

FCIA Webinar

Design
Installation
Inspection
Maintain Protection



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FCIA – Firestop Contractors International Association



- **Fire Exits??**
- **Housekeeping....**
- **Thanks to FCIA Members**
 - Firestop Contractors
 - Manufacturers, Consultants
 - Firestop Distributors, Reps, Friends

Welcome....

Bill McHugh

Firestop Contractors International Association

800 W. Roosevelt Rd., Bldg. C-312 – Glen Ellyn, IL 60137 USA

+1-708-202 -1108 ~ bill@FCIA.org

FREE MOP & Life Safety Digest

Email us - Info@FCIA.org

www.FCIA.org



- ***FCIA's Firestop Education Program***
 - ***Level 1***
 - ***Level 2***
 - ***Level 3***
 - ***Level 4++***
- ***35+ Hours Education & Exams***
- ***Online!***

FCIA – Firestop Contractors International Association

- **FREE Life Safety Digest**
- **UL/ULC, FM 4991 Contractor Programs**
- **IAS AC 291 Inspection Agency Accreditation Program**
- **Firestop Certificate & Individual Knowledge**
- **ASTM Inspection Standards**
- **Tools @ FCIA.org** for Specifiers, AHJ's, Building Owners, Firestop Contractors & Inspection Agencies
- **Watch FCIA.org for Webinar Announcements!**



FCIA Action !

- Conferences
 - FCIA CAN @ Ottawa, Ontario CAN – Sept. 20-22
 - FCIA FIC @ Hyatt Tamaya, ABQ – Oct. 24-27
 - FCIA ECA @ Nashville, USA – May 18-20
 - FCIA ME @ Doha, Dubai – June 12-17
 - FCIA @ FSBI India
- Webinars
- Code Development & Standards
- Committee Action
- International Discussions



D-DESIGN

Specs,
Code,
Standards

I-INSTALLATION

MS Programs AND
Mfr. Education

BARRIER MANAGEMENT

Fire Codes
NFPA 101, 1, IFC
Barrier Management

**QUALITY
PROCESS**

I – INSPECTION

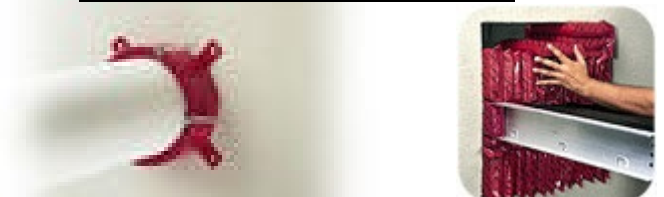
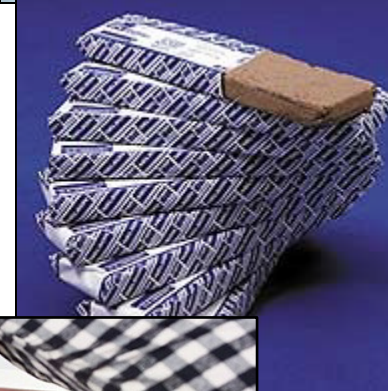
IBC Ch. 17
NFPA 80
NFPA 1

“DIIM” – Design, Install, Inspect, Maintain

- Fire Resistance & Smoke Resistant Firestopping
 - Properly *Designed* Building Codes
 - FCIA - 07-84-00 – Specification – **CCS**
 - **Tested and Listed Systems** –
 - ASTM E814, UL 1479, ASTM E1966, UL 2079, E2307, E2837, E3037
 - **Movement, (M) Smoke (L), Water (W)**
 - Professional *Installation* –
 - FCIA Member, ULC Qualified Contractors, FM 4991 Approved
 - Properly *Inspected* –
 - ASTM E2174 / E2393, by IAS AC 291 Agencies, ULC, IFC, FM Exams
 - **Protection Maintained** – Annually – by FCIA Members

Firestopping for Continuity – Firestop Products

- Sealants
 - Silicone, Latex, Intumescent
- Wrap Strips
 - “Thick, Thin, Wide, Less Wide”
- Putties
- Pillows
- Composite Sheets
- Bricks / Plugs
- Pre Fabricated Kits
- Mortar
- Spray Products
- Tapes



Firestop Inspection Starts at Submittal

- **Submittal becomes *Inspection Documents***
 - **Listings – Submittal Scams??**
 - **Manufacturers Instructions**
 - **Product Data Sheets**
 - **Safety Data Sheets**
 - **Certificates of Compliance**
- **Check**
 - **Listings Current?**
 - **Listings reflect field conditions?**

Firestop Inspection Listings –

- www.ul.com/PiQ
- www.Intertek.com
- www.ApprovalGuide.com
- Firestop Manufacturers

UL Product iQ®

SEARCH MY SEARCHES MY TAGS BILL ⚙️ UL Solutions

System No. C-AJ-1353

May 15, 2023

ANSI/UL1479 (ASTM E814)	CAN/ULC S115
F Rating - 3 Hr	F Rating - 3 Hr
T Rating - 0 Hr	FT Rating - 0 Hr
L Rating At Ambient - Less Than 1 CFM/sq ft	FH Rating - 3 Hr
L Rating At 400 F - Less Than 1 CFM/sq ft	FTH Rating - 0 Hr
	L Rating At Ambient - Less Than 5.1 L/S/m ²
	L Rating At 204 C - Less Than 5.1 L/S/m ²

Feedback

XHEZ7.pdf - Adobe Acrobat Standard DC

File Edit View Window Help

Home Tools Document [Icons] 1 / 3 [Icons] Sign In

8/14/23, 12:51 PM XHEZ7.C-AJ-1155 | UL Product iQ

UL Product iQ®

UL Solutions

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance

Firestop & Inspection – Who?

- **Contractor Self Inspection/Survey**
 - *Verify Management System validity...*
- **Manufacturer Inspection**
 - *Visit...*
- **3rd Party Inspection= ASTM E2174 & ASTM E2393**
 - **IBC, NFPA 1, MasterSpecs**
 - Independent 3rd Party
 - Destructive, Non-Destructive
 - Specified Frequency

How do Contractors Select/Analyze Systems & Inspection Agencies Analyze?

