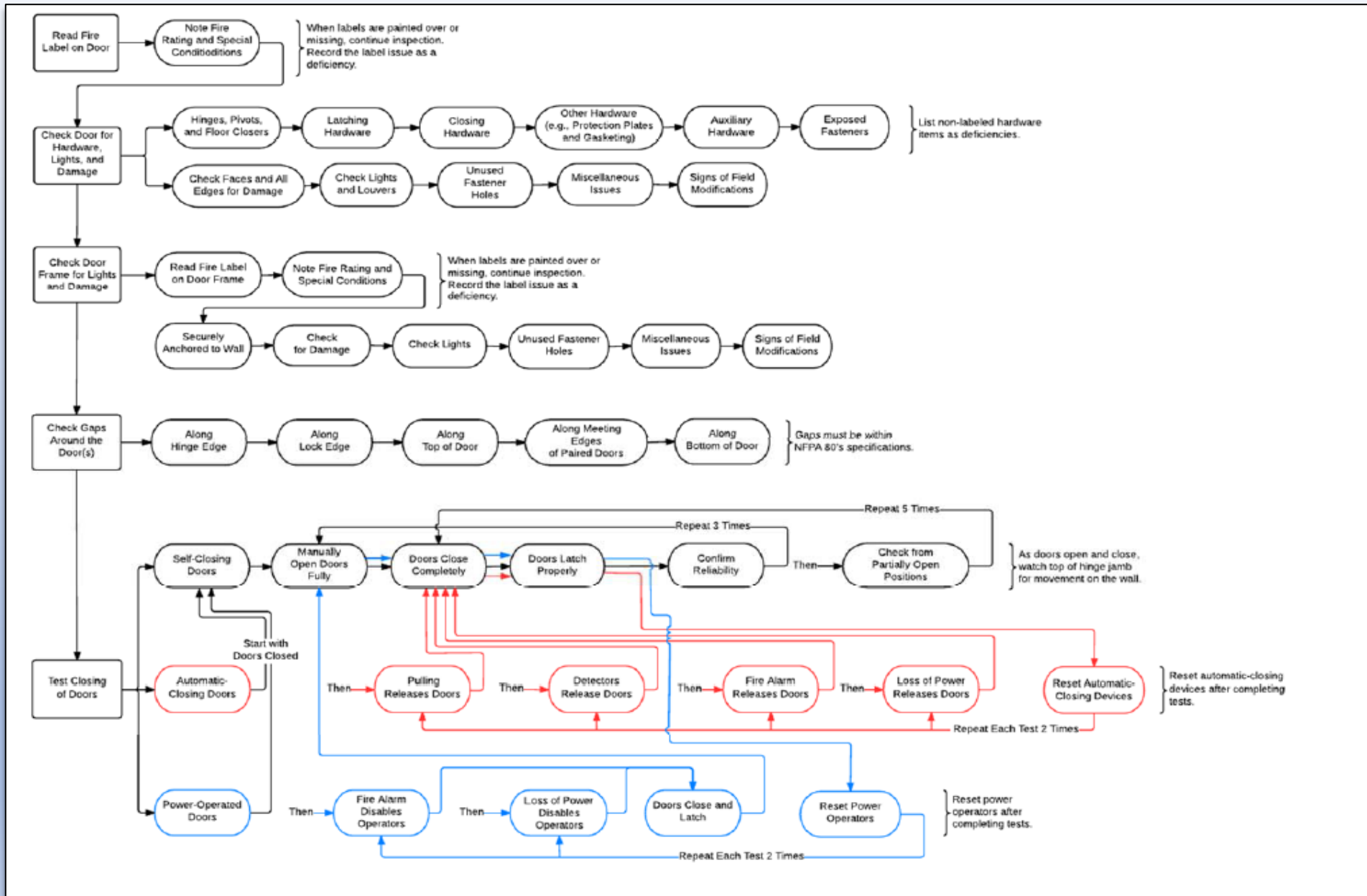
- Door operations
  - Self-closing operation
  - Automatic-closing operation
  - Powered operation

