

PasFiPro '25

12-13 FEBRUARY 2025
LeMERIDIEN DUBAI AIRPORT
DUBAI, UAE



FCIA 2025 DOHA MEMBER MEETING & SYMPOSIUM

PASSIVE FIRE PROTECTION MANAGEMENT & FIRE CODES

Presented by:

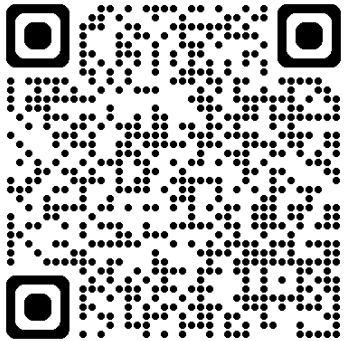
Bill McHugh

Abhishek Chhabra

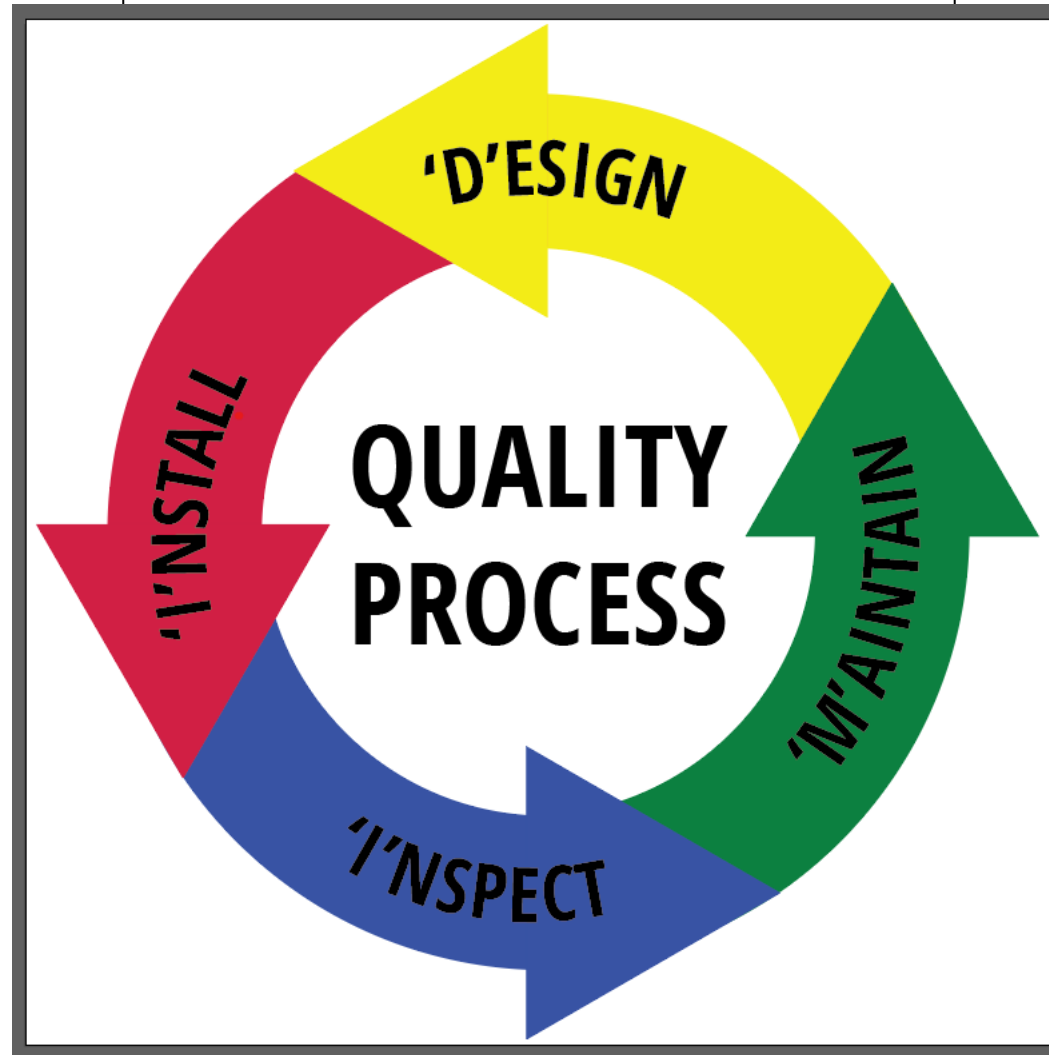
FCIA/NFCA

FCIA's DIIM™

INSTALLATION
FM 4991/UL QFCP
Programs AND
Mfr. Education



DESIGN
Specs, Code



PFP/BARRIERS
MAINTAIN
PROTECTION
Fire Codes

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

always useful.	
q) Records of security measures should be known to authorized personnel only.	The records of the facility should include detailed specifications of,
r) Where no records exist, information should be slowly built up as it becomes available during the course of maintenance work.	a) all materials incorporated, for example name of facing brick, mix of concrete, species and grade of timber;
s) Use of computers for storing information may be preferred.	b) materials with properties that can prove injurious to health and safety;
24.2.1.1 Drawings	c) all plant and machinery, including manufacturers' trade literature, manuals and instructions for installation, operation and maintenance; and
The records of the facility should include as-built and as subsequently altered drawings [see 24.2.1 (c)] and contain, as a minimum, the following:	d) methods of work used during construction, which are unusual or a typical, such as assembly of purpose-made manufactured units.
a) A neighborhood plan, showing the position of the facility and the site upon which it is located in relation to its surroundings;	All specifications and schedules, including those used during construction work, should be verified against
b) The site plan, showing the facility and other structures forming the facility and external	
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!!



I-Inspection

- **NEW Buildings – 07-84-00 Specs - [www. FCIA .org](http://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



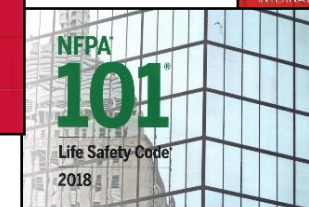
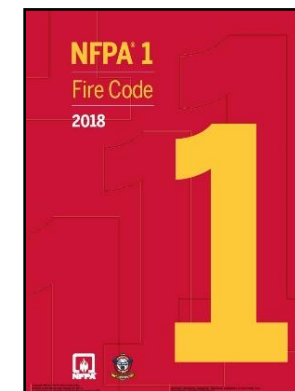
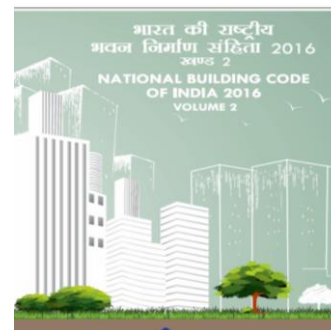
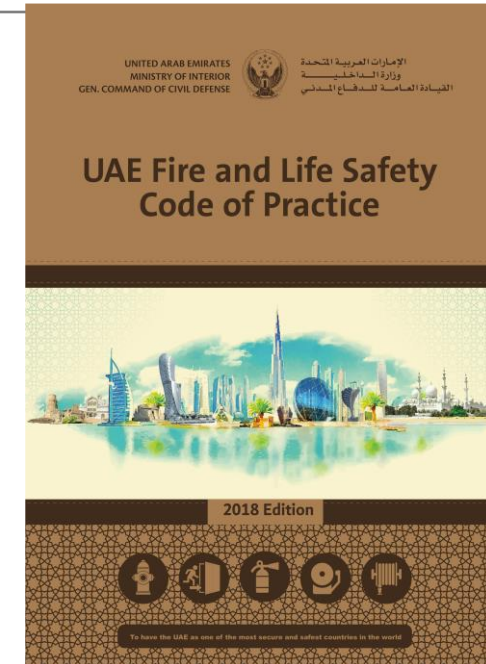
Specs – Don't Forget Division 1

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**
- **Firestopping – 07 84 00**
- **Fireproofing – 07 81 00**

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.

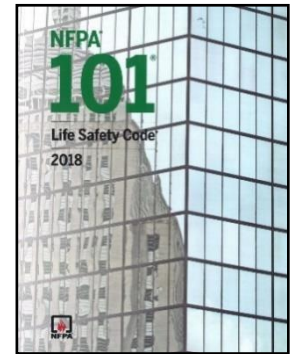
Damaged, altered or breached firestop systems shall be properly repaired, restored or replaced to comply with applicable codes as per the guidelines of Civil Defense.

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

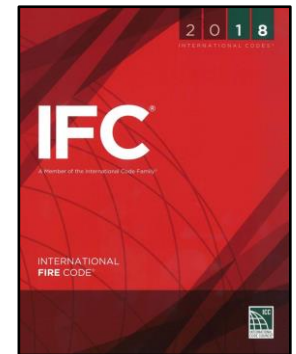


2018 International Fire Code Maintenance

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



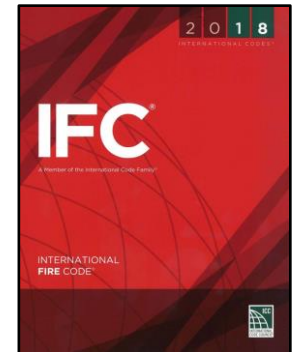
2018 International Fire Code Maintenance

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



International Property Maintenance Code

[F] 703.1 Fire-resistance-rated assemblies. The required fire-resistance rating of fire-resistance-rated walls, fire stops, shaft enclosures, partitions and floors shall be maintained.

[F] 703.2 Opening protectives. Required opening protectives shall be maintained in an operative condition. Fire and smokestop doors shall be maintained in operable condition. Fire doors and smoke barrier doors shall not be blocked or obstructed or otherwise made inoperable.

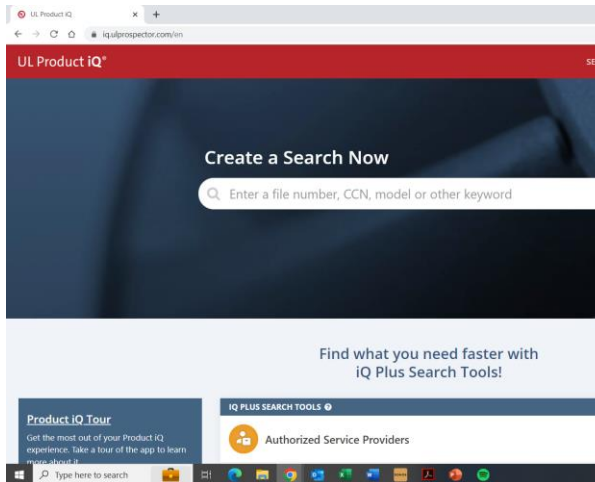
703.3 Maintenance. The required fire-resistance rating of fire-resistance-rated construction, including walls, firestops, shaft enclosures, partitions, smoke barriers, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and joint systems, shall be maintained. Such elements shall be visually inspected annually by the owner and repaired, restored or replaced where damaged, altered, breached or penetrated. Records of inspections and repairs shall be maintained. [IPMC 2018, 703]

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...

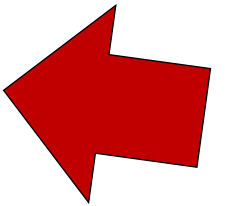


I-Inspection – SURVEY

- **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....”.**

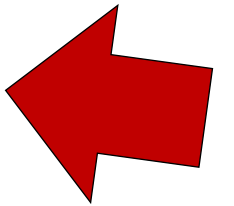


Fire Codes Require Maintenance

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.

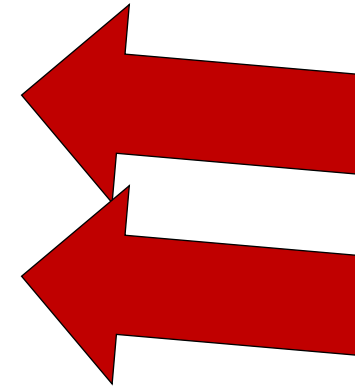


Fire Codes Require Maintenance – INDIA

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.

