



Inspecting Swinging Fire Doors with Builders Hardware

A Practical Guide for
AHJs and Facility Management Personnel

About

Door
Security & Safety
FOUNDATION

Today's Agenda

- Introduction to Swinging Fire Doors with Builders Hardware
- NFPA 80's Inspection, Testing, and Maintenance Requirements
- Applying NFPA 80's Inspection Requirements to Swinging Fire Doors
- Maintaining Swinging Fire Doors



History of NFPA 80's Requirements



NFPA 80 HISTORY

- 1999 edition (and earlier editions) of NFPA 80
- Chapter 15, Care and Maintenance
 - Paragraph 15-2.1.1

"Hardware shall be examined frequently and any parts found to be inoperative shall be replaced immediately."
- In the previous editions of NFPA 80 prior to 2007, the duration of time between inspections is ambiguous. Additionally, it is not clear as to what components of the fire door assembly should be inspected.

New NFPA 80 Requirements

- In the 2007, 2010 and 2013 edition of NFPA 80, ***Chapter 5.2.1, Care and Maintenance***, requires annual inspection, of every fire door in new and existing buildings along with a written record of every assembly inspected. The revised NFPA 80 standards also provides specific instructions, as described in Chapter 6, as to which components of the fire door assemblies must inspected.

Safety Inspections of Fire Door Assemblies

➤ NFPA 80, 5.2.4

"Fire door assemblies shall be inspected and tested not less than annually."

➤ NFPA 80, 5.2.2

"A record of all inspections and testing shall be signed by the inspector and kept for inspection by the AHJ."





**Play the SDI
Fire Door Test
[Video](#)**

**Introduction to
Swinging Fire Doors
with Builders Hardware**

Keep These Points in Mind...

- ✓ *Fire doors are mechanical equipment that is subject to wear and tear*
- ✓ *Failure to properly maintain fire door assemblies in good operating condition is the action that violates code*

Swinging Doors with Builders Hardware

- Average lifespan of doors, frames, and hardware
 - Door assemblies subject to high frequency usage:
 - 400 to 5,000 cycles per day (118,000 to 1,500,000/yr)
 - 3 to 7 years, depending on the hardware

 - Door assemblies subject to ordinary usage:
 - 50 to 200 cycles per day (18,000 to 75,000/yr)
 - 7 to 15 years, depending on the hardware

 - Door assemblies subject to low frequency usage:
 - 1 to 20 cycles per day (300 to 7,000/yr)
 - Up to the lifetime of the building, depending on the hardware

Swinging Fire Doors

- Swinging fire door assemblies with builders hardware
 - Covered in Chapter 6 in NFPA 80
 - Component-based systems

Swinging Fire Doors

- Swinging fire door assemblies with builders hardware are comprised of:
 - Labeled door frame
 - Labeled door(s)
 - Labeled or listed door hardware products
 - Hinges
 - Door bolts
 - Locks and latches
 - Door closers
 - Etc.

Swinging Fire Doors

➤ Labeled door frames

- Embossed labels
- Physical labels
 - Mylar
 - Metal

➤ Labels might state the maximum duration of the fire-protection rating of the door frame (e.g., 3 hours)

- Many labels on 3-sided door frames simply identify the frame as being fire-rated
- Labels on sidelight and transom frames usually have the maximum duration of fire-protection rating

Steel Door Frames 5.2.3.5.2(1)

➤ Labels

- Fire rated labels properly attached and readable



Swinging Fire Doors

- Labeled doors
 - Physical labels
 - Mylar
 - Metal
 - States hardware requirements
 - Latch throw
 - Fire exit hardware
 - S-label for smoke door assemblies

✓ ***States fire-protection rating in hours or minutes***

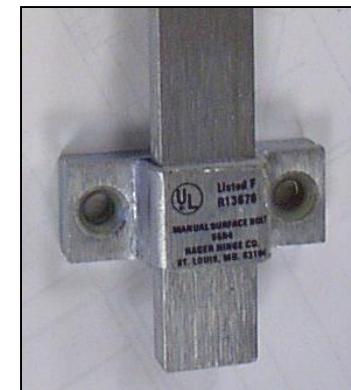
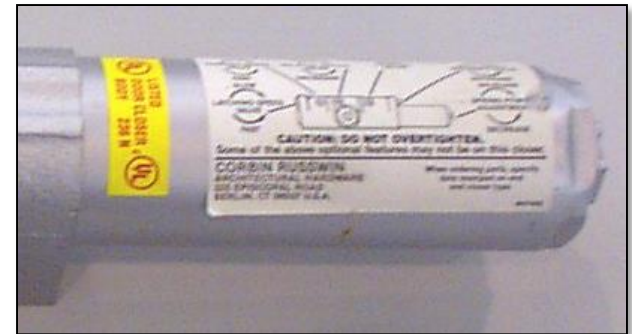


Swinging Fire Doors

- Door frame and door labels
 - Applied at factory or authorized shop BEFORE door hardware is installed
- Door hardware labels
 - Marked during manufacturing
 - Some products (e.g., hinges) are only listed

Swinging Fire Doors

- Labeled and listed hardware components
 - Marked with emblems and symbols
 - F, f, ff
 - UL
 - ETL
 - Embossed, stamped, or applied



Swinging Fire Doors

- Glass and glazing
 - 1/4-inch clear wire glass
 - Fire resistance rated glazing
 - Fire protection rated glazing


DOOR LABEL

D - indicates the glazing shall be used in a door assembly and the glazing meets the fire resistance requirements of the test standard

NH - indicates the glazing does not meet the hose stream requirements of the test (allowed for 20 minute rating only)

NT - indicates glazing does not meet temperature rise criteria

XX - symbolizes fire protection rating period, in minutes (minimum 20 minutes)



The image shows a sample fire door label with the following text:
fireglass20
TEMPERED U A
16CFR 1201 CAT. II
ANSI Z97.1-2004
SGCC 2010 6mm
D-NH-NT-20
6259
CLASSIFIED
UL
R-13377

Swinging Fire Doors

➤ NFPA 80 allows:

- Door frames, doors, and hardware to be products of different manufacturers
- door frames, doors, and hardware to be labeled and listed by different testing labs

✓ *All of these combinations of products can be confusing to AHJs, owners, and maintenance personnel*

Swinging Fire Doors

➤ Fire door ratings

- 1/3-hour (20 minutes)
- 1/2-hour (30 minutes)
- 3/4-hour (45 minutes)
- 1-hour (60 minutes)
- 1-1/2 hour (90 minutes)
- 3 hour (180 minutes)

Swinging Fire Doors

- Swinging fire doors are rated less than walls
 - 4-hour walls requires 3-hour door assemblies
 - 2-hour walls requires 1-1/2 hour door assemblies
 - 1-hour walls requires 3/4-hour door assemblies
 - Exception: 1/3-hour door assemblies in some occupancies

Swinging Fire Doors...

➤ Component-based systems

- Frame, door, and hardware components
- Virtually infinite combinations of components
- Each component is required to be labeled or listed

✓ ***Typically, the label on the door establishes the duration of fire protection rating for the assembly***

Swinging Fire Doors

➤ Assemblies commonly consist of:

- Hollow metal doors and frames
- Hollow metal frames and wood doors*
- Pressed steel frames and wood doors*
- Aluminum frames and wood doors*
- Aluminum frames and flush aluminum doors
- Wood composite frames and wood doors*
- Fiberglass reinforced polymer (FRP) frames and doors

*Fire rated wood doors can be flush or stile and rail designs
– high pressure decorative laminate (e.g., Plastic laminate)
fire doors are a type of flush wood fire door.

Other Types of Fire Door Assemblies

- Swinging fire doors with fire door hardware
- Horizontally sliding fire doors
- Vertically sliding fire doors
- Rolling steel fire doors
- Access fire doors
- More...