- Wall or Floor Construction Type, Rating
- Wall or Floor Thickness
- Penetrating Item, Coverings
- Size, Type, Thickness
- Annular Space, Joint, Breach Sizes
- Packing/Damming/Backing Materials
- Fill Material(s)

= *Rated Firestop System*

Manufacturers Instructions, Tested and Listed Designs



STI Graphic

Firestop & Inspection

- ASTM E2174 / ASTM E2393 – *“Inspection Process”*



Firestop & Inspection

What SYSTEM is THIS?



Firestop & Inspection



Sheet Metal?



Composite Sheet?



**Possible UL
System Nos.:
C-AJ-5138,
C-AJ-5209,
W-J-5091,
Etc.**

Affinity Firestop Photo

Firestop & Inspection



What SYSTEM is THIS?

Firestop & Inspection



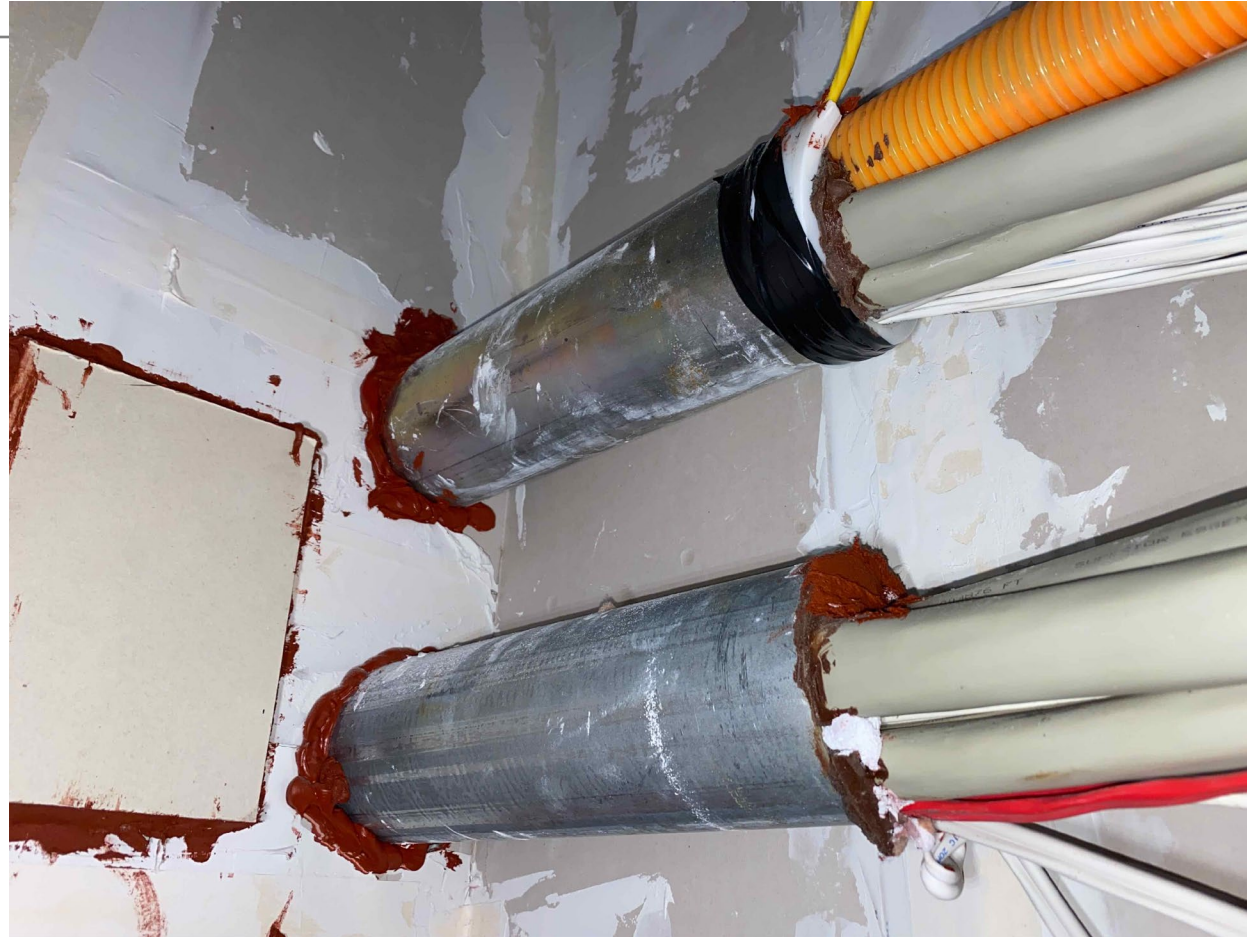
What SYSTEM is THIS?

Firestop & Inspection



What SYSTEM is THIS?

Firestop & Inspection



What SYSTEM is THIS?

Firestop & Inspection

- Build **ASSEMBLY** Right!!
 - NFPA 1 – “Fire-Resistive Patches or complete panel replacement”
 - Gypsum Panel Choice
 - Regular, Type X, Type C
 - Gypsum Block
 - Concrete/Masonry
 - Clay Tile Block
 - **Walls Not Continuous**
 - **Holes & Repair Method**



