
PASSIVE
FIRE PROTECTION
SYMPOSIUM
4-6 JUNE 2024 • INTERCONTINENTAL DUBAI MARINA
FCIA
NFCA®

FCIA

FCIA 2024 DUBAI MEMBER MEETING & SYMPOSIUM

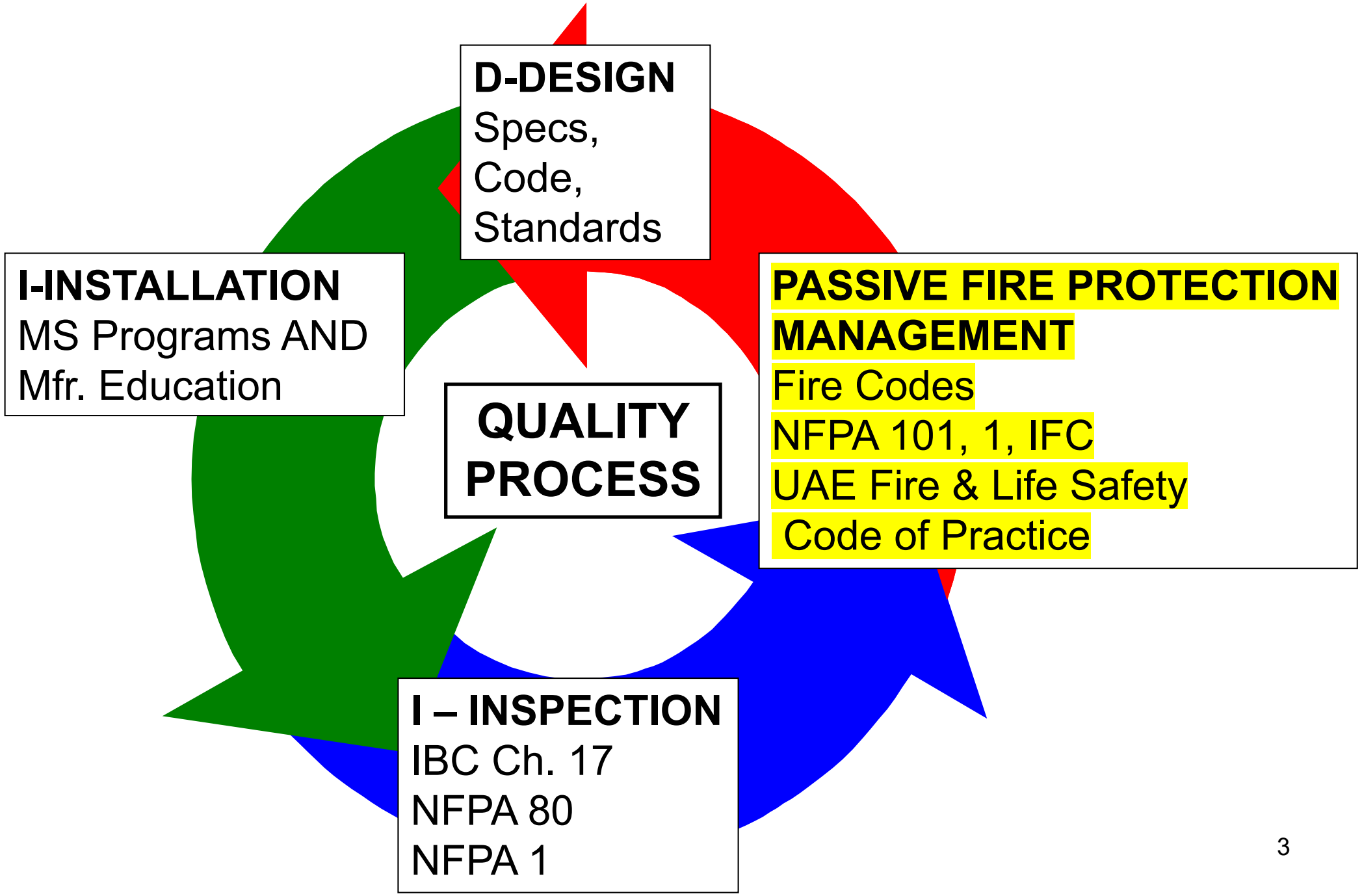
PASSIVE FIRE PROTECTION MANAGEMENT & FIRE CODES

Presented by:

Bill McHugh

Abhishek Chhabra

FCIA/NFCA


D-DESIGN
Specs,
Code,
Standards
I-INSTALLATION
MS Programs AND
Mfr. Education
QUALITY
PROCESS
PASSIVE FIRE PROTECTION
MANAGEMENT
Fire Codes
NFPA 101, 1, IFC
UAE Fire & Life Safety
Code of Practice
I – INSPECTION
IBC Ch. 17
NFPA 80
NFPA 1

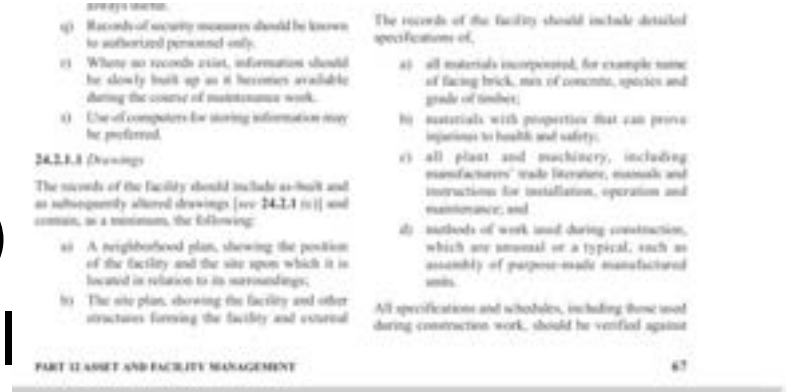
I-Installation – Maintain Protection

Heckler Photo

C. Zussman Pepper Photo

Expectations… Firestop, Fireproofing, PASSIVE

- **SUBMITTALS for EACH Product/System - INVENTORY**
  - Manufacturers Product Data Sheet (PDS)
  - Manufacturers Installation Instructions (MI
  - Manufacturers Safety Data Sheet (SDS)
  - Tested and Listed System for EACH Type
  - Engineering Judgements/ Equivalent Fire-Resistance-Rated Assembly
  - Firestop Contractor Qualifications – FM 4991, UL QFCP
  - Firestop Inspection



q) Records of security measures should be known to authorized personnel only.

r) Where no records exist, information should be slowly built up as it becomes available during the course of maintenance work.

s) Use of computers for storing information may be preferred.

24.2.1.1 *Drawings*

The records of the facility should include as-built and as subsequently altered drawings [see **24.2.1** (s)] and contain, as a minimum, the following:

a) A neighborhood plan, showing the position of the facility and the site upon which it is located in relation to its surroundings;

b) The site plan, showing the facility and other structures forming the facility and external

The records of the facility should include detailed specifications of,

a) all materials incorporated, for example name of facing brick, mix of concrete, species and grade of timber;

b) materials with properties that can prove injurious to health and safety;

c) all plant and machinery, including manufacturers' trade literature, manuals and instructions for installation, operation and maintenance; and

d) methods of work used during construction, which are unusual or a typical, such as assembly of purpose-made manufactured units.

All specifications and schedules, including those used during construction work, should be verified against

PART 12 ASSET AND FACILITY MANAGEMENT 67

Installation Contractor Qualifications
FM & UL/ULC – 4 Components

1. Office Facility Quality Management System Audit
2. Field – Jobsite Audit
3. Employ a person
   - UL/FM Firestop Exam @ 80% or better
   - DRI if employed by Approved/Qualified Firm
     - ***Designated Responsible Individual (DRI)***
4. Annual Audit

NOTE: Manufacturer Programs NOT EQUAL!!

FM APPROVED 4991

ULC Underwriters' Laboratories of Canada
Laboratoires des Assureurs du Canada
Qualified Firestop Contractor Program

UL Underwriters Laboratories Inc.
Qualified Firestop Contractor Program

I-Inspection

- NEW Buildings – 07-84-00 Specs - www. FCIA .org
- Special Inspection – ASTM E2174 & ASTM E2393
- Qualifications
  - Special Inspection Agency/Company –
    - IAS AC 291 Accredited Special Inspection Agencies
  - Special Inspector Qualifications
    - FM Firestop Exam
    - UL Firestop Exam
      - AND
    - IFC Exam
    - ICC Certificate of Learning Achievement
    - FCIA Certificate of Achievement Education Program

Specs – Don't Forget Division 1
Documentation for Maintain Protection

- Reference to ALL Divisions for Closeout Submittals
  - 01 78 29 Final Site Survey
  - 01 78 33 Bonds
  - 01 78 36 Warranties
  - 01 78 39 Project Record Documents (Ref.07-84-00, etc.)
  - 01 78 43 Spare Parts
  - 01 78 46 Extra Stock Materials
  - 01 78 53 Sustainable Design Closeout Documentation

M – Maintain Passive Protection

- National Building Code of India
- NFPA 101
- NFPA 1
- International Fire Code
- UAE
- Saudi Arabia
- Etc….

UAE Fire and Life Safety Code of Practice Maintenance & Management

- **21.15.2** The required fire resistance rating of installed firestop systems shall be *visually inspected by the owner or owner's inspection agency annually.* Damaged, altered or breached firestop systems shall be properly repaired, restored or replaced to comply with applicable codes as per the guidelines of Civil Defense.
- **21.15.3** Any new openings made therein for the passage of through penetrants, shall be protected with approved firestop system to comply with applicable codes as per the guidelines of Civil Defense.

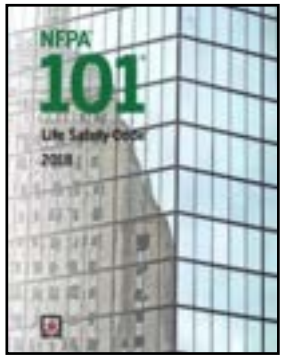
UAE Fire & Life Safety Code of Practice

3.7. Maintenance & Management

3.7.2. The condition of installed firestop systems shall be visually inspected by the owner or owner's representative annually. Damaged, altered or breached firestop systems shall be properly repaired, restored or replaced to comply with applicable codes as per the guidelines of Civil Defense.

National Fire Protection Association
NFPA 101 – 2018

- **SECTION 4.6.12 Maintenance, Inspection, and Testing.**
  - **4.6.12.1** **Whenever or wherever any device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **is required for compliance** with the provisions of this Code, **such device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or other feature ***shall thereafter be continuously maintained*** … in accordance with applicable NFPA requirements or requirements developed as part of a performance-based design, or as directed by the AHJ.



National Fire Protection Association
NFPA 1 – 2018

- **12.3.3* Maintenance of Fire-Resistive Construction, Draft-Stop Partitions, and Roof Coverings.**
  - **12.3.3.1** Required fire-resistive construction, including fire barriers, fire walls, exterior walls due to location on property, fire-resistive requirements based on type of construction, draftstop partitions, and roof coverings, *shall be maintained and shall be properly repaired, restored, or replaced where damaged, altered, breached, penetrated, removed, or improperly installed.*

FCIA Added Emphasis

2018 International Fire Code Maintenance

SECTION 701
GENERAL

- **701.1 Scope.** The provisions of this chapter shall govern the inspection and maintenance of the materials, systems and assemblies used for **structural *fire-resistance***, *fire-resistance-rated* construction separation of adjacent spaces and construction installed to resist the passage of smoke to safeguard against the spread of fire and smoke within a building and the spread of fire to or from buildings. New buildings shall comply with the *IBC*.

FCIA Added Emphasis

2018 International Fire Code Maintenance

SECTION 701
GENERAL

- **701.6 Owner's responsibility.** The **owner shall maintain an inventory** of all required fire-resistance-rated construction, construction installed to resist the passage of smoke and the construction included in **Sections 703 through 707.** **Such construction shall be visually inspected by the *owner* annually and properly repaired, restored or replaced where damaged, altered, breached or penetrated.**
- **Records of inspections and repairs shall be maintained.**

FCIA Added Emphasis

What's an *Inventory?*

- Life Safety Drawings
- Tested and Listed Systems (Listings), if not incorporated in the ….
- Manufacturers Installation, Maintenance and Repair Instructions
- Manufacturers Product Data Sheets
- Manufacturers Safety Data Sheets

2021 International Fire Code Maintenance

SECTION 703 GENERAL

703.2 Repair of penetrations. Where damaged, materials used to protect membrane- and through-penetrations shall be replaced or restored with materials or systems that meet or exceed the code requirements applicable at the time when the assembly was constructed, remodeled or altered.