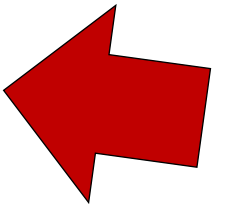


All specifications and schedules, including those used during construction work, should be verified against

Fire Codes Require Maintenance – INDIA

- **9 BUILDING MAINTENANCE – METHODS AND MANAGEMENT**

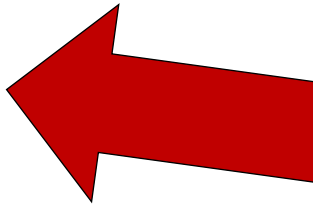
- **9.1 General** – “Any building (including its services) when built has certain objectives and during its total economic life, it has to be maintained in proper condition to meet those objectives. **Maintenance is a continuous process requiring a close watch and taking immediate remedial action.** 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....”.**



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.



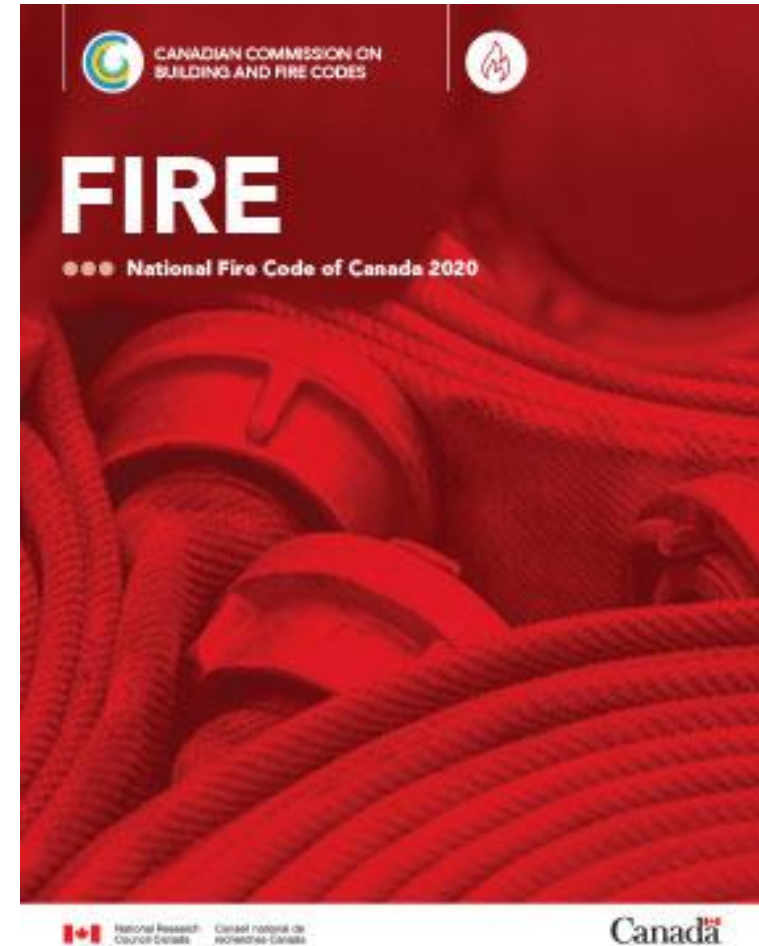
National Fire Code of Canada

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



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



Hose Stream Test



GA Photo

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

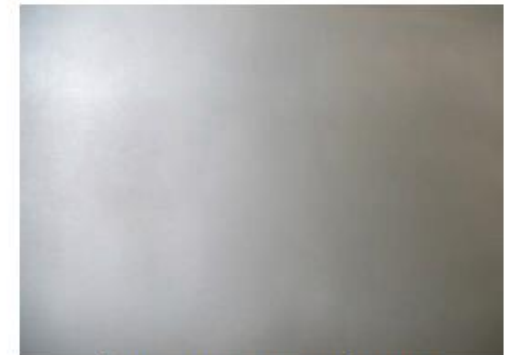
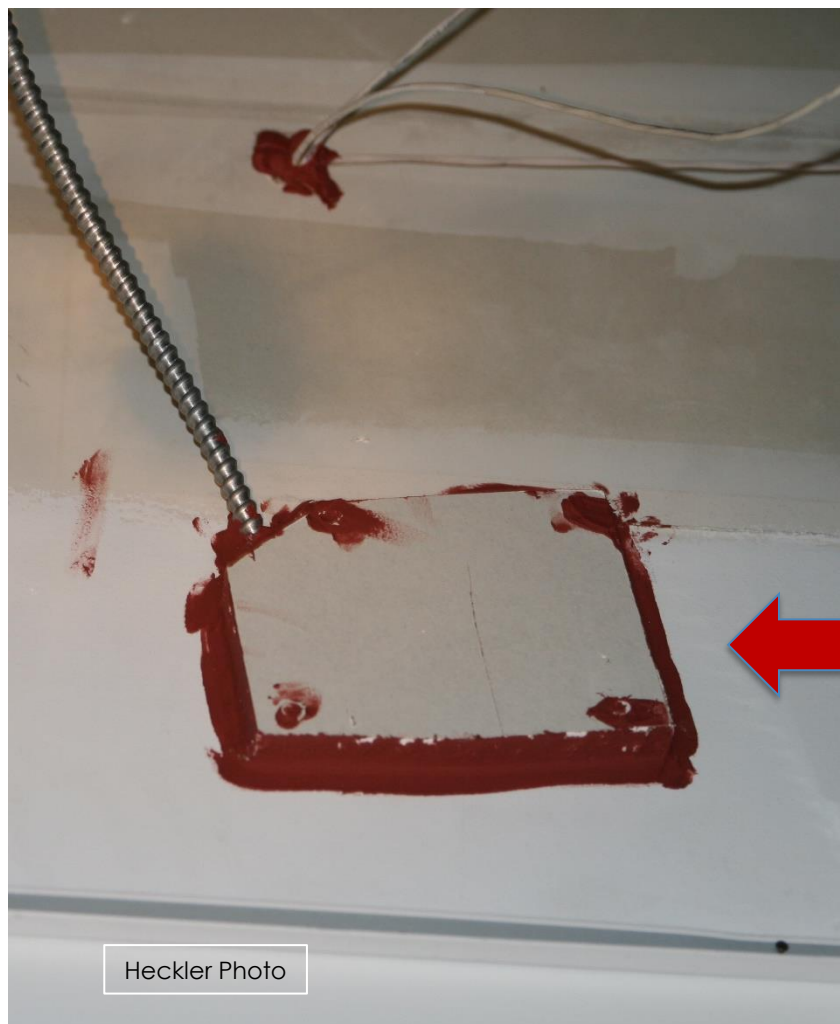


Figure 6: Redecorate Repaired Area

What's wrong with this picture?



Repairs

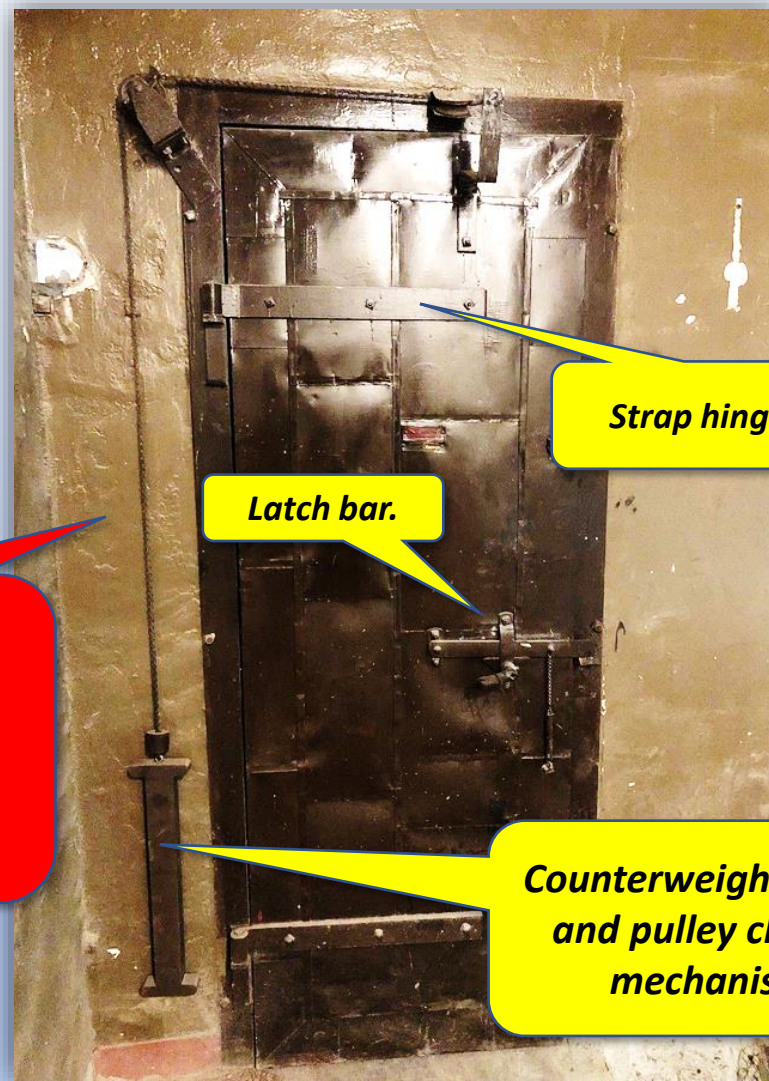
- Simply covering a hole or damaged area **is not a repair**
- Repair procedure must take into consideration:
 - Size of the affected area
 - Hourly rating of assembly
 - Framing: type, size and spacing
 - Gypsum: type, number of layers and orientation
 - Accessibility: Can the repair be made from both 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**



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

Fire exit hardware.

Swinging Door with Builders Hardware (Chapter 6)



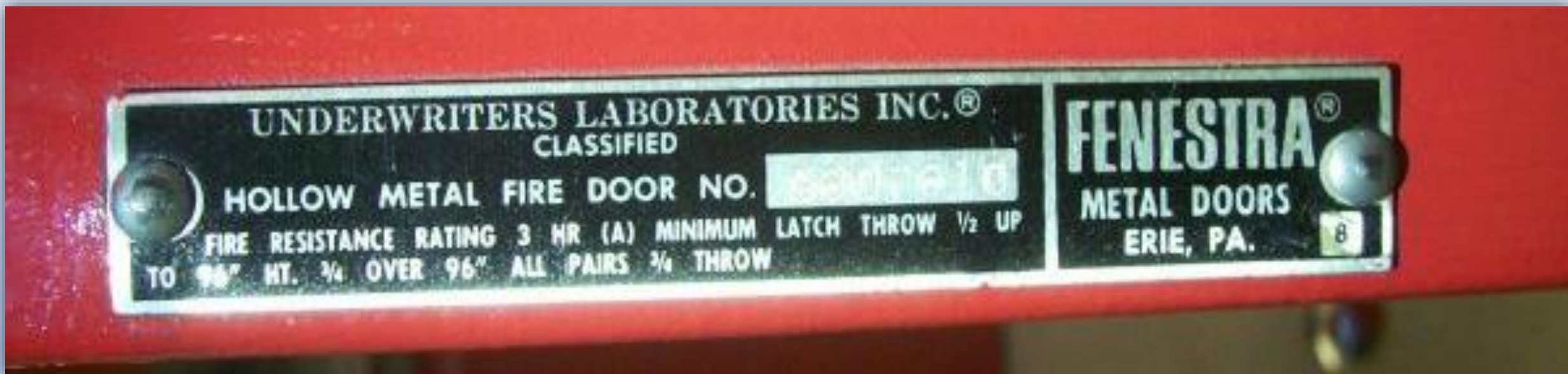
Strap hinges.

Latch bar.