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

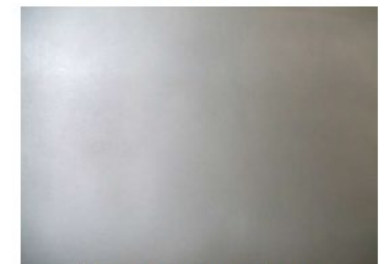


Figure 6: Redecorate Repaired Area

Firestop & Inspection

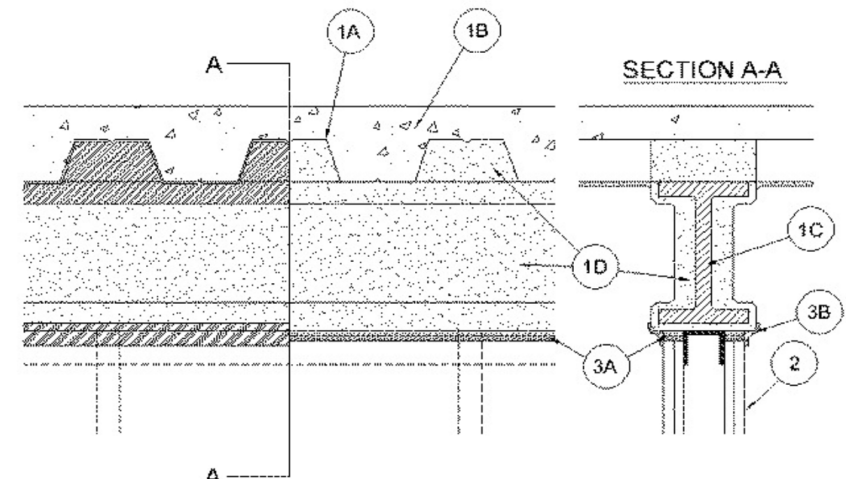
- Penetrations & Joints –
 - Annular Space Sizes
 - Sleeve Lengths
 - Wrong System
 - Wrong Products (Unlisted)



Firestop & Inspection

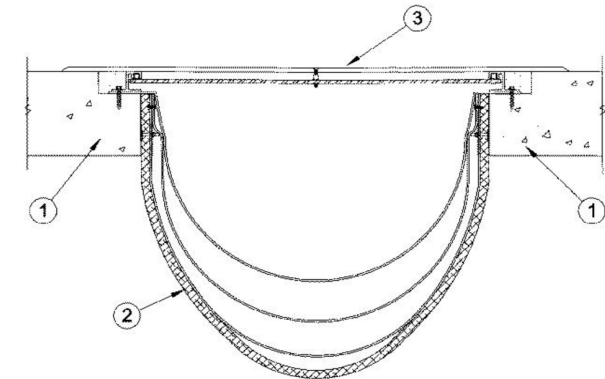
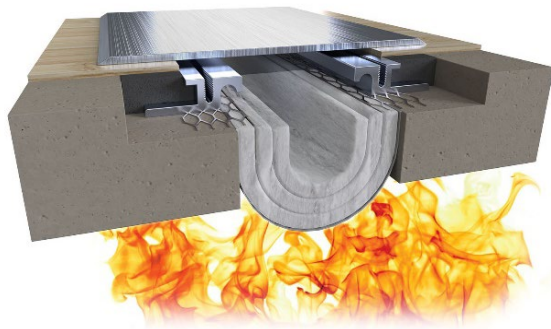
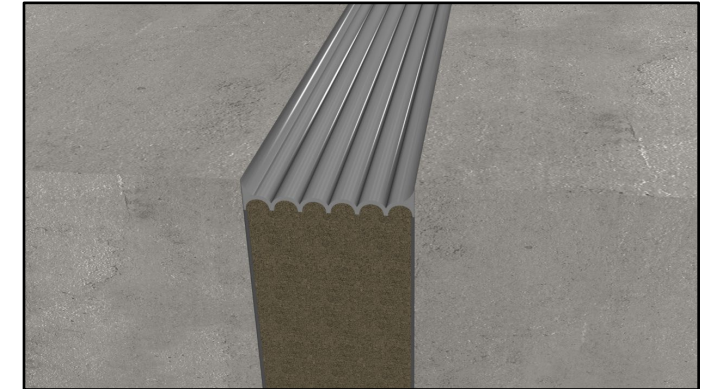
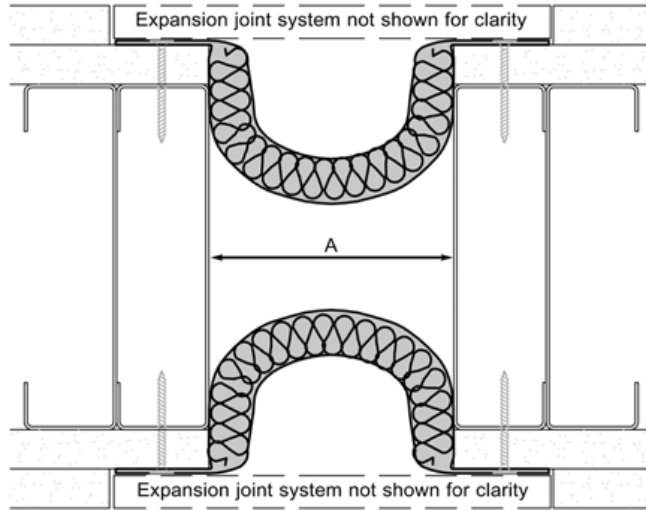
HW-D-0259

- Beam Size, Shape
- **INCREASED** Fireproofing Thickness on Web of Beam
 - Acceptance Criteria – 250°F Ave / 325°F Individual Point on non-fire side
- Rest of beam protected based on beam design