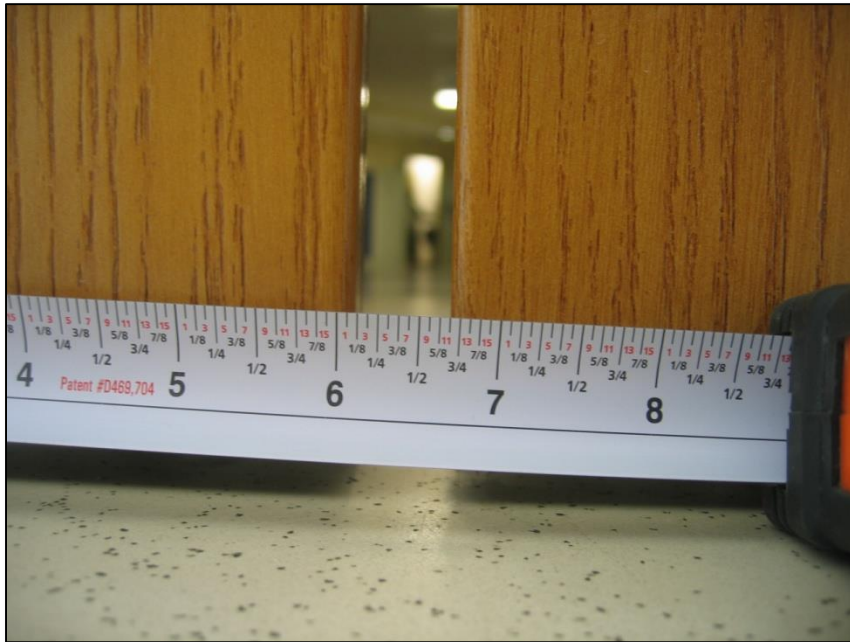
✓ ***The label on these types of fire door assemblies cover the entire assembly***

Clearances

- NFPA 80 requires swinging doors with builders hardware to be installed within the following clearances:
 - Hollow metal doors: 1/8-inch (plus or minus 1/16-inch) at vertical edges and top edges of doors
 - Maximum clearance: 3/16-inch
 - Minimum clearance: 1/16-inch
 - Wood doors: 1/8-inch maximum (no over- or under-tolerance) at vertical edges and top edges of doors
 - Maximum clearance: 1/8-inch
 - Minimum clearance: None
- ✓ **Doors of other materials are treated the same as wood doors**

Steel and Wood Doors 6.3.1.7.1

➤ Clearances at jambs, head, & meeting stiles



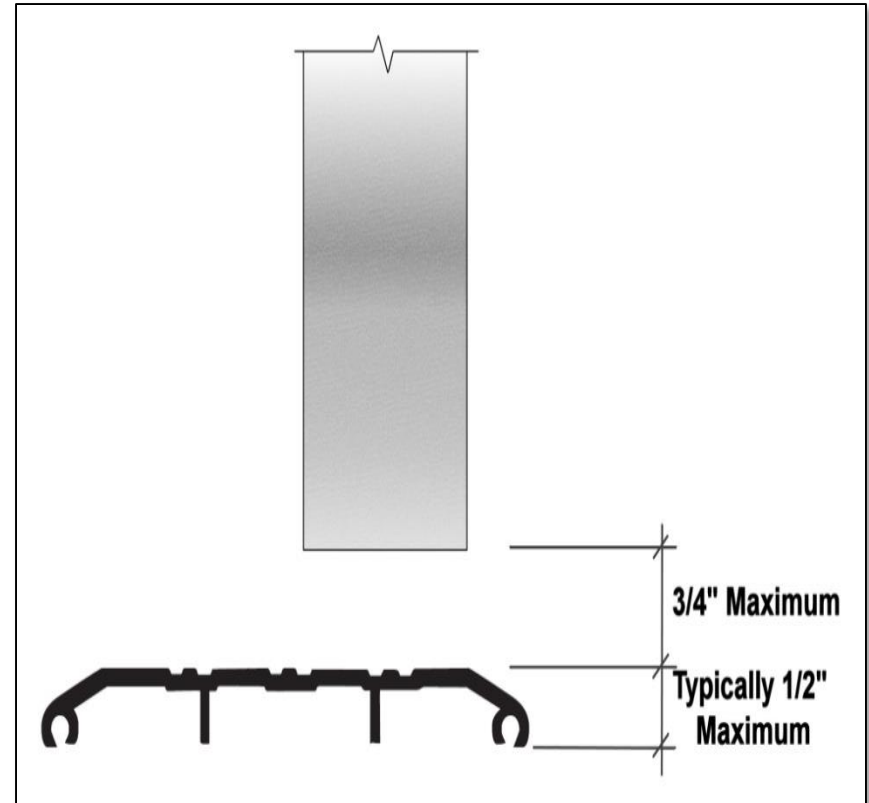
- Hollow Metal Doors: 1/8-inch (+/- 1/16-inch)
- Wood Doors: 1/8-inch
- Silencers/mutes installed

Clearances

- Fire door tests allow 1/8-inch clearance between the door and door frame with no over- or under-tolerance
 - NFPA 252, Standard Methods of Fire Tests of Door Assemblies
 - UL 10B, Standard for Safety Fire Tests of Door Assemblies
 - UL 10C, Standard for Positive Pressure Fire Tests of Door Assemblies
 - Other fire door test standards

Installation

- Clearance under the doors
 - Maximum of 3/4-inch where bottom of door is less than 38-inches above the floor
 - Maximum of 3/8-inch where bottom of door is 38-inches or higher above the floor
 - Access doors



Installation of Fire Door Assemblies

➤ Common Misconceptions

- Label on door(s) indicates the assembly is **"OK"**
- Fire doors are **"OK"** as long as they close and latch
- All fire doors are inspected by the AHJ

Installation of Fire Door Assemblies

- Label on door establishes requirements for hardware components
 - Dimension of latch bolt throw (projection)
 - Application of fire exit hardware
 - Temperature rise (e.g., 650, 450, and 250 degrees)

- ✓ ***Some labeled hardware items have restricted applications***

Typical Installation of Swinging Fire Door Assemblies

- Frames set by masons or rough carpenters/drywall installers
 - Frames in masonry walls are often installed months before the door and hardware are installed
- Doors and hardware installed by finish carpenters or skilled mechanics
 - Sometimes by lesser skilled personnel

Top 10 Deficiencies Swinging Fire Doors

- Painted or missing fire door labels
- Poor clearance dimensions around the perimeter of the door in the closed position
- Kick down door holders
- Auxiliary hardware items that interfere with the intended function of the door
- Fire door blocked to stay in the open position
- Area surrounding the fire door assembly blocked by furniture, equipment, and/or boxes
- Broken, defective, or missing hardware items (e.g., latch bolts, strike plates, closer arms, cover plates, etc.)
- Fire exit hardware installed on doors that are not labeled for use with fire exit hardware
- Missing or incorrect fasteners
- Bottom flush bolts that do not project 1/2-inch into the strikes

Questions?

**NFPA 80,
Standard for Fire Doors and Other
Opening Protectives**

Safety Inspections
of Fire Door Assemblies

Care and Maintenance

➤ NFPA 80, Chapter 5

- Applies to new and existing installations (NFPA 80, 5.1.1.2)
- Repairs
- Field Modifications
- Replacement
- Acceptance testing

Care and Maintenance

- Replacing door frames, doors, and builders hardware
 - Meets the requirements for fire protection
 - Meets the requirements for new installations

- Replacing glass and glazing products
 - New glass and glazing products are required to be labeled
 - Existing glass and glazing products are permitted to be replaced with same (e.g., 1/4-inch wire glass can be replaced with same)

Field Modifications

- What are field modifications?
 - Drilling holes larger than 1-inch in diameter
 - 1-1/4 inch diameter for cylinders is permitted
 - Cutouts formed by any means other than by drilling
 - Square, rectangular, or other irregular shape
 - Welding of any type
 - Spot welding
 - Seam welding
 - Undercutting doors in height or width
 - Wood and composite fire doors are permitted to be trimmed 3/4-inch in height at the bottom of the door

Field Modifications

- What are field modifications?
 - Mortising doors and frames for hardware items
 - Hinges, lock fronts, flush bolts, etc.
 - Boring holes through width of doors for remote controlled (electrified) hardware
 - Exception: Intertek licensed Perfect Raceway field modification

Safety Inspections of Fire Door Assemblies

- After installation
- During annual inspection cycles
 - Performance-based program
- After maintenance

Safety Inspections of Fire Door Assemblies

➤ NFPA 80, 5.2.4

"Fire door assemblies shall be inspected and tested not less than annually."

➤ NFPA 80, 5.2.2

"A record of all inspections and testing shall be signed by the inspector and kept for inspection by the AHJ."

Safety Inspections of Fire Door Assemblies

- Inspections are required to be performed by a qualified person

- Qualified Person:
 - “A person who, by possession of a recognized degree, certificate, professional standing, or skill, and who, by knowledge, training, and experience, has demonstrated the ability to deal with the subject matter, the work, or the project.”

- ✓ ***AHJs need to have confidence in the expertise of the persons performing NFPA 80's safety inspections***

Keep These Points in Mind...