FCIA Added Emphasis

2021 International Fire Code Maintenance

- **SECTION 703-707**
  - **704 – Joints & Voids – Protected w/Firestop Systems (Pens, Joints, Perimeter)**
  - **705 – Door and Window Openings – Protected with Fire Doors**
  - **706 - Duct and Air Transfer Openings – Protected with Fire Dampers**
  - **707 – Concealed Spaces – Fireblocking, Draftstopping**
  - **708 – Spray Fire Resistive Materials and Intumescent Fire-Resistive Materials**

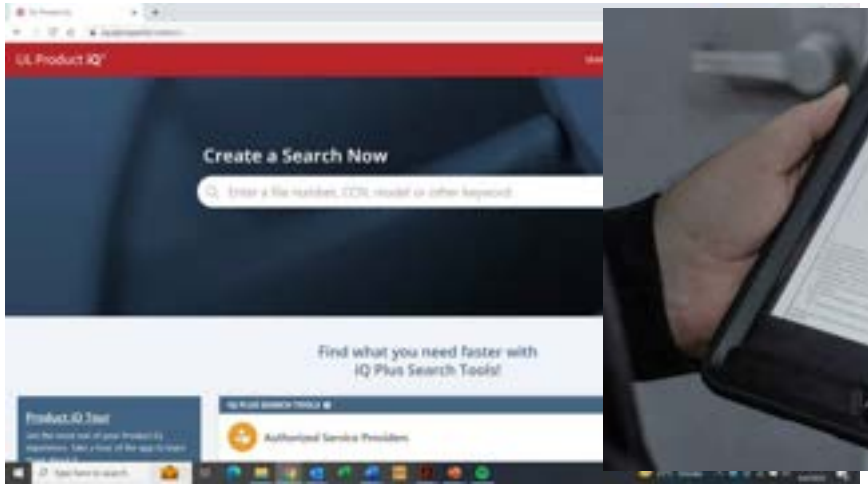
FCIA Added Emphasis

Fire Codes Require Maintenance – INDIA

- **9 BUILDING MAINTENANCE – METHODS AND MANAGEMENT**
- **9.1 General** – “Any building (including its services) when built has certain objectives and during its total economic life, it has to be maintained in proper condition to meet those objectives. Maintenance is a continuous process requiring a close watch and taking immediate remedial action. It is interwoven with good quality of housekeeping. It is largely governed by the quality of original construction. The owners, engineers, constructors, occupants and the maintenance agency are all deeply involved in this process and share a responsibility….”.

Consider Requesting for RESULTS…

Please protect the breaches in fire-resistance with a firestop system (and structural fire protection) installed in accordance with a listing and manufacturers instructions…

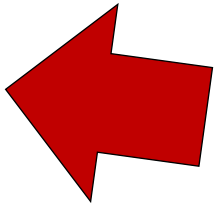


I-Inspection – SURVEY

- **Visual Building Survey/Inspection….**
  - **Does the Firestop/Fire-Resistive Joint look like the assembly in the LISTING?**
    - Annular Space
    - Visible Breaches, unless listing allows
    - Joint Width
    - Penetrating Item Types, Coverings, #Quantity
    - Penetrations in Joints & Not in System/Listing…
    - Much more…
  - **Competent Personnel**

Fire Codes Require Maintenance – INDIA

- **Ch. 12, Section 9 Asset and Facility Maintenance**
- **BUILDING MAINTENANCE – METHODS AND MANAGEMENT**
- **9.1 General** – "Any building (including its services) when built has certain objectives and during its total economic life, it has to be maintained in proper condition to meet those objectives. **Maintenance is a continuous process requiring a close watch and taking immediate remedial action.** It is interwoven with good quality of housekeeping. It is largely governed by the quality of original construction. The owners, engineers, constructors, occupants and the maintenance agency are all deeply involved in this process and share a responsibility….".



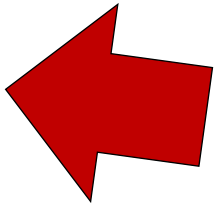
Fire Codes Require Maintenance
Vol. 2 – Ch. 12 Asset & Facility Management

9.1.1 The objective of maintenance is,

a) to preserve building and services, machinery in good operating condition;

b) to restore it back to its original standards; and

c) to improve the facilities depending upon the development that is taking place in building and services engineering.



Fire Codes Require Maintenance – INDIA

24.2.1.2 *Specifications and schedules*

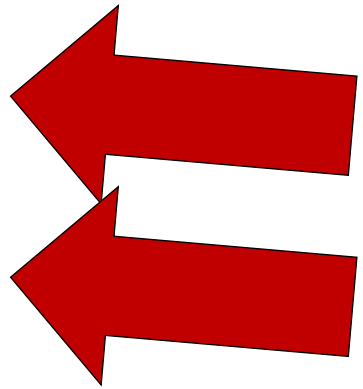
The records of the facility should include detailed specifications of,

a) all materials incorporated, for example name of facing brick, mix of concrete, species and grade of timber;

b) materials with properties that can prove injurious to health and safety;

c) all plant and machinery, including manufacturers' trade literature, manuals and instructions for installation, operation and maintenance; and

d) methods of work used during construction, which are unusual or a typical, such as assembly of purpose-made manufactured units.



All specifications and schedules, including those used during construction work, should be verified against

Fire Codes Require Maintenance – INDIA

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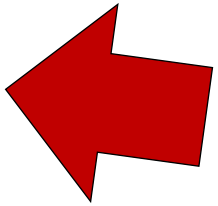


Fire and Life Safety AUDIT – INDIA

E-7 FIRE AND LIFE SAFETY AUDIT

a) Fire and life safety audit shall be carried out for all buildings having a height of more than 15 m.

b) Such audits shall preferably be conducted by a third party auditor having requisite experience in fire and life safety inspections.

c) Frequency of such audits shall be once in two years.

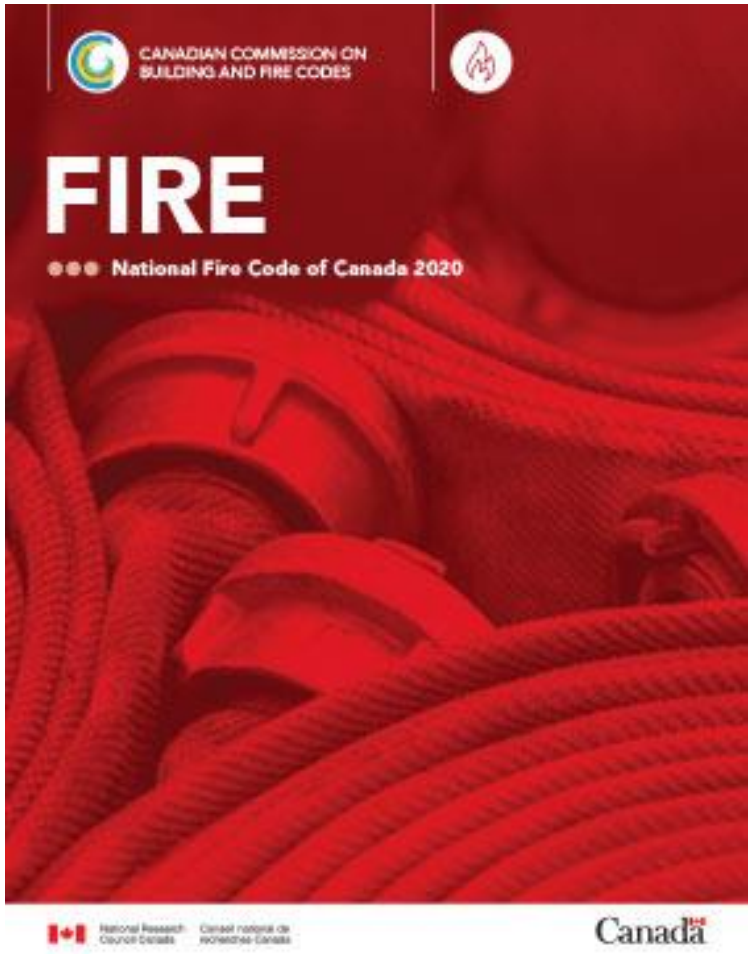
National Fire Code of Canada

National Fire Code of Canada

- ***Division B – Part 2, Building and Occupant Fire Safety***

  2.2.1.2 – Damage to Fire Separations

Where *fire separations* are damaged so as to affect their integrity, they shall be repaired so that the integrity of the *fire separation* is maintained…



Saudi Arabia Fire Code – "Continuously Maintained"

SECTION 107 MAINTENANCE

107.1 Maintenance of safeguards. Where any device, equipment, system, condition, arrangement, level of protection, or any other feature is required for compliance with the provisions of this code, or otherwise installed, such device, equipment, system, condition, arrangement, level of protection, or other feature shall thereafter be continuously maintained in accordance with this code and applicable referenced standards.

Education about Systems AND Products

J. Black, GDA Photo

Firestop (& Other Fire-Resistance Repairs)

- Repairs
  - Instruction requirements by manufacturer
  - TESTED AND LISTED SYSTEMS
  - Patching
    - Systems….Ratings
    - Adhesion
    - Movement
    - T, L, W Ratings
    - ***As recommended by MFR, Listing***

Affinity Firestop Image

Gypsum Based Walls

- Gypsum Mineral
- Types of Gypsum Panel Cores and Their Applications
- Test Standard and Method
- Common UL Designs and Acceptable Variations
- Repairs of Gypsum Wallboard

Wall Testing Furnace

GA Photo

Hose Stream Test

GA Photo

Repairs

- Simply covering a hole or damaged area **is not a repair**
- Repair procedure must take into consideration:
  - Size of the affected area
  - Hourly rating of assembly
  - Framing: type, size and spacing
  - Gypsum: type, number of layers and orientation
  - Accessibility: Can the repair be made from both sides?
  - Other: fastening method, location of repair, etc.
- NFPA 1:
  - 12.3.3.2 Where required, **fire-rated gypsum wallboard** walls or ceilings that are damaged to the extent that through openings exist, the damaged gypsum wallboard shall be **replaced or returned to the required level of fire resistance using a listed repair system or using materials and methods equivalent to the original construction.**
- ***Must contact manufacturer to verify listed repair method***

Repairs

- GA-225 – Repair of Fire-Rated Gypsum Panel Product Systems

Figure 1: Damaged Gypsum Panel

Figure 2: Square Off Damaged Area

Figure 3: Frame Opening

Figure 4: Apply Gypsum Panel Patch

Figure 5: Tape and Finish Patched Area

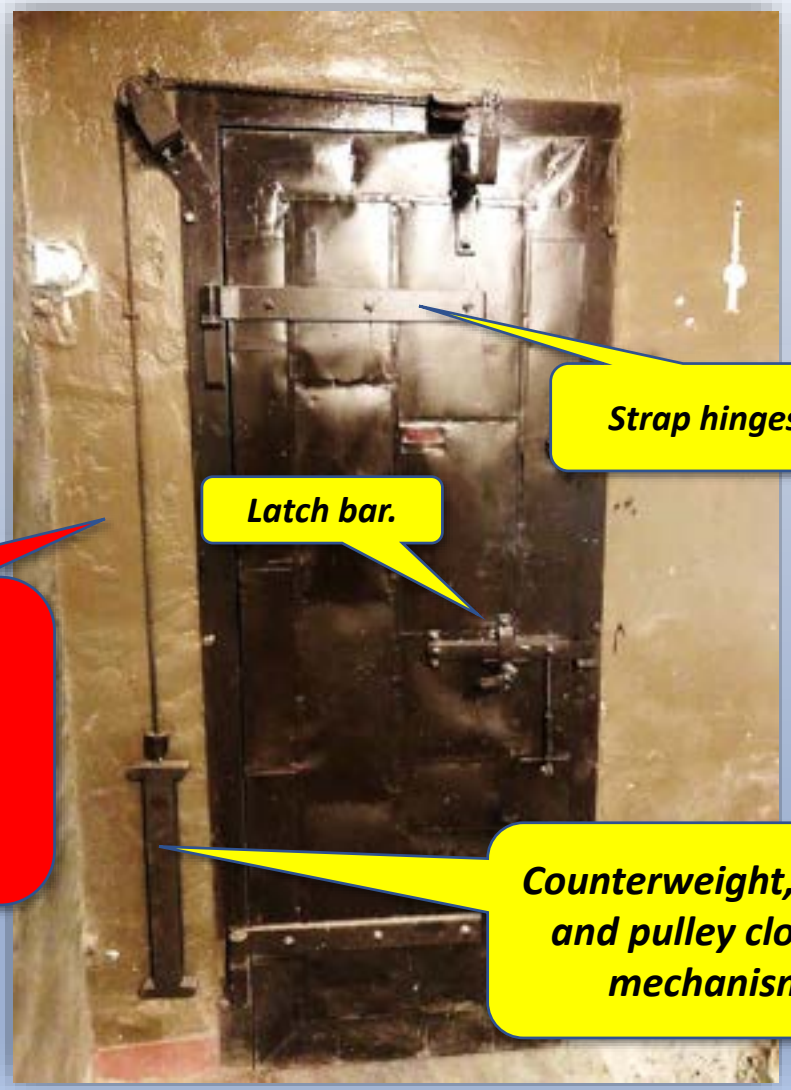
Figure 6: Redecorate Repaired Area

Swinging Door with Builders Hardware (Chapter 6)

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

Fire exit hardware.

Swinging Door with Fire Door Hardware (Chapter 7)



Strap hinges.

Latch bar.

