

FCIA Webinar Series

Firestop Systems Selection & Analysis with FCIA

Bill McHugh, Executive Director of FCIA
Rich Walke, CTI, Consultant to FCIA

FCIA – Firestop Contractors International Association



- **Fire Exits??**
- **Housekeeping....Phones, Hands off Keyboard!**
- **Thanks to FCIA Members**
 - Firestop Contractors
 - Manufacturers, Consultants
 - Firestop Distributors, Reps, Friends
- **FREE PDF MOP/ Word Doc Spec** - Specifiers @ AE, Independents, AHJ's with Jurisdictions, More

FCIA – Firestop Contractors International Association

- **FREE Life Safety Digest**
- **UL/ULC, FM 4991 Contractor Programs
IAS AC 291 Inspection Agency
Accreditation Program, Individual Knowledge**
- **ASTM E2174/E2393 Inspection Standards**
- **Tools @ FCIA.org** for Specifiers, AHJ's, Building Owners,
Firestop Contractors & Inspection Agencies
- **Watch FCIA.org for Webinar Announcements!**



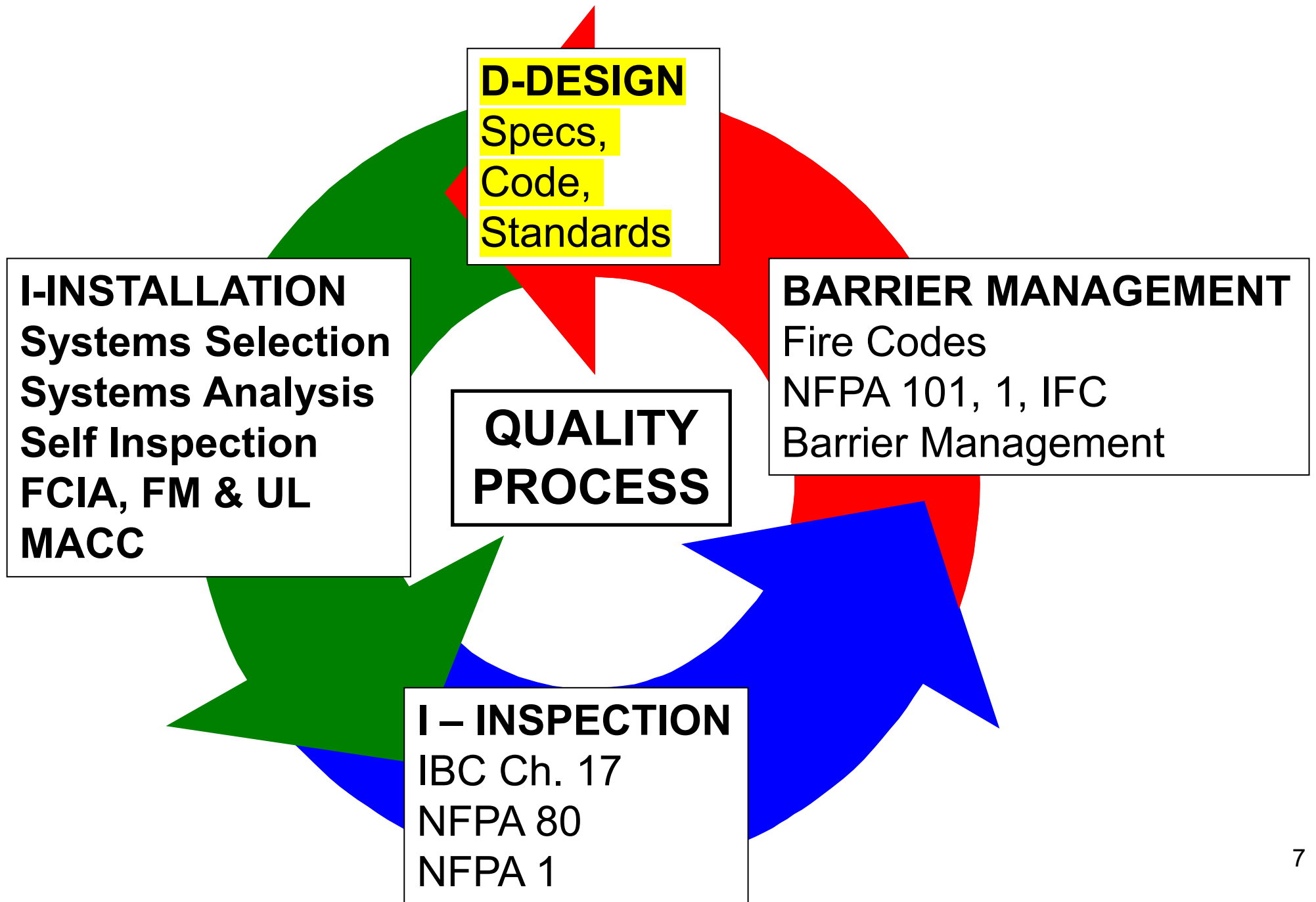
FCIA Actions - 2021

- Conferences - HYBRID
 - FCIA FIC @ San Diego – Nov. 2-5
- Webinars & Symposiums
- Code Development & Standards Discussions
- Committee Action
- International Discussions
- ***NEW Education for Careers in Firestopping!!***
 - ***FCIA's FCAEP – Check it out!***

- ***NEW Education for Careers in Firestopping!!***
 - ***FCIA's FCAEP –***
 - ***4 Levels***
 - ***Career Path Education***
 - ***FCIA Certificates***
 - ***FCIA Education Respected Worldwide***

“TOTAL FIRE PROTECTION”

- **Effective Compartmentation**
 - Fire Barriers, Fire Walls/Floors, Smoke Barriers
 - Firestopping, Fire Dampers, Swinging and Rolling Fire Doors, Fire Rated Glazing
- **Detection & Alarm Systems**
- **Sprinkler Suppression Systems**
- **Education for Safety**
 - Building Owners & Managers, Building Occupants and Firefighters



“DIIM” – Design, Install, Inspect, Maintain “DIIM” @ FCIA since 1998....

- Fire Resistance & Smoke Resistant Firestopping
 - Properly *Designed* Building Codes
 - FCIA - 07-84-00 – Specification – *CCS, RSW*
 - *Tested and Listed Systems* – ASTM E814, UL1479, ASTM E1966, UL 2079, ASTM E2307, E2837, E2874, E3037
 - Movement (M), Smoke (L), Water (W)
 - Professional *Installation* –
 - FCIA Member, UL/ULC Qualified Contractors, FM 4991 Approved Contractors
 - Properly *Inspected* –
 - ASTM E2174 / E2393, by IAS-AC291 Agency, UL/ULC, IFC, FM Exam
 - *Protection Maintained* – Annually – by FCIA Members

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Firestop Systems Selection & Analysis with FCIA

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Building & Fire Code Requirements

- International Codes –
 - New and Existing Buildings – International Building Code – Chapter 7
 - International Fire Code – Chapter 7
- NFPA 5000 – 101 – Chapter 8
- National Building Code of Canada
- UAE Fire and Life Safety Code – Chapter 1, Section 21
- Other Worldwide Codes
- ***Minimum requirements - Construction & Maintaining Protection***

Building & Fire Code Requirements

- Fire-Resistance Rated Barriers – Defined Terms
 - ***Exterior Walls***
 - ***Fire Walls***
 - ***Fire Barriers***
 - ***Fire Partitions (Not in NFPA)***
 - ***Smoke Barriers***
 - ***Smoke Partitions***
 - ***Archaic Assemblies***

Smoke Barriers & Firestopping

- Smoke Barriers differ from Smoke Partitions?
 - **Smoke Barrier** –
 - **IBC** – Hourly Rated, Quantified Firestop “L” Rating
 - < 5 cfm/sf (IBC 2006)
 - < 50 cfm, 100 sf of Wall Area (IBC 2009)
 - **NFPA** – ... ‘restricting the passage of smoke’...
 - Hourly Rated, Quantified Firestop L Rating Chapter 8
 - NO quantified “L” Rating ... Healthcare Chapter
 - Continuous, Barrier to Barrier, ... through concealed spaces
 - Not always fire-resistance-rated
 - **Smoke Partition** –
 - **IBC** – Continuous barrier, not fire rated... ‘retard’
 - **NFPA** – Continuous membrane that is designed to form a barrier to *limit the transfer of smoke*....