UL Solutions Image

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



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

Firestop & Inspection FF-D-4001

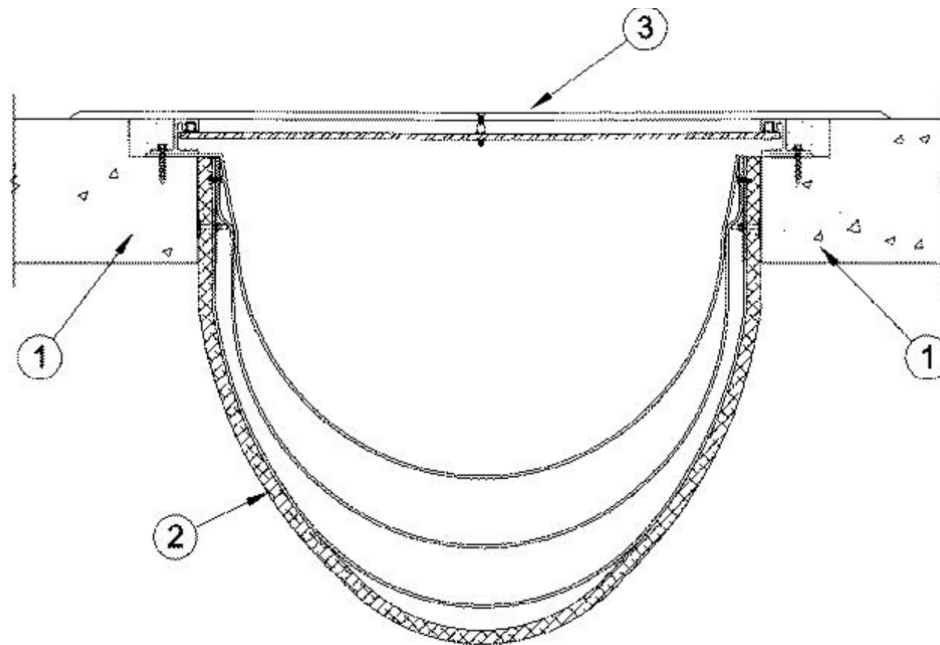
System No. FF-D-4001

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.

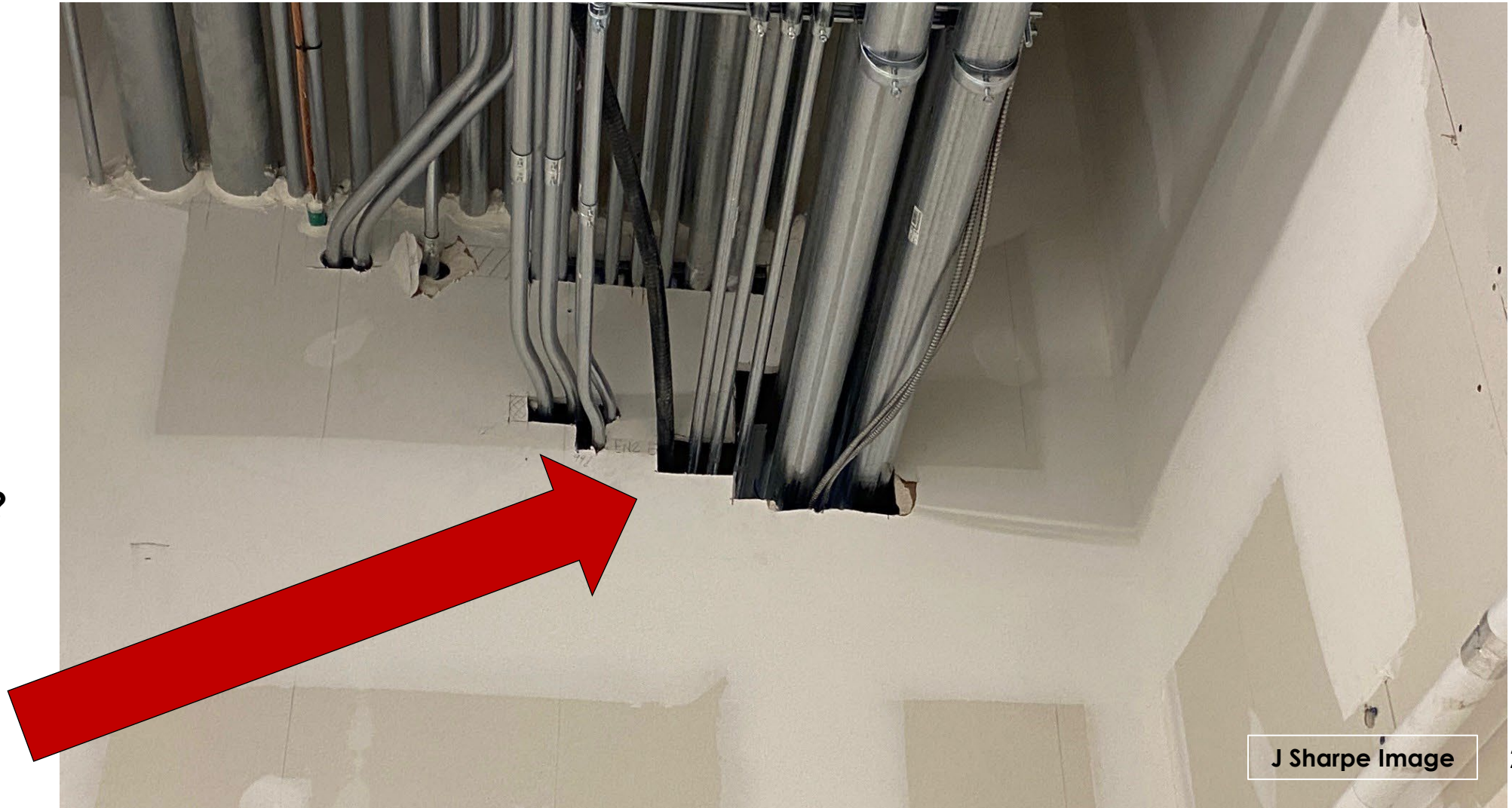
CONSTRUCTION SPECIALTIES INC — FB97-25F-++ through FB97-36F-++ (++=max width of joint opening)

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.