Counterweight, rope, and pulley closing mechanism

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

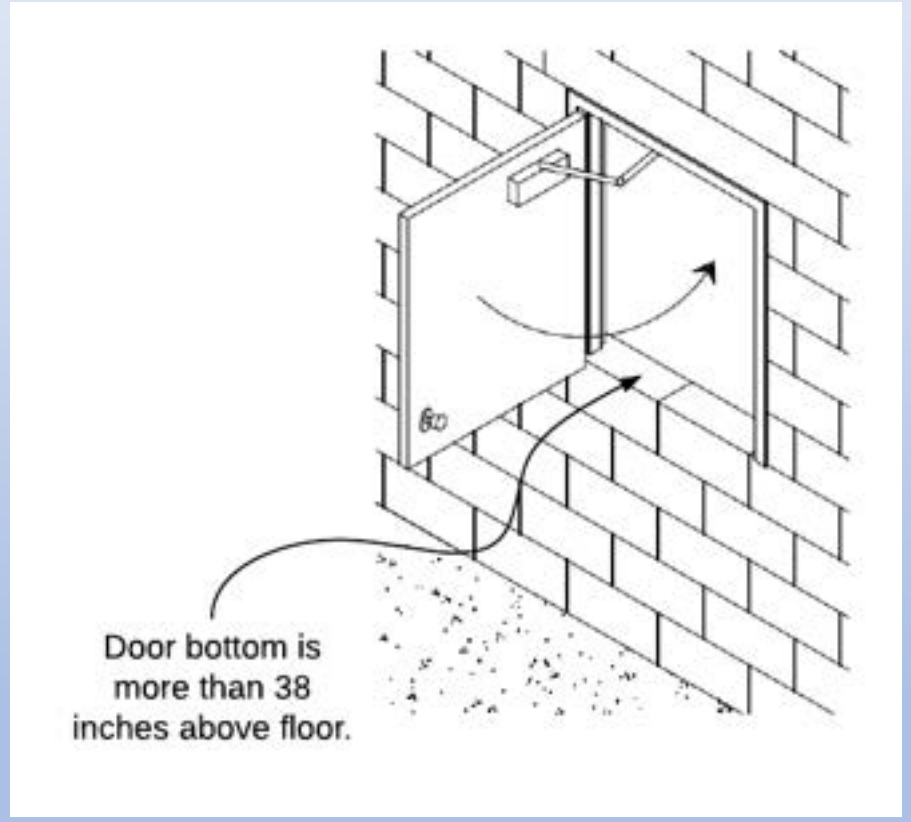
FACTORY MUTUAL

FM

APPROVED

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.



Required Elements of an “Approved” Life-Safety Damper Installation

1. Rated Barrier
2. Listed Product
3. Installation Requirements

Standards - NFPA

National Fire Protection Association

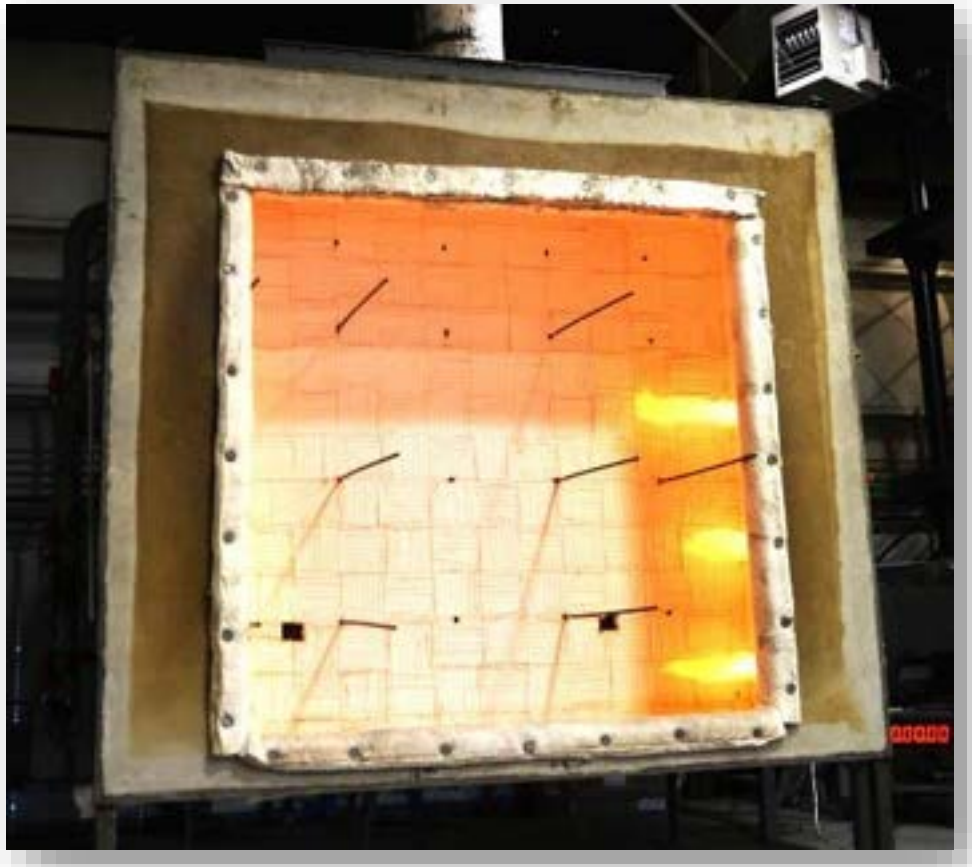
- Installation, Testing and Maintenance
  - NFPA 80
    - Standard for Fire Doors
  - NFPA 105
    - Standard for Smoke Doors
  - NFPA 90A and 90B
    - Standard for Installation of Air-conditioning and Ventilating Systems
  - NFPA 92
    - Standard for Smoke-Control Systems

Standards - UL

Underwriters Laboratories

- Testing, Evaluation and Certification
  - **UL 555** - standard for Fire dampers
  - **UL 555S** - standard for Smoke dampers
  - **UL 555C** - standard for Ceiling Radiation dampers

- UL's "Follow-Up Service" ensures that dampers are built as they were tested



Periodic Testing

IFC / NFPA 80 & 105

- Frequency
  - “Each damper shall be tested and inspected 1 year after installation.”
  - “The test and inspection frequency shall then be every 4 years, except in buildings containing a hospital, where the frequency shall be every 6 years.”

Uses of Fire-rated Glazing

- As a fire-resistance-rated wall assembly
- Vision panels in fire rated door assemblies
- Transom and sidelight panels used adjacent to fire doors
- Fire window assemblies

Fire-resistance-rated Wall

Vision Panel in Door

Sidelight Panels

Interior Fire Windows

SAFTIFIRST Images

Marking Requirements for Fire-Rated Glazing

- 2006 and later codes requires marking on glazing to provide an easy method to confirm code compliance both at time of installation and during annual inspections

TGP Image

NFPA 80 Requirements – Care and Maintenance Cont.

- **5.2.1 Inspection**
  - **5.2.1*** Periodic inspections and testing shall be performed not less than annually.
  - **5.2.2.3** Results of inspection, testing and maintenance shall be documented.

NFPA 80 Requirements – Care and Maintenance Cont.

- **5.5 Maintenance**
  - **5.2.15.1*** Damaged glazing material shall be replaced with labeled glazing.
  - **5.2.15.1.1** Replacement glazing materials shall be installed in accordance with their individual listing.

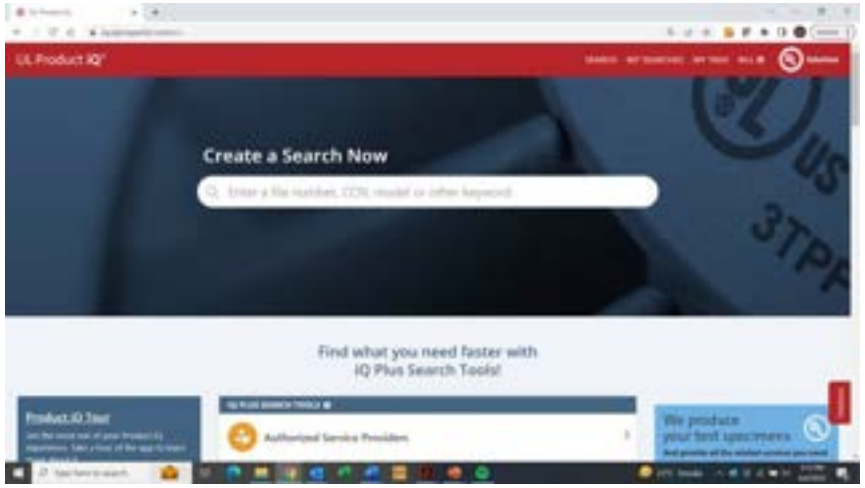
Request produces Results …

Please fill, plug the holes = Foam, Mud, Stuff

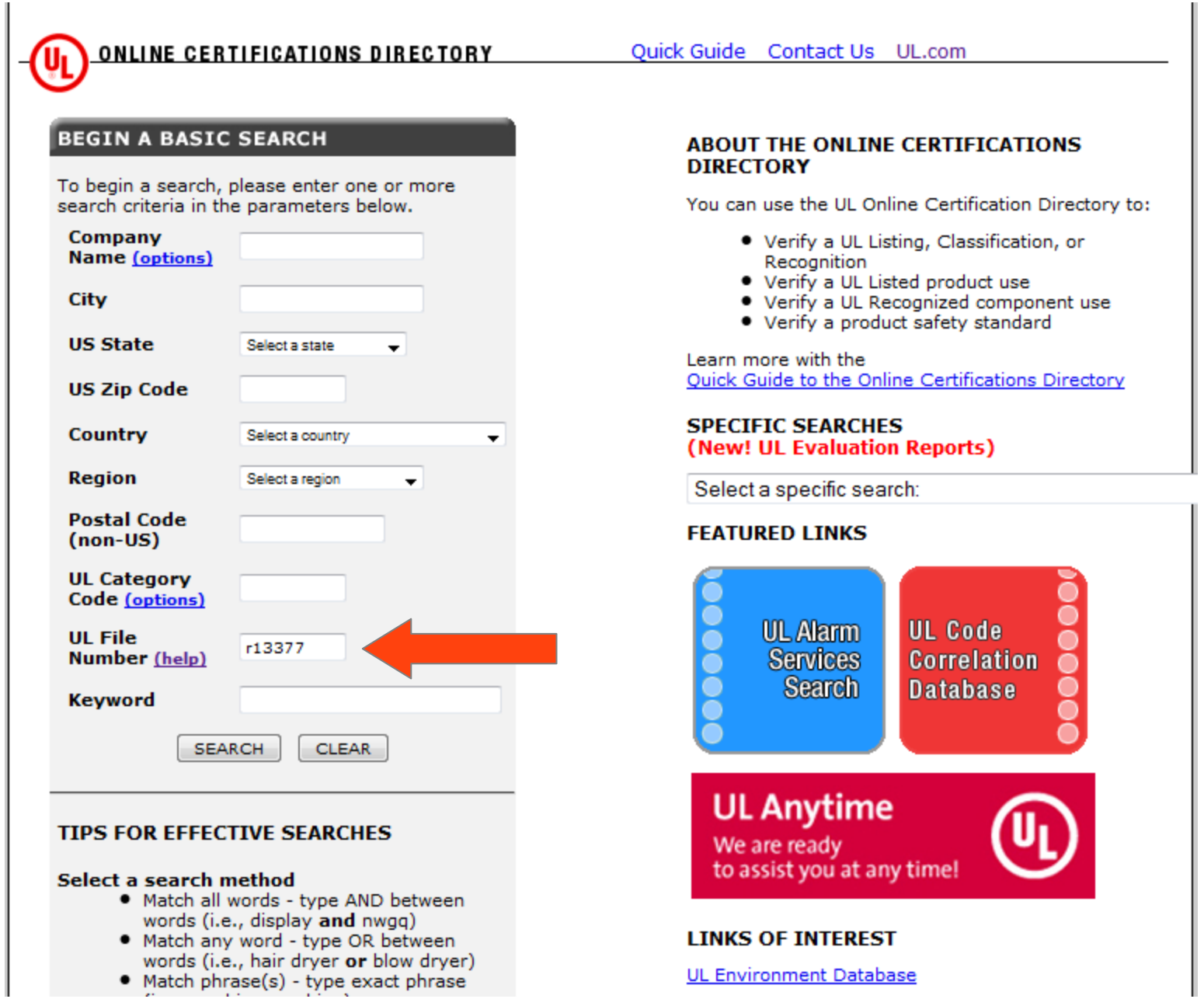
Consider Requesting …

Please protect the fire-resistance breaches with a firestop system installed in accordance with a listing and manufacturers instructions…(Structural Fireproofing Too)

= A System…



Labeling Requirements



ONLINE CERTIFICATIONS DIRECTORY

Quick Guide Contact Us UL.com

BEGIN A BASIC SEARCH

To begin a search, please enter one or more search criteria in the parameters below.