Barrier Continuity SYSTEMS

- **Products Become Systems – Test Standards**
 - **Fire & Smoke Barriers – Fire Separations**
 - ASTM E119, UL 263
 - **Firestopping –**
 - UL 1479, ASTM E814, UL 2079, E1966, E2307, E2837, E3037...test methods...”
 - **Swinging/Rolling Fire Doors – UL 10B & UL 10C....NFPA 252**
 - **Fire Rated Glazing – UL 9, NFPA 257, UL 263, ASTM E119**
 - **Fire/Smoke Dampers – UL 555, UL 555S, UL 555C**
- **SYSTEM Testing = Suitability Statement**

Continuity

Effective Compartmentation Features



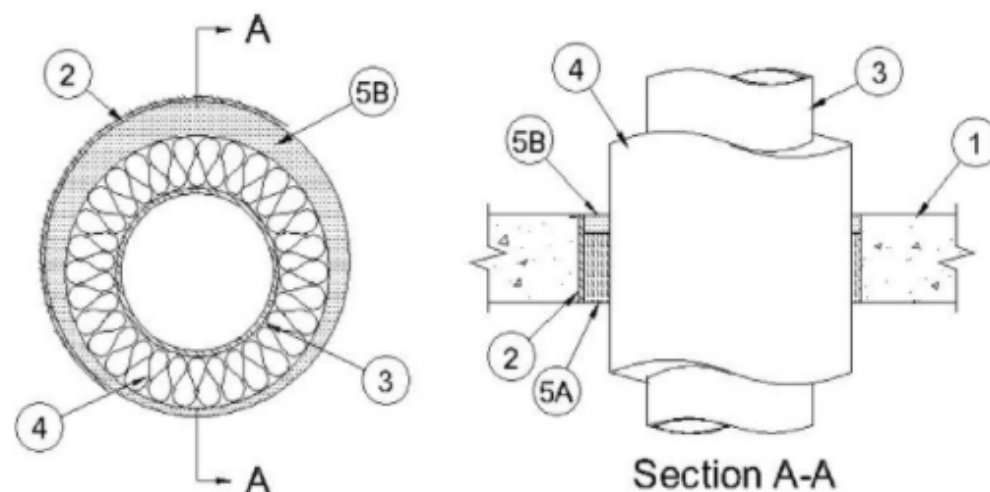




**Possible UL
System Nos.:
C-AJ-5138,
C-AJ-5209,
W-J-5091,
Etc.**

Affinity Firestop Photo

F Ratings — 1 and 2 Hr (See Item 3)
T Ratings — 0, 3/4 and 1 Hr (See Item 4)



1. Floor or Wall Assembly — Min 2-1/2 in. (64 mm) thick reinforced lightweight or normal weight (100-150 pcf or 1600 - 2400 kg/m³) concrete floors or min 3 in. (76 mm) thick reinforced lightweight or normal weight concrete walls. Wall may also be constructed of any UL Classified **Concrete Blocks***. Max diam of opening 9 in. (229 mm).

See **Concrete Blocks** (CAZT) category in the Fire Resistance Directory for names of manufacturers.

2. Steel Sleeve — (Optional) - Nom 9 in. (229 mm) diam (or smaller) Schedule 10 (or heavier) steel sleeve cast or grouted into floor or wall assembly. Steel sleeve may be installed flush or may project max 2 in. (51mm) beyond the floor or wall surfaces. As an alternate, nom 9 in. (229 mm) diam (or smaller) sleeve fabricated from nom 0.019 in. (0.48 mm) thick galv steel cast or grouted into floor or wall assembly flush with floor or wall surfaces.

3. Through Penetrants — One metallic pipe to be installed concentrically or eccentrically within opening. Penetrant to be rigidly supported on both sides of floor or wall assembly. The following types and sizes of metallic pipes may be used:

A. **Steel Pipe** — Nom 4 in. (102 mm) diam (or smaller) Schedule 10 (or heavier) steel pipe.

B. **Iron Pipe** — Nom 4 in. (102 mm) diam (or smaller) cast or ductile iron pipe.

C. **Copper Tubing** — Nom 2 in. (51 mm) diam (or smaller) Type L (or heavier) copper tubing.

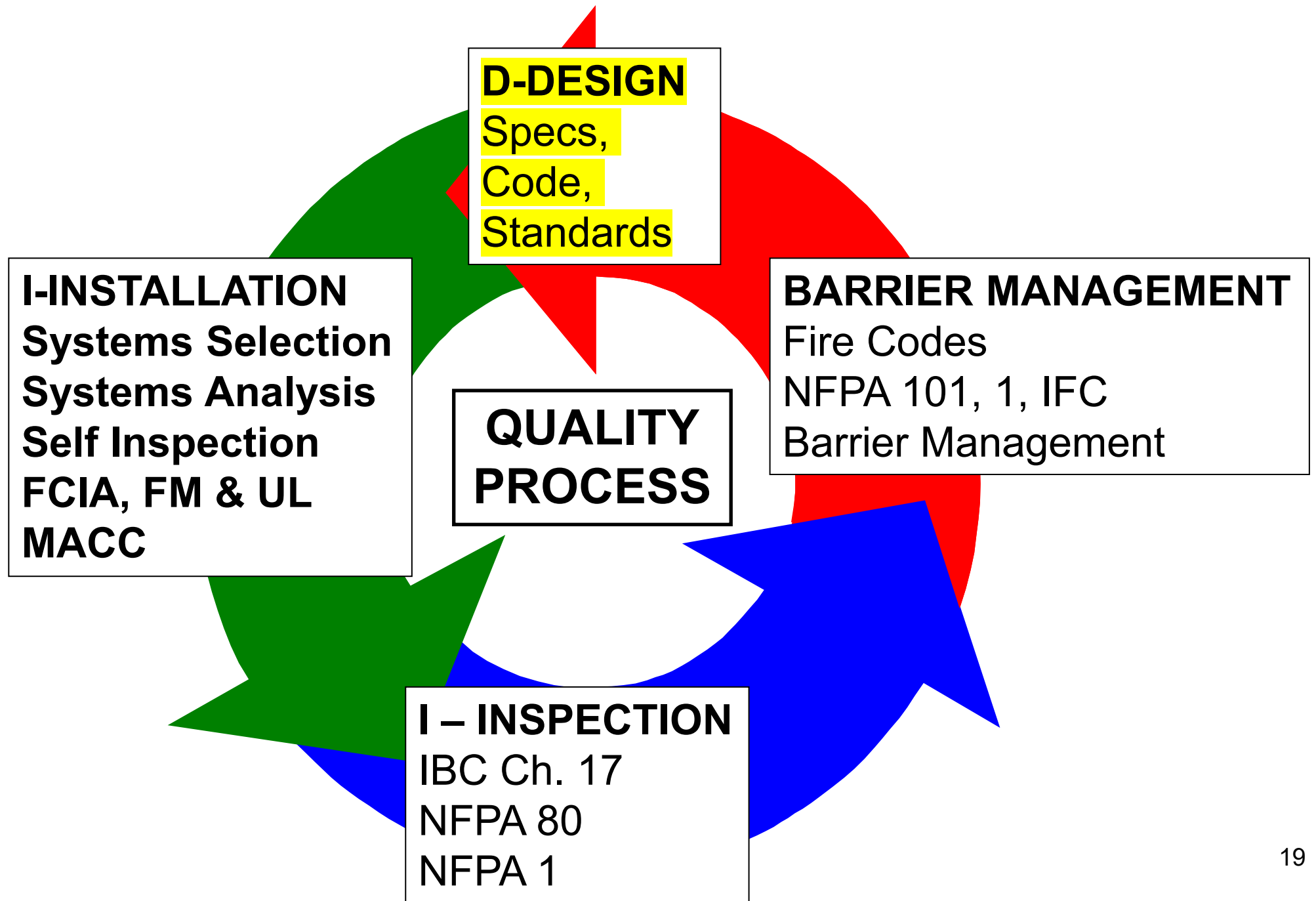
D. **Copper Pipe** — Nom 2 in. (51 mm) diam (or smaller) Regular (or heavier) copper pipe.

F Rating is 2 Hr for Penetrants A and B. F Rating is 1 Hr for Penetrants C and D.

4. Pipe Covering* — Nom 1-1/2 in. (38 mm) thick (or less) hollow cylindrical heavy density glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or with butt tape supplied with product. Annular space between the pipe covering and periphery of opening or sleeve shall be min 1/2 in. to max 1 in. (13 mm to 25 mm).

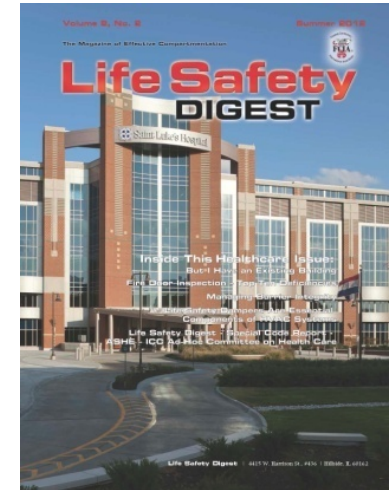
See **Pipe and Equipment Covering - Materials** - (BRGU) category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a smoke Developed Index of 50 or less may be used.

T Rating is 3/4 Hr for nom 1-1/2 in. (38 mm) thick pipe covering for penetrants A and B. T Rating is 1 Hr for nom 1-1/2 in. (38 mm) thick pipe covering for Penetrants C and D. T Rating is 0 Hr for all Penetrants when pipe coverings less than nom 1-1/2 in. (38 mm) thick.