- ✓ ***Only the AHJ has the authority to enforce building and fire code compliance***
- ✓ *Presumption of correct applications*
- ✓ *Inspectors need to be aware of the building codes that were applicable at the time of installation*

NFPA 80's Inspection Requirements

- ✓ Labels are clearly visible and legible
- ✓ No open holes or breaks exist in surfaces of either the door or frame
- ✓ Glazing, vision light frames, and glazing beads are intact and securely fastened in place, if so equipped
- ✓ The door, frame, hinges, hardware, and non-combustible threshold are secured, aligned, and in working order with no visible signs of damage
- ✓ No parts are missing or broken

NFPA 80's Inspection Requirements

- ✓ Door clearances do not exceed clearances listed in 4.8.4 or 6.3.1.7
- ✓ The self-closing device is operational; that is, the active door completely closes when operated from the full open position
- ✓ If a coordinator is installed, the inactive leaf closes before the active leaf
- ✓ Latching hardware operates and secures the door when it is in the closed position

NFPA 80's Inspection Requirements

- ✓ Auxiliary hardware items that interfere or prohibit operation are not installed on the door or frame
- ✓ No field modifications to the door assembly have been made that void the label
- ✓ Meeting edge protection, gasketing, and edge seals, where required, are inspected to verify their presence and integrity
- ✓ Signage affixed to the door meets the requirements listed in 4.1.4

Overview

Performance-Based Option

- Designed for large buildings, facilities, and campuses that have on-going door maintenance programs
 - Formal inspection cycle extended up to 3 years
 - Incremental extensions granted based on maintaining an acceptable level of compliance
 - Inspection and maintenance programs fully documented
 - Trained personnel
 - Sustained high level of compliance (e.g., 95 to 100 percent)
 - Requires constant documentation of door maintenance program
 - Subject to revocation for cause by AHJ

✓ ***Requires AHJ's approval in writing***

Overview

Performance-Based Option

- Door maintenance program
 - Door usage frequencies
 - History of door repairs
 - Building condition
 - Consequence of failure

- Transitioning to performance-base option requires consideration of:
 - Past door reliability
 - Resource expenditures
 - Administrative burden

Questions?

Roles and Responsibilities

Building Owner's Role and Responsibilities

- Maintaining fire door assemblies in working condition in accordance with NFPA 80
 - NFPA 80 limits the type of work that can be performed on fire door assemblies
 - Owner's personnel need to be aware of limitations
- Performing and documenting NFPA 80's safety inspections of fire door assemblies
 - Annually

Authority Having Jurisdiction's (AHJ) Role and Responsibilities

- Enforce NFPA 80's requirements for fire door assemblies
 - Installation and maintenance
 - Annual inspections (including performance based option)

- Establish acceptable inspection parameters
 - Clearances around perimeter of doors
 - Painted or missing fire door labels
 - Grace period(s) for making corrective actions
 - More...

Fire Door Assembly Inspector's (FDAI) Role and Responsibilities

- Witness, document, and report condition of fire door assemblies to building owners
 - As of date and time of inspection
 - Research and document special conditions

- Recommend corrective actions

- Educate
 - Building owners and maintenance personnel
 - AHJs

Swinging Fire Doors with Builders Hardware

- Simple to complex functions
 - Fire safety
 - Life safety
 - Accessibility
 - Security
 - Access controlled

✓ Generally, fire rating requirements take precedence over other code requirements

Questions?

Inspecting Swinging Fire Door Assemblies

Where are the Fire Doors?

- Original blueprints and specifications
- Approved door and hardware submittal schedules
- Walk the building and find the fire doors
 - Locate swinging fire doors
 - Stair towers
 - Along corridors
 - Other areas...

Index of Fire Door Assemblies

- Assign each fire door a unique identifier
 - Door number
 - Bar code

Documentation

➤ Acceptance Testing

- Initial installation
- After maintenance work

➤ Safety Inspections

- Annual safety inspections
- Performance-based inspections

Documentation

➤ Acceptance Testing records

- Retained for life of installation
 - Before Certificate of Occupancy is issued
 - After maintenance work is performed
- Format that survives the retention period
 - Digital (secured – can't be edited)
 - Paper
- Signed by inspector(s) and kept for AHJ's review

Documentation

➤ Safety Inspections

- Format that survives the retention period
- Minimum retention period of 3 years
- Signed by inspector and kept for the AHJ's review.

Corrective Actions

➤ Inspection reports

- Inspector's recommendations for repairing fire doors

➤ Minor corrective actions

- Replacing and/or tightening fasteners
- Adjusting doors and hardware
 - Shimming doors to correct excessive clearance gaps
 - Adjusting door closers
 - Aligning latching hardware with strike plates
- Filling unused fastener holes

Finding a Fire Door Assembly Inspector (FDAI)

- Door Security & Safety Foundation
 - Locate and FDAI
 - www.doorsecuritysafety.org

- Door and Hardware Institute (DHI)
 - Find a Certified/Professional
 - www.dhi.org

- Intertek
 - <http://www.intertek.com/building/door-inspector-program>

Door and Hardware Institute

- Fire Door Assembly Inspection training program:
 - Comprehensive 4-day face-to-face class
 - Inspection requirements
 - NFPA 80, Standard for Fire Doors and Other Opening Protectives
 - NFPA 101, Life Safety Code
 - Students perform inspections of fire door assemblies
 - Standardized inspection report forms
 - Includes prerequisite courses
 - **Proctored 4-hour exam**
 - **Minimum passing score is 80%**

- ✓ ***Fire Door Assembly Inspector (FDAI)***
 - ***DHI professional credential***

Certification for Inspectors of Fire Door Assemblies

- Intertek
 - Warnock Hersey Mark
- Certified Fire Door Inspector (CFDI)
- Company and inspector(s)
 - Signed agreements
- 3-year certification cycle for inspectors
- Photo badge credentials



Preliminary Safety Inspections

- Corrective actions made before safety inspections:
 - Increase the number of compliant door assemblies
 - Reduce follow up work
 - Makes buildings safer

Routine Maintenance

- Routine maintenance work does not need to be documented in acceptance testing
 - Tightening fasteners
 - Replacing fasteners
- Replacing hardware items like hinges, locks and latches, fire exit hardware, and closing devices is required to be documented
 - Acceptance testing

Repairs 5.5.5(1)

- (1) The fire door, frame, or any part of its appurtenances shall be repaired with parts obtained from the door's manufacturer.
- (2) The door shall be tested to ensure emergency operation and closing upon completion of the repairs.

Common Corrective Actions 5.5.7

- Tightening fasteners
- Replacing fasteners
 - Builders hardware requires special fasteners
- Filling unused fastener holes in doors and frames
 - Steel/stainless steel screws, joint compound, wooden dowels
 - New caulking-type products (designed for fire doors)
- Shimming hinges to adjust door clearances
 - Steel shim material
- Replacing small parts
 - Strike plates, end caps, covers, etc.

Common Corrective Actions

5.5.2, 5.5.5

- Replacing worn out hardware
 - Hinges, locks/latches, door closers, gasketing, etc.
- Replacing broken glazing materials
 - Clear wired glass, etc.

Inspection Items

Steel Door Frames 5.2.3.5.2(1)

➤ Labels

- Fire rated labels properly attached and readable



Steel Door Frames 5.2.3.5.2(1)

- Frame Condition
 - No-rust through on frames



Steel Door Frames 5.2.3.5.2(1)



- Frame Condition
 - No open holes or breaks in the frame faces.

Steel Door Frames

5.2.3.5.2(1)

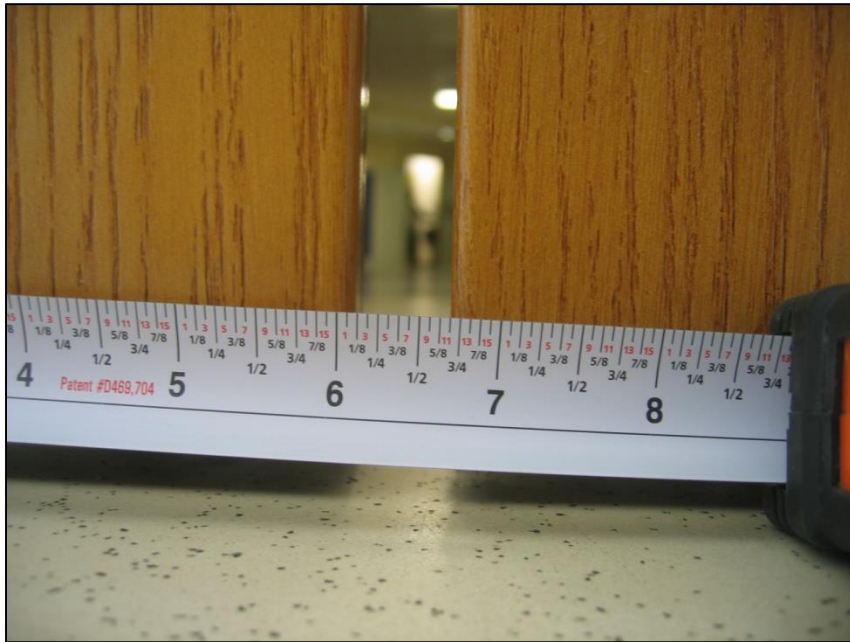
➤ Frame Condition

- No unused fastener holes.
- Frame jamb extends to floor. No space between bottom of frame and floor.
- Fasteners installed in miters of knock down frames.



