

Door Security & Safety FOUNDATION

AWARENESS | EDUCATION | RESEARCH

OUR MISSION

Our mission is to promote secure and safe openings that enhance life safety, through outreach efforts that include awareness and education within the building design, code authority, and facility management communities.



Door Security & Safety FOUNDATION

Presents:

Swinging Fire Door Assemblies
with Builders Hardware

Design, Installation, Inspection,
and Maintenance

About the Instructor & Presenter:

Paul Baillargeon, AHC, FDAI

A 40 year veteran in the Door Frame and Hardware Industry, Mr. Baillargeon is a certified Architectural Hardware Consultant and a Fire Door Assembly Inspector. He is also a Field Inspector for Intertek Testing Services. Mr. Baillargeon is an instructor in the DHI Education Program and member of DHI Education Council. Mr. Baillargeon is also a Technical Consultant to the Door Security & Safety Foundation.





Design

- Swinging Fire Door Assemblies with Builders Hardware
 - Covered in Chapter 6 in NFPA 80
 - Component Based Systems

Design

- 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.

Design

- Labeled Door Frames
 - Embossed Labels
 - Physical Labels
 - Mylar
 - Metal

Design

- 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

Design

- Labeled and Listed Hardware Components
 - Marked with Emblems and Symbols
 - F, f, Ff
 - UL
 - Embossed, Stamped, or Applied

Design

- Glass and Glazing
 - 1/4-inch Clear Wire Glass
 - Fire Resistance Rated Glazing
 - Fire Protection Rated Glazing

Design

- 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



UNDERWRITERS LABORATORIES INC.®

CLASSIFIED

SWINGING TYPE FIRE DOOR

NO. [REDACTED]

FIRE RATING: [REDACTED]

HR.

MIN LATCH THROW: [REDACTED]



UNDERWRITERS LABORATORIES INC.®

CLASSIFIED

SWINGING TYPE FIRE DOOR

FIRE RATING: [REDACTED]

HR.

NO. [REDACTED]

FIRE DOOR TO BE EQUIPPED WITH FIRE EXIT HARDWARE



UNDERWRITERS LABORATORIES INC.®

CLASSIFIED

SWINGING TYPE FIRE DOOR

NO. [REDACTED]

FIRE RATING: [REDACTED]

HR.

MIN LATCH THROW: [REDACTED]

TEMP. RISE 30 MIN. [REDACTED] °F MAXIMUM



UNDERWRITERS LABORATORIES INC.®

CLASSIFIED

SWINGING TYPE FIRE DOOR

FIRE RATING: [REDACTED]

HR.

NO. [REDACTED]

TEMP. RISE 30 MIN. [REDACTED] °F MAXIMUM

FIRE DOOR TO BE EQUIPPED WITH FIRE EXIT HARDWARE



UNDERWRITERS LABORATORIES INC.®

LISTED

FIRE DOOR FRAME

NO.



UNDERWRITERS LABORATORIES INC.®

LISTED

FIRE DOOR FRAME
WITH PANELS

NO.



UNDERWRITERS LABORATORIES INC.®

LISTED

FIRE DOOR FRAME
FOR LIGHTS

NO.



UNDERWRITERS LABORATORIES INC.®

LISTED

FIRE WINDOW FRAME

NO.

Design

- NFPA 80 Allows Door Frames, Doors, and Hardware to be Products of Different Manufacturers
- NFPA 80 Allows Doors Frames, Doors, and Hardware to be Labeled and Listed by Different Testing Labs

Design

- 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)

Design

- Swinging Doors 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

Installation

- Component-Based Assemblies
 - 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***

Installation

- 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 Doors Cover the Entire Assembly***

Installation

- 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***

Installation

- 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
 - Wood Doors: 1/8-inch Maximum (No Over- or Under-Tolerance)
 - Doors of Other Materials are Treated the Same as Wood Doors

Installation

- Fire Door Tests Allow 1/8-inch Clearance with No Over- or Under-Tolerance
 - 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

- 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

- 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***

Inspection

- Inspectors Need to be Cognizant of Applicable Code Requirements at Time of Installation
- Presumption of Correct Applications
- Practical Application of Inspection Criteria

Inspection

- Only the AHJ has the authority to enforce building and fire code compliance



Inspection

- NFPA 80 Requires Annual Inspection and Operational Testing of Swinging Fire Doors with Builders Hardware
 - Chapter 5, Care and Maintenance
 - List of Inspection Points
 - Requires Qualified Persons
 - Written Records Kept for AHJ's Inspection
- ✓ ***Deficiencies Required to be Repaired Without Delay***

Maintenance

- Door Assemblies are Comprised of Mechanical Equipment that are Subject to Wear and Tear

✓ ***Failure to Properly Maintain Fire Door Assemblies in Operating Condition is the Action or Inaction that Violates the Building and Fire Codes***

Maintenance

- Simple to Complex Functions
 - Fire Safety
 - Life Safety
 - Accessibility
 - Security
 - Access Controlled
- ✓ ***Fire Rating Requirements Take Precedence Over Other Code Requirements***

Maintenance

- Common Corrective Actions:
 - 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)

Maintenance

- Common Corrective Actions:
 - Shimming Hinges to Adjust Door Clearances
 - Steel Shim Material
 - Replacing Small Parts
 - Strike Plates, End Caps, Covers, etc.
 - Replacing Worn Out Hardware
 - Hinges, Locks/Latches, Door Closers, Gasketing, etc.
 - Replacing Broken Glazing Materials
 - Clear Wired Glass, etc.

Maintenance

- 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

2.07

WMLD 01 B



2.07





EXIT


EXIT

8113





109



117



119













March 2000

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Memo

To: [Name]
From: [Name]
Subject: [Subject]

[Main body of memo text]

FREE
C.E.U.
Website

CAFETERIA MENU

Item	Price
Breakfast	\$1.50
Lunch	\$2.50
Dinner	\$3.50
Special	\$4.50
... (many more items)	...

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CD Aurora Medical Center

[Notice text]


Keep Our Patients Safe!

[Notice text]





B 2063

A photograph of a dark wood-grain surface, possibly a table or desk. A yellow sticky note is placed in the lower center, with the handwritten number "2.29" on it. There are several coins scattered on the surface: two on the left, two on the right, and one in the center. The coins appear to be US quarters. The background shows a white wall and a white baseboard.

2.29

























LISTED

FIRE EXIT HARDWARE

ISSUE NO. U - 332

CONFORMS TO STANDARDS

UL 10C AND UBC 7-2 (1997)

SARGENT MFG. CO.

NEW HAVEN, CONN.



For More Information:

- Door Security & Safety Foundation
 - Web Site: www.doorsecuritysafety.org
- Door and Hardware Institute  Door and Hardware Institute
 - Web Site: www.dhi.org
- On LinkedIn
 - The Door and Hardware Institute's Fire Door Assembly Inspection Group

For More Information:

- Facility Maintenance Personnel Trainings
- Owner's Guide
- AHJ's Guide
- Reference Guide



✓ ***Details available on the Foundation's website.***

The background of the slide features a series of classical, fluted columns and a set of wide stone steps leading up to them. The image is in a light, sepia-toned color palette, creating a sense of history and stability.

Door Security & Safety FOUNDATION

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