Specs – Starts Barrier Management Process

- **NEW Buildings – 07-84-00 Specs**
 - www.FCIA.org
- **Part I – Products...but**
 - **Systems**
 - **Product Properties**
 - **Manufacturers**
- **“Single Manufacturer to the greatest extent possible” – EJ/EFRRRA’s**



Specs – Key Parts Relating to Installation

- **NEW Buildings – 07-84-00 Specs**
 - **www.FCIA.org**
- **Part II– Contractor/Installer Qualifications**
 - **FCIA Member in Good Standing, AND**
 - **FM 4991, Standard for the Approval of Firestop Contractors, OR**
 - **UL / ULC Qualified Firestop Contractor Program**
 - **AND**
 - **Manufacturer Accredited, Approved, Trained**

Specs – Key Parts Relating to Inspection

- **NEW Buildings – 07-84-00 Specs**
 - **www.FCIA.org**
- **Part II – Qualifications – Special Inspection**
 - **Special Inspection Agency –**
 - **IAS AC 291 Accredited Special Inspection Agencies**
 - **Special Inspector Qualifications**
 - **FM Firestop Exam**
 - **UL Firestop Exam**
 - **AND**
 - **IFC Exam**

Specs – Don't Forget Division 1 – ALL Divisions

Documentation for Building Life Cycle

- **Reference 01-78-00 Closeout Submittals**
 - **01 78 29 Final Site Survey**
 - **01 78 33 Bonds**
 - **01 78 36 Warranties**
 - **01 78 39 Project Record Documents - SYSTEMS**
 - **01 78 43 Spare Parts**
 - **01 78 46 Extra Stock Materials**
 - **01 78 53 Sustainable Design Closeout Documentation**

Building & Fire Code Requirements

Identify the Barriers First

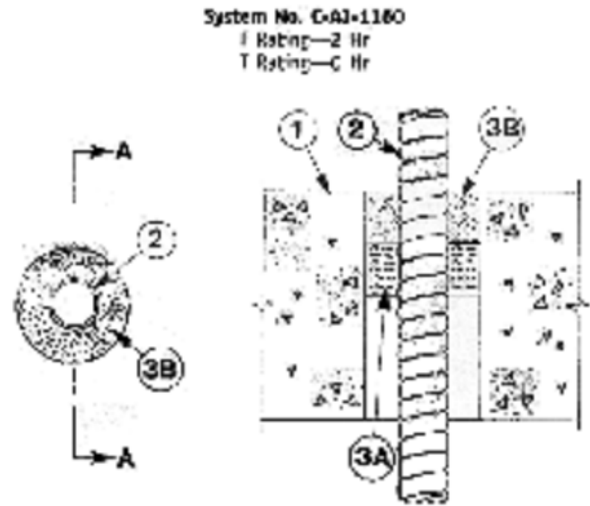
- Fire-Resistance Rated Barriers – Code Defined Terms
 - *Exterior Walls*
 - *Fire Walls*
 - *Fire Barriers*
 - *Fire Partitions (Not in NFPA)*
 - *Smoke Barriers*
 - *Smoke Partitions*
 - *Archaic Assemblies*

Existing Buildings

- **Archaic Assemblies**
 - Clay Tile Block
 - Gypsum Block
 - Plaster
 - Clay Tile/Concrete
 - Unidentified Assemblies
- **Tested ... Calculated ... Prescriptive**

Firestopping for Continuity

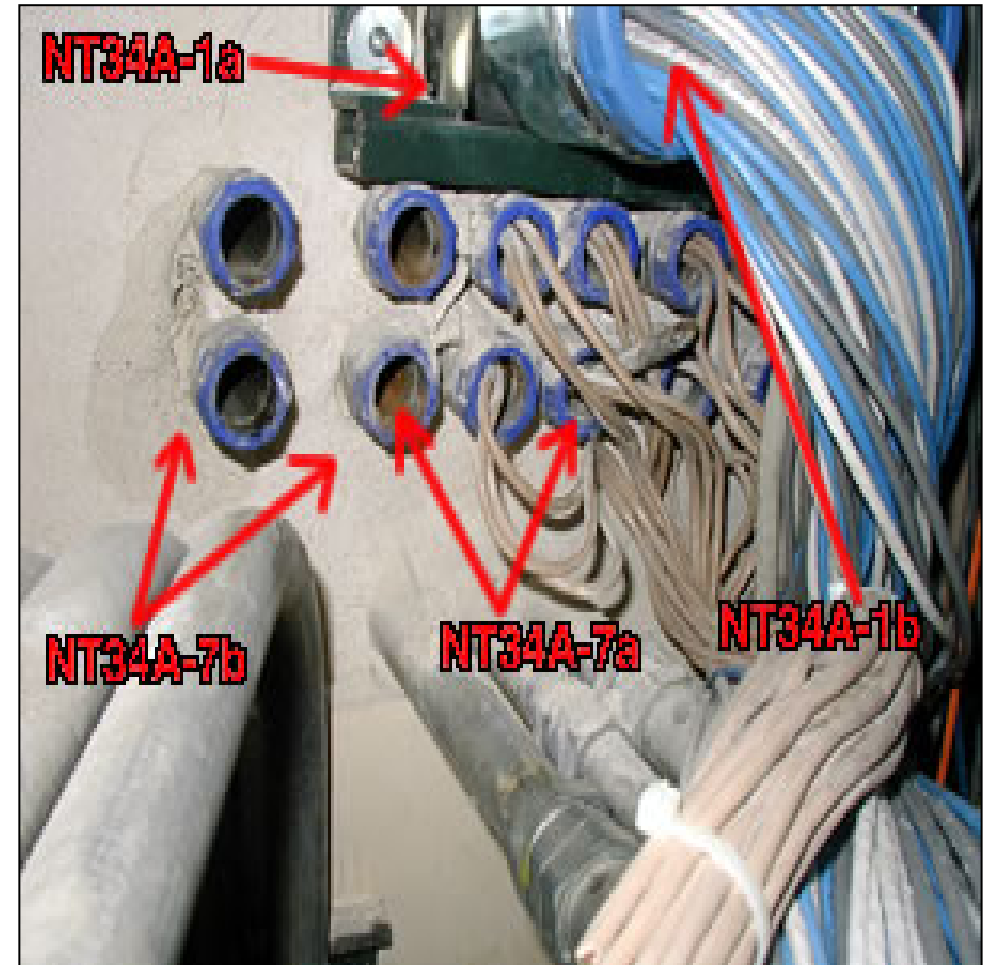
I – Classified Systems



1. Floor or Wall Assembly—Min. 4-1/2 in. thick lightweight or normal weight (100 to 150 pcf) concrete. Wall may also be constructed of any A Classified Concrete Block*. Size of circular through opening in floor or wall assembly to be 1/2 in. to 1-1/2 in. larger than diam of flexible metal conduit (item 2) installed in through opening. Max diam of opening is 6 in. See Concrete Block (A-21) category in the Fire Resistance Directory for names of manufacturers.
2. Through Penetrating Product*—Max 4 in. diam (or smaller) steel or max 3/4 in. diam (or smaller) aluminum flexible metal conduit. Max one flexible metal conduit to be installed per center or circular through opening in floor or wall assembly. Flexible metal conduit to be rigidly supported on both sides of floor or wall assembly.
3. Packing Material—Min 1 in. thickness of ceramic (plastic) fiber blanket or mineral wool batt insulation. Insulation to be secured into opening on a permanent basis. Packing material to be recessed min. 1 in. from top surface of floor or from both surfaces of wall.
4. Fill, Void or Cavity Material*—Grout—Applied to fill the annular space around the flexible metal conduit. In floor, a min 2 in. depth of fill material to be installed flush with top surface of floor. In walls, a min 1 in. depth of fill material to be installed flush with wall surface on both sides of wall assembly.