Company Name (options)

City

US State — Select a state

US Zip Code

Country — Select a country

Region — Select a region

Postal Code (non-US)

UL Category Code (options)

UL File Number (help) — r13377

Keyword

SEARCH CLEAR

TIPS FOR EFFECTIVE SEARCHES

Select a search method

- Match all words - type AND between words (i.e., display **and** nwgq)
- Match any word - type OR between words (i.e., hair dryer **or** blow dryer)
- Match phrase(s) - type exact phrase

ABOUT THE ONLINE CERTIFICATIONS DIRECTORY

You can use the UL Online Certification Directory to:

- Verify a UL Listing, Classification, or Recognition
- Verify a UL Listed product use
- Verify a UL Recognized component use
- Verify a product safety standard

Learn more with the Quick Guide to the Online Certifications Directory

SPECIFIC SEARCHES
(New! UL Evaluation Reports)

Select a specific search:

FEATURED LINKS

UL Alarm Services Search

UL Code Correlation Database

UL Anytime
We are ready to assist you at any time!

LINKS OF INTEREST

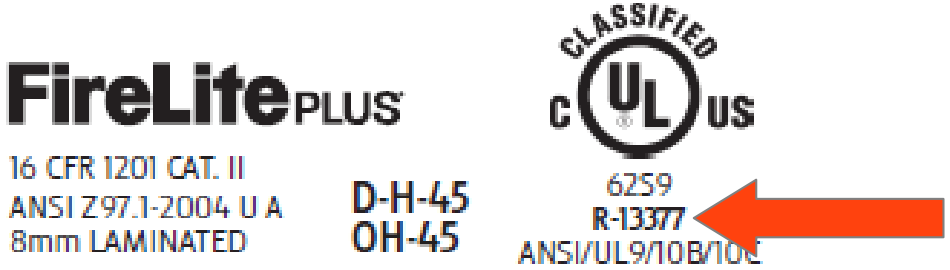
UL Environment Database

TGP Slide

Labeling Requirements

UL Online Certifications Directory

- Available online at database.ul.com
- Search for UL File Number found on label for more information on listing



TGP Slide

Labeling Requirements

Fire-Rated Glass Manufacturer Label

FireLite

D-H-20
OH-20

CLASSIFIED c UL us
6259
R-13377
ANSI/UL9/10B/10C

CLASSIFIED c UL us
GLAZING MATERIALS
9FX5

Pilkington Pyrostop
120-104
16 CFR 1201 CAT II
ANSI Z97.1-2009 UA
LAMINATED
W-120
North America
TGP

TGP Slide

2” wide x .75” tall

Labeling Requirements

Label Standards

- "**W**" indicates that the glass passes ASTM E119
  - ➢ This is the wall standard which includes temperature rise and hose stream
- **"D"** indicates that the glass passed NFPA 252
  - ➢ Door standard
- **"O"** indicates that the glass passed NFPA 257
  - ➢ Opening standard
- **"H"** indicates that the glass passed hose stream test

TABLE 716.3
MARKING FIRE-RATED GLAZING ASSEMBLIES

FIRE TEST STANDARD	MARKING	DEFINITION OF MARKING
ASTM E 119 or UL 263	W	Meets wall assembly criteria.
NFPA 257 or UL 9	OH	Meets fire window assembly criteria including the hose stream test.
NFPA 252 or UL 10B or UL 10C	D	Meets fire door assembly criteria.
	H	Meets fire door assembly "Hose Stream" test.
	T	Meets 450°F temperature rise criteria for 30 minutes
	XXX	The time in minutes of the fire resistance or fire protection rating of the glazing assembly

For SI: °C = [(°F) - 32]/1.8.

TGP Slide

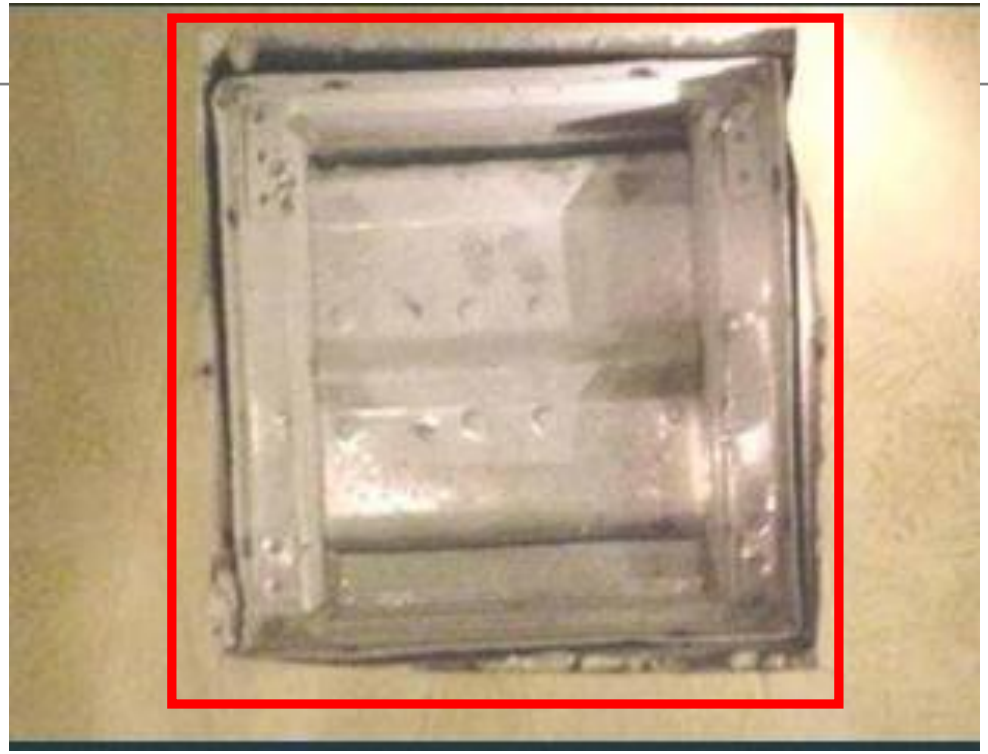
Labeling Requirements

Fire-Rated Frame Manufacturer Label

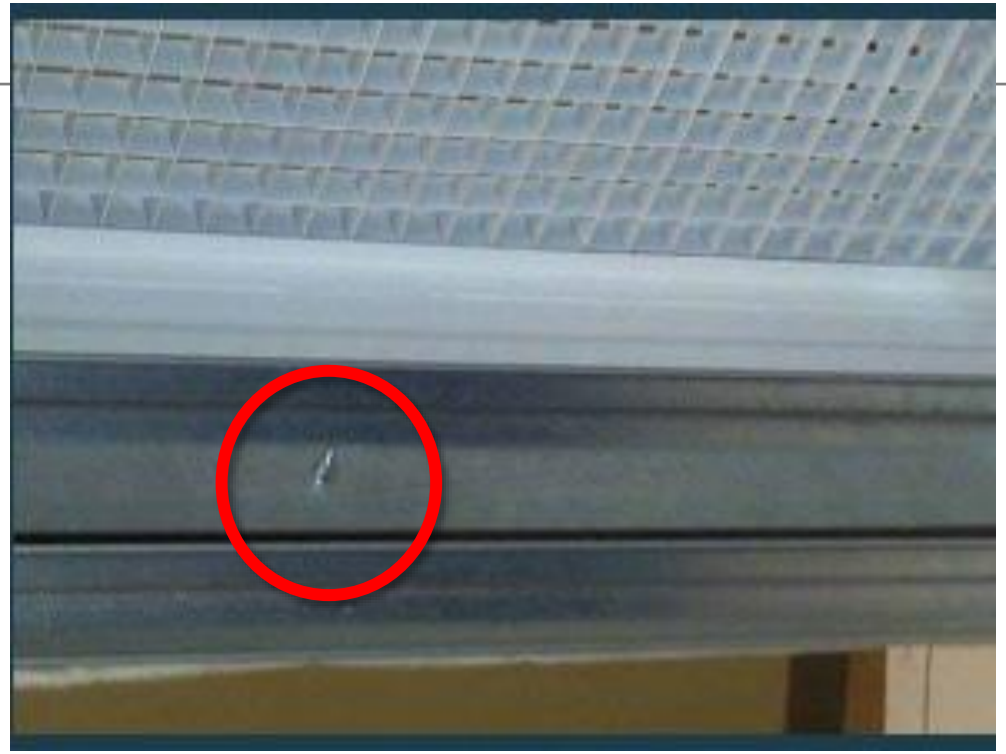
Fireframes® Heat Barrier Series
by TGP
SPECIAL PURPOSE FIRE DOOR FRAME ASSEMBLY
FIRE RATING 60 MIN. SERIAL NO _____
TEMPERATURE RISE, 30 MIN. 250° MAX
POSITIVE PRESSURE
ALSO CLASSIFIED IN ACCORDANCE WITH UL-10C

Installers should not remove or paint over frame labels

Fireframes® Designer Series
by TGP
SPECIAL PURPOSE FIRE DOOR & WINDOW FRAME ASSEMBLIES
FIRE RATING 60 MIN. SERIAL NO _____
POSITIVE PRESSURE
ALSO CLASSIFIED IN ACCORDANCE WITH UL-10C



The damper not installed square, plumb, straight, it is installed racked



The installation screw is in the track of the damper

Greenheck Slide

Modifying the damper in the field without approval from the AHJ

Greenheck Slide

Not following
Damper Manufacturer's IOM
for approved installations!

Greenheck Slide

History of NFPA 80's Requirements

DSSF Slide

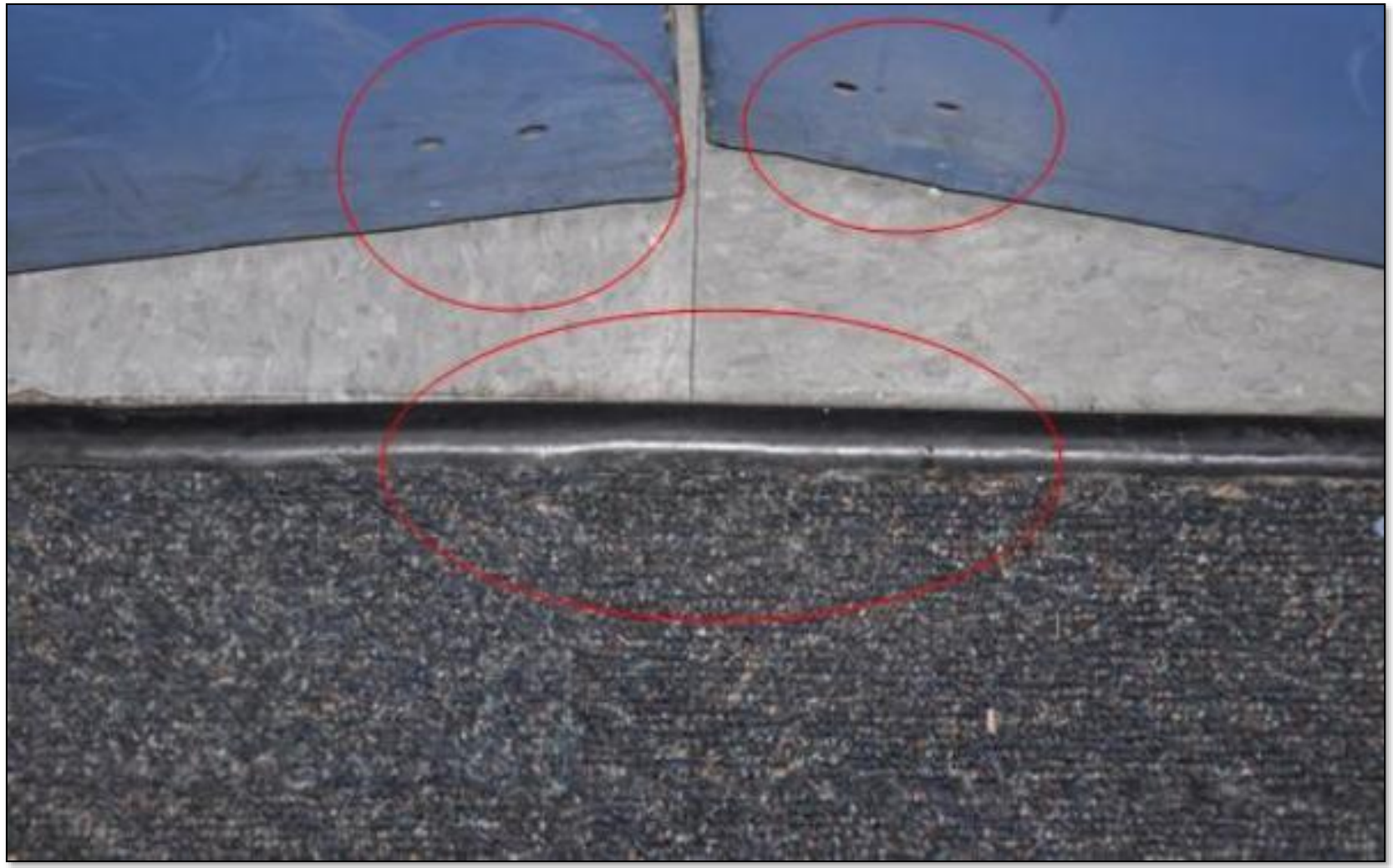
DSSF Slide

DSSF Slide


The door shown in these photos protected a nature center and management offices from a fire that began in the maintenance shop.