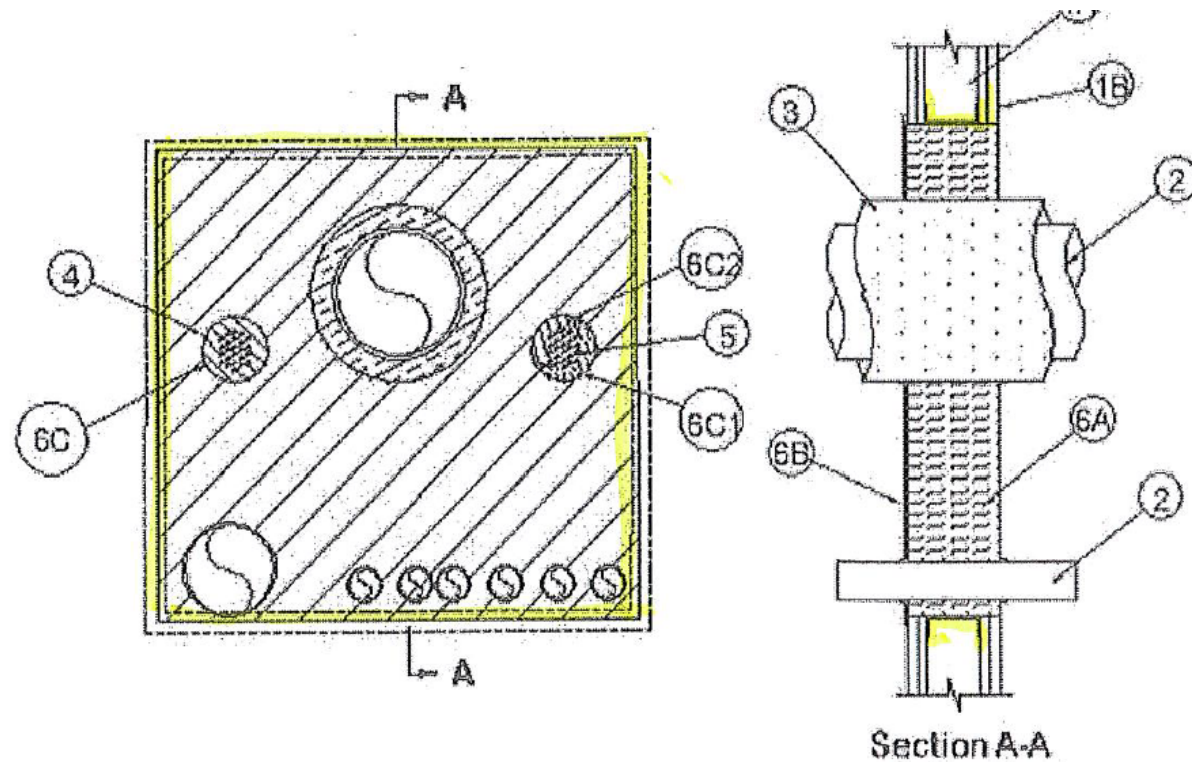
As an alternate, where the linear joint opening is enclosed within a chase wall and is non load bearing, a cover consisting of a creased sheet of min 2 mil stainless steel foil secured with 1 in. wide continuous galv steel washer strips along each side of the joint opening may be used.

Firestop & Inspection

FRAMING?



Firestop & Inspection



1. **Wall Assembly** — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:

A. **Studs** — Wall framing may consist of either wood studs or channel shaped steel studs. Wood studs to consist of nom 51 by 102 mm (2 by 4 in.) lumber spaced max 406 mm (16 in.) OC. Steel studs to be min 89 mm (3-1/2 in.) wide and spaced max 610 mm (24 in.) OC. **Additional framing members shall be located to completely frame the opening.**