Minnesota Mining & Mfg. Co.—TF 27506

*Bearing the UL Classification Marking
 (Bearing the UL Listing Mark)



Firestopping for Continuity

Products become **SYSTEMS** Based on Testing

- ‘Field Erected Construction...Tested to...’
 - Standards – UL 1479, ASTM E814, UL 2079, ASTM E1966, ASTM E2837, ASTM E2307, FM 4990
 - F Rating – Flame
 - T Rating – Temperature
 - L Rating – Smoke
 - W Rating – Water
 - M Rating – Movement



3M Photo

Conditions of Acceptance F Rating

- Passage of Flame
- Hose Stream

Conditions of Acceptance T Rating

- Passage of Flame
- 325°F (180°C) Temperature Rise
- Hose Stream

L Rating (Optional)

- Air Leakage Rate at Ambient Temperature
- Air Leakage Rate at 400°F (204°C)

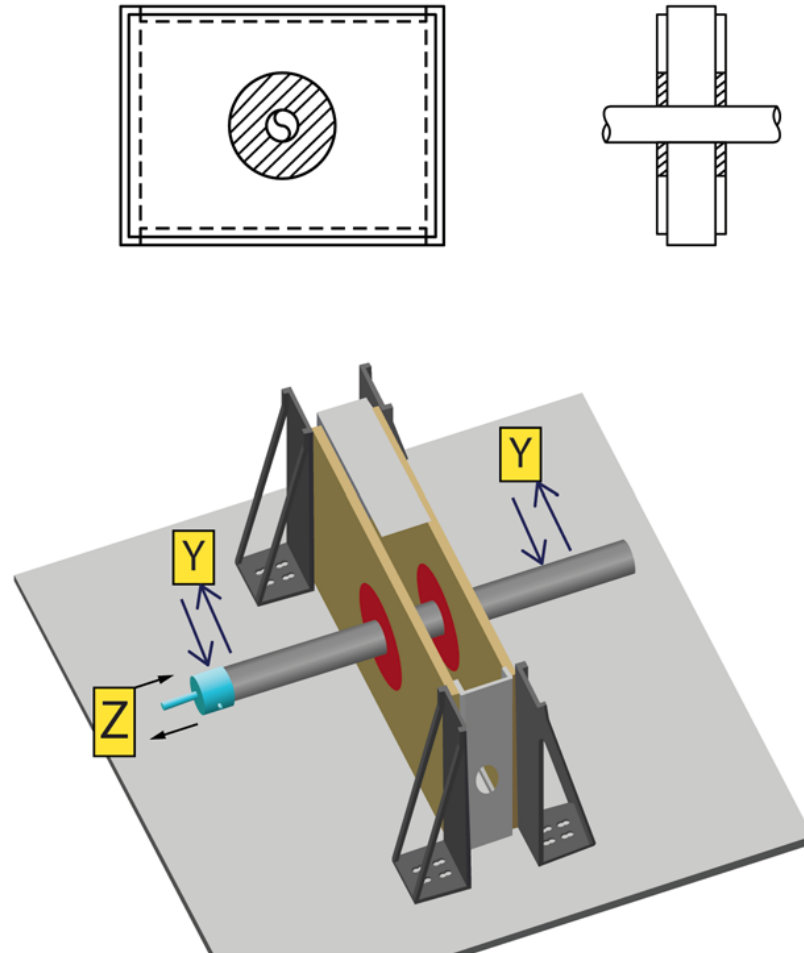
W Rating (Optional)

- Optional program, applicable to incidental water
- 3 Ft. WC (0.91 M WC) Pressure Head / 72 Hr Exposure
- Firestop subjected to water exposure, followed by standard fire and hose stream tests
- Firestop systems assigned a W Rating

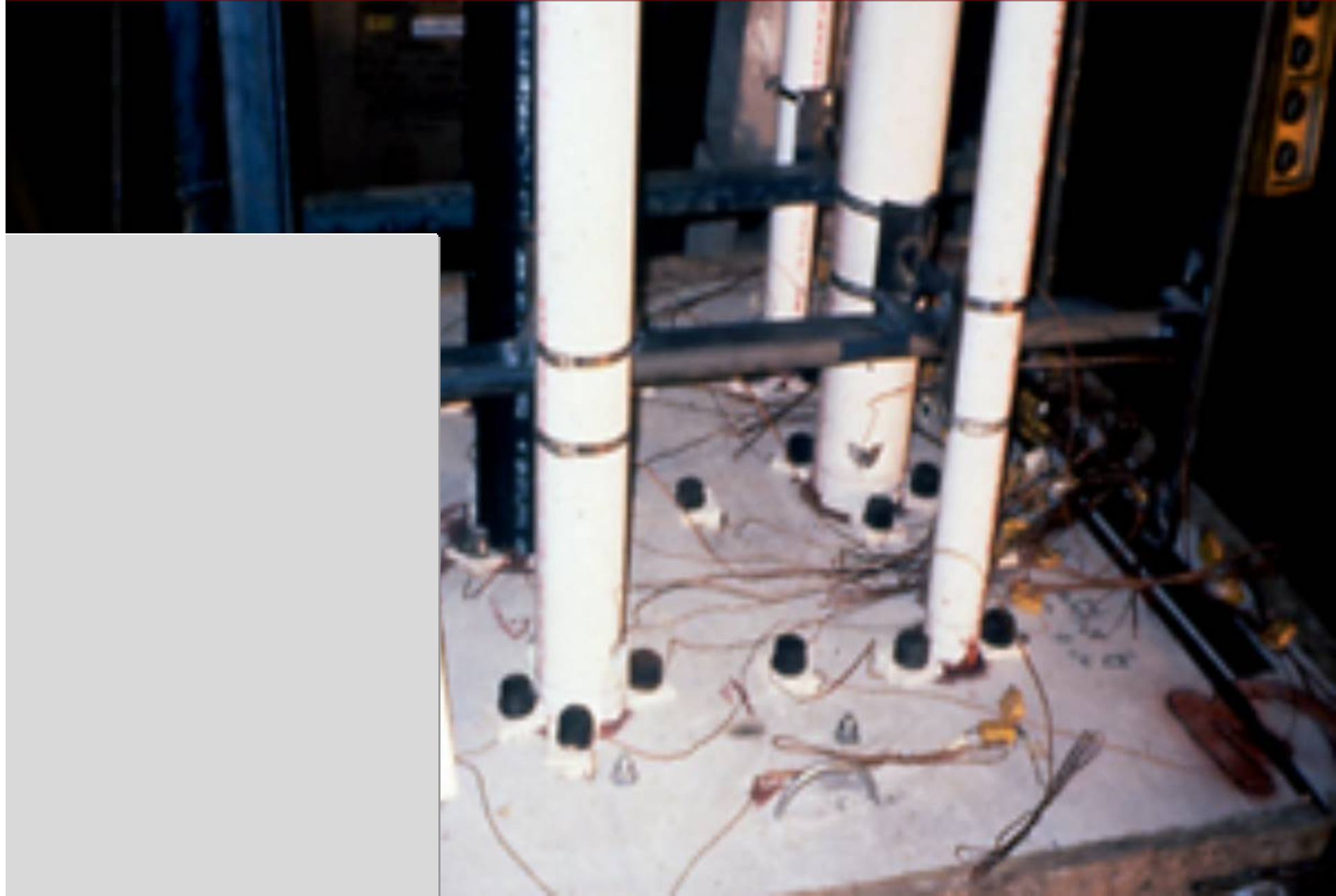
M Rating (Optional)

- Applicable to movement of penetrating item/Assembly
- Penetrating item moved perpendicular to and/or in plane of barrier - ASTM E3037
- After movement, fire and hose stream test
- Firestop systems - M Rating
 - Rating within plane based on percentage of annular space
 - Rating perpendicular to barrier based on dimension

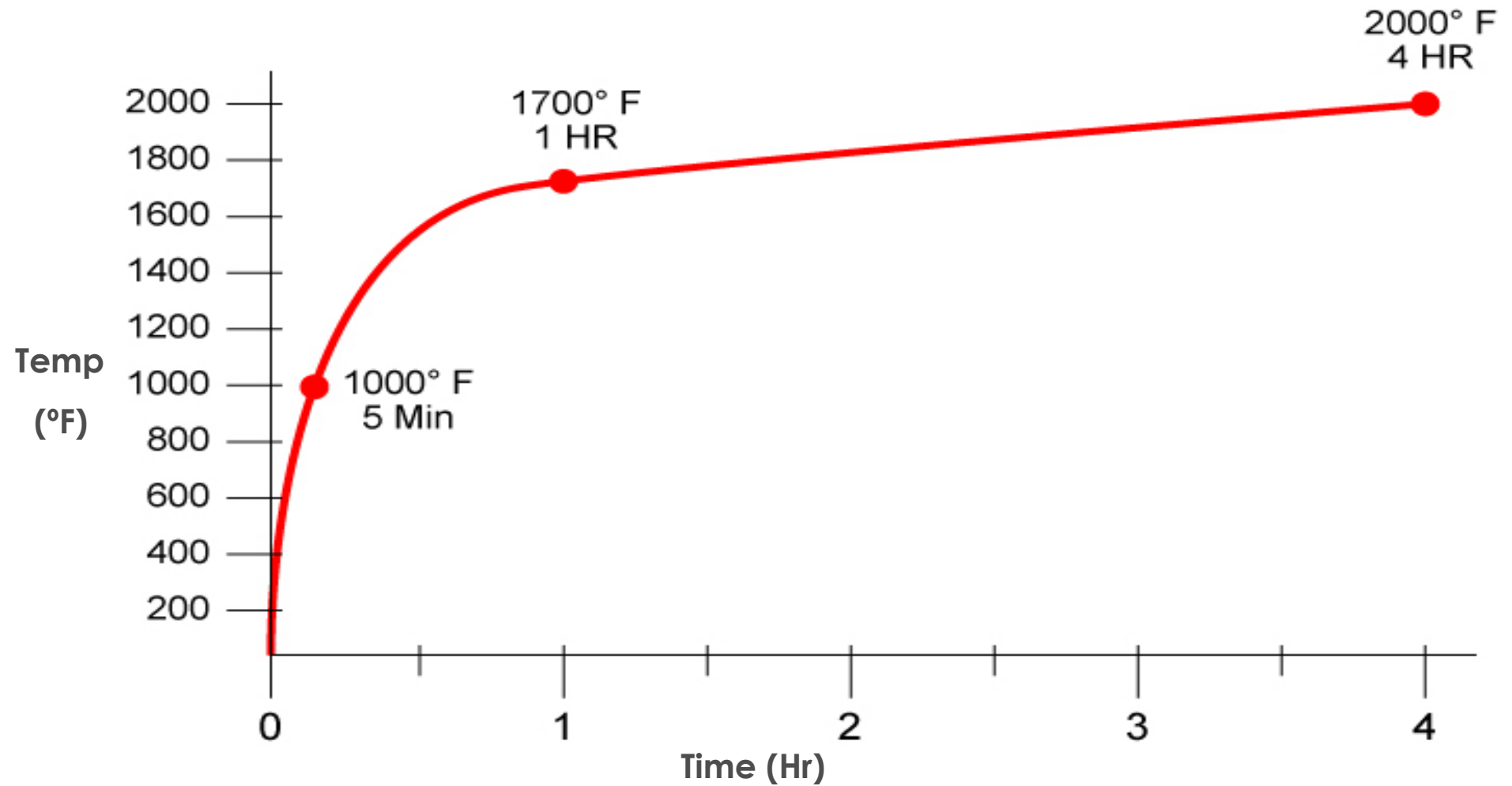
M Rating (Optional – ASTM Image)