DSSF Slide

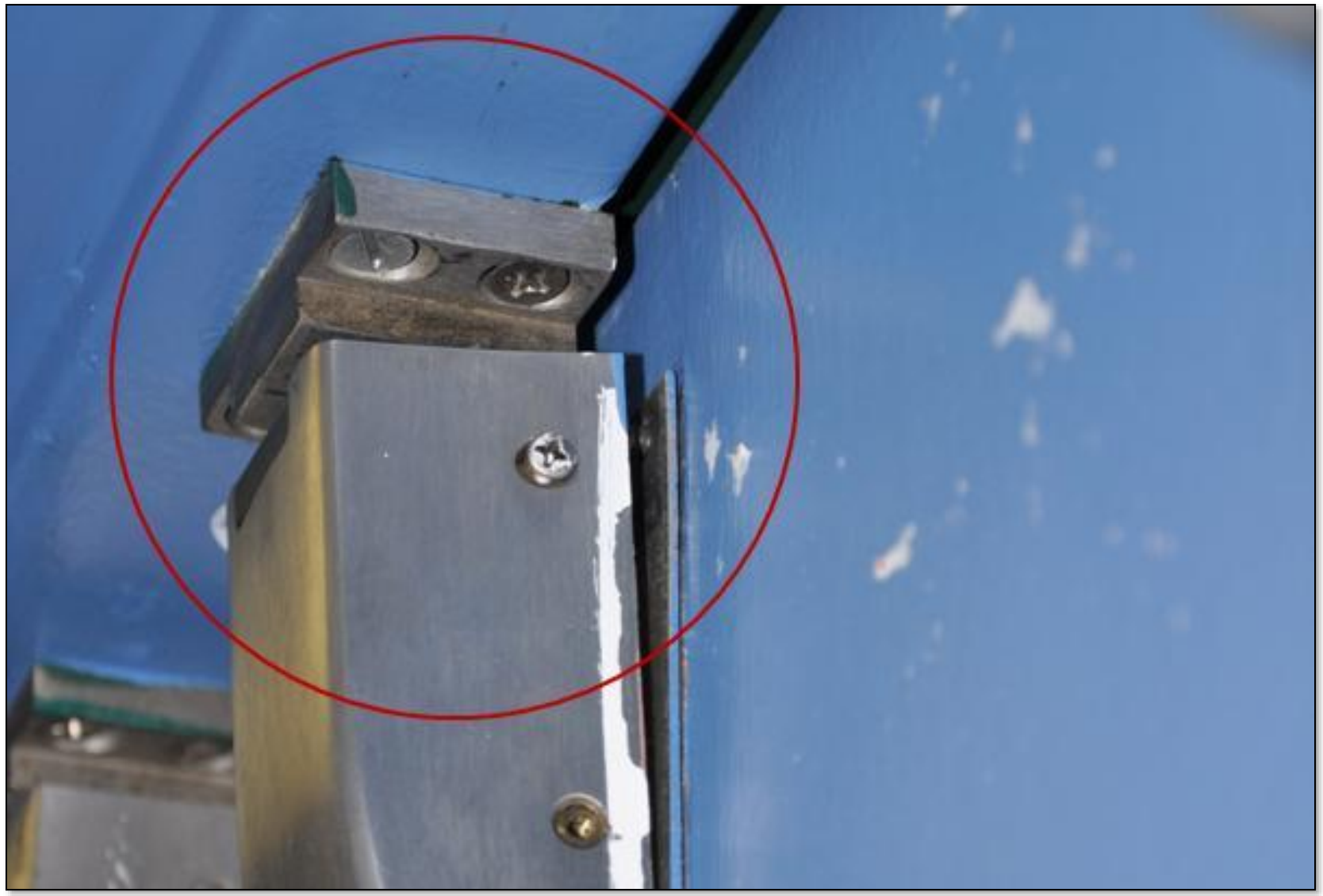
DSSF Slide



DSSF Slide

DSSF Slide

DSSF Slide



DSSF Slide

Labels 5.2.3.5.2 (1) (2013)

DSSF Slide

Steel Door Frames 5.2.3.5.2(1)

- Frame Condition
  - No-rust through on frames

Strikes 6.4.4.8

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

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.

DSSF Slide

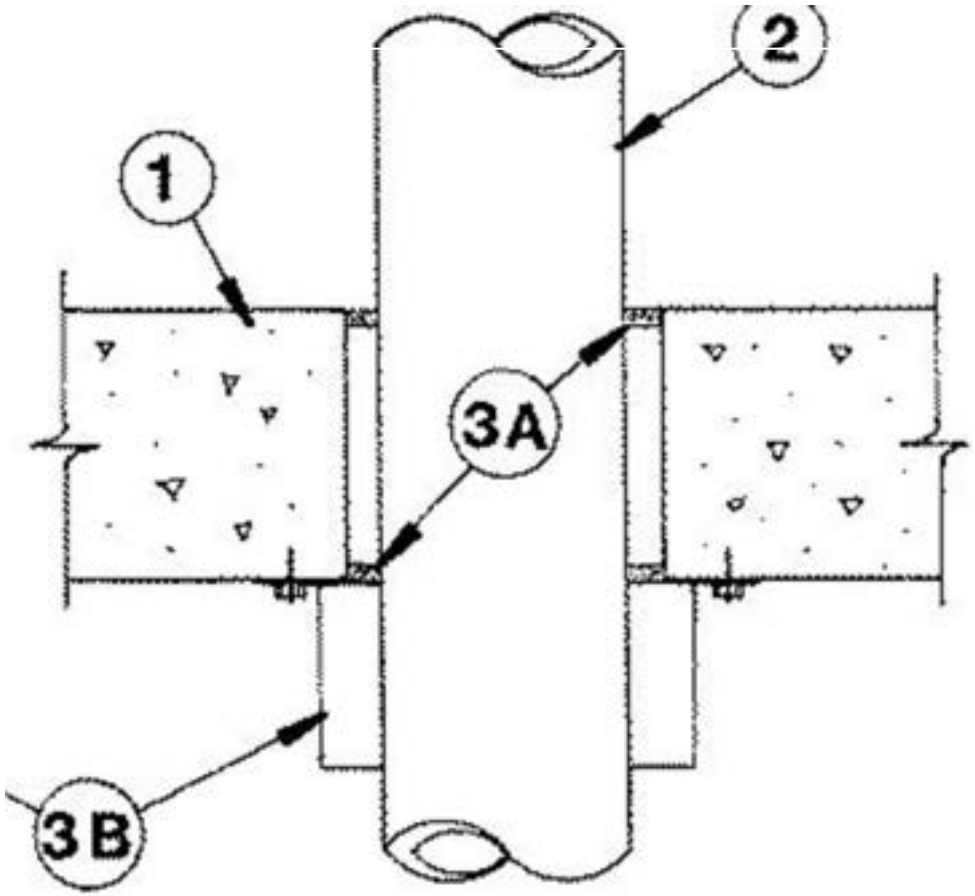
Protection Plates - 6.4.5

- 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

What's wrong with this picture?

Heckler Photo

C-AJ-2038
https://iq.ulprospector.com/en/profile?e=173569



What's wrong with this picture?

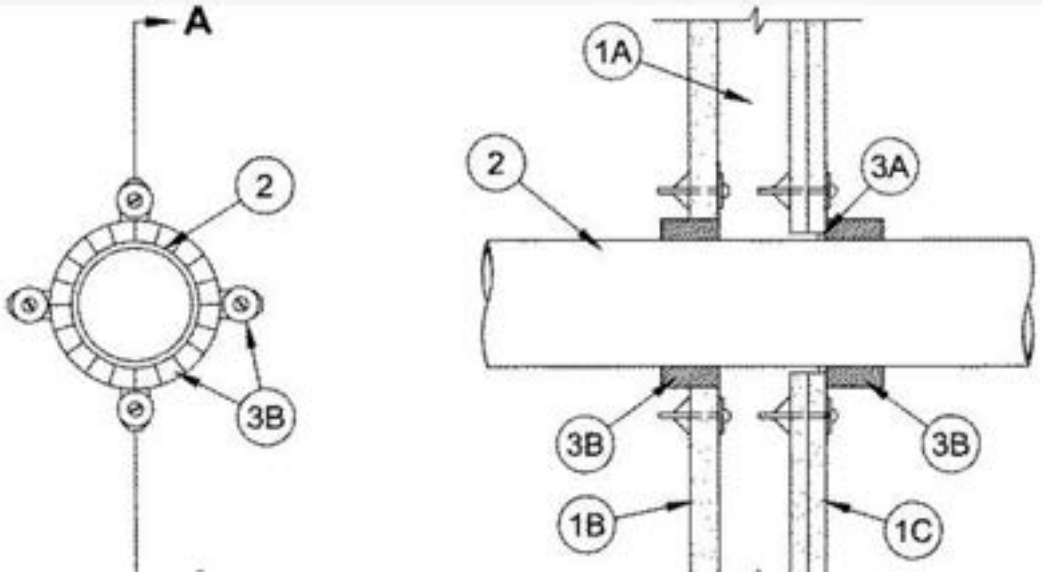
Sleeve?
Rags?
No Sealant?

D. Falconer Photo

What's wrong with this picture?

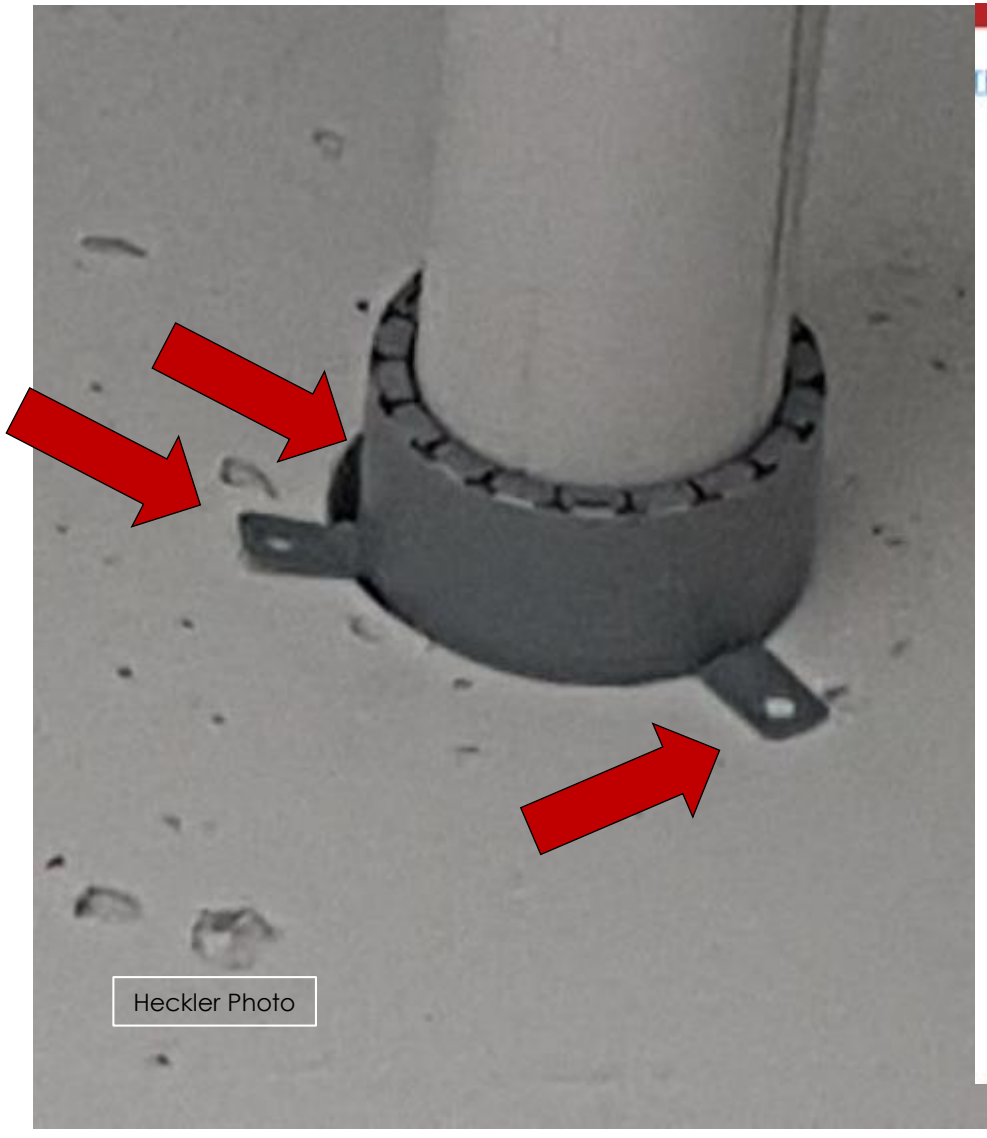
W-L-2257
https://iq.ulprospector.com/en/profile?e=176962

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
	F Rating — 2
	FT Rating — 2
	FH Rating — 2
	FTH Rating — 2



https://iq.ulprospector.com/en/profile?e=176962

What's wrong with this picture?