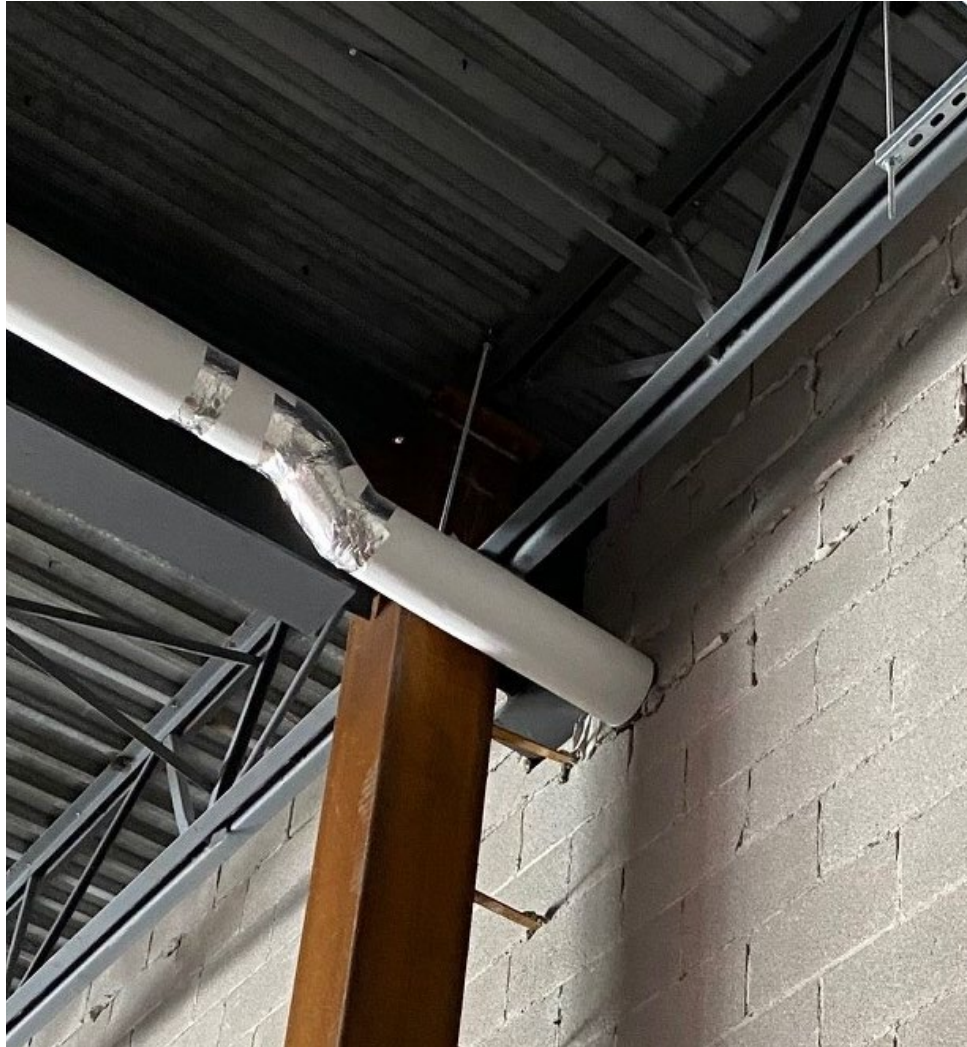
Firestop & Inspection

**Insulation
HIDING
Penetrating
Item**

**BIG Plastic
Pipes
NEED
COLLARS**

**Insulated
Metal
NEED
SEALANT
ONLY - MOST
CASES**

**BIG \$\$\$\$
Difference**



Firestop & Inspection

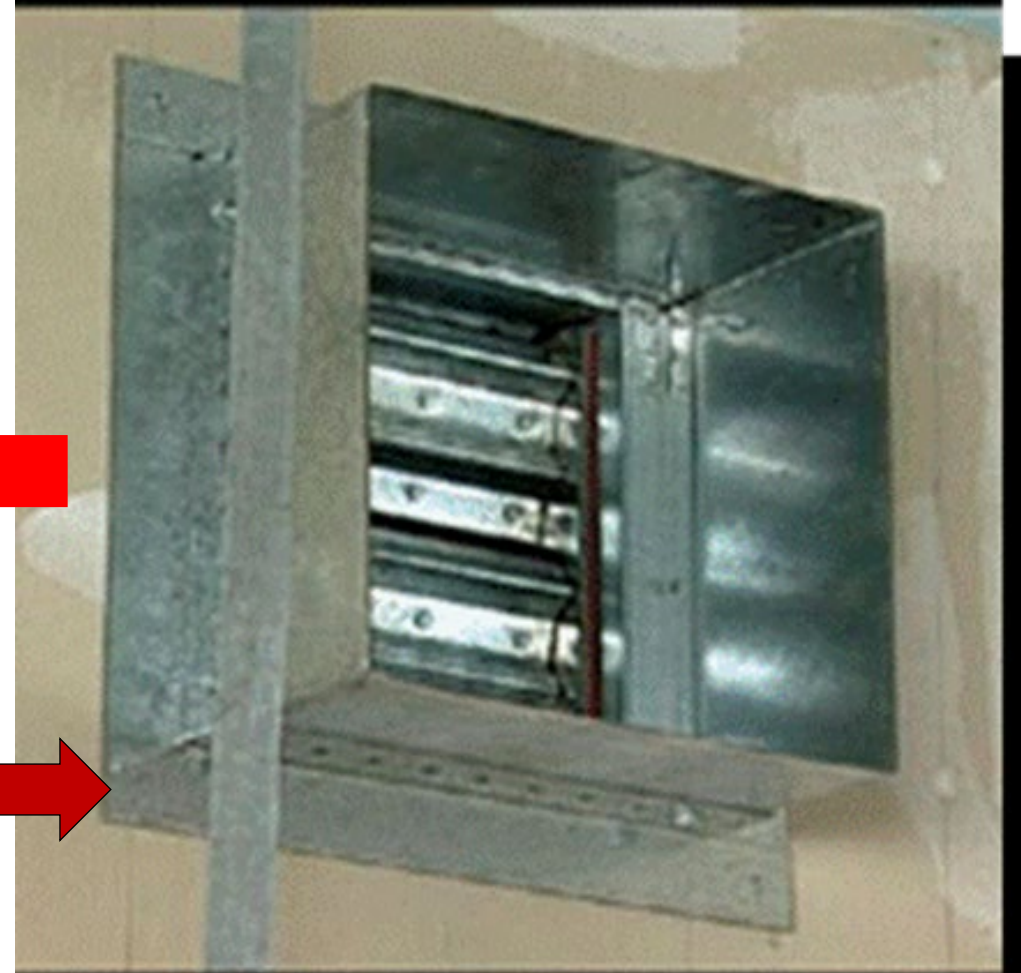
Transitions

Metal Pipe
Plastic Pipe

UNSAFE



Firestop & Inspection



Fire Damper Annular Space?

Firestop & Inspection

Annular
Space
Control

System
LIMITS
ANNULAR
SPACE



Firestop & Inspection



Mineral Wool and??

Heckler Photo

Firestop Inspection in Codes

ASTM E2174 - ASTM E2393

- NFPA 101 / 5000 - Chapter 8 - Annex
- NFPA 1, Ch. 12 – ‘Quality Assurance Program’
- 2012 – 2018 International Building Code
 - CH 17 – Special Inspections
 - Buildings 75’ & higher above Fire Department Access
 - ***R Occupancies >250 occupants***
 - Occupancy Type III, IV, Chapter 16 Table 1604.5
- Abu Dhabi International Building Code
- National Building Code of Canada??
- Master Specifications

I – Inspection – NFPA 1 2018

12.3.2* Quality Assurance for Penetrations and Joints. In new buildings three stories or greater in height, a quality assurance program **for the installation of devices and systems** installed to protect penetration and joints shall be prepared and monitored by the RDP responsible for design. **Inspections** of firestop systems and fire-resistive joint systems shall be in accordance with 12.3.2.1 and 12.3.2.2.