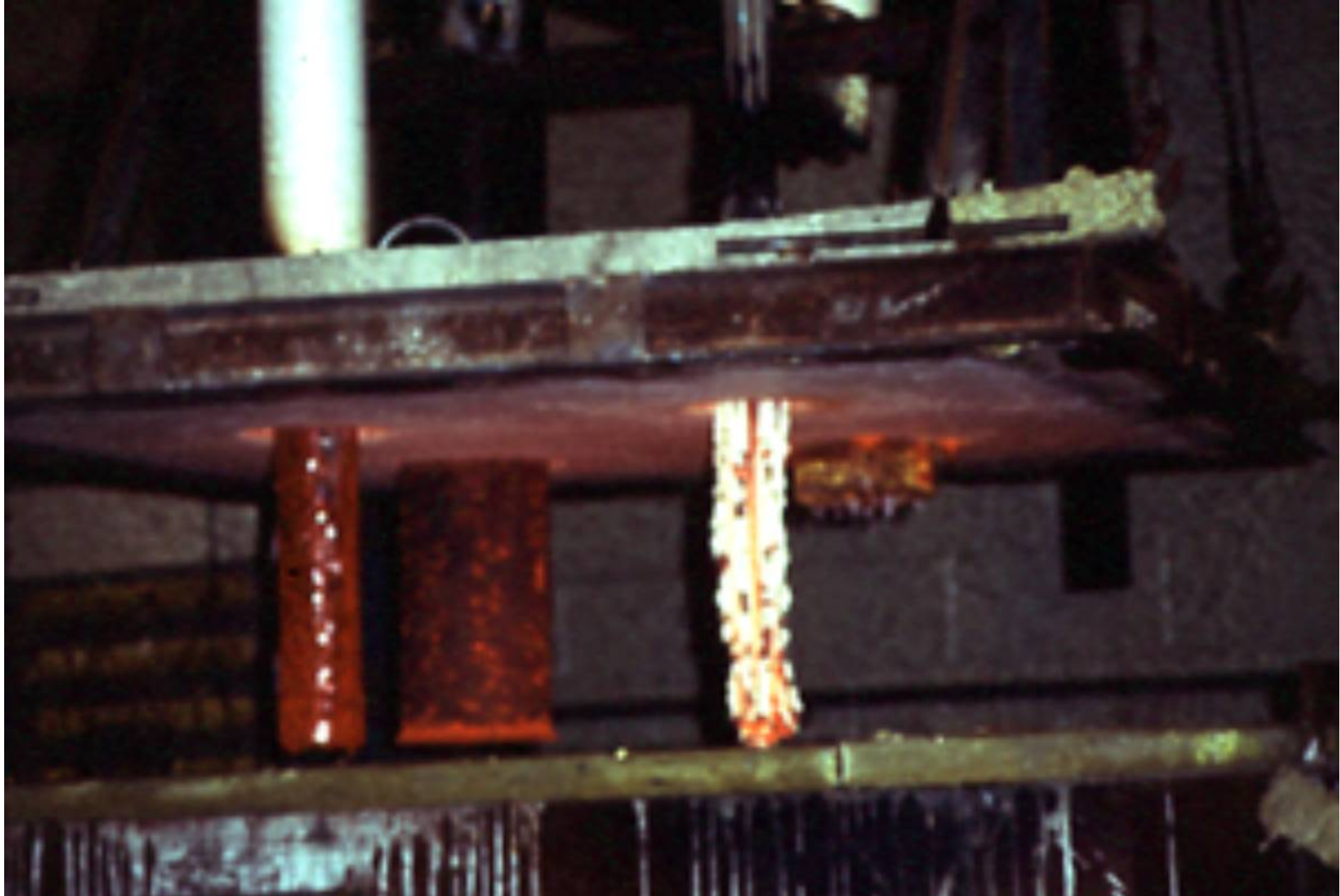


Pre-Test View – Top, Concrete Assy.



Time-Temperature Curve





Post-Test View – Under Assembly

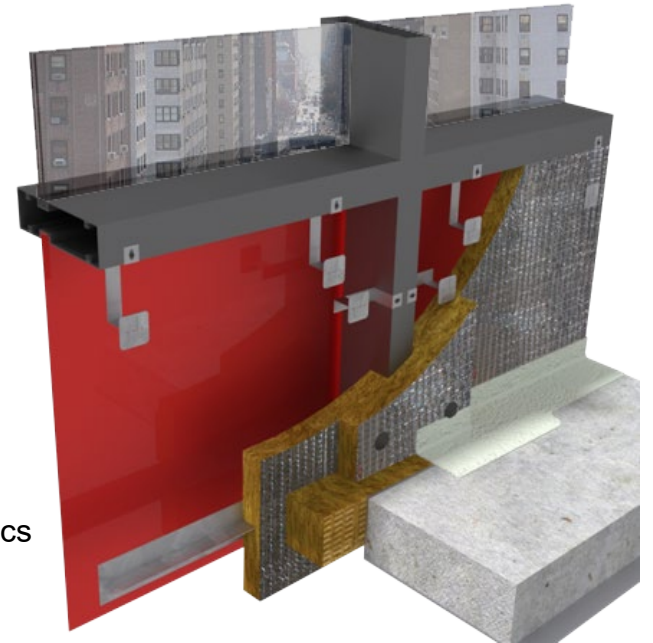
Hose Stream Test



UL Photo

IBC & Curtain Walls

- **ASTM E2307**
- **Prevent Fire Spread – Interior Safing Slot**
 - Interior Flame
 - Exterior Flame Plume from Window
 - Time & Temperature
 - Tested Systems....
- **Leapfrog Testing (ASTM E2874)?**



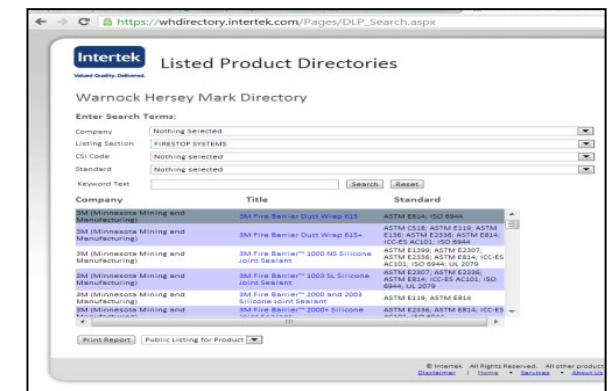
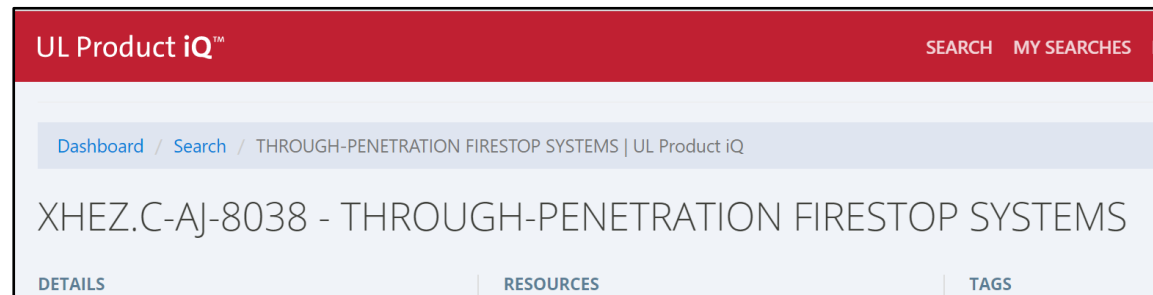
OCF/Thermafiber Graphics

Barrier Continuity Products become SYSTEMS

- Fire Rated Systems Directories –
 - FM Approvals
 - Intertek
 - UL/ULC Product iQ Online Directory



Systems Selection & Analysis...Not as easy as it looks...