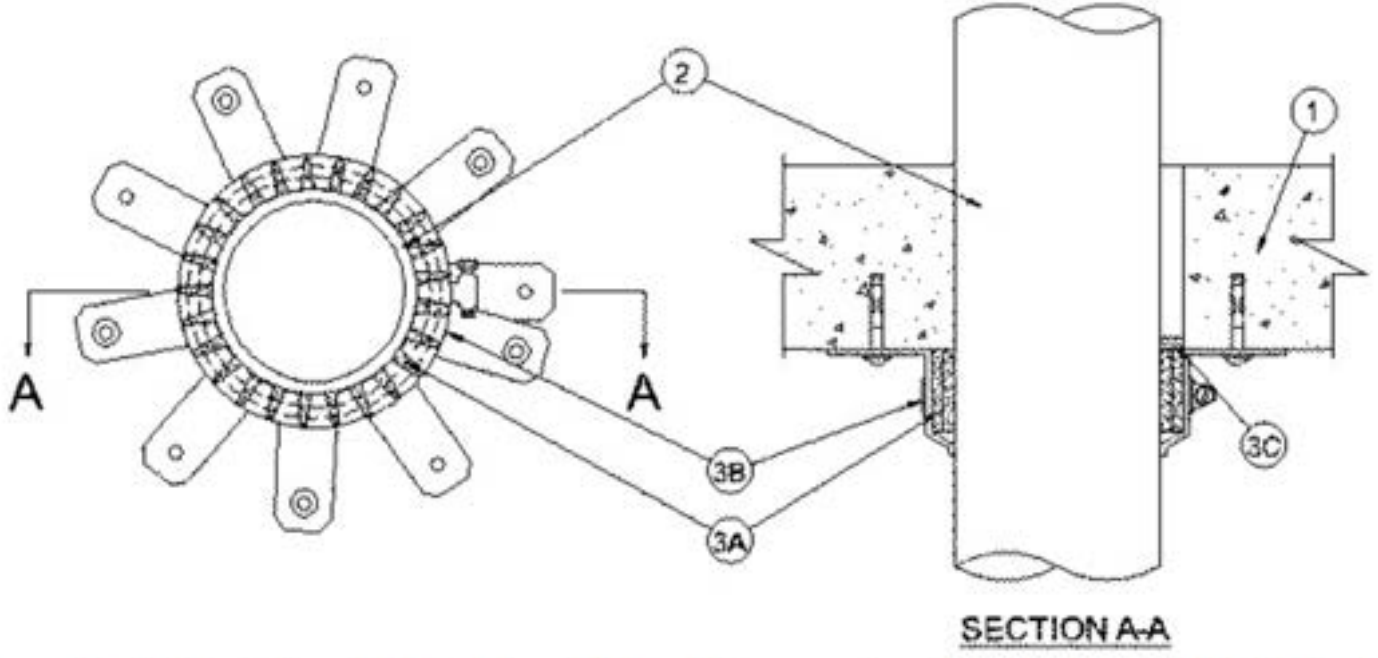
Through-penetration Firestop Systems

System No. C-AJ-2371

January 09, 2015

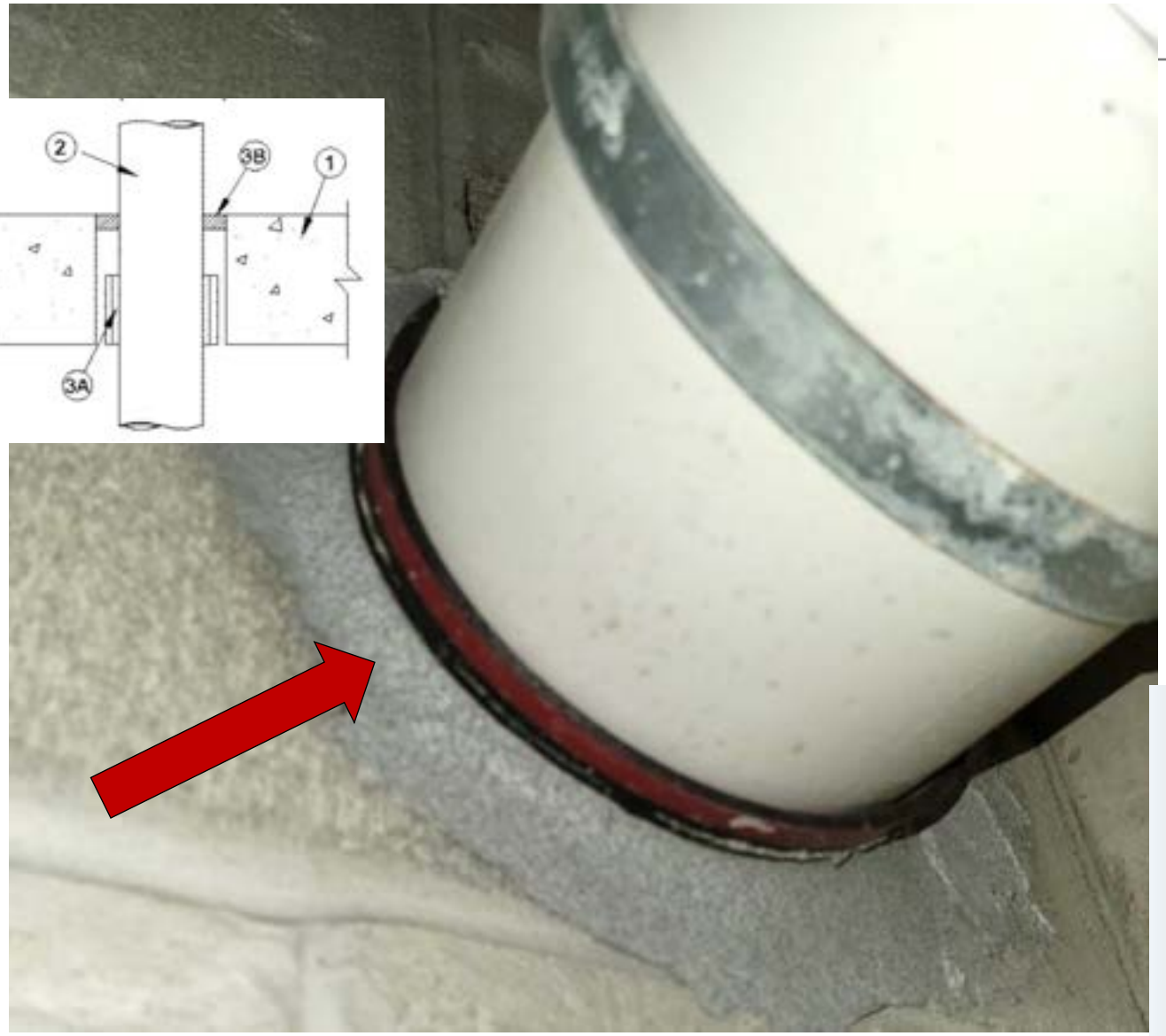
F Rating - 3 Hr

T Ratings - 2 and 3 Hr (See Item 3)



SECTION A-A

C-AJ-2048?? No



C-AJ-2048
https://iq.ulprospector.com/en/profile?e=178770

System tested with a pressure differe[illegible] 50 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. **Floor or Wall Assembl[illegible]** m (4-1/2 in.) thick reinforced lightweight or normal weight (1600-2400 kg/cu meter or 100-150 [illegible]. Max diam of opening is 152 mm (6 in.).

1A. **Stee[illegible]oor Assembly** — (Not Shown) — As an alternate to Item 1, the floor assembly may consist of a fluted steel deck concrete floor assembly. The floor assembly shall be constructed of the materials and in the manner described in the individual Floor-Ceiling Design in the UL Fire Resistance Directory and shall include the following construction features:

A. **Steel Floor and Form Units*** — Min 64 mm (2-1/2 in.) deep galv fluted units.

2. **Through Penetrants** — One nonmetallic pipe or conduit centered within opening with a nom 19 mm (3/4 in.) annular space between penetrant and periphery of opening. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of penetrants may be used:

A. **Polyvinyl Chloride (PVC) Pipe** — Nom 102 mm (4 in.) diam (or smaller) Schedule 40 solid core or cellular core PVC pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. **FT and FTH Ratings are 1-1/4 Hr.**

B. **Fire Retardant Polypropylene (FRPP) Pipe** — Nom 102 mm (4 in.) in. diam (or smaller) Schedule 40 FRPP pipe for use in closed (process or supply) or vented (drain, waste or vent) piping systems. **FT and FTH Ratings are 1/4 Hr.**

4. **Firestop System** — The firestop system shall consist of the following:

A. **Fill, Void or Cavity Materials* - Wrap Strip** — Nom 6.4 mm (1/4 in.) thick intumescent material supplied in 51 mm (2 in.) wide strips. Min two layers of wrap strip individually wrapped tightly around the nonmetallic penetrant with ends butted and held in place with masking tape. Butted ends in successive layers shall be offset. Bottom edge of wrap strip to be flush with the bottom surface of floor or with both surfaces of wall assembly. When used with the steel deck floor assembly, bottom edge of wrap strip shall be flush with the crest of the steel

4. **Firestop System** — The firestop system shall consist of the following:

A. **Fill, Void or Cavity Materials* - Wrap Strip** — Nom 6.4 mm (1/4 in.) thick intumescent material supplied in 51 mm (2 in.) wide strips. Min two layers of wrap strip individually wrapped tightly around the nonmetallic penetrant with ends butted and held in place with masking tape. Butted ends in successive layers shall be offset. Bottom edge of wrap strip to be flush with the bottom surface of floor or with both surfaces of wall assembly. When used with the steel deck floor assembly, bottom edge of wrap strip shall be flush with the crest of the steel form units.

RECTORSEAL — Biostop Wrap Strip

B. **Fill, Void or Cavity Material* — Caulk** — Min 13 mm (1/2 in.) thickness of fill material applied within the annulus, flush with top surface of floor or with both surfaces of wall assembly.

RECTORSEAL — Biostop 500+

C-AJ-2048?? No

F-A-2162 – NO 50pa, NOT CANADA!!!
https://iq.ulprospector.com/en/profile?e=178770

System No. F-A-2162

January 27, 2009

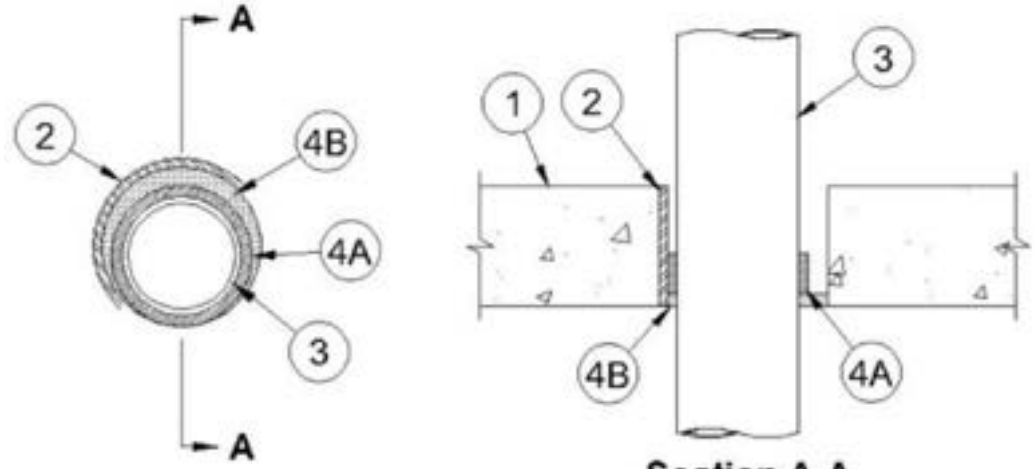
F Rating — 2 Hr

T Rating — 0 Hr

L Rating At Ambient — Less Than 1 CFM/sq ft

L Rating At 400 F — Less Than 1 CFM/sq ft

W Rating — Class 1 (See Item 4B)