= FM 4991/UL QFCP & ASTM E2174, ASTM E2393



I – Inspection – IBC Code Requirements

1705.16 Fire-resistant penetrations and joints. In **high-rise buildings or in buildings assigned to Risk Category III or IV in accordance with Section 1604.5, special inspections** for through-penetrations, membrane penetration firestops, fire resistant joint systems, and perimeter fire barrier systems that are tested and listed in accordance with Sections 714.3.1.2, 714.4.1.2, 715.3 and 715.4 shall be in accordance with Section 1705.16.1 or 1705.16.2. [IBC 1705.16]

I – Inspection – IBC Ch. 17, Ch. 2

TWO AHJ APPROVALS REQUIRED

APPROVED AGENCY. An **established and recognized agency** regularly engaged in conducting tests or furnishing inspection services, when such agency has been *approved*. [IBC 202 Definitions]

SPECIAL INSPECTOR. A qualified person **employed or retained by an *approved agency*** and *approved* by the *building official* as having the **competence** necessary to inspect a particular type of construction requiring *special inspection*. [IBC 202. Definitions]

Inspector Qualifications in ASTM E2174/E2393

- **FIRM 'Independent of, and Divested from ' Installing firm, Distributor, Manufacturer, Competitor, Supplier...**
- **FIRM 'Not a Competitor of the Installer, contractor, manufacturer, or supplier**
- **Inspector is other than the contractor...(GC)**
- **Submit notarized statements of Independence...**
- **2 Years Experience in construction inspections...**
- **ASTM E3038??**

Inspection Firm Qualifications – IAS AC 291

Management System Items

- **Minimum Qualifications & Technical Competency**
 - **Firestopping – UL, FM, or IFC Firestop Exam Training, Inspector Supervision**
- **Contracts – ‘within area of expertise’**
- **Safety**
- **Measuring & Monitoring Resources**
- **Recordkeeping**
- **Sample Handling**
- **Report Content, Coverage, Dispatching**
- **Complaints, Appeal, Feedback**
- **Internal Audits**



Inspection Firm Qualifications – IAS AC 291

Management System Items

- **Risk to Impartiality – Conflicts of Interest**
- **Insurance**
- **Legal**
- **Intermediate and Final Reports**
 - **Notification of Discrepancies**
- **Status Reviews**
- **Management Review**

Firestop Special Inspection

ASTM E2174 – ASTM E2393

- Inspection Documents
 - Systems, Materials,
 - Manufacturers Instructions,
 - SDS,
 - Plans – Assembly Type
- Identification Systems (Labels)
 - Firestop Contractor Installed
 - Speeds System Evaluation

Firestop Installation, Special Inspection & Labels

WARNING!
MUST REMAIN FIRESTOPPED!
 Removing Firestop will void fire rating. If access is needed, contact engineering or Firestop Southwest for proper re-installation instructions. To maintain UL classification, reseal only with approved brand Firestop material.

Installer: _____ Date: _____ UL#: _____

FIRESTOP SOUTHWEST
 2318 S. Industrial Park Ave.
 Tempe, AZ 85282
 (800) 235-2669

WARNING

FIRESTOP MATERIAL
DO NOT TAMPER OR REMOVE

DATE INSTALLED: _____
 ASSEMBLY NO: _____
 PENETRATION BELONGS TO: _____

TO REPAIR OR RETROFIT CONTACT:
PRO-FIRESTOP INC.
PH: 416-293-0993

13187

WARNING
 This opening has been sealed with 3M Fire Protection Products. **DO NOT REMOVE!**
 To maintain UL classification in retrofitting, reseal with 3M Fire Barrier Products ONLY!

EZ-Path

HILTI
 Fire Rated Assembly / Assemblage Homologues
 WARNING: DO NOT REMOVE! PRIERE DE NE PAS DEPLACER



Special Inspection
Firestop


No. SI 000003

This installation has been inspected to the procedures and limitations specified in the issued report

Contact UL
 877.852.3677
 Fire.Inspection@ul.com

UL LLC © 2019

Installed by (Contractor's name and address),
 an FM Approved Firestop Contractor
 Do Not Disturb – Fire Resistance Rated System
 Serial No. xxxxxx


APPROVED

Firestop Inspection Process

ASTM E2174 – ASTM E2393

- **Observation Reviews**
 - During construction
 - Witnessed randomly of the installed systems on each floor
 - **E2174 - 10%**, each **type** of Service Penetration Firestop System
 - **Type = By System, By Firestop Installing Contractor**
 - **E2393 - 5% of Total Lineal Feet** for each **type** of Fire Resistance Rated Joint System
 - **Type = By System, By Firestop Installing Contractor**



Affinity Firestop Photo

Firestop Inspection Process

ASTM E2174 – ASTM E2393

- Destructive Reviews (Testing)
 - Performed Post-Construction
 - **E2174** - Minimum 2%, no less than 1, each **type** per 930 m² (10,000 SF) of floor area
 - **Type = By System, By Firestop Installing Contractor**
 - **E2393** - Minimum 1 / 152 LM (500 LF) of Joint Area, by **type**, mandatory; Exception mechanical joints
 - **Type = By System, By Firestop Installing Contractor**



Affinity Firestop Photo

Firestop Inspection Process

ASTM E2174 - ASTM E2393

- Inspectors shall
 - Not be in CONFLICT...
 - Not supervise or direct FS Contractors
 - Systems Selection = Supervision
 - Commence reviews at FS installation
 - Review installation based on manufacturers installation instructions & Listing (system requirements)

Firestop Inspection Process – TOOLS...

ASTM E2174 - ASTM E2393

- Equipment – Options
 - Tapes
 - Tablets w/Systems
 - Borescope to explore areas that are concealed or partially
 - Flashlight
 - Laser Pointer
 - [Listings, Manufacturers Instructions]
 - NOT MICROMETERS



Firestop Repairs

- Repairs
 - Instruction requirements by manufacturer
 - Listed systems
 - Patch/infilling
 - Adhesion
 - Movement
 - F, FT, FH, FTH, L, M, W Ratings
 - ***As recommended by MFR***