Swinging Door with Fire Door Hardware (Chapter 7)

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

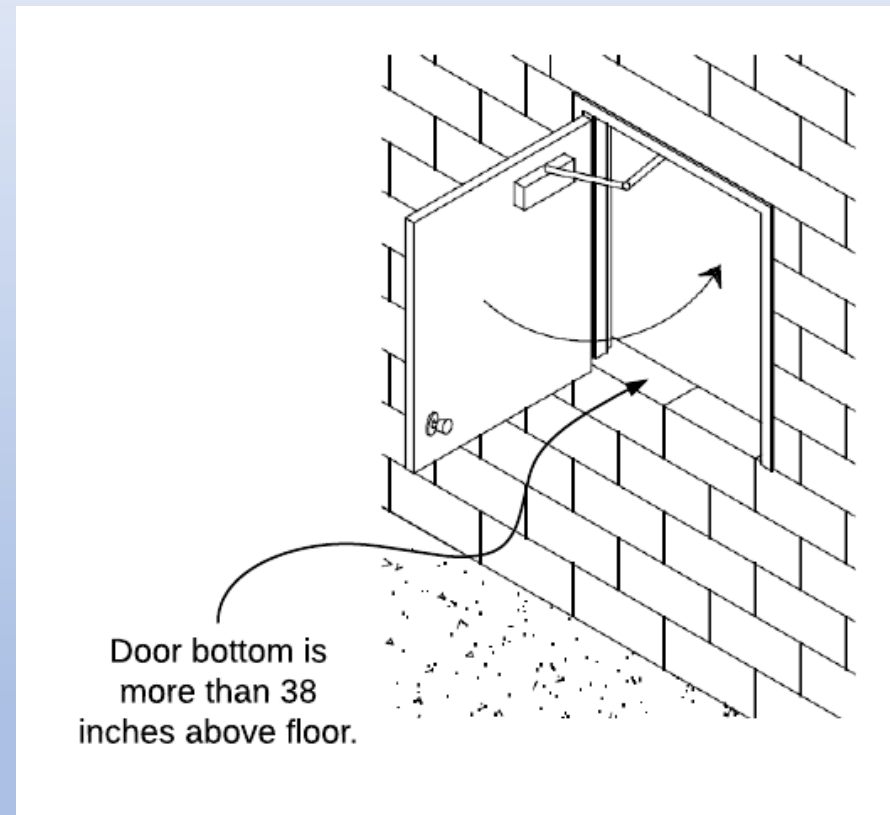
FACTORY MUTUAL



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

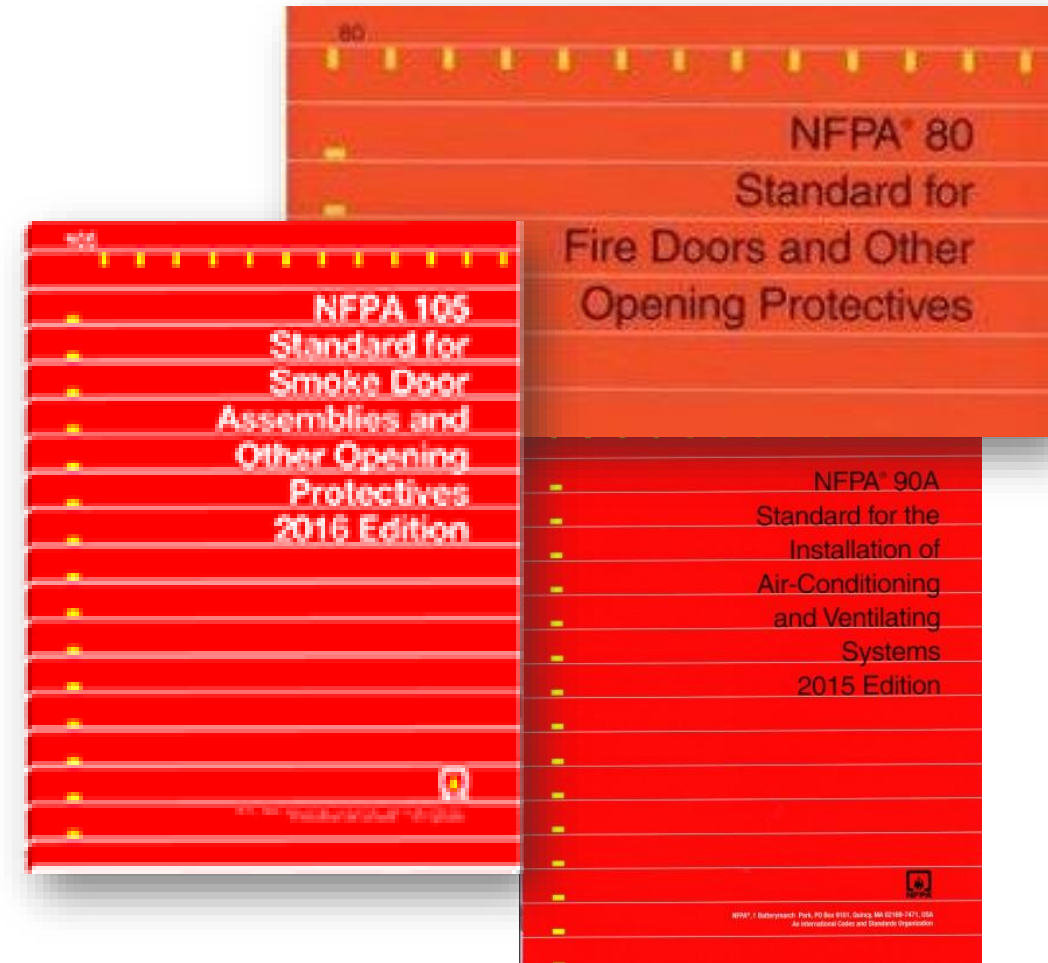
3. Installation Requirements



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

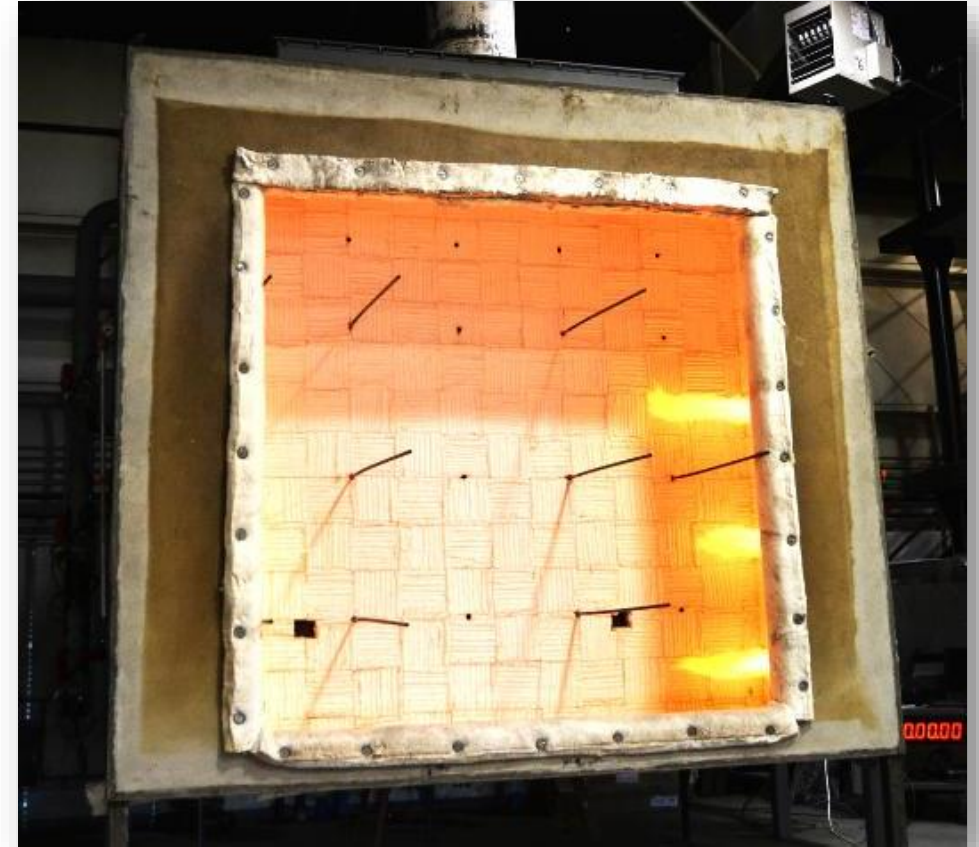


Standards - UL



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

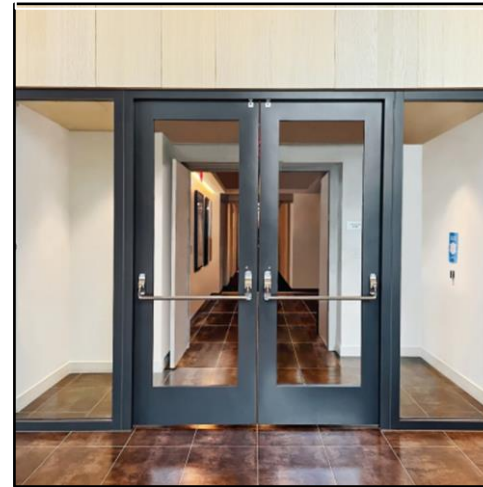
Fire-resistance-rated Wall



Vision Panel in Door



Sidelight Panels



Interior Fire Windows



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



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.

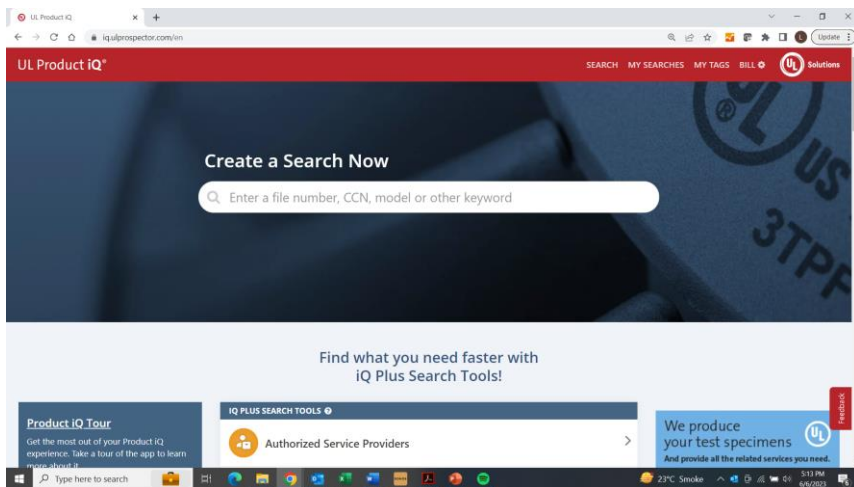
Request produces Results ...

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)	<input type="text"/>
City	<input type="text"/>
US State	<input type="text" value="Select a state"/>
US Zip Code	<input type="text"/>
Country	<input type="text" value="Select a country"/>
Region	<input type="text" value="Select a region"/>
Postal Code (non-US)	<input type="text"/>
UL Category Code (options)	<input type="text"/>
UL File Number (help)	<input type="text" value="r13377"/>
Keyword	<input type="text"/>
<input type="button" value="SEARCH"/> <input type="button" value="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

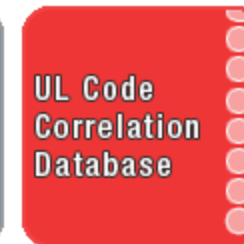
[Quick Guide to the Online Certifications Directory](#)

SPECIFIC SEARCHES

(New! UL Evaluation Reports)

Select a specific search:

FEATURED LINKS



UL Anytime

We are ready to assist you at any time!



LINKS OF INTEREST

[UL Environment Database](#)

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

FireLite PLUS

16 CFR 1201 CAT. II
ANSI Z97.1-2004 U A
8mm LAMINATED

D-H-45
OH-45

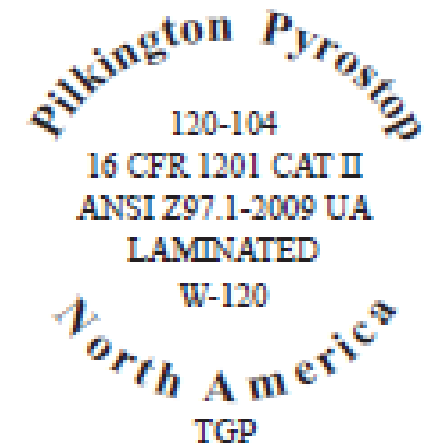


6259
R-13377
ANSI/UL9/10B/10C



Labeling Requirements

Fire-Rated Glass Manufacturer Label



Label Standards

Labeling Requirements

- **“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.

Labeling Requirements

Fire-Rated Frame Manufacturer Label



Fireframes® Heat Barrier Series S
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 S
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



Modifying the damper in the field without approval from the AHJ

Not following
Damper Manufacturer's IOM
for approved installations!