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

- Wall or Floor Construction
 - Type of Construction
 - Rating
 - Thickness
- Penetrating Item(s)
 - Type
 - Size (diam or rectangular dimension, wall thickness)
 - Angle of penetration



STI Graphic

Existing Buildings

Barrier Identification – Responsibility??

- **Archaic Assemblies**
 - Clay Tile Block
 - Gypsum Block
 - Plaster
 - Clay Tile/Concrete
 - Unidentified Assemblies
- **Tested ... Calculated ... Prescriptive**
- **Plans Declare Fire-Resistance-Ratings**
- **Manufacturer Declares if Firestopping Suitable in Barrier Type.**

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

- Pipe Coverings
 - Type
 - Manufacturer
 - Product Identification
 - Thickness
- Annular Space
 - Min and Max between Penetrating Item and Periphery of Opening
 - Min and Max between adjacent Penetrating Items
- Joint Width & Depth



STI Graphic

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

- Packing/Damming/Backing Materials
 - Type
 - Thickness
 - Compression
- Fill Material(s)
 - Type
 - Manufacturer
 - Product Identification
 - Location



STI Graphic

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

- Thickness
- Attachment Method
- Etc.
- Rating Based on Code and/or Specs
 - F, T, L, W and/or M Rating

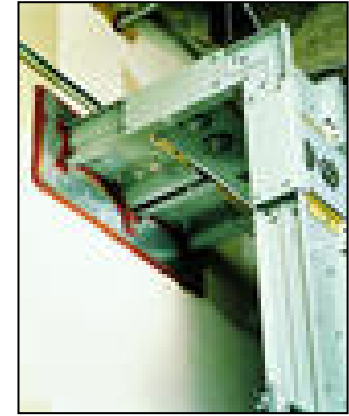
= Rated Firestop System when Installed To Manufacturer's Instructions, and Tested and Listed Designs



STI Graphic

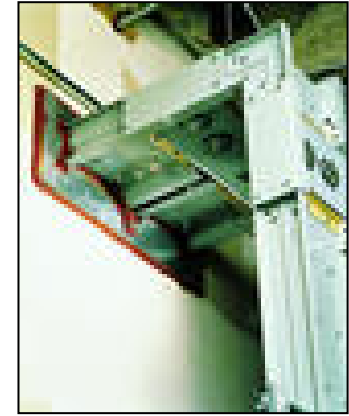
Firestopping for Continuity – Firestop Products

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



Firestopping for Continuity – Firestop Products

**Key is using the right product
AND SYSTEM for the right
application!!!**



Engineering Judgments/EFRRRA

- Variances to Systems at Site? – Now What...
 - **First Action in Process**
 - Find another system – Same Manufacturer
 - Find another system – Different Manufacturer
 - If no system exists in either case....
 - **Second Action –**
 - *Engineering Judgment – “EJ”*
 - *Equivalent Fire Resistance Rated Assembly – “EFRRRA”*
 - ***Based on engineering, IFC Protocol***

Engineering Judgments/EFRRRA

International Firestop Council – Manufacturers – www.firestop.org

IFC Guidelines for Evaluating Engineering Judgment Guidelines

‘Construction industry professionals, building officials, fire officials, firestop contractors and other stakeholders need appropriate guidelines for evaluating and using such judgments.’

As such, IFC developed *Recommended IFC Guidelines for Evaluating Firestop Systems in Engineering Judgments*.

Engineering Judgments/EFRRA

IFC EJ Guidelines for the Evaluation ...

Engineering Judgments for firestop systems should:

- Not a substitute for existing designs
- Emphasizes importance of tested designs
- Should be issued only by those who know the components
- Based on sound engineering practices and knowledge of performance of the designs
- Based on interpolation of previous testing
- Issued only for a specific jobsite
- Presented in clear detail



Engineering Judgments/EFRRA

Engineering Judgments/EFRRA's – More Thoughts:

- Manufacturer Involved
 - ONLY Manufacturer
 - Manufacturer in Conjunction with...
- Based on Similar Testing
- Not 'expand' listing too far
- **AHJs' Approve, based on 104.11**
- Might require Engineers Stamp
- **Contractors**
- Require Manufacturer Statement,
- **WILL PASS if Subjected to**



System Selection Using the UL Directories

UL Product iQ



Organization of Listing information for Fire Resistance, and Firestop and Joint Systems

- Guide information
- Designs, systems or assemblies
- Product categories (indexed by manufacturer's names)

Guide Information

- Equipment, materials or systems included in the category
- Intended use, restrictions or supplemental information that apply
- Standard(s) used to evaluate products under the category
- Listing or Classification Mark information for the category

Designs or Systems

- Each fire resistance design, firestop system, joint system and perimeter fire containment system contains specific construction features and ratings
- Many designs and systems contain various options and various ratings
- Must be followed exactly for rating to apply

Product Categories

- Each product category describes some generic family of products (e.g. Gypsum Board)
- Each product category covers products used in fire resistance designs, joint systems, perimeter fire containment systems and firestop systems

Product Categories Cont.

- Each product category contains manufacturers and designations of products tested for each of these uses and as specified in the designs or systems

Questions / Comments



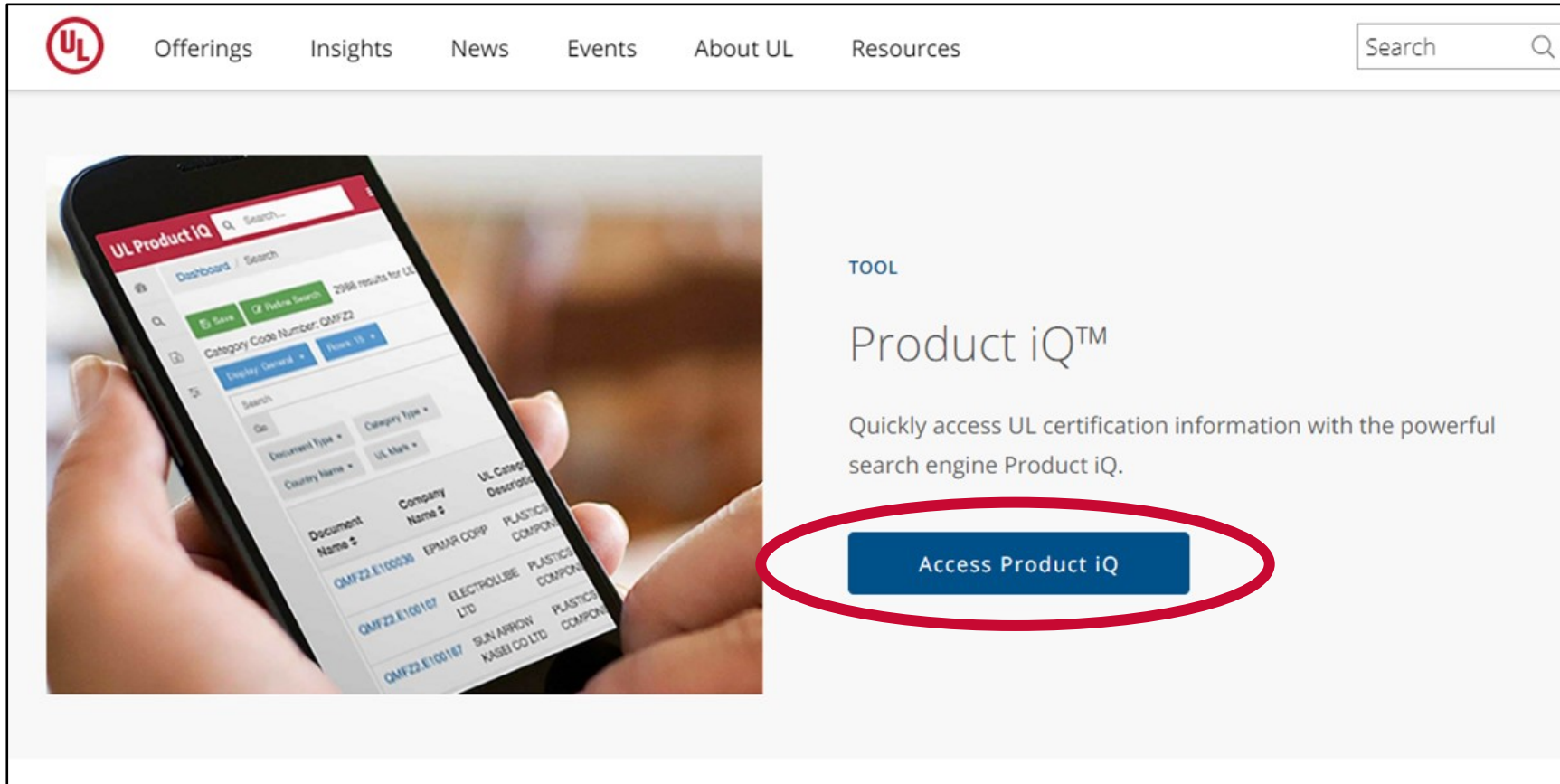
Product iQ – UL's New Online Directory

- Replaces the old Online Certifications Directory which was developed in 1999
- Identifies Certified products, designs, systems, assemblies and constructions
- Helps you achieve code compliance
- Is continuously updated
- Requires registration to create user account
- Basic Service – no charge for use