Steel and Wood Doors 6.3.1.7.1

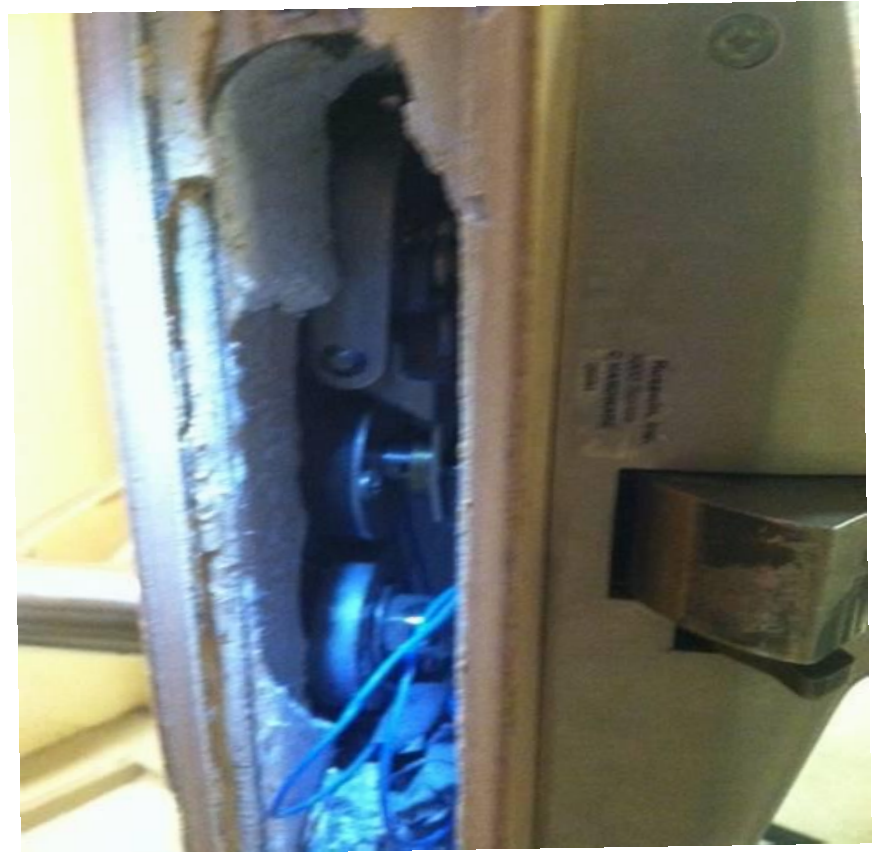
➤ Clearances at jambs, head, & meeting stiles



- Hollow Metal Doors: 1/8-inch (+/- 1/16-inch)
- Wood Doors: 1/8-inch
- Silencers/mutes installed

Wood Doors 5.2.3.5.2(2)

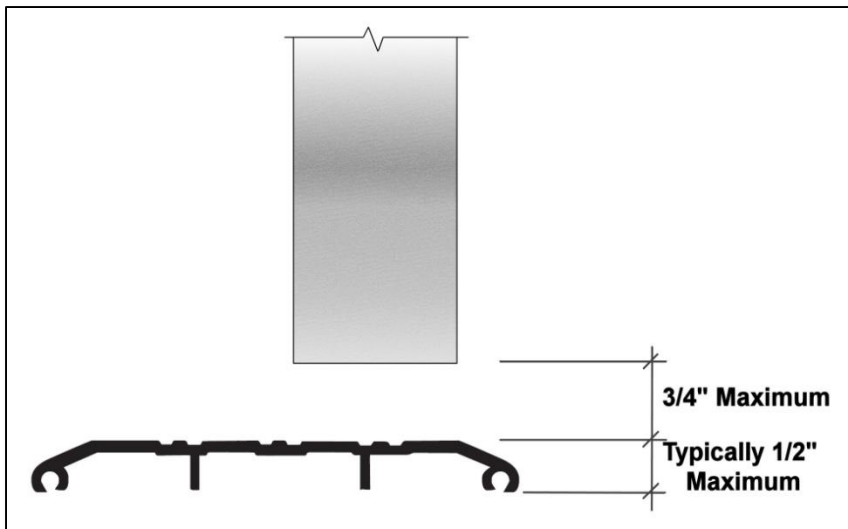
- Fire rated labels properly attached and readable
- No delaminating of door face to core of doors
- No holes, cracks, or splits in faces, stiles, and rails of doors



Steel & Wood Doors

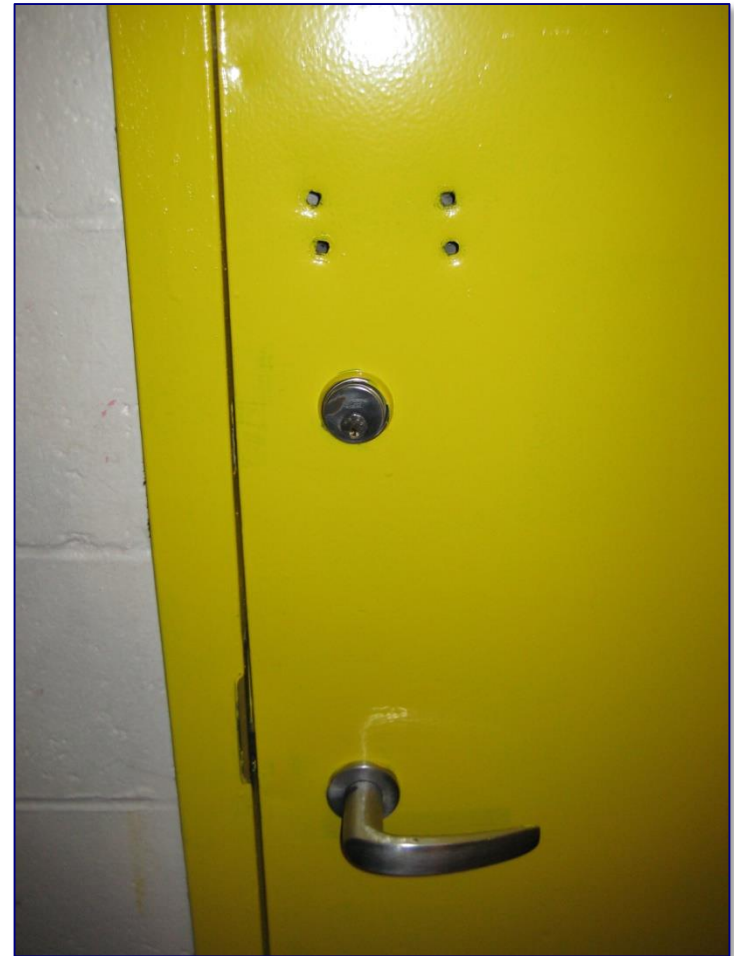
4.8.4.1

- No unused fastener holes
- Proper clearances
 - 3/4-inch maximum clearance between bottom of door and finished floor or threshold



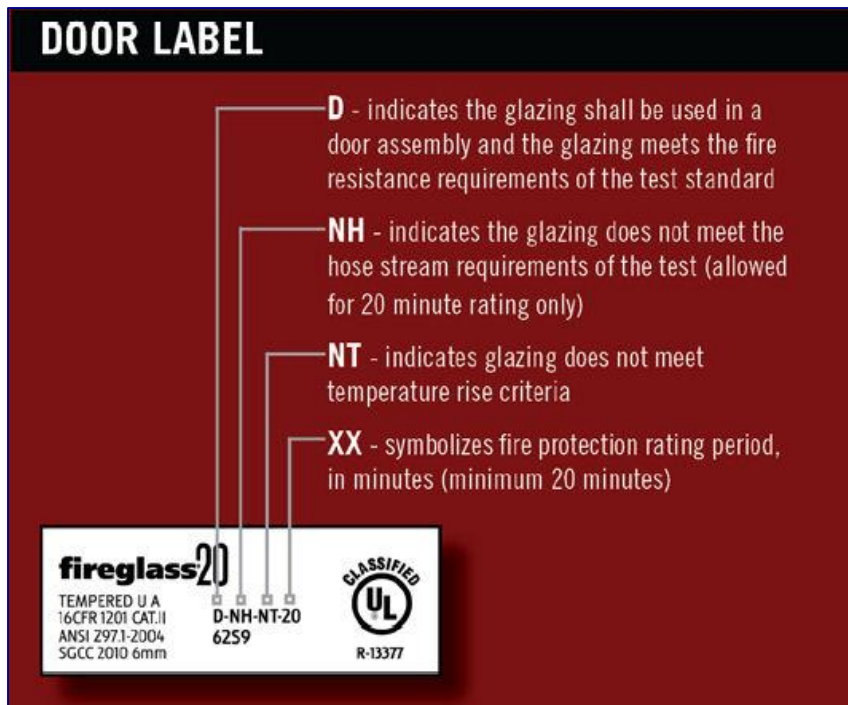
Steel Doors 5.2.3.5.2(2)

- No broken welds on rails or stiles of steel doors.
- No holes in faces and edges of steel doors.
- Verify face of door for delaminating of face skins from core of door.