History of NFPA 80's Requirements





- **Protect People**
- **Protect Property**



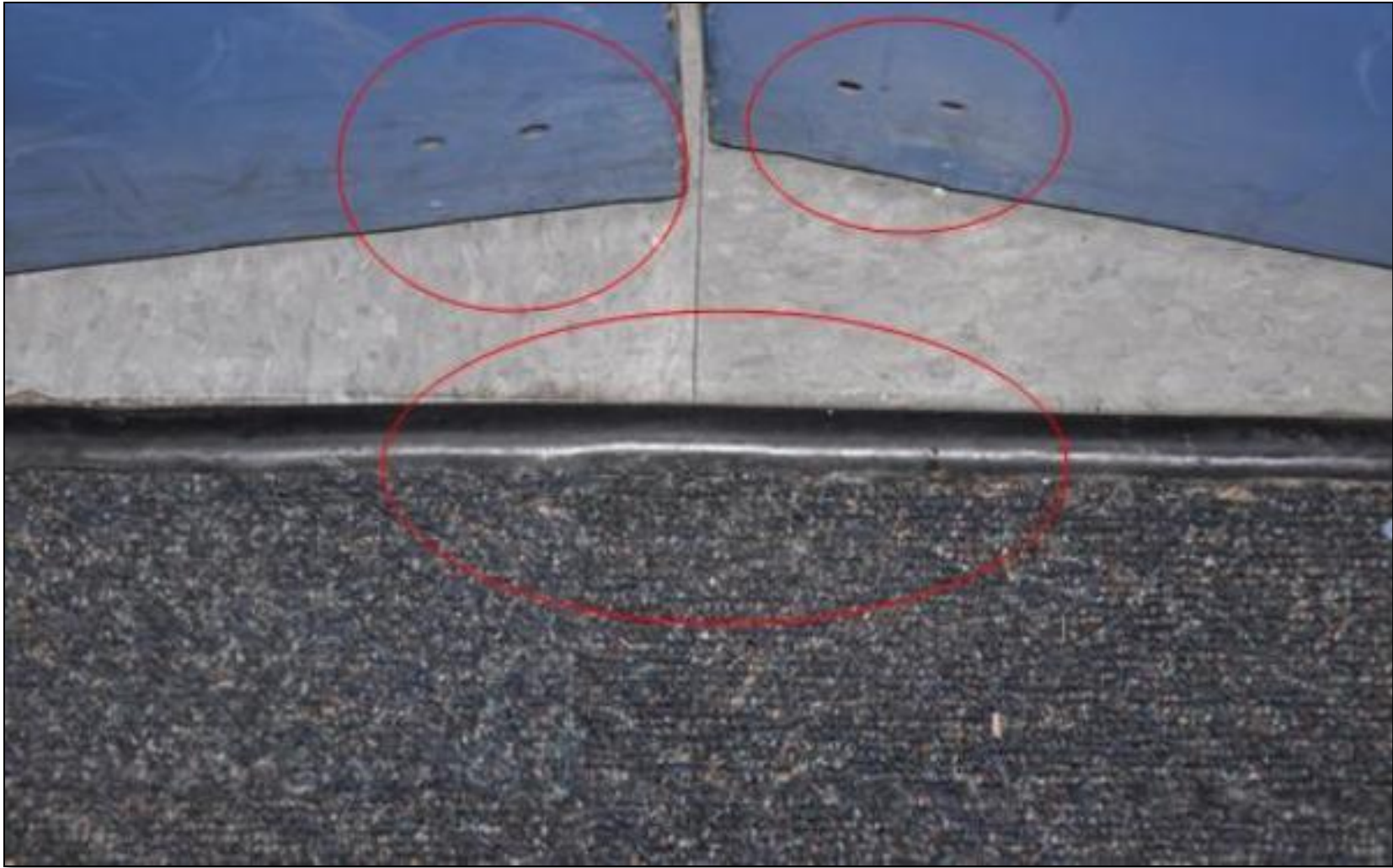
DSSF Slide



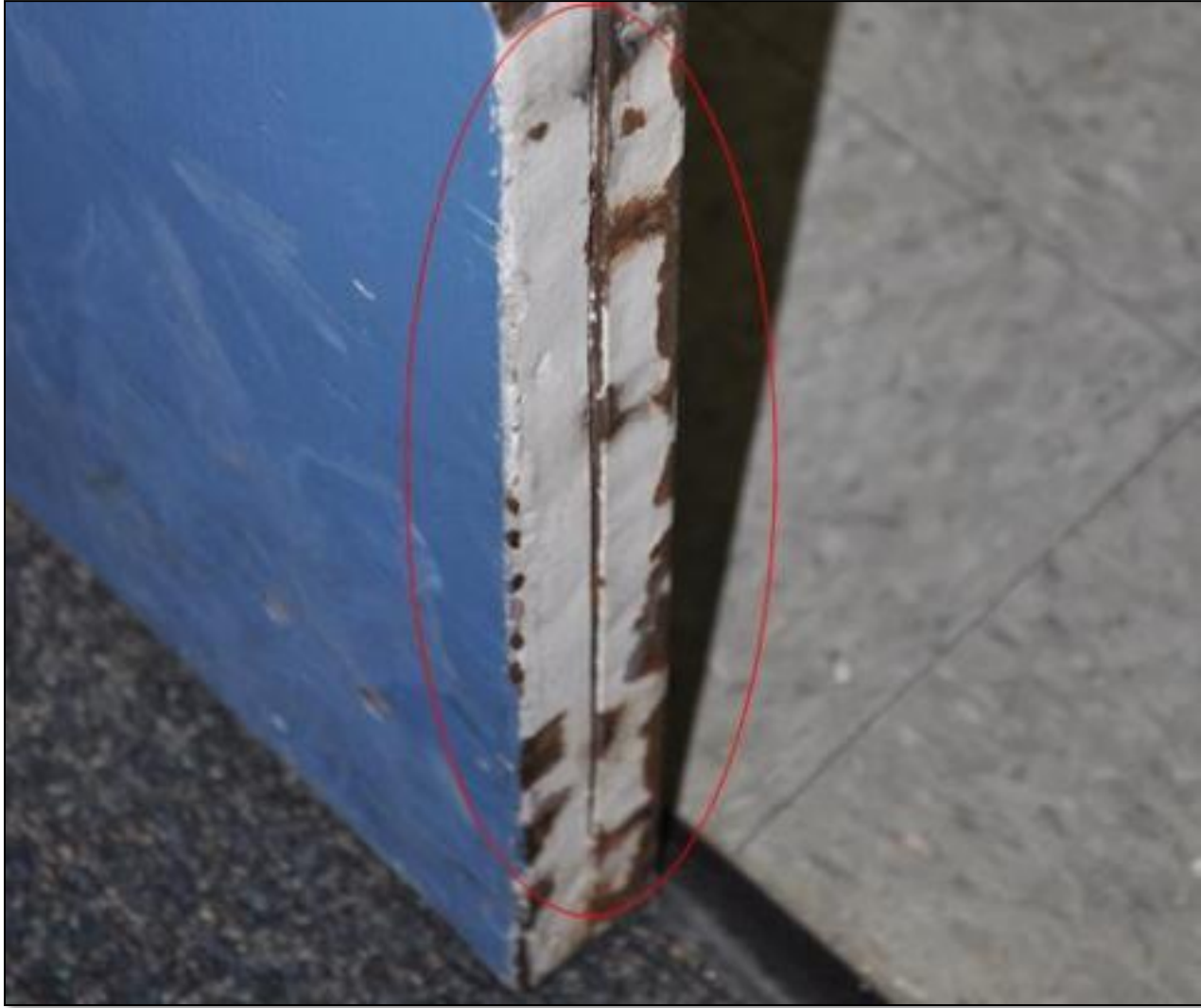
The door shown in these photos protected a nature center and management offices from a fire that began in the maintenance shop.

DSSF Slide





DSSF Slide



DSSF Slide

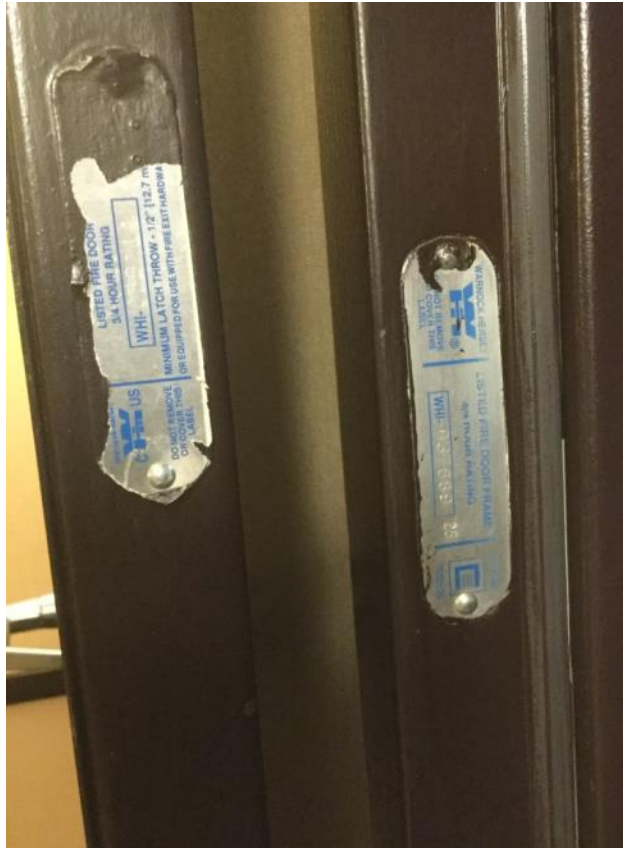


DSSF Slide



DSSF Slide

Labels 5.2.3.5.2 (1) (2013)



Steel Door Frames 5.2.3.5.2(1)

- Frame Condition
 - No-rust through on frames



Strikes

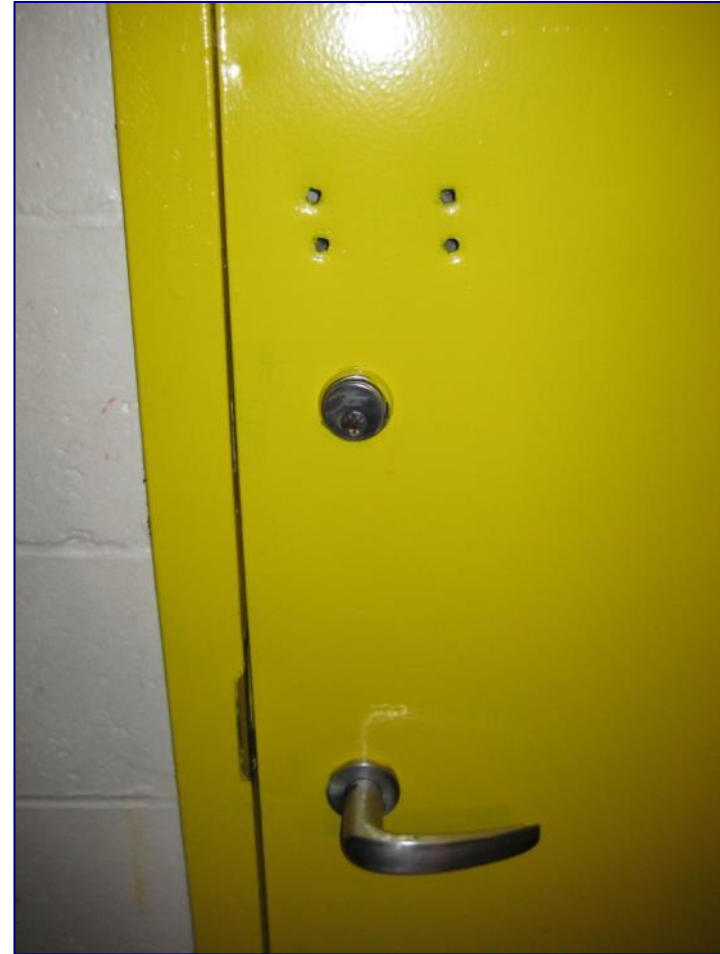
6.4.4.8

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



Steel Doors 5.2.3.5.2(2)