Product iQ – UL's New Online Directory

- Paid Subscription Service provides more features
 - Save Searches
 - Tags and Groups
 - Confirmation Letters
- <https://iq.ulprospector.com/en/>
- Vanity addresses
 - www.ProductiQ.UL.com
 - www.UL.com/ProductiQ
 - www.UL.com/PiQ

UL Product iQ – www.ul.com



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Category Code Number: QMF22

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Category Type

Country Name

UL Mark

Document Name

Company Name

UL Category Description

QMF22.E100036 EPMAR CORP PLASTIC COMPON

QMF22.E100107 ELECTROLUBE LTD PLASTIC COMPON

QMF22.E100107 SUN ARROW KASEI CO LTD PLASTIC COMPON

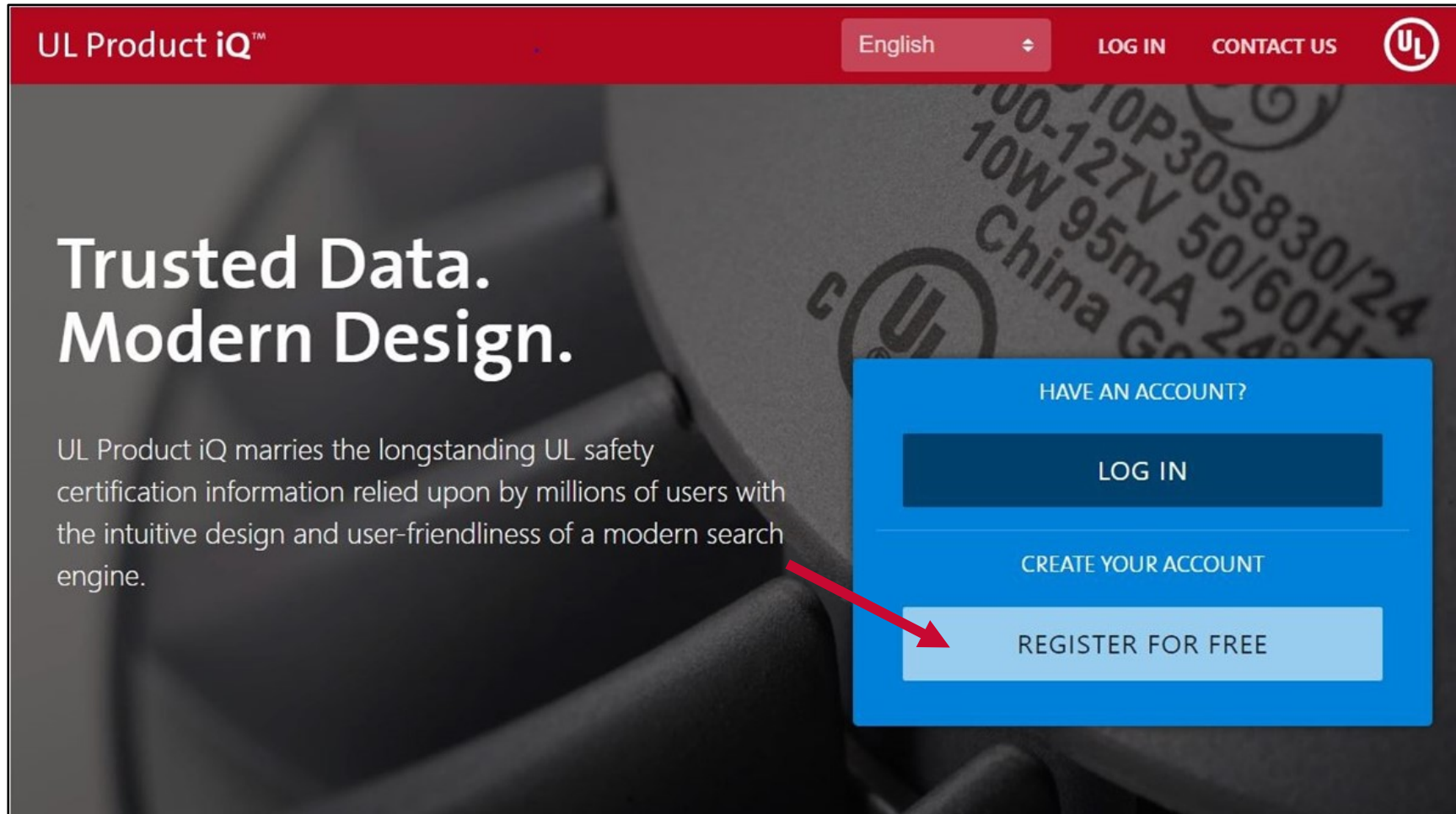
TOOL

Product iQ™

Quickly access UL certification information with the powerful search engine Product iQ.

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English



Product iQ is a commercial platform for product information, including UL's safety certifications. This registration form is tailored to industry professionals. If you are a non-commercial user, please read the information prompts for help completing certain fields. [Additional information regarding free accounts.](#)

Upon submission of this form, you will receive an email with an activation link. Click the link and receive immediate access to Product iQ. If you do not receive the email within a few minutes, please check your spam folder.

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Company Name

Job Title * ?

Job Title

Helpful Hints

Read the information prompts for help completing certain fields.

After submitting this form, check your inbox for an email with your activation link to access this site.

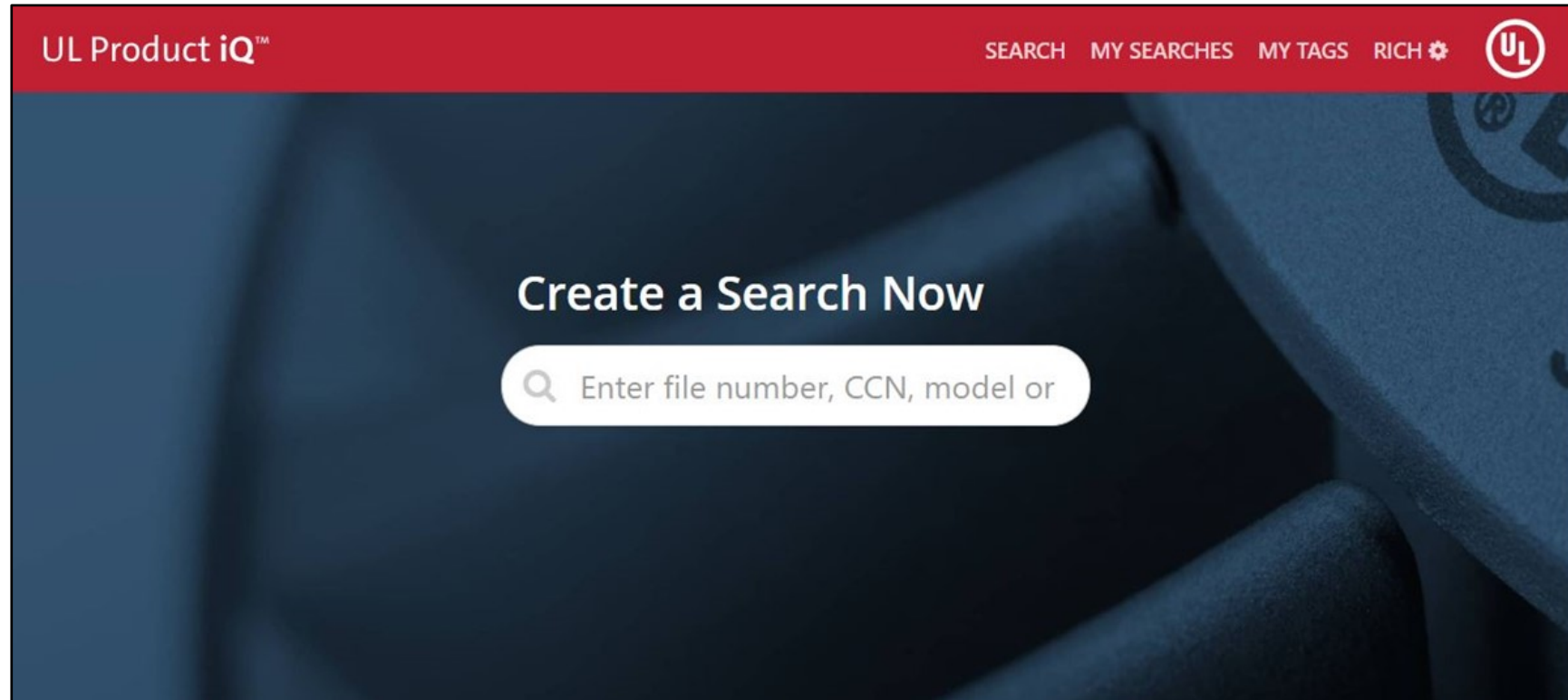
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UL Product iQ Cont.