Glazing

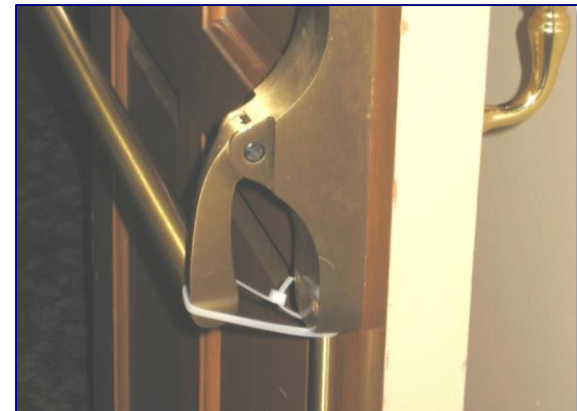
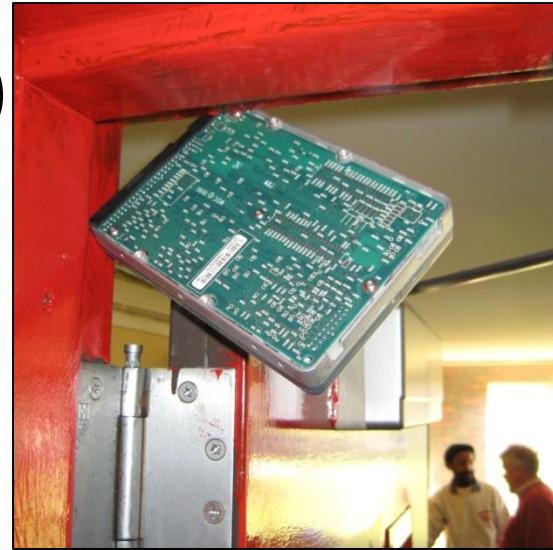
4.4.1



- Glazing beads securely fastened/no missing fasteners.
- Labeled light kits secured fastened - no missing fasteners.
- Correctly sized fire rated glazing installed.

Hardware 5.2.3.5.2(4)

- Incorrect hardware i.e.; deadbolt, hold open closers.
- Correct operation of doors
 - Swing freely
 - Self-Closing
 - Self-Latching



Hinges, Continuous Hinges, Pivots

6.4.3.1



- Labeled or listed.
- Steel hinges and pivots.
- Ball Bearing hinges.
- Spring Hinges (must be labeled on fire doors)
- Door must fully close from an open position of 30 degrees with spring hinges.

Hinges, Continuous Hinges, Pivots

6.4.3.2

- Hinge reinforcements secured to frame
- No rust on hinges/screws, reinforcements
- Steel shims
- No missing/loose screws
- Use of steel hinge fillers (at hardware retrofits)



Locksets / Latchsets 6.4.4



- Listed or labeled
- Correctly secured with no broken parts or missing fasteners
- Latch bolt projects the required distance into the strike – 1/2-inch minimum or as required by the manufacturer

Fire Exit Hardware 6.4.4.2.1

- Must bear fire exit hardware label
- Latch bolt projects the required distance into the strike
 - 1/2-inch minimum or as required by the manufacturer
- No missing parts
 - lever, knob
 - end caps
 - Strikes
 - bottom rods
 - fire pin



Fire Exit Hardware 6.4.4.2.3



- Strikes properly attached
 - No missing fasteners



- Confirm that the fire exit hardware devices are attached to door with through bolts
- No type of mechanical dogging of devices exists

Door Closers

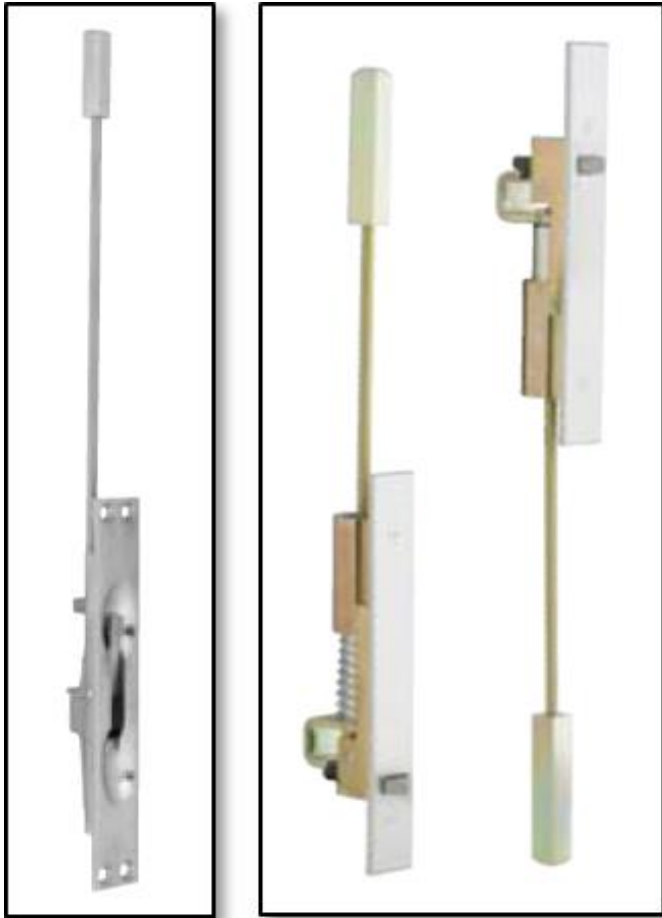
6.4.1

- Fire labeled or listed
- Closer arms intact
- Securely attached
- Non hold-open type
- No missing screws
- Functions as intended
- Brackets provided where required
- Door closes from the full open position



Flush Bolts

6.4.4.5.1



- Manual flush bolts – limited application on fire doors
- Automatic flush bolts – require door coordinator
- Be aware of egress requirements

Door Coordinators 5.2.3.5.2(8)

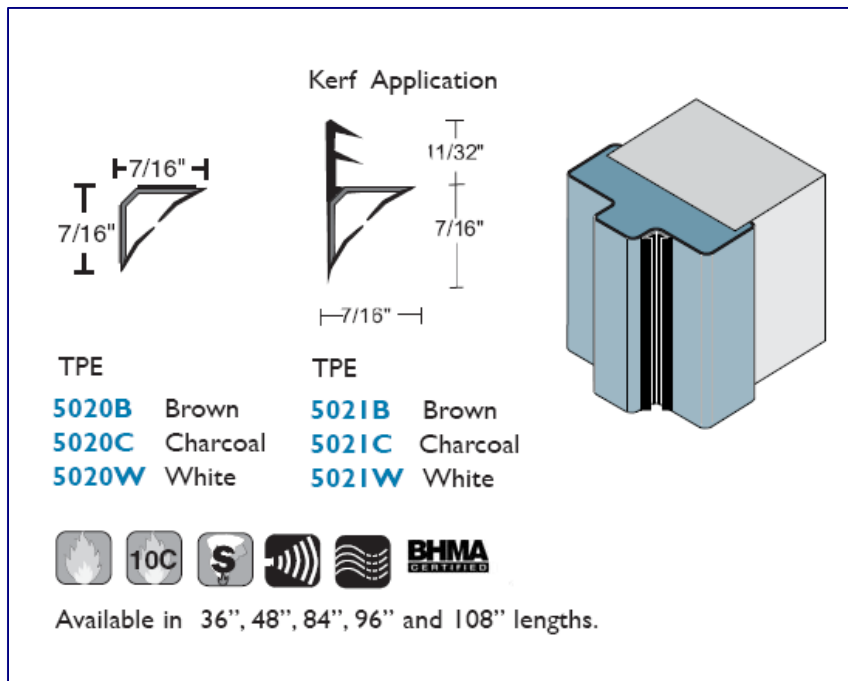
- Used for pairs with an active and inactive leaf
 - Ensures the inactive leaf closes first



Gasketing

6.4.8

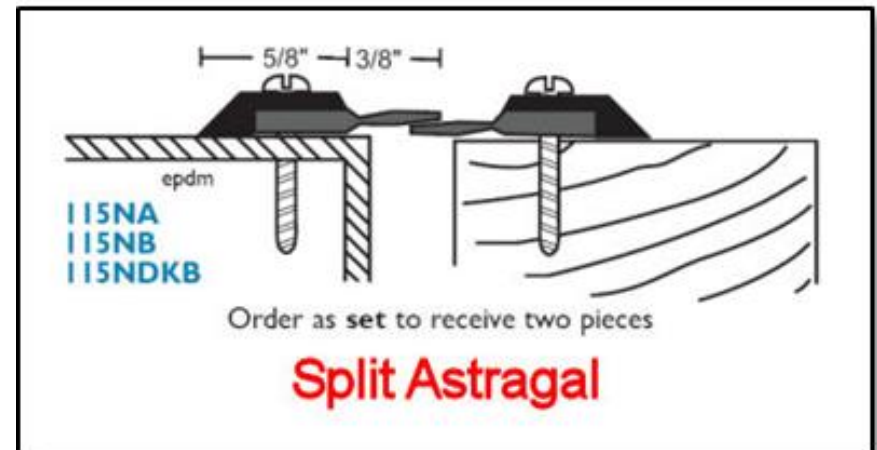
- Fire rated or listed
- Continuous around perimeter of door; no breaks are allowed
- Gasket material must be in “full contact” with door frame