Affinity Firestop Photo

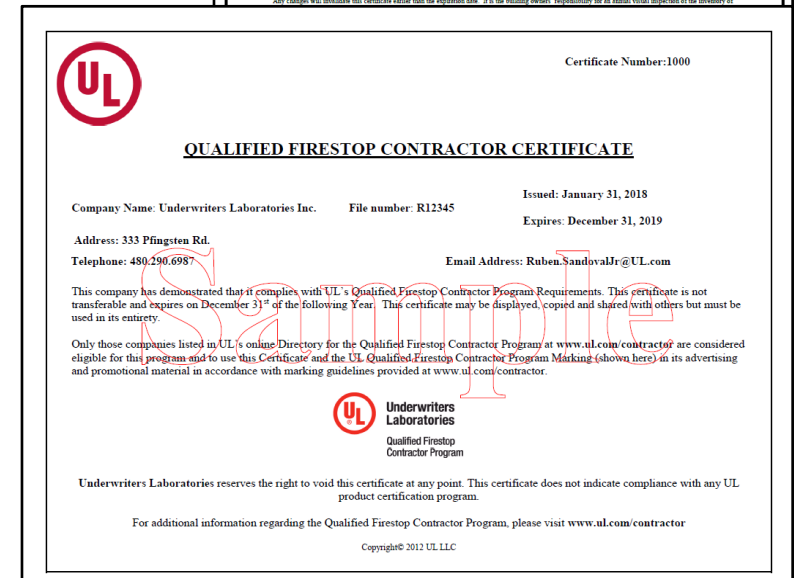
Master Audit Certificate of Compliance Program

A **Jobsite Specific Management System Audit** – Our audit provides verified processes were followed to properly installed firestop systems.

UL Solutions Image

A **Renewable Jobsite Specific Certificate** – After completion of a successful audit, we issue a jobsite specific certificate that is renewable for the building owner.

Improved Firestop Systems Documentation – The MACC certificate in conjunction with the firestop systems documentation, **builds the fire-resistance inventory required by the 2018 International Fire Code** for fire and smoke protection features.

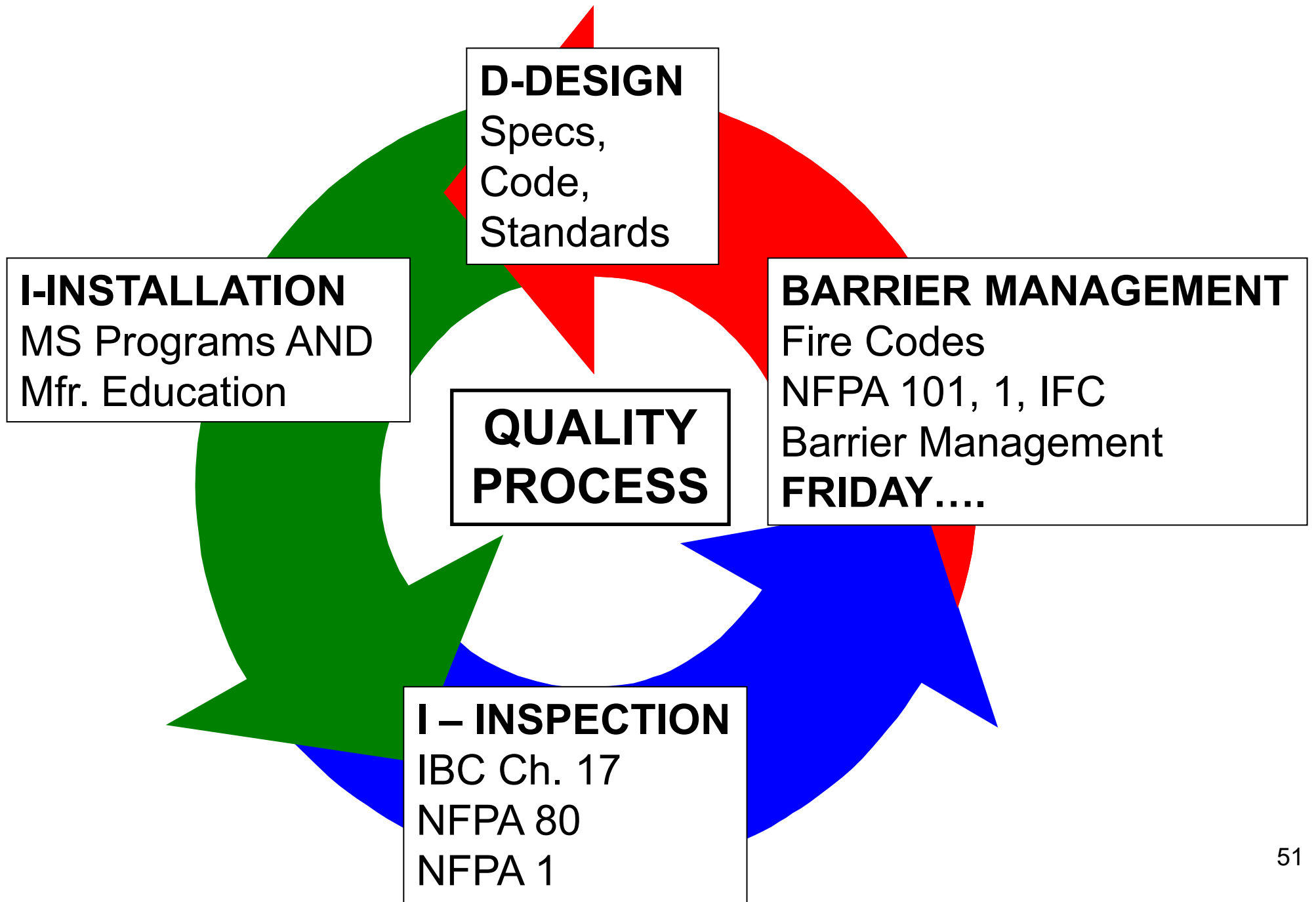


FM 4991 & UL/ULC QFC

- **UL QUALIFIED or FM 4991 APPROVED**
 - DRI – Appointed by Contractor, CEU's
 - Worldwide Program
 - Speeds Inspection

- **Listed @**
 - www.UL.com/PiQ
 - www.FCIA.org
 - www.ApprovalGuide.com





Thanks.....

Bill McHugh & Mark St. Onge

Firestop Contractors International Association

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AHJ's, Specifiers with Design Firms, Independent

FREE MOP – FREE Life Safety Digest

Email - Info@FCIA.org



FCIA Webinar

Design Installation **Inspection** Maintenance & Management

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