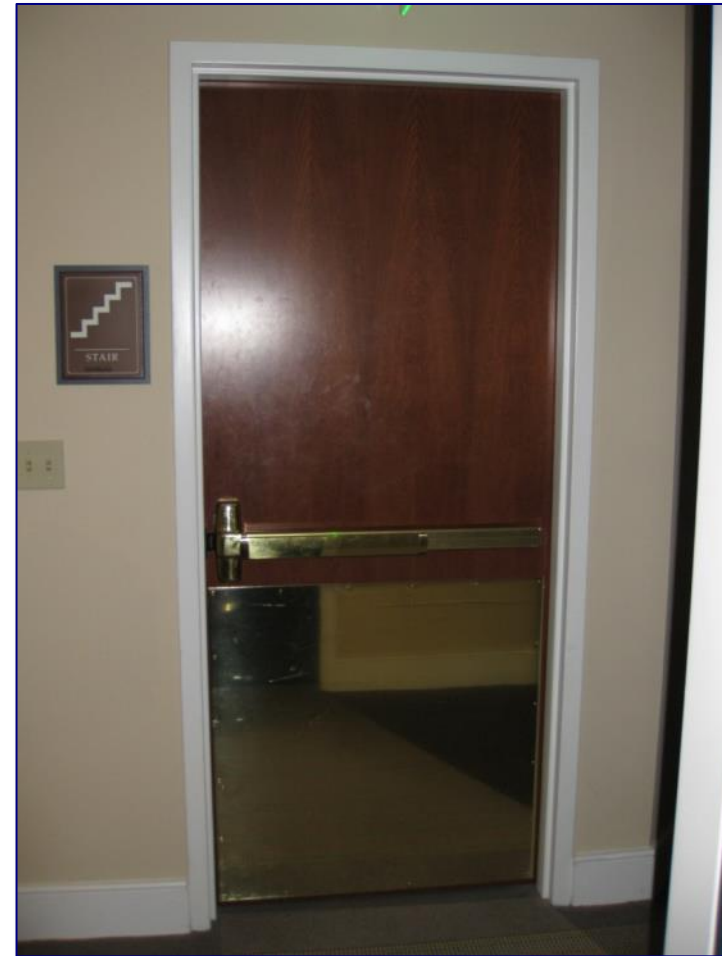
- No broken welds on rails or stiles of steel doors.
- No holes in faces and edges of steel doors.
- Verify face of door for delaminating of face skins from core of door.



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



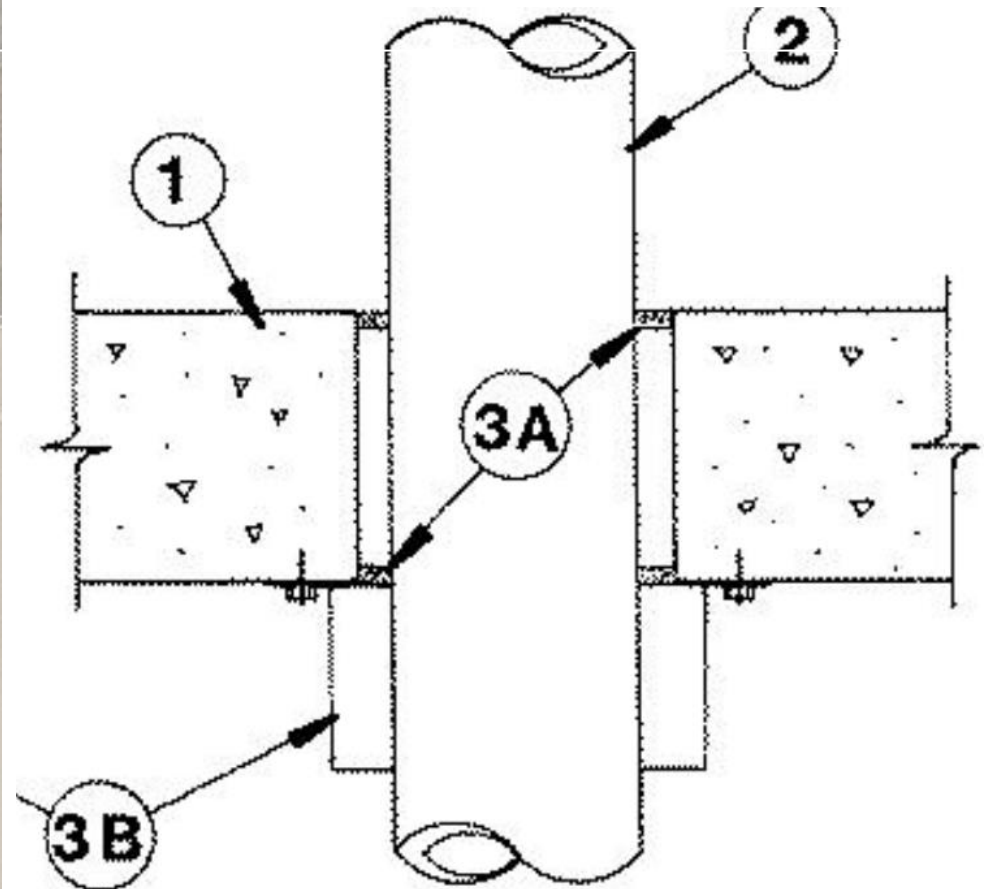
What's wrong with this picture?



Heckler Photo

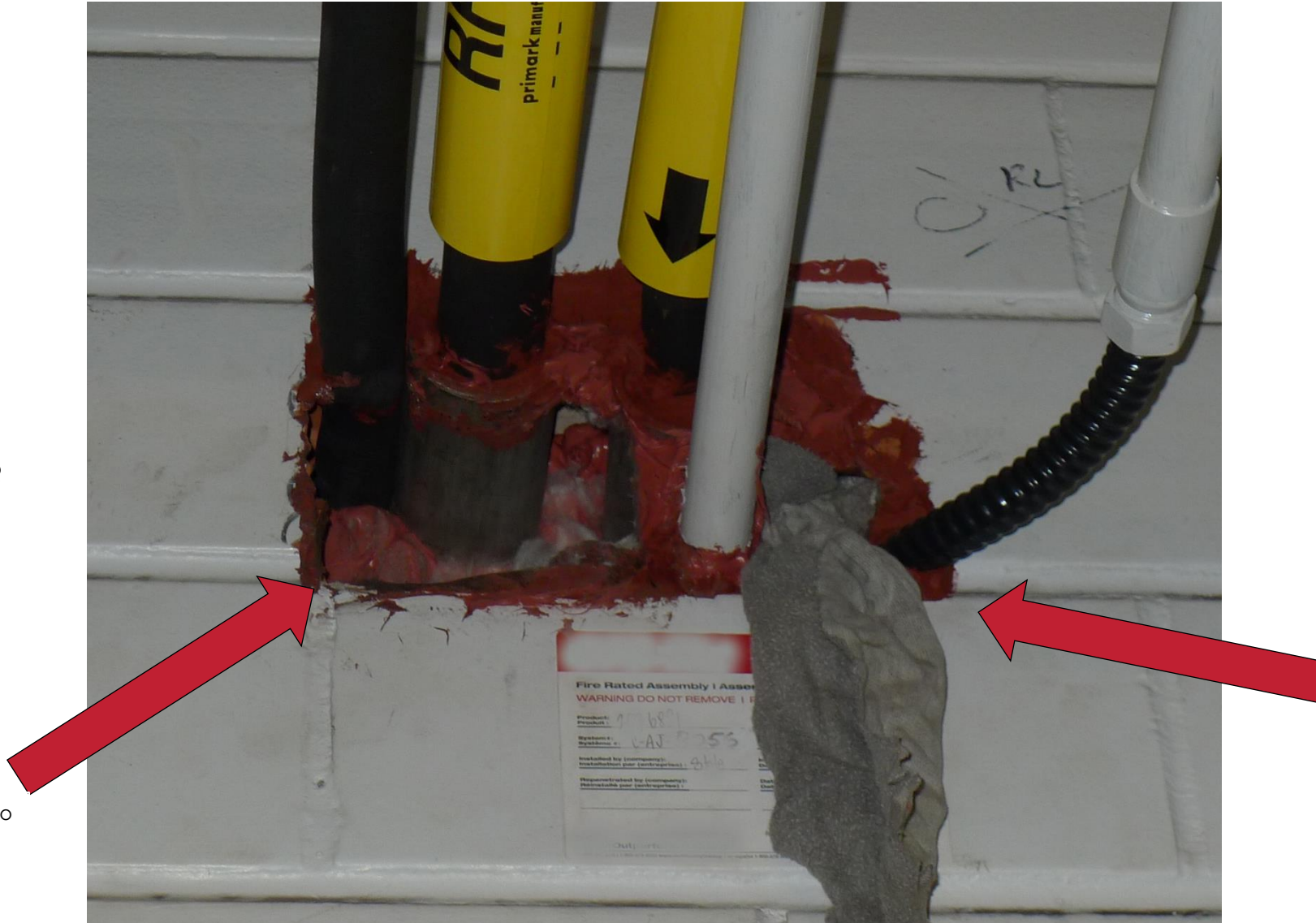
C-AJ-2038

<https://iq.ulprospector.com/en/profile?e=173569>



What's wrong with this picture?

Sleeve?
Rags?
No Sealant?



D. Falconer Photo

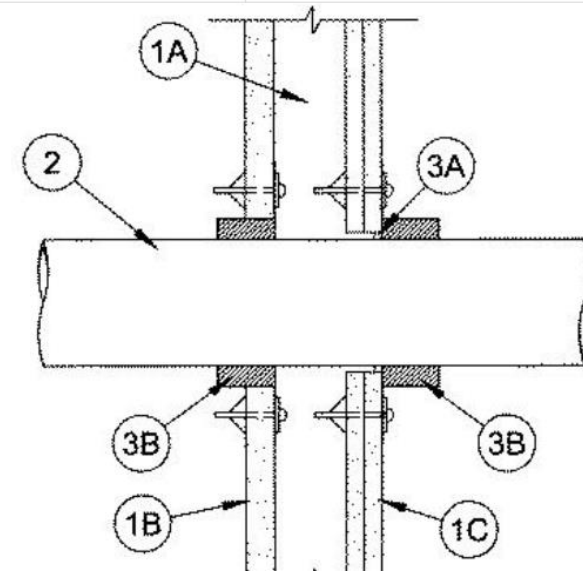
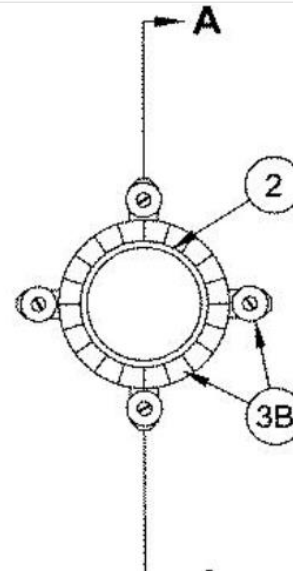
What's wrong with this picture?



W-L-2257

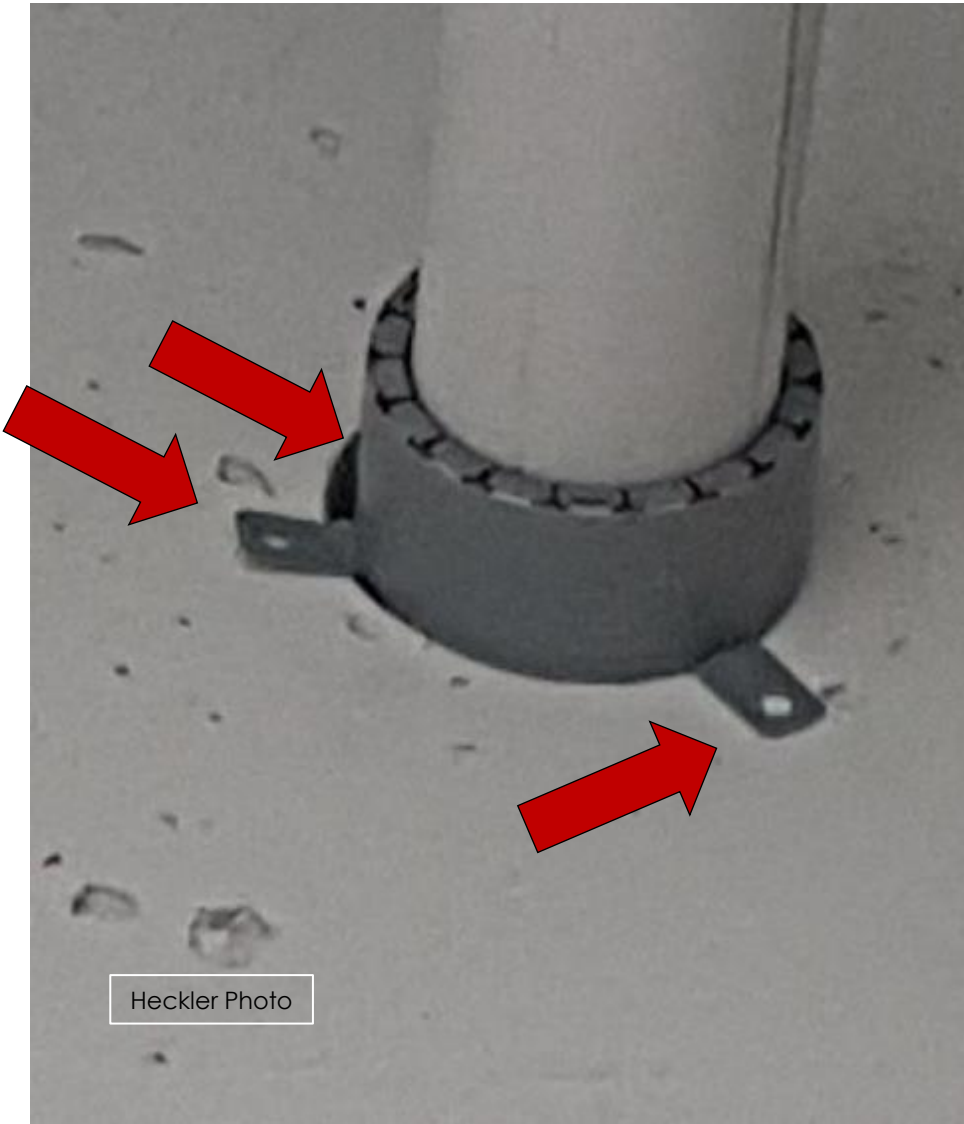
<https://iq.ulprospector.com/en/profile?e=176962>

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?