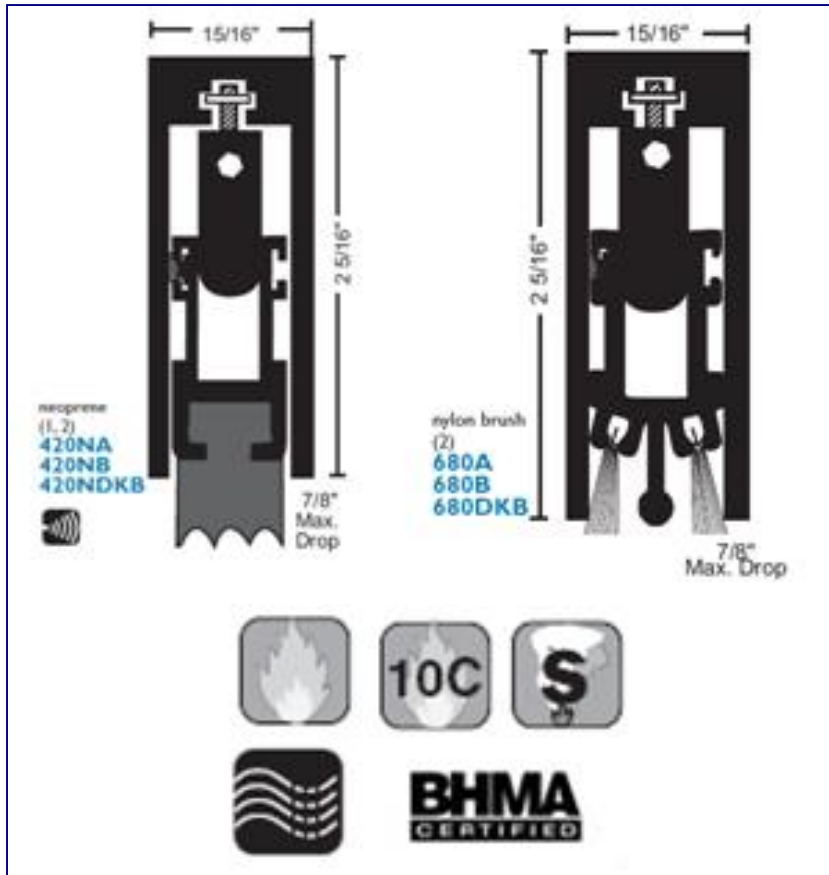
Astragals

6.4.7*

- Must extend 3/4-inch over door edge
- Astragals shall be full height of doors and securely fastened to door



Door Bottoms 5.2.3.5.2(12)

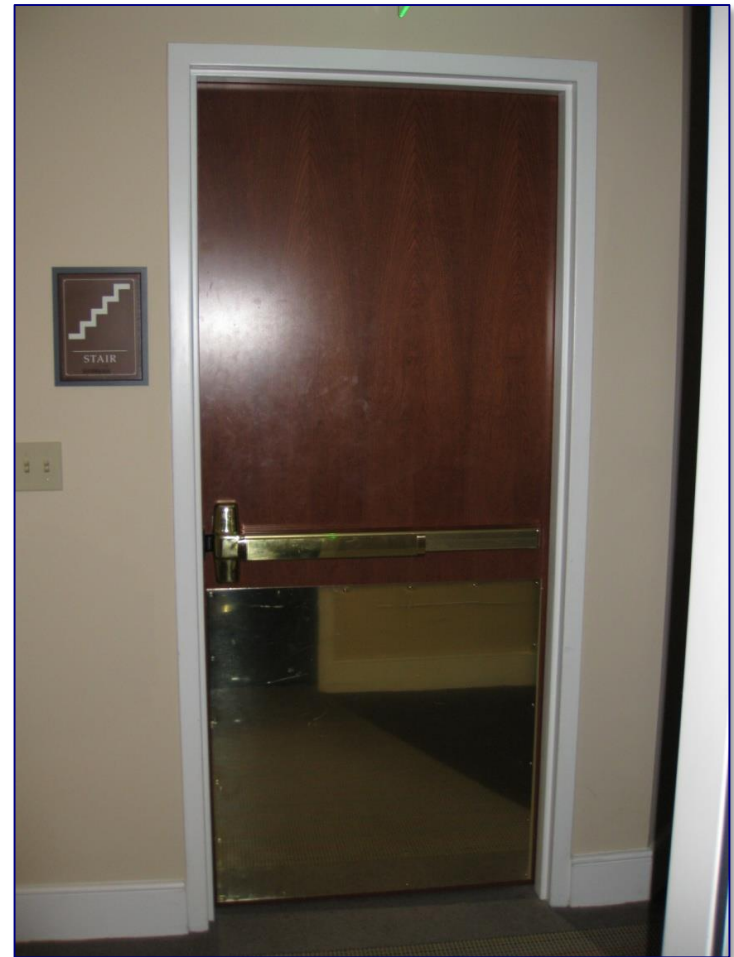


- Fire rated or listed
- Must retract fully and may not rub on floor during opening cycle
- Cannot be used to close a gap greater than 3/4-inch
- Securely attached to door with no missing fasteners

Protection Plates 6.4.5

- Size of plates shall not exceed the sizes in the manufacturers' listings
 - The listing of the door
 - The listing of the protection plate

- Plates installed higher than 16 inches from the bottom of the door are required to be labeled



Protection Plates 6.4.5.1



- Confirm that no plates are mounted on doors more than 48 inches above finished floor
- All screws that are drilled for fastening of protection plate must be inserted and properly set
 - No broken screw heads

Signage 4.1.4.1

- Signage attached to doors with adhesive only
 - No screws or nails allowed
- Signage must not exceed 5% of door surface area
- Signage is not permitted to be attached to glass or glazing



Blockage 5.2.3.5.2(10)



- Area around door must remain clear of any materials

Door Wedges 5.2.3.5.2(10)

- Manual blocking open of doors is not permitted
 - Kick-down door holders
 - Friction door holders
 - Overhead door holders
 - Hold open arms on door closers
 - Furniture, trash cans, fire extinguishers, etc...



Mechanical Hold-Opens 5.2.3.5.2(10)



- Not allowed
 - Kick-down stops
 - Stops with hooks
 - Closers with hold-open arms

Decorations 5.2.3.5.2(13)

- Decorations can cause premature door failure due to additional fuel added to fire loading of door



Mail Bins or Boxes on Doors

5.2.3.5.2(13)



- Fasteners penetrate door skin and product adds fuel to fire door assembly.

Strikes

6.4.4.8

- Strike pocket in frame filled with miscellaneous materials preventing latch bolt projection



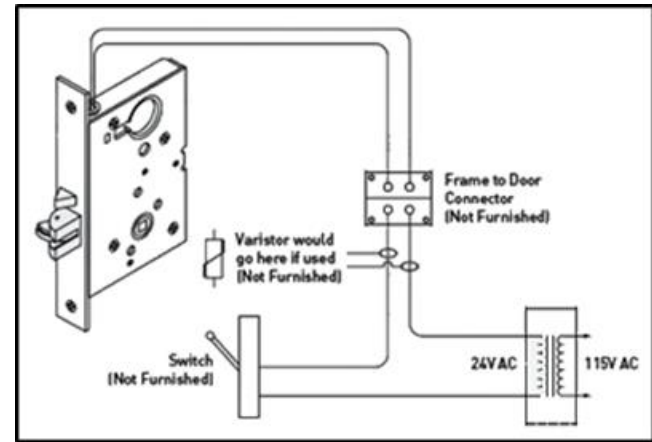
Electrified Hardware 6.4.4.11



- Must activate, as required, upon activation of the following devices:
 - Card Readers
 - Key Switches
 - Push Buttons
 - Fire Alarm Activation

Electrified Locks 6.4.4.11

- Locks or unlocks upon request of activation
- Verify whether fail safe or fail secure is required/installed
 - Fail safe operation requires power to remain locked condition
 - Fail secure operation requires power to remain unlocked condition



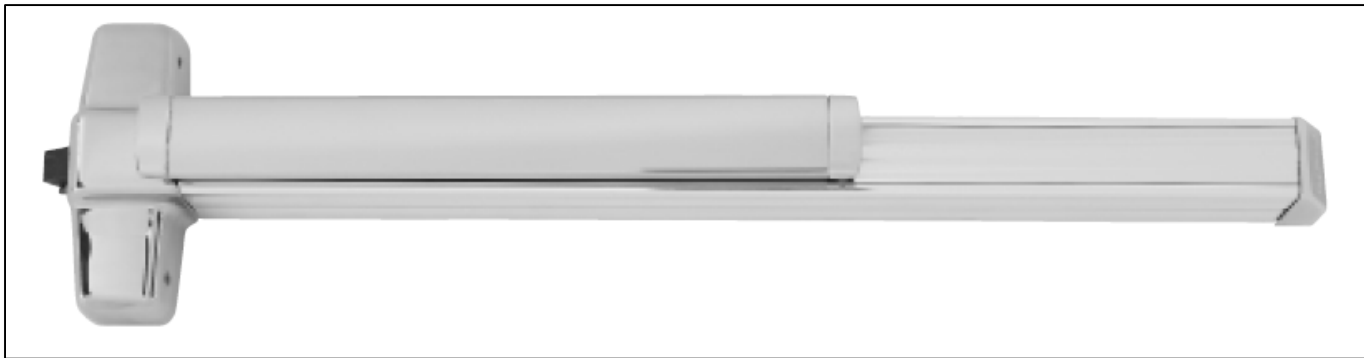
Electric Strikes 6.4.4.11



- Placement in frame
- Verify gap between electric strike and frame is tight and that screws holding strike, in place are tight
- Verify strike is fail secure on fire doors