Section A-A

What's wrong with this picture? NOTHING

Superl Photo

UL Product iQ® SEARCH MY SEARCHES MY TAGS BILL UL Solutions

XHEZ7 - Through-penetration Firestop Systems Certified for Canada

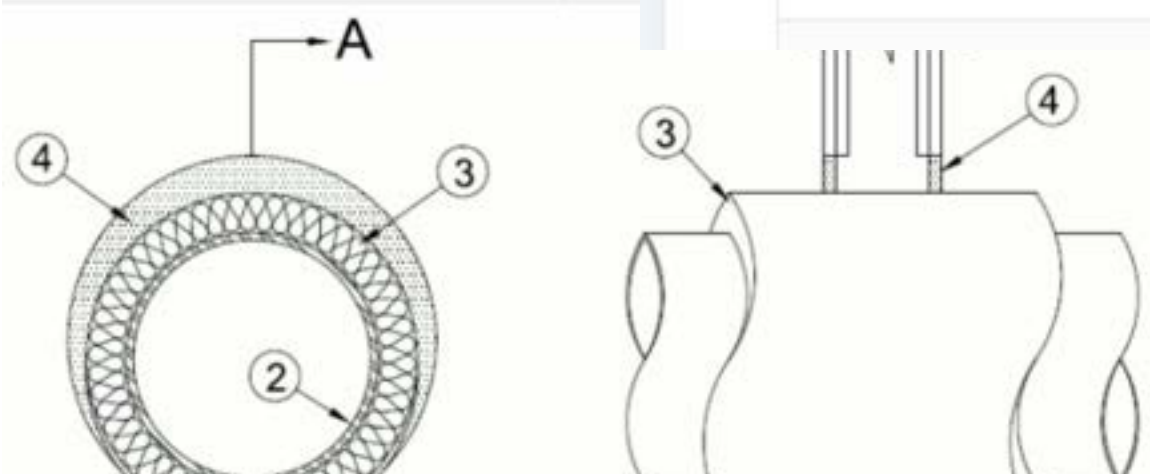
See General Information for Through-penetration Firestop Systems

See General Information for Through-penetration Firestop Systems Certified for Canada

System No. W-L-5029

July 17, 2015

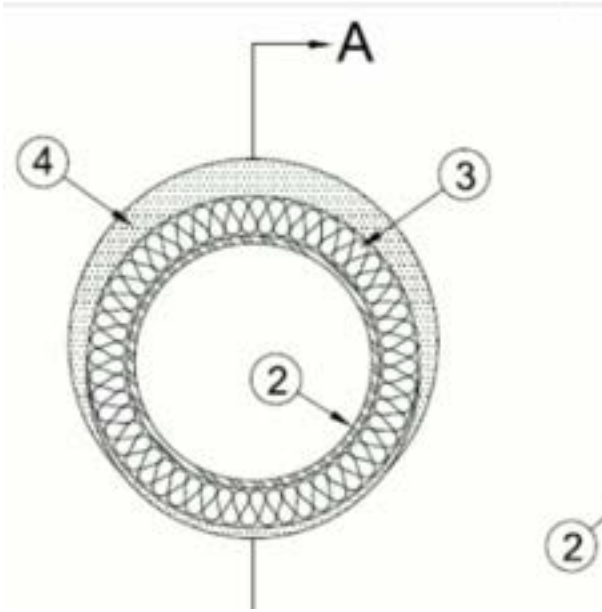
ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)	F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
T Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)	FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
L Rating At Ambient — 4 CFM/Sq Ft	FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
L Rating At 400 F — Less Than 1 CFM/Sq Ft	FTH Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
	L Rating At Ambient — 4 CFM/Sq Ft
	L Rating At 400 F — Less Than 1 CFM/Sq Ft



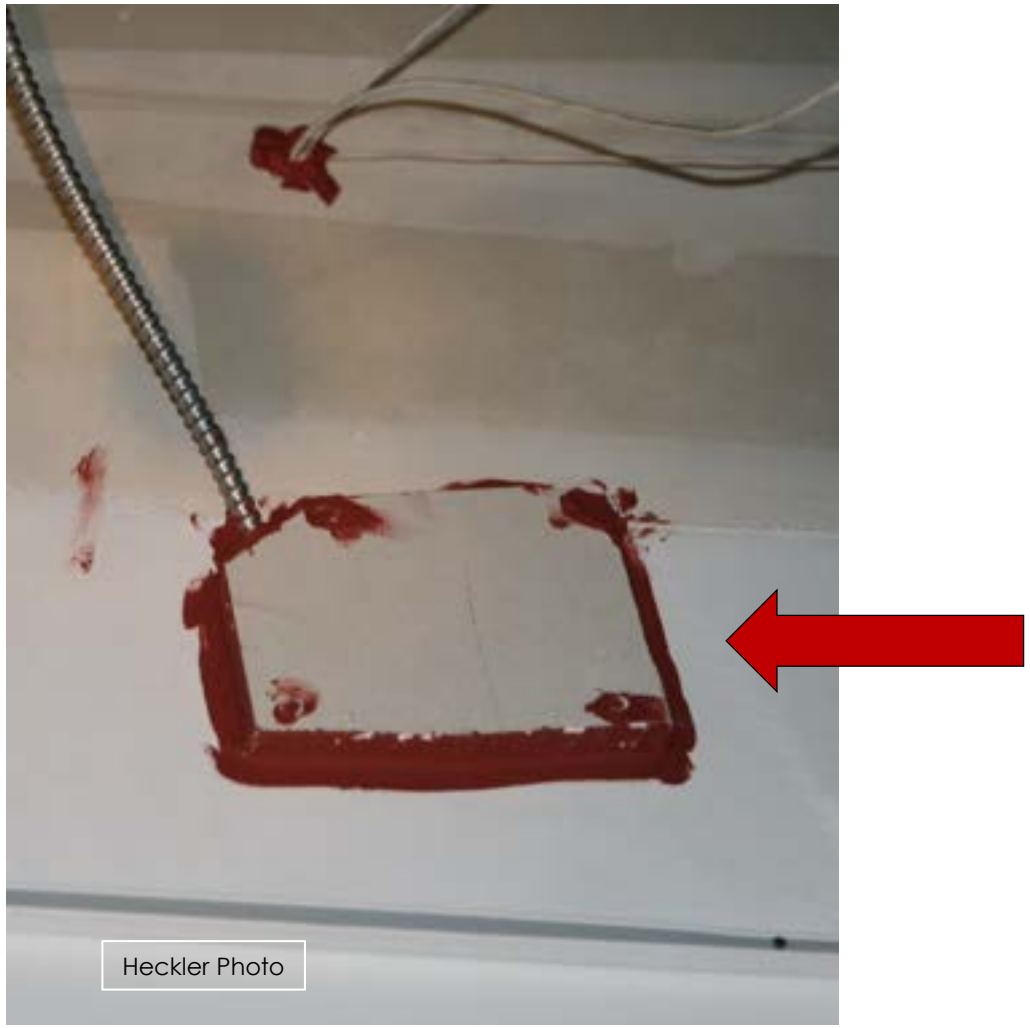
W-L-5029
https://iq.ulprospector.com/en/profile?e=177655

What's wrong with this picture? MIX??

Heckler Photo



What's wrong with this picture?



What's wrong with this picture?

Couplings?

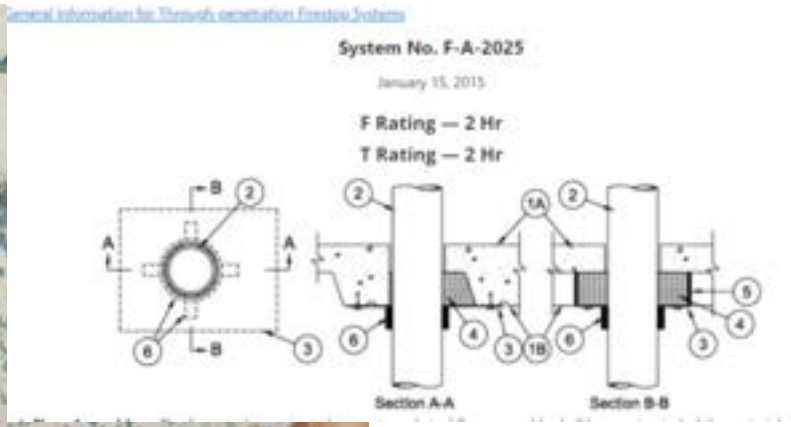
No Firestop?

Sheet metal?

End Cap Sealants?

Spacing?

Mixing manufacturers?



Heckler Photo

What's wrong with this picture?

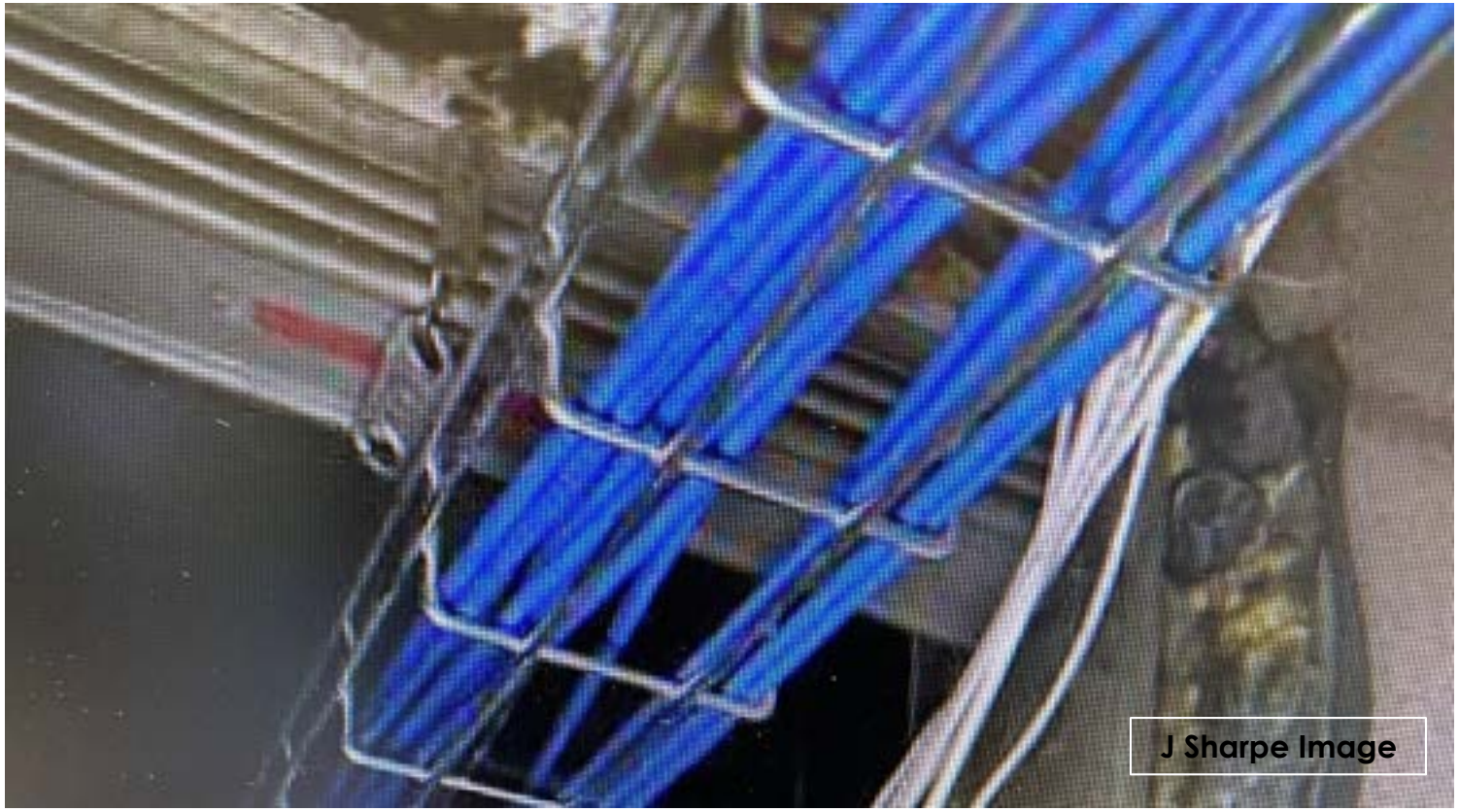
Heckler Photo

Firestopping & Compartmentation
Do we have a Problem??