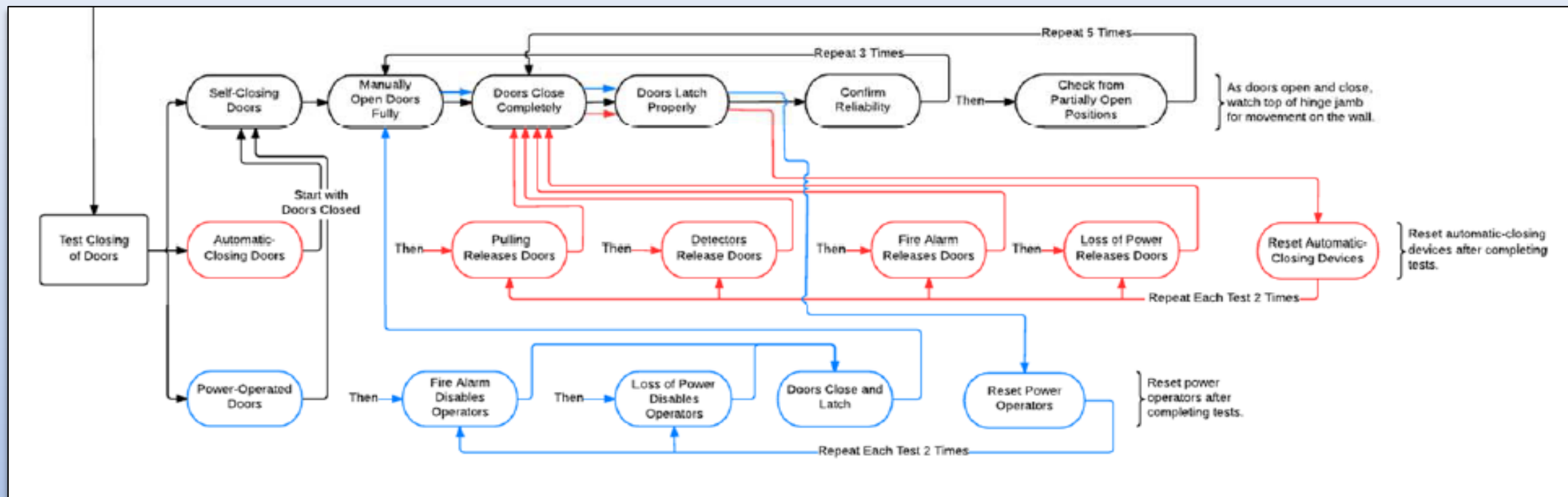
# Chapter 6: Swinging Doors with Builders Hardware

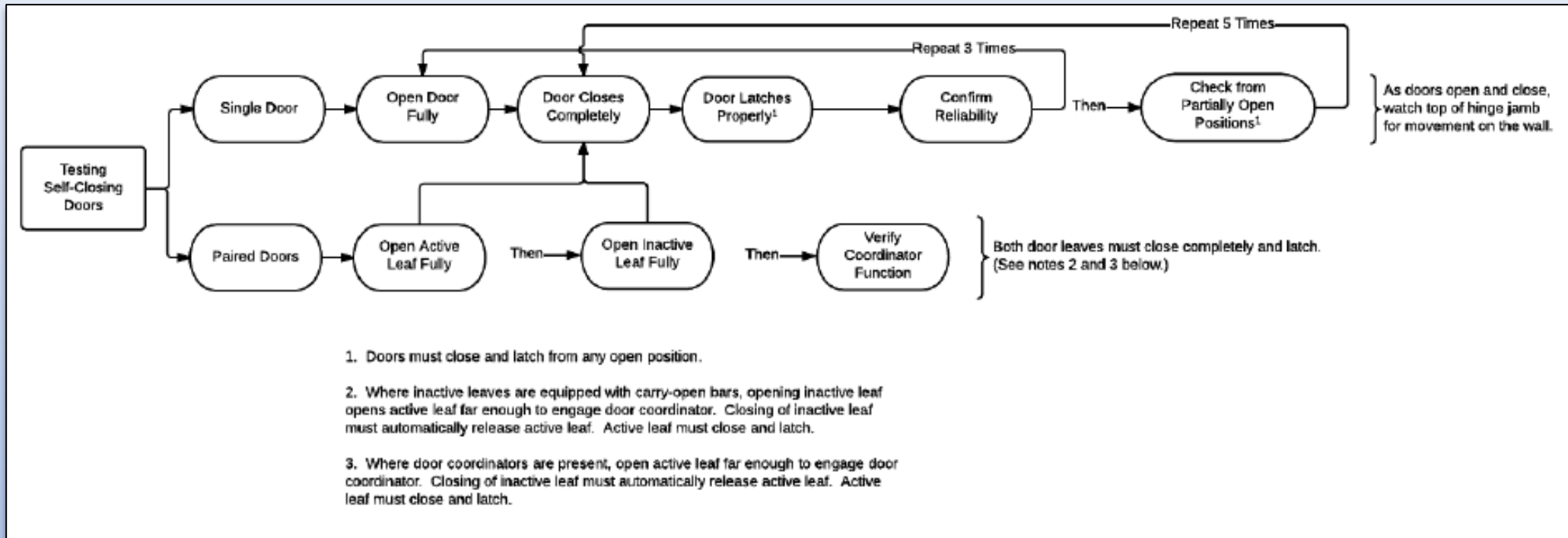
- Clearance dimensions on the pull-side of the assemblies
  - Between vertical and top edges of doors and door frames
  - Between vertical edges of pairs of doors