Heckler Photo

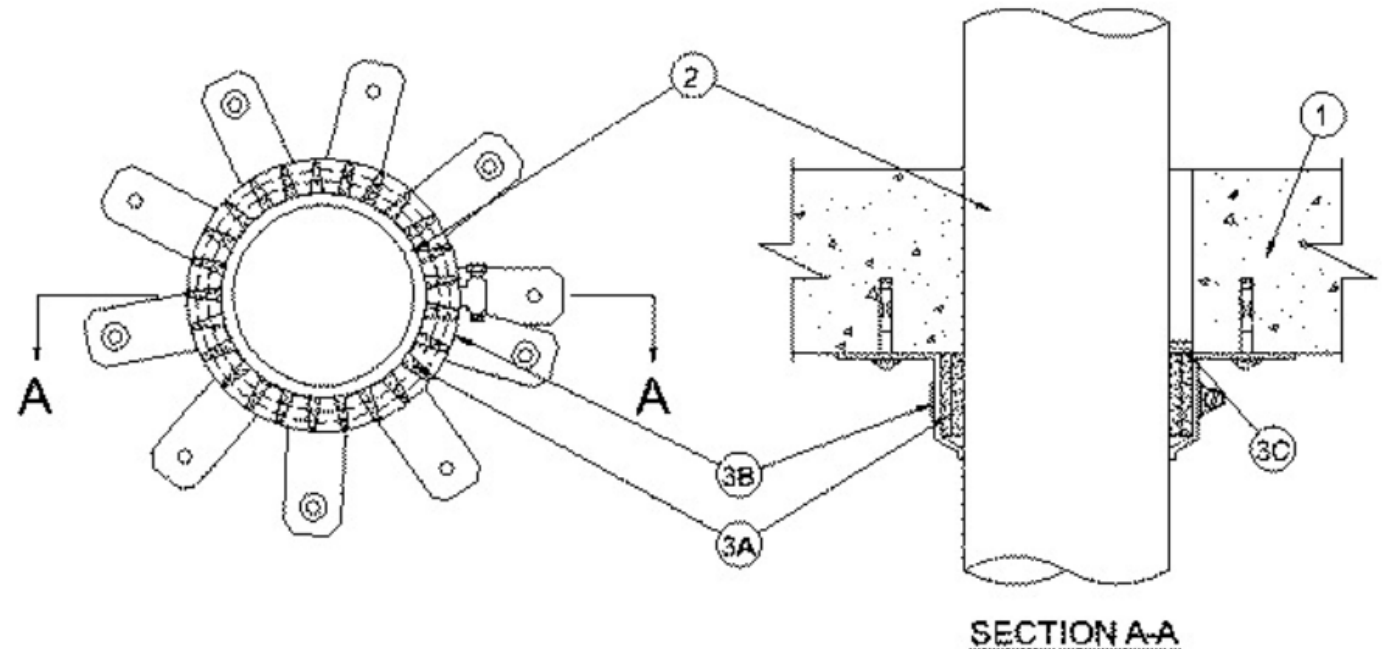
[Through-penetration Firestop Systems](#)

System No. C-AJ-2371

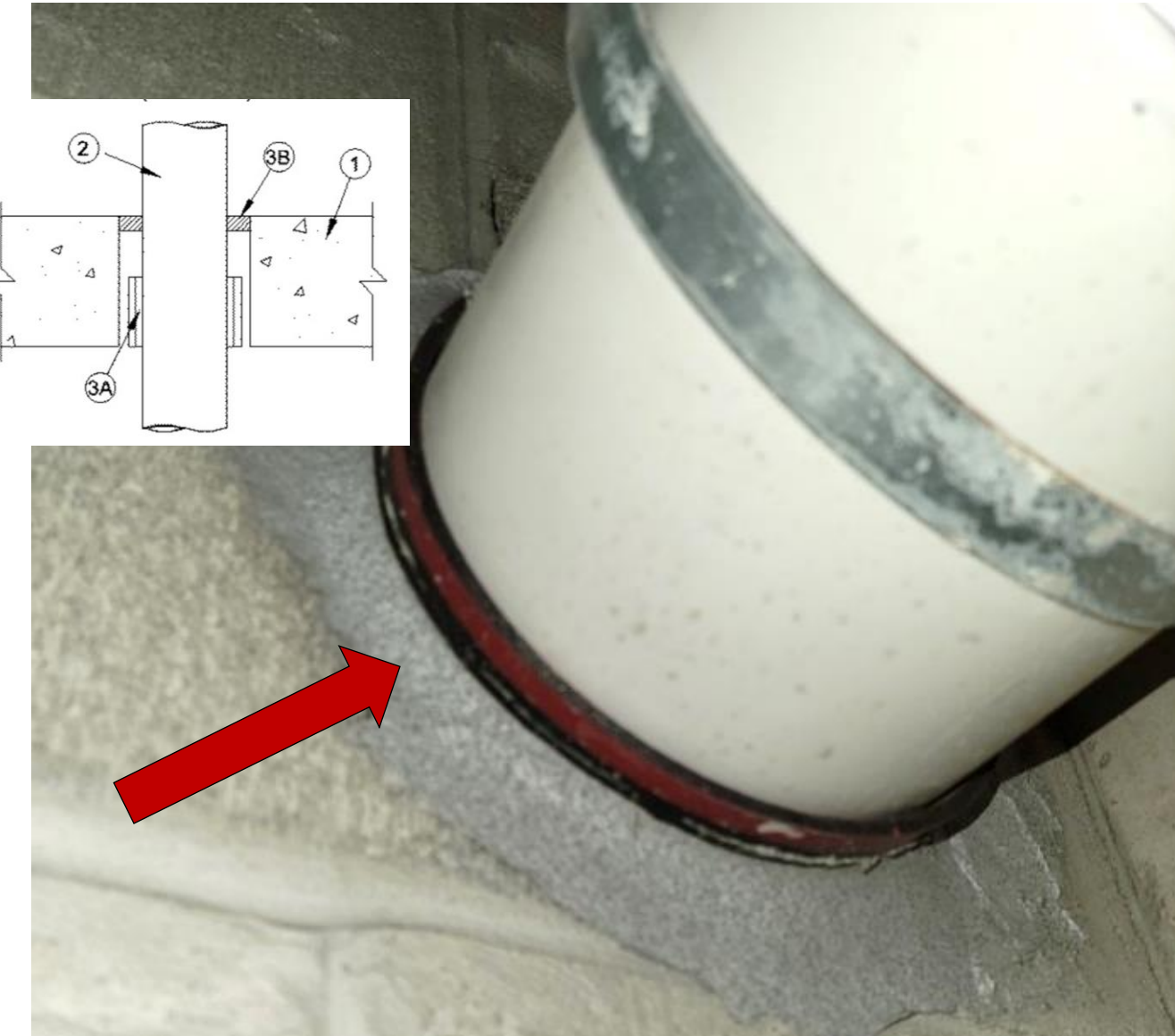
January 09, 2015

F Rating - 3 Hr

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



C-AJ-2048?? No



C-AJ-2048

<https://iq.ulprospector.com/en/profile?e=178770>

System tested with a pressure difference of 50 Pa between the exposed and the unexposed surfaces with the higher pressure on the exposed side.

1. **Floor or Wall Assembly** — Min 102 mm (4-1/2 in.) thick reinforced lightweight or normal weight (1600-2400 kg/cu meter or 100-150 lb/cu ft) concrete. Max diam of opening is 152 mm (6 in.).

1A. **Steel Floor 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

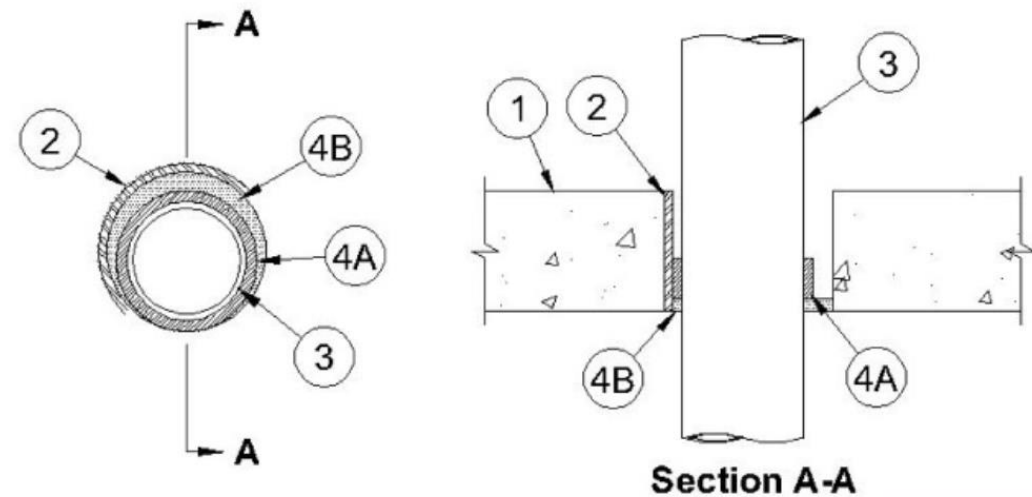
F Rating — 2 Hr

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

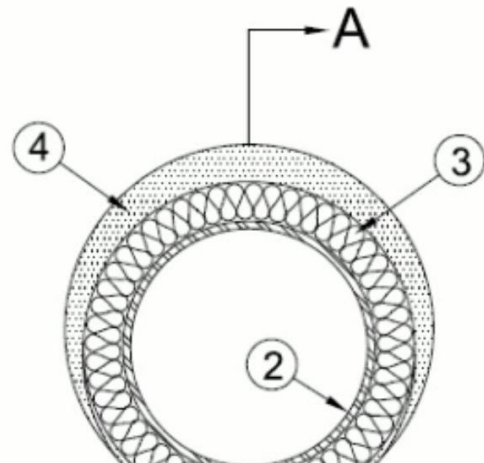
W Rating — Class 1 (See Item 4B)



What's wrong with this picture? NOTHING



Superl Photo



UL Product iQ®

SEARCH MY SEARCHES MY TAGS BILL ⚙



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

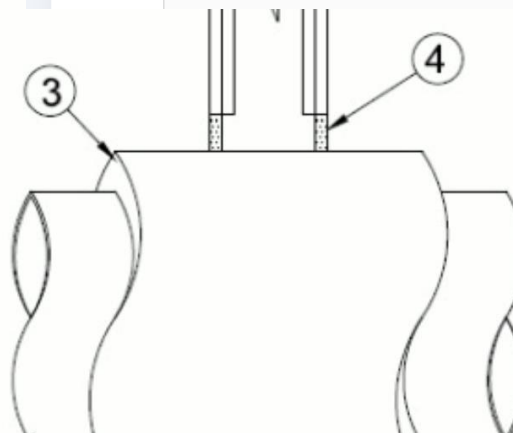
July 17, 2015

ANSI/UL1479 (ASTM E814)