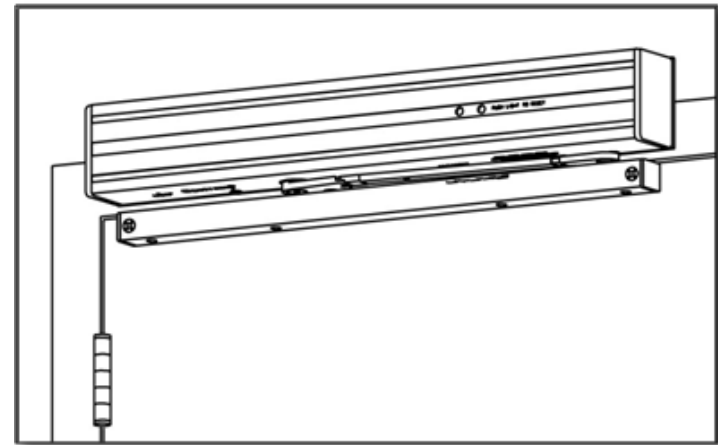
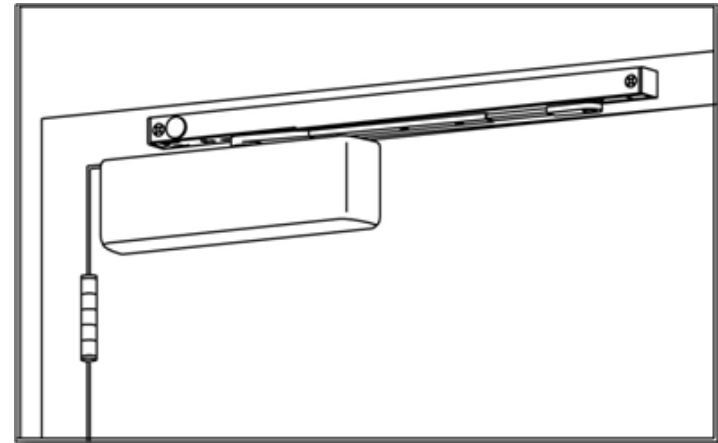
Electrified Fire Exit Hardware 6.4.4.3.3

- Electric Latch Retraction
 - Latch bolt must project and engage strike(s) under alarm conditions
- Electrified Trim
 - Electric lock (fail safe) and electric unlock (fail secure)
- Delayed Egress
 - Sound local alarm and allows door to open after 15 seconds
 - Allows immediate free egress under alarm conditions



Automatic Closing Doors 6.1.3.3

- Doors close and latch up on fire alarm
- Single point combination units
- Multi-point hold-opens
- Magnetic holders



Magnetic Hold Open Devices 6.1.3.3



- Properly thru-bolted to doors
- Correct armature installed
- Chains and other “homemade” armatures not permitted on fire doors

Automatic Operators 6.1.3.3

- Auto opening and closing function, operates properly under request
- Auto operators deactivated upon actuation of fire alarm



Repairs 5.5.5(1)

- (1) The fire door, frame, or any part of its appurtenances shall be repaired with parts obtained from the door's manufacturer.
- (2) The door shall be tested to ensure emergency operation and closing upon completion of the repairs.

Common Corrective Actions 5.5.7

- Tightening fasteners
- Replacing fasteners
 - Builders hardware requires special fasteners
- Filling unused fastener holes in doors and frames
 - Steel/stainless steel screws, joint compound, wooden dowels
 - New caulking-type products (designed for fire doors)
- Shimming hinges to adjust door clearances
 - Steel shim material
- Replacing small parts
 - Strike plates, end caps, covers, etc.

Common Corrective Actions

5.5.2, 5.5.5

- Replacing worn out hardware
 - Hinges, locks/latches, door closers, gasketing, etc.
- Replacing broken glazing materials
 - Clear wired glass, etc.

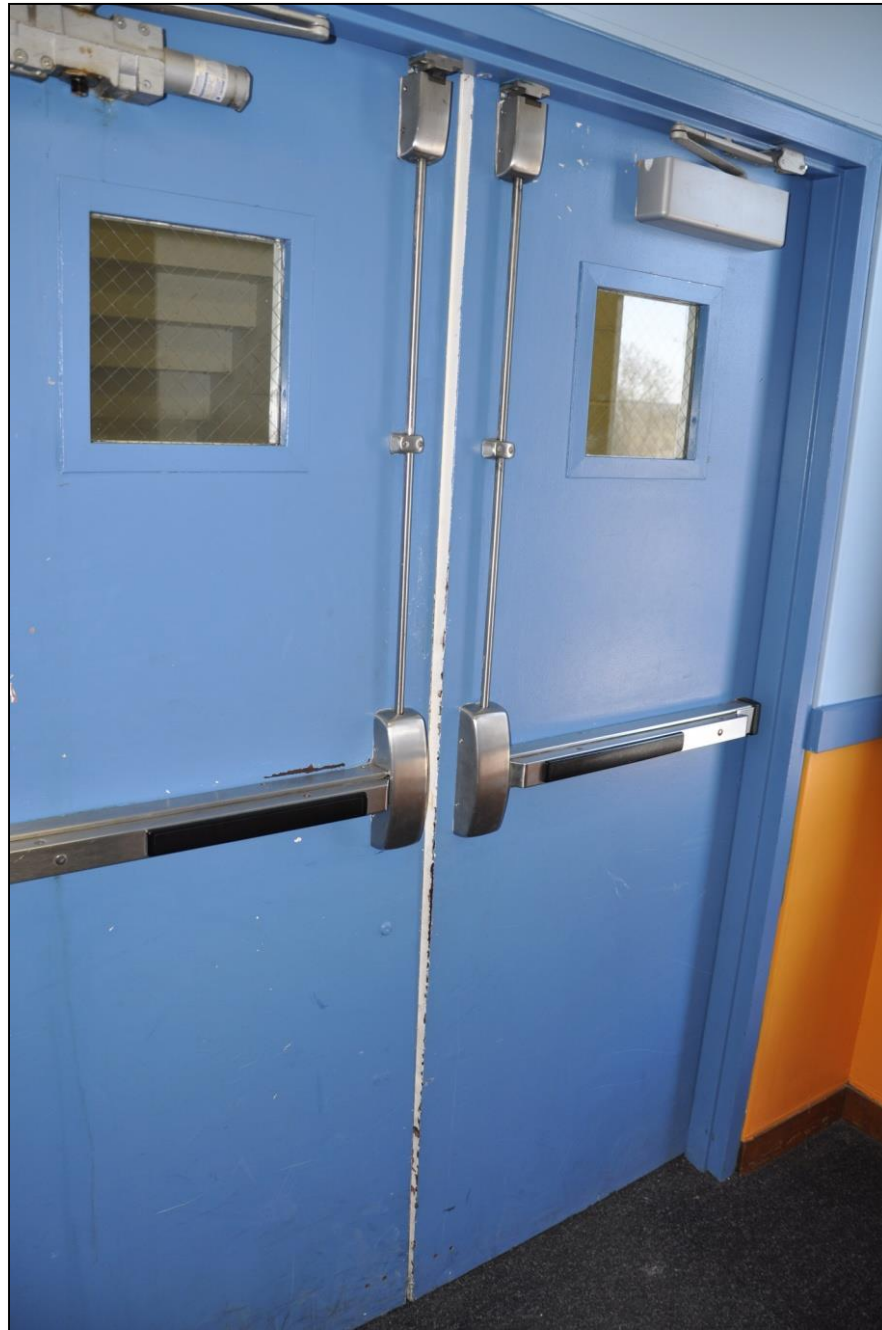
Questions?