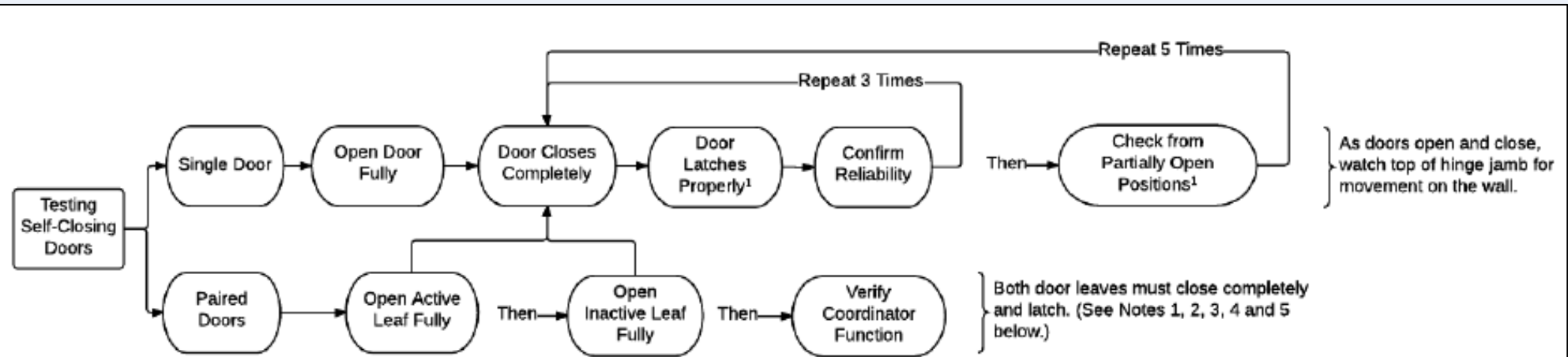


***Chapter 4, General, specifies clearances under swinging doors.***









1. Doors must close and latch from **any** open position.

2. Where inactive leaves are equipped with panic hardware (on non-fire rated doors) or fire exit hardware and carry-open bars and a door coordinator is installed on the door frame, opening inactive leaf opens active leaf far enough to engage door coordinator. Closing of inactive leaf must automatically release active leaf. Active leaf must close and latch under its own power.

3. Where inactive leaves are equipped with automatic or self-latching flush bolts and a door coordinator is installed on the door frame, hold open active leaf far enough to engage door coordinator before opening inactive leaf. Open inactive leaf and allow active leaf to be held open by coordinator. Coordinator must hold active leaf open until inactive leaf returns to closed position. Closing of inactive leaf must automatically release active leaf. Active leaf must close and latch under its own power. Closing of active leaf engages automatic flush bolts, causing inactive leaves to latch.

4. Where inactive leaves are equipped with open back strikes, or both door leaves are equipped with vertical rod panic hardware (on non-fire rated doors) or fire exit hardware, both door leaves must open **and** close independently. Door coordinators are not required. Overlapping astragals that interfere with the opening or closing of either door leaf are not allowed.

5. Where inactive leaves are equipped with manually operated flush bolts or surface bolts. For the purposes of functional testing, temporarily hold or block open active leaf. Release flush bolts (or surface bolts) and test closing function of inactive leaf. Upon completion of functional testing, verify flush bolts (or surface bolts) are properly engaged in top and bottom strikes. Allow active leaf to close and latch under its own power.

# Summary

- Swinging fire doors are specially engineered systems
  - They have one job; preventing a fire from spreading.
  - They require increased attention during installation, and throughout their service lives.



***Fire doors must be kept in a Constant State of Readiness.***

*Questions?*