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)
L Rating At Ambient — 4 CFM/Sq Ft
L Rating At 400 F — Less Than 1 CFM/Sq Ft

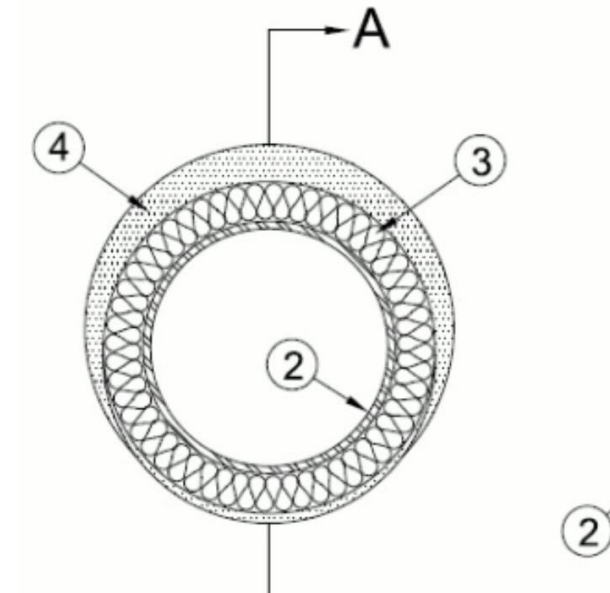
CAN/ULC S115

F Ratings — 1, 2 and 3 Hr (See Items 1, 3 and 4)
FT Ratings — 0, 1/2, 1 and 1-1/4 Hr (See Item 3)
FH Ratings — 1, 2 and 3 Hr (See Items 1, 2 and 4)
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??



What's wrong with this picture?

- Couplings?
- No Firestop?
- Sheet metal?
- End Cap Sealants?
- Spacing?
- Mixing manufacturers?

Heckler Photo



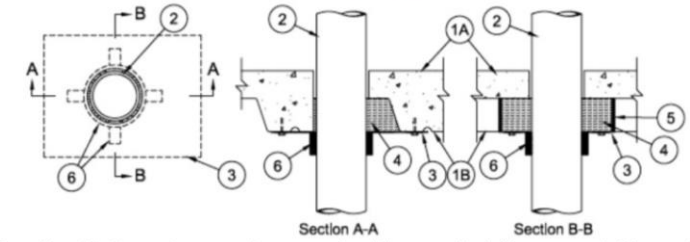
General Information for Through-penetration Firestop Systems

System No. F-A-2025

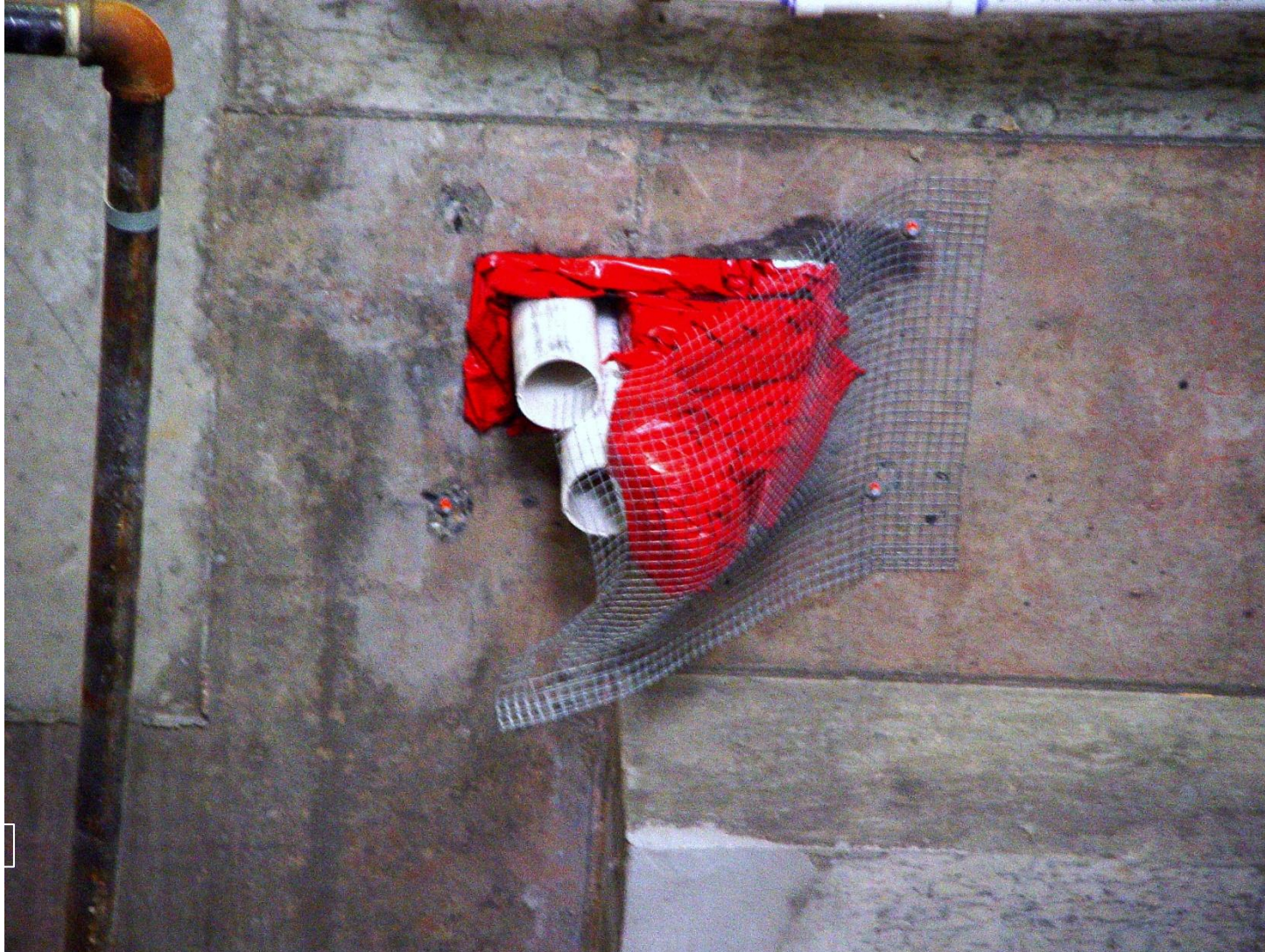
January 15, 2015

F Rating — 2 Hr

T Rating — 2 Hr



What's wrong with this picture?



Firestopping & Compartmentation

Do we have a Problem??

FOAM STILL???

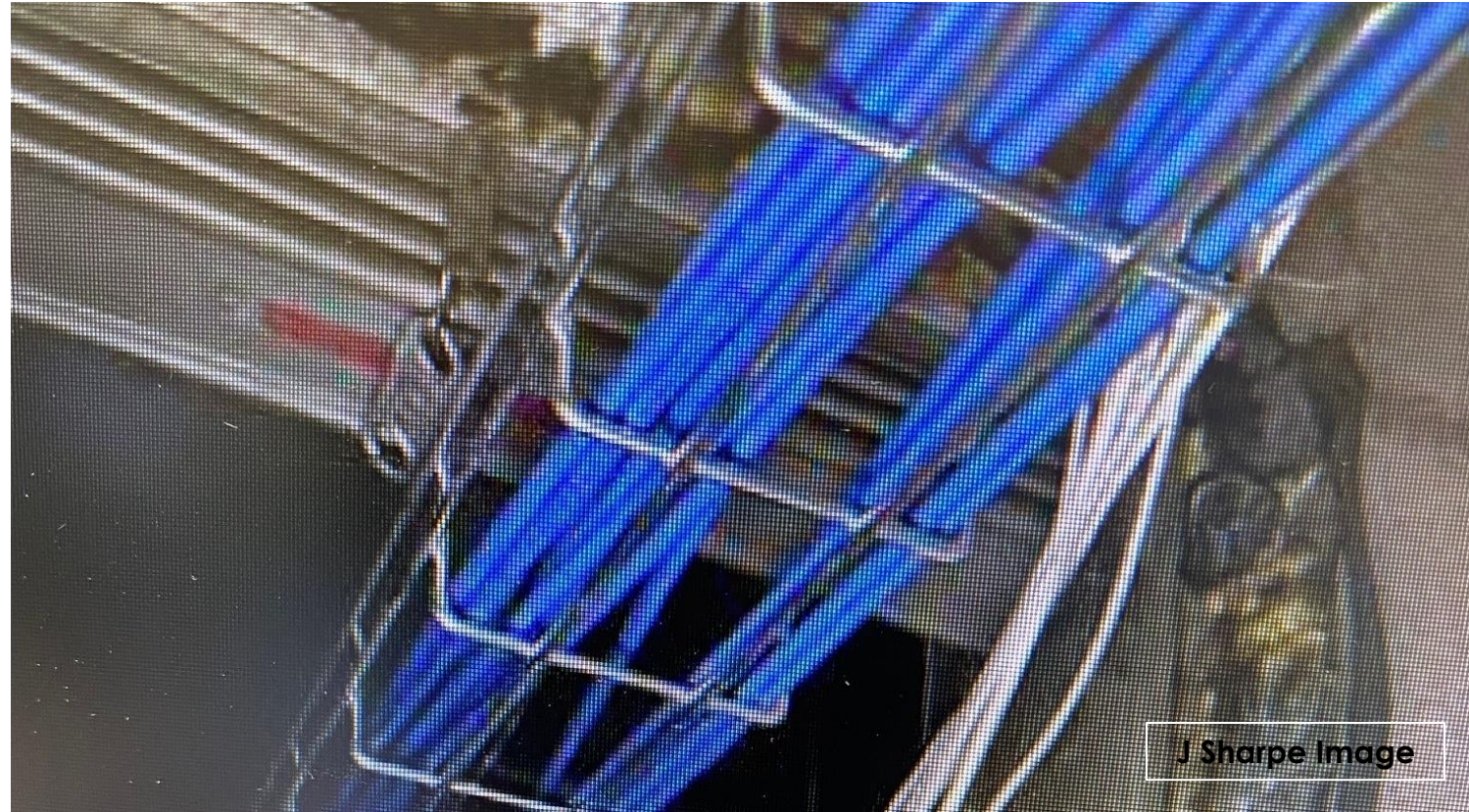


J Sharpe Image

Firestopping & Compartmentation

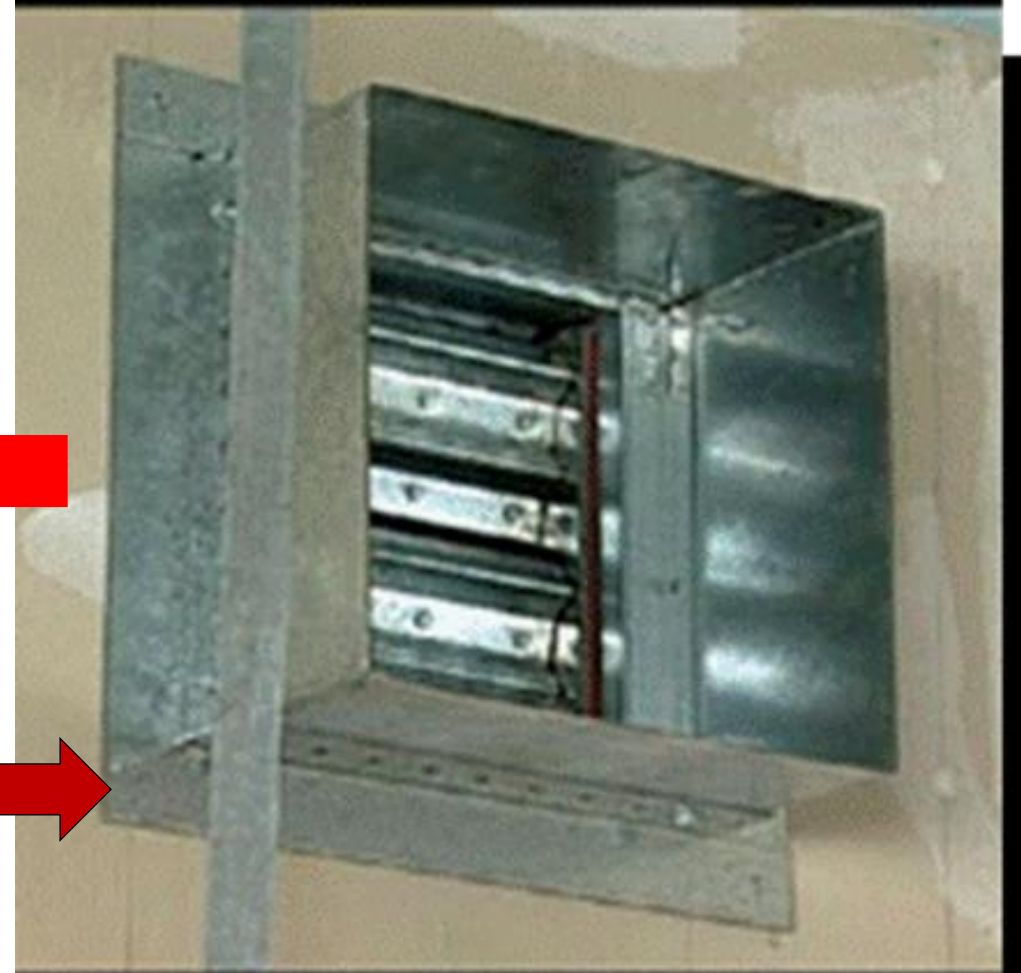
Do we have a Problem??