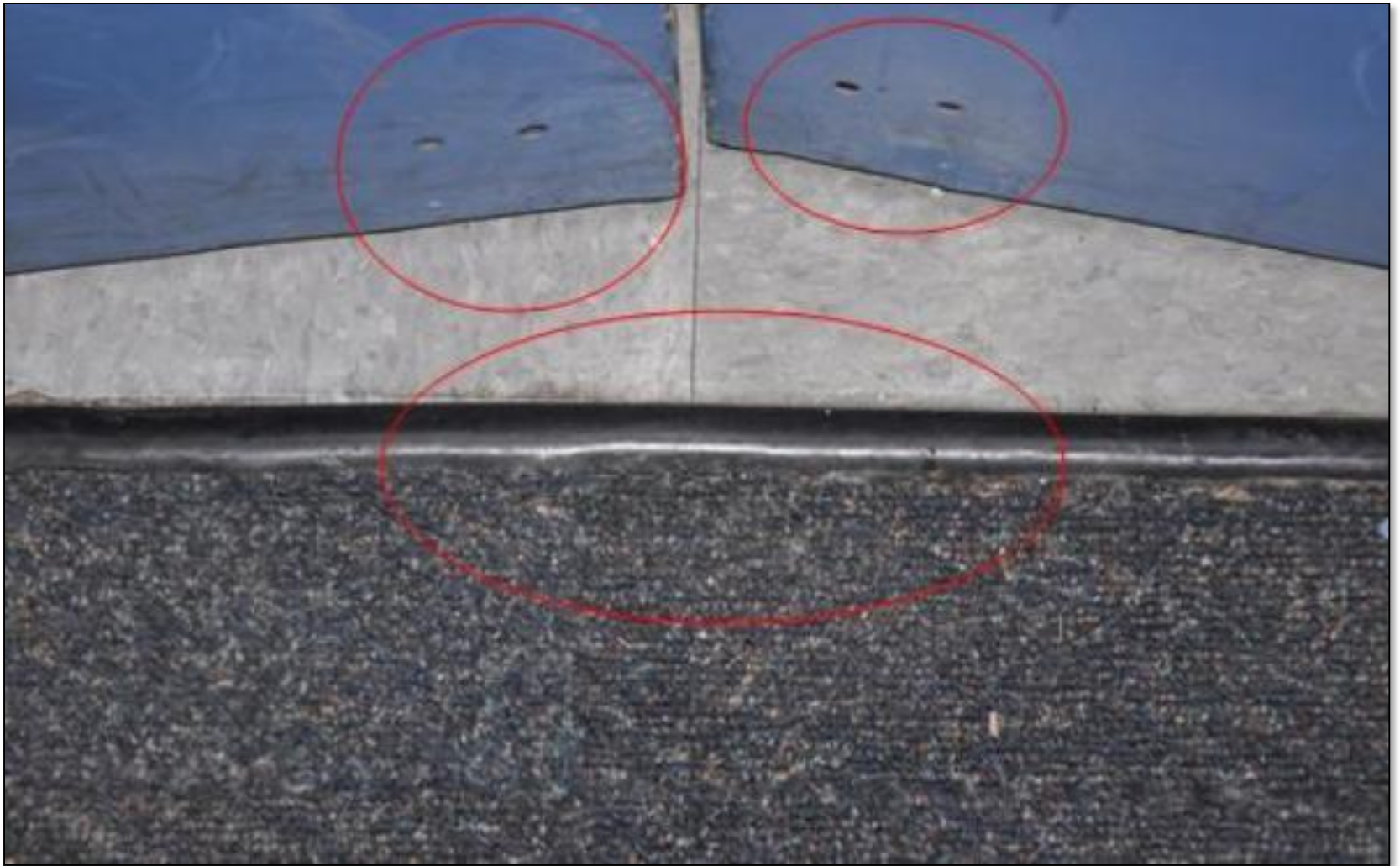


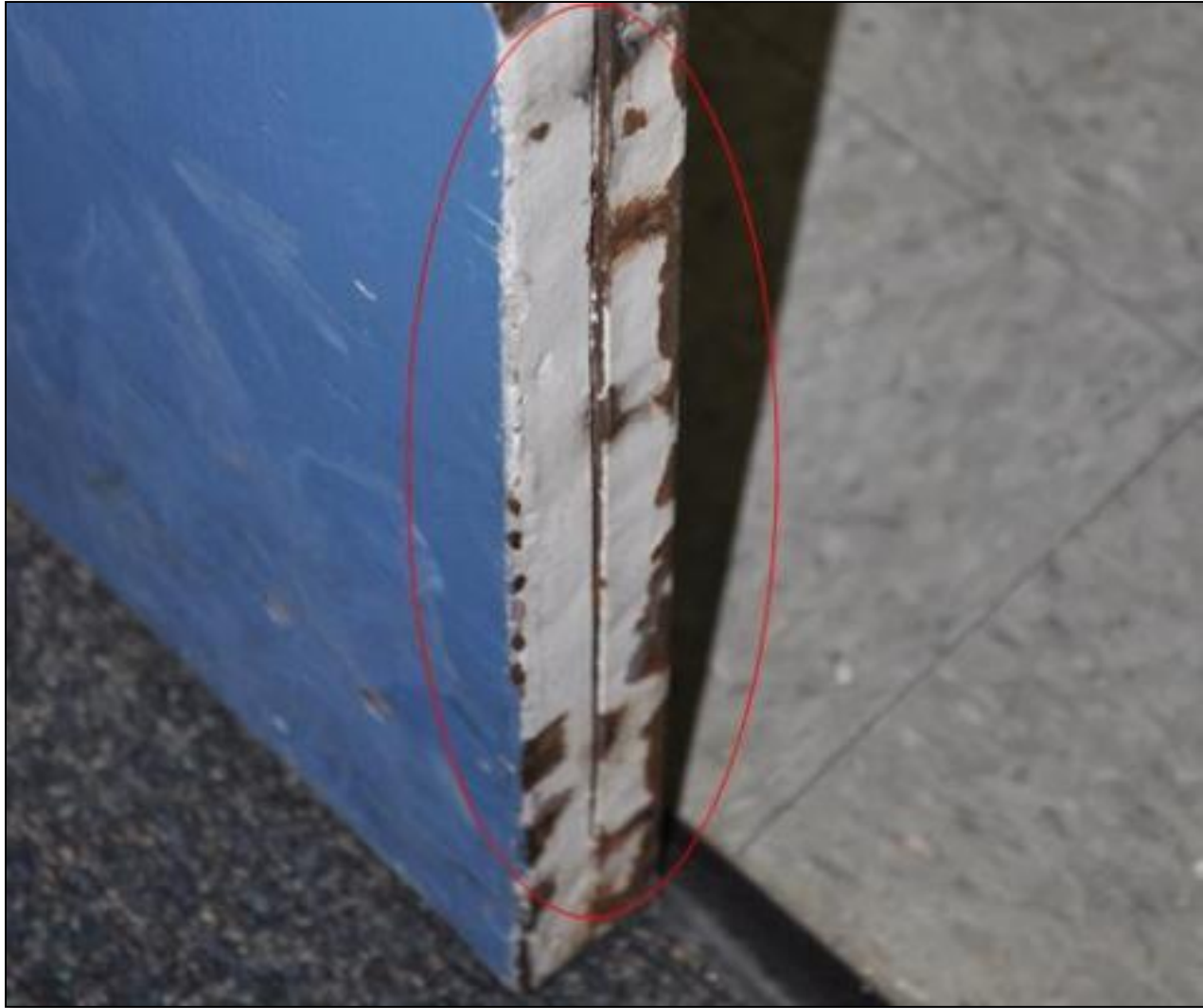


















Questions?

Review...

➤ Part 1

- Introduced you to Swinging Fire Doors with Builders Hardware
- Discussed installation practices that affect swinging fire door assemblies

➤ Part 2

- Reviewed NFPA 80's inspection requirements for fire door assemblies
- Discussed the roles and responsibilities of Owners, AHJs, and FDAIs
- Identified common deficiencies found on swinging fire door assemblies

Review...

➤ Part 3

- Discussed how to locate, identify, and catalog swinging fire door assemblies in your buildings and facilities
- Explained to find a credentialed Fire Door Assembly Inspector (FDAI)
- Determined when corrective actions are needed to maintain swinging fire door assemblies

➤ Part 4

- Outlined how to perform preliminary safety inspections of fire door assemblies
- Identified common corrective actions needed for swinging fire door assemblies
- Discussed how to perform routine maintenance on fire door assemblies

Facility's Relationships

➤ With AHJ

- What is allowed for modifications?
- What type of fire labels are allowed?
- What condition of label is acceptable?

➤ With FDAI

- 3rd-party inspections
- FDAI-credentialed personnel (self-inspections)

➤ With Distributor/Vendor

- Confirm factory authorization of field modification(s) to doors and frames to accept new hardware applications.

Swinging Fire Door Assemblies

2 Basic Rules

➤ Rule #1

- All fire door assemblies shall consist of:
 - Labeled door frames
 - Labeled fire doors
 - Labeled or listed hardware & glazing

➤ Rule #2

- Any field modification to a labeled product must be approved by the testing laboratory that labeled or listed the product or component

For More Information...

- Contact your local Fire Door Assembly Inspector (FDAI)
- Study NFPA 80's inspection requirements
- Study the Door Security & Safety Foundation's publications:
 - Owner's Guide
 - AHJ's Guide
 - Reference Guide
- Join the online discussion group on LinkedIn:
 - The Door and Hardware Institute's Fire Door Assembly Inspection Group

**Thank You
for Your Attention!**