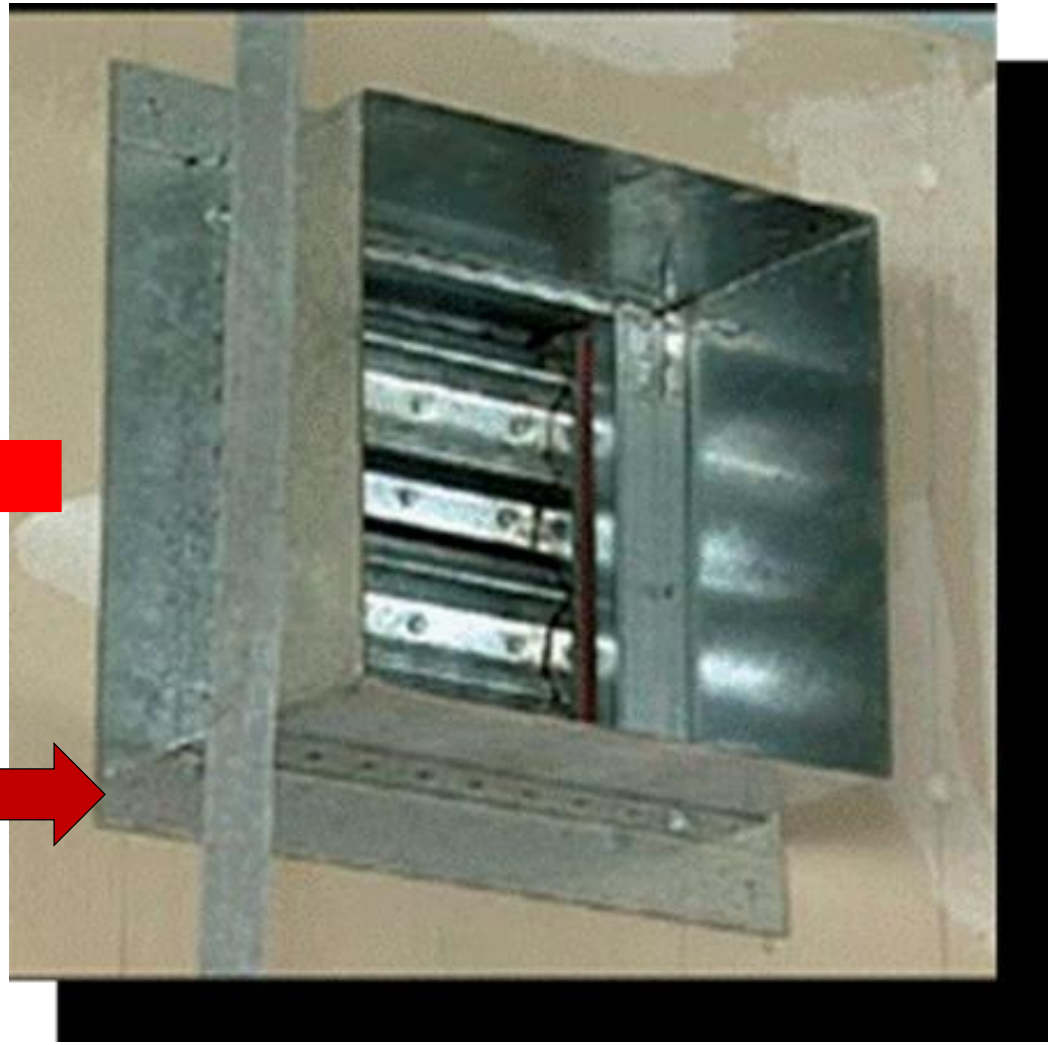
FOAM STILL???

Firestopping & Compartmentation
Do we have a Problem??

Cable Tray through a FIRE DAMPER?



Firestopping & Compartmentation
Do we have a Problem??



Fire Damper Annular Space?

Firestopping & Compartmentation
Do we have a Problem??

Annular Space Control

System LIMITS ANNULAR SPACE

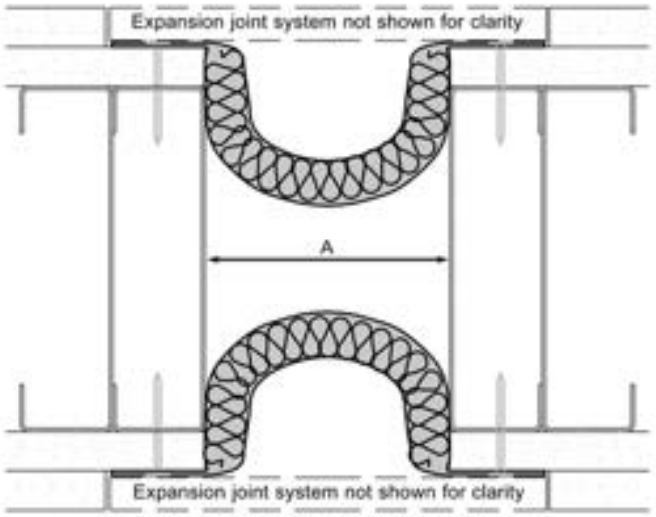
FCIA Recommended Professional Practice Identification Systems

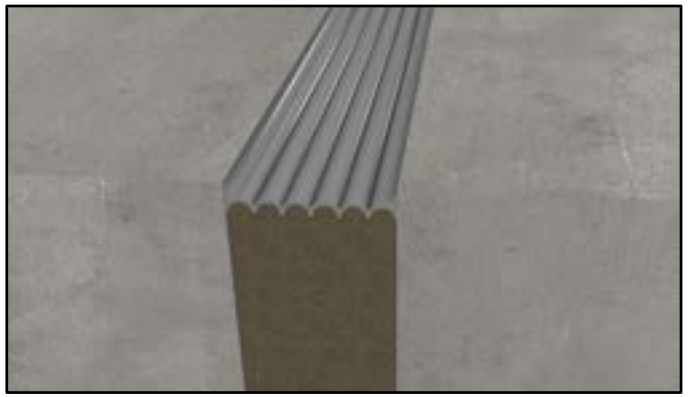
“Labelling”

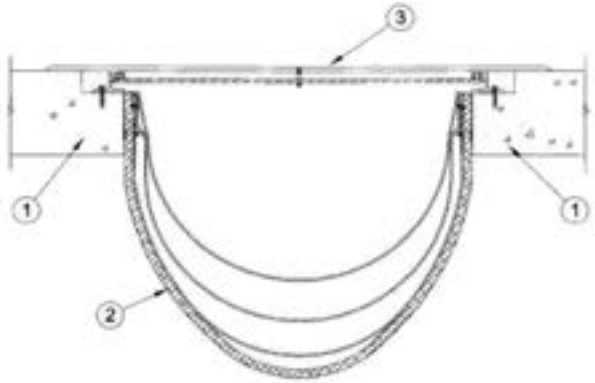
-On-

Wall/Horizontal Assy. Penetrating Item Hanging

Firestop & Inspection - Fire Rated Expansion Joints = FF-D-4001, -1201, -1204…more







Balco, Construction Specialties, Inpro, MM Systems, UL Solutions

Firestop - FF-D-4001

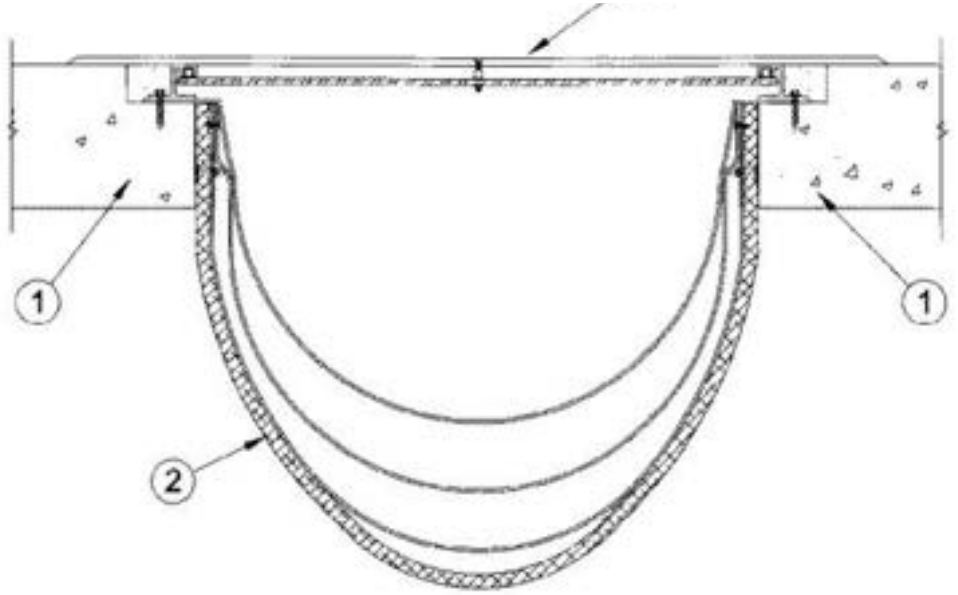
System No. FF-D-4001

September 20, 2000

Assembly Rating — 2 Hr

Nominal Joint Width — 25 to 36 in.

Class II and III Movement Capabilities — 50% Compression or Extension

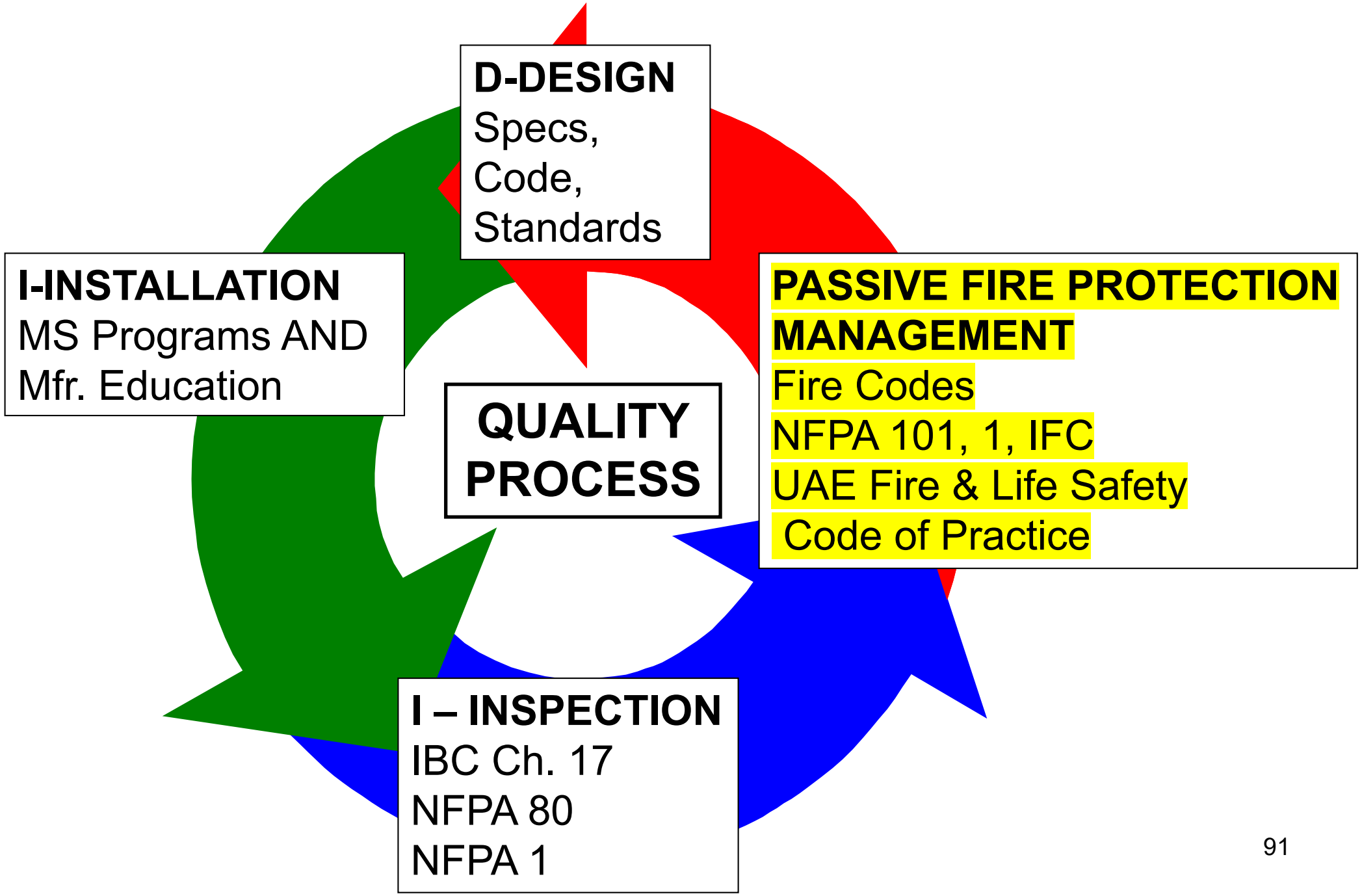


1. **Floor Assembly —** Reinforced lightweight or normal weight (100-150 pcf) structural concrete having a min thickness of 4-1/2 in. at stepped-edges receiving joint cover (Item 3).

2. **Mechanical Joint Assembly* — Nom width of joint is 25 to 36 in.** Flexible multilayer mat material with galv steel mounting angles on longitudinal edges. The mechanical joint assembly shall be installed in accordance with the installation instructions accompanying the units.

CONSTRUCTION SPECIALTIES INC — FB97-25F-++ through FB97-36F-++ (++=max width of joint opening)

3. **Joint Cover —** Min 0.030 in. thick joint cover formed of aluminum, bronze, stainless steel or galv steel. Joint covers anchored to floor slabs on each side of joint opening, continuous over entire length of joint, in accordance with the manufacturer's installation instructions.
As an alternate, where the linear joint opening is enclosed within a chase wall and is non load bearing, a cover consisting of a creased sheet of min 2 mil stainless steel foil secured with 1 in. wide continuous galv steel washer strips along each side of the joint opening may be used.


D-DESIGN
Specs,
Code,
Standards
I-INSTALLATION
MS Programs AND
Mfr. Education
QUALITY
PROCESS
PASSIVE FIRE PROTECTION
MANAGEMENT
Fire Codes
NFPA 101, 1, IFC
UAE Fire & Life Safety
Code of Practice
I – INSPECTION
IBC Ch. 17
NFPA 80
NFPA 1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PASSIVE FIRE PROTECTION MANAGEMENT & FIRE CODES

Presented by:

Bill McHugh

Abhishek Chhabra

FCIA/NFCA