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

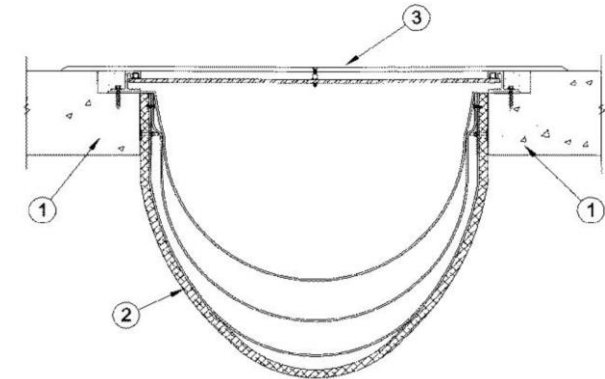
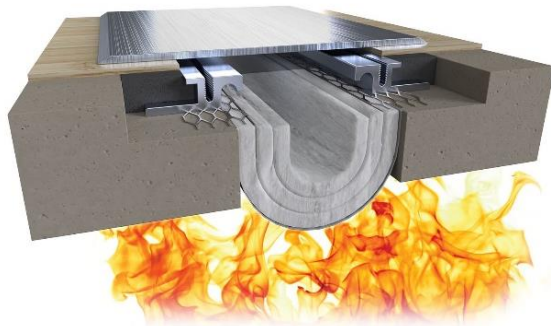
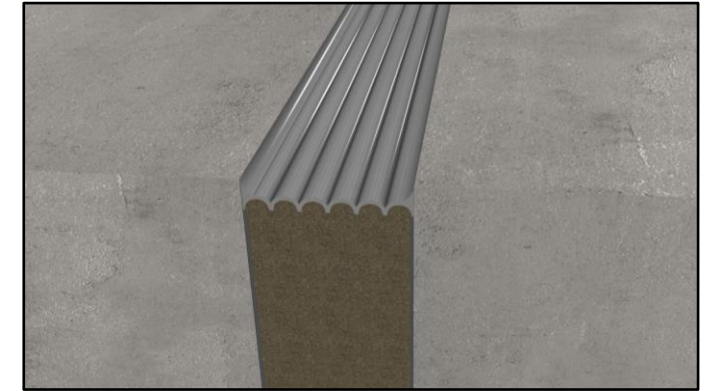
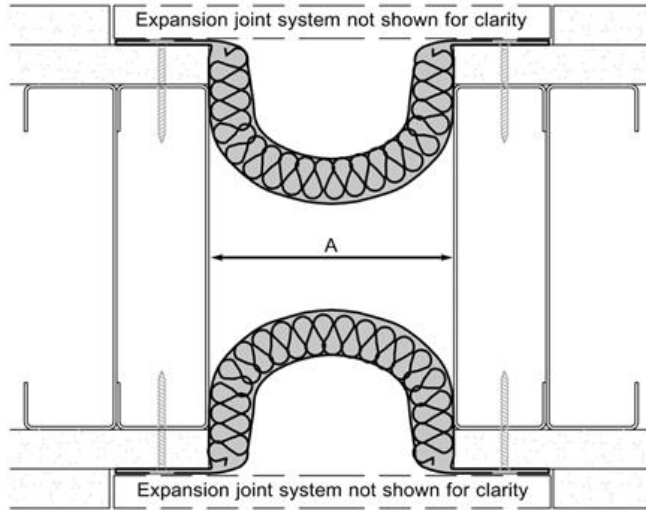
“Labelling”

-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

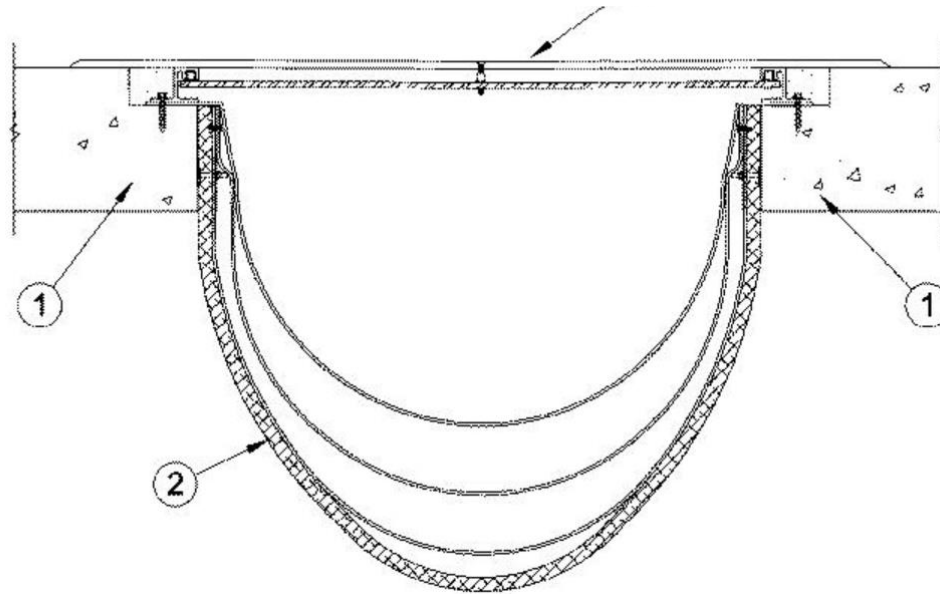
System No. FF-D-4001

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.

Fireproofing....

- 708.1 Maintaining protection.
- Where required when the building was originally permitted and constructed, spray fire-resistive materials, ~~and~~ intumescent fire-resistant materials and other materials used to provide fire-resistance protection, shall be visually inspected to verify that the materials do not exhibit exposure to the substrate.
- 708.2 Repair of Spray Fire-Resistive Materials and Intumescent Fire-Resistive Materials.
- Where damaged, materials used to protect columns, beams and horizontal assemblies shall be repaired, replaced or restored in accordance with the listing, the manufacturer's repair instructions and with the same materials and thicknesses used in the listing. Where the listing is not known, repairs shall be made with the same material type and thickness that exists.

Measuring Thickness



Measure Thickness Coating and Record



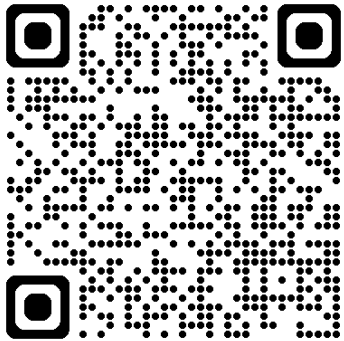
Maintaining Protection Fireproofing

- Patch to full thickness....

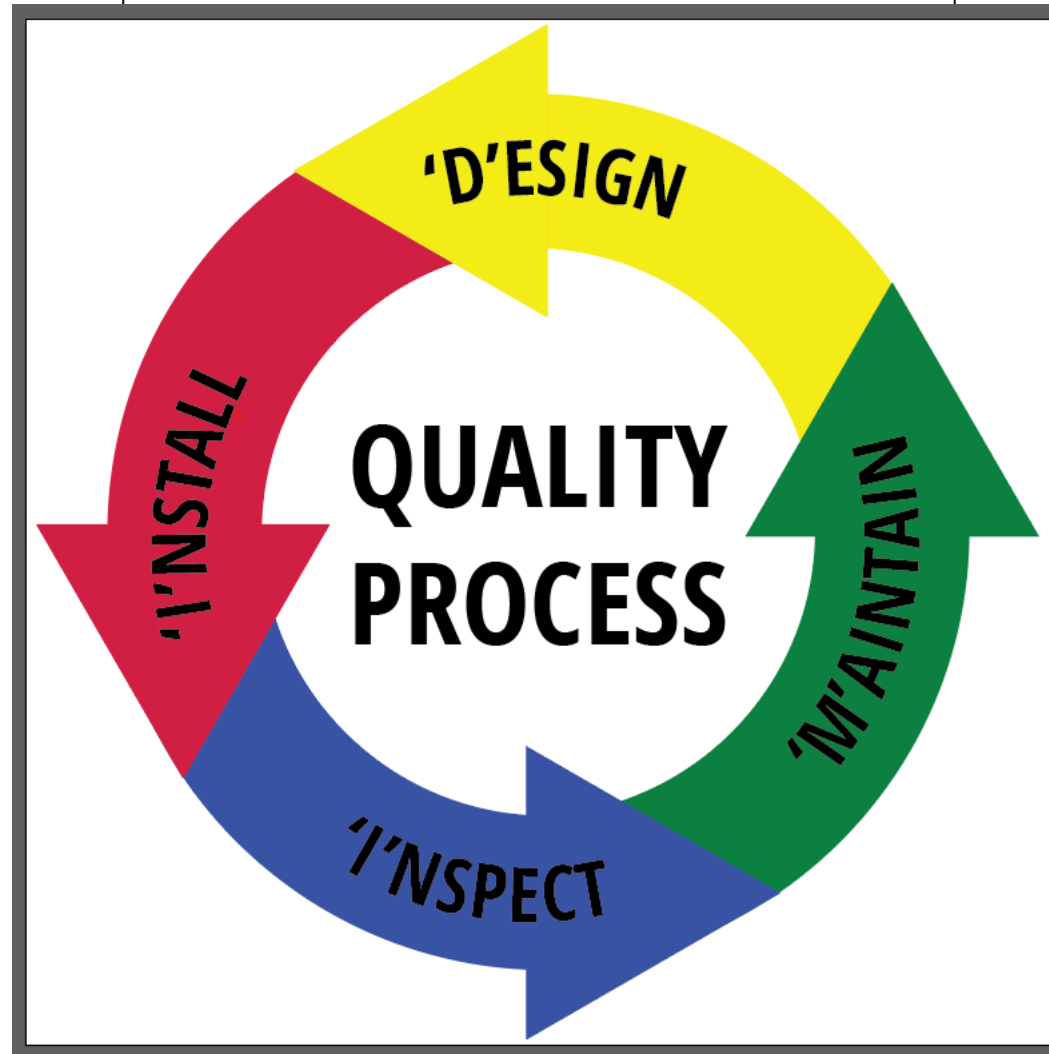


FCIA's DIIM™

INSTALLATION
FM 4991/UL QFCP
Programs AND
Mfr. Education



DESIGN
Specs, Code



PFP/BARRIERS
MAINTAIN
PROTECTION
Fire Codes

INSPECTION
IBC Ch. 17 -NFPA 80 - NFPA 1

FCIA 2025 DOHA MEMBER MEETING & SYMPOSIUM

PASSIVE FIRE PROTECTION MANAGEMENT & FIRE CODES

Presented by:

Bill McHugh

Abhishek Chhabra

FCIA/NFCA

PasFiPro '25

12-13 FEBRUARY 2025
LeMERIDIEN DUBAI AIRPORT
DUBAI, UAE