UL Product iQ Cont.

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UL Architectural Services
Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.

Feedback

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The screenshot displays the UL Product iQ website. The top navigation bar is red with the 'UL Product iQ' logo on the left and search, my searches, my tags, and rich features on the right. The main content area is divided into two columns. The left column contains a sidebar with 'UL Architectural Services' and a 'Product iQ tip' about Confirmation Letters. The right column features a 'Building Materials and Systems' section with a list of categories including Dampers, Electrical Circuit Protective Systems (FHIT), Fire Door and Fire Window Related Certifications, Fire Rated Roofs, Walls, Floors, Beams and Columns, Fire-rated Grease Duct Assemblies, and Fire-resistance Ratings of Structural Steel Used in Petrochemical Facilities.

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UL Architectural Services
Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.

Product iQ tip **Confirmation Letters**
Shareable document confirming a Product iQ listing
[LEARN MORE](#)

Building Materials and Systems

Search for designs, systems, assemblies, and products that include, or are related to, hourly fire-resistance ratings.

Dampers
The category Dampers for Fire Barrier and Smoke Applications covers fire dampers, smoke dampers (leakage-rated dampers), combination fire and smoke dampers (fire and leakage-rated dampers), and corridor dampers.

Electrical Circuit Protective Systems (FHIT)
Electrical Circuit Protective Systems consist of components and materials that are intended for installation as protection for specific electrical wiring systems, with respect to the disruption of electrical circuit integrity upon exterior fire exposure.

Fire Door and Fire Window Related Certifications
Fire door assemblies and window assemblies are construction details and the fire ratings for fire door assemblies and fire window assemblies that are more complex than those typically associated with these assemblies.


Fire Rated Roofs, Walls, Floors, Beams and Columns
This category covers floor-ceilings, roof-ceilings, beams, columns, walls and partitions investigated for an hourly fire-resistance rating.

Fire-rated Grease Duct Assemblies

Fire-resistance Ratings of Structural Steel Used in Petrochemical Facilities
This category covers hourly fire-resistance ratings of steel columns intended for use in petrochemical facilities investigated using a rapid rise fire exposure.

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH 

[Firestop Systems](#)

This category covers firestop systems, which are specific constructions consisting of a wall or floor assembly, a penetrating item passing through an opening in the wall or floor assembly, and the materials designed to prevent the spread of fire.

[Firestop Systems for Canada](#)

This category covers firestop systems, which are specific constructions consisting of a wall or floor assembly, a penetrating item passing through an opening in the wall or floor assembly, and the materials designed to prevent the spread of fire.

[Installation Code Search](#)

Search for UL Certified products by installation code. Select your model installation code and section to locate UL Certified products for Code compliant installations.

[Joint Systems](#)

This category covers joint systems, which are specific constructions consisting of adjacent fire-resistance-rated wall and/or floor assemblies and the materials designed to prevent the spread of fire through a linear opening between the wall and/or floor

[Perimeter Fire Containment Systems](#)

A perimeter fire containment system is a specific construction consisting of a floor with an hourly fire endurance rating, an exterior curtain wall with no hourly fire endurance rating, and the fill material installed between the floor and the curtain wal

[Qualified Firestop Contractors \(RFTI\)](#)

[Roof Deck Constructions](#)

This category covers roof deck constructions investigated as to the spread of fire on the underside and/or resistance to wind uplift forces.

[Sprinkler Identification Number](#)

UL Product iQ Cont.

UL Product iQ™

SEARCHMY SEARCHESMY TAGSRICH

UL

Thermal Barrier Systems (XCLF)

This category covers thermal barrier systems consisting of components and materials intended for installation as protection for electrical wiring systems specified in the individual systems. These systems are investigated with respect to heat transmission

UL Evaluation Reports

Ventilation Duct Assemblies

This category covers the fire-resistive performance of ventilation duct assemblies. These assemblies are investigated with respect to their ability to resist the spread of fire from one compartment to another without the aid of fire dampers.

Windstorm Rated Building Products

This category covers windstorm-rated exterior building products intended to protect the exterior envelope of structures in the event of hurricanes or tornadoes.

Other

PIQ DATABASE INFO

229327

Document Count

15 Jan, 2019

Last Update

68474

Companies Listed

UL Product iQ Cont.

Smart Search for a firestop system if system number is known

- System No. C-AJ-1014



UL Product iQ Cont.

The screenshot displays the UL Product iQ search interface. At the top, a red header bar contains the 'UL Product iQ™' logo on the left and navigation links for 'SEARCH', 'MY SEARCHES', 'MY TAGS', 'RICH', and a settings gear icon on the right. The main content area has a dark blue background with the text 'Create a Search Now' in white. Below this is a search bar containing the text 'C-AJ-1014'. A dropdown menu is open below the search bar, showing two categories: 'KEYWORD' and 'SYSTEM NUMBER'. Under 'KEYWORD', there is a result for 'C-AJ-1014' with the description 'Find all information for C-AJ-1014'. Under 'SYSTEM NUMBER', there is a result for 'C-AJ-1014' with a count '(2)'. A red arrow points to the 'C-AJ-1014' result under the 'SYSTEM NUMBER' category. At the bottom of the page, there are three promotional banners: 'iQ™ Family of Databases For enhanced search functionality.', 'IQ PLUS SEARCH TOOLS ? Authorized Service Providers', and 'Tools to give you greater control and flexibility. CHECK THEM OUT!'.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH ⚙️

Create a Search Now

Q C-AJ-1014

KEYWORD

C-AJ-1014
Find all information for **C-AJ-1014**

SYSTEM NUMBER

C-AJ-1014 (2)

iQ™ Family of Databases
For enhanced search functionality.

IQ PLUS SEARCH TOOLS ?
Authorized Service Providers >

Tools to give you greater control and flexibility.
CHECK THEM OUT!

UL Product iQ Cont.

UL Product iQ™

SEARCHMY SEARCHESMY TAGSRICH

UL

REFINE RESULTS

Build or filter your results by keyword and/or adding criteria like document type, file number and country name.

Keyword

Filter by Keyword

Search

System Number

x C-AJ-1014

Add Filter

Cancel

Reset

Save Search

Dashboard / Search

2 Results :: System Number: C-AJ-1014

Display: General

Rows: 100

Document Name	Company Name	UL CCN Description	My Tags
XHEZ.C-AJ-1014	3M COMPANY	THROUGH-PENETRATION FIRESTOP SYSTEMS	
XHEZ7.C-AJ-1014	BEELE ENGINEERING B V	THROUGH-PENETRATION FIRESTOP SYSTEMS CERTIFIED FOR CANADA	

« 1 »

1 of 1

Product iQ tip


Guided Keyword Search

Intuitive keyword suggestions to expedite your search

LEARN MORE

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH 

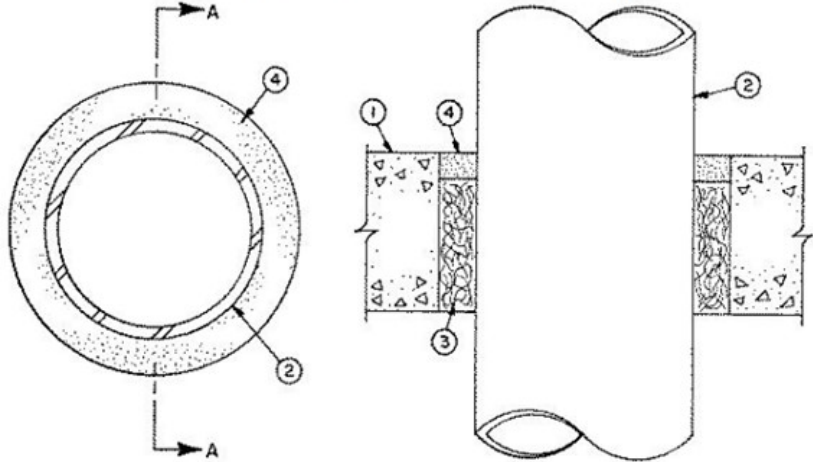
Add Tag

XHEZ - Through-penetration Firestop Systems

[See General Information for Through-penetration Firestop Systems](#)

System No. C-AJ-1014
May 09, 2013

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



UL Product iQ Cont.

OR, Using an iQ Plus Search

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH ⚙️ UL

iQ™ Family of Databases
For enhanced search functionality.

UL Architectural Services
Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.

Feedback

IQ PLUS SEARCH TOOLS

- Authorized Service Providers
- Building Materials, Systems and Installation Codes
- Finished Goods
- Gaskets
- Other

Quickly access confirmation letters with an upgraded Product iQ account

Learn more

Advertisement

Learn more about Product iQ features

UL Product iQ Cont.

UL Product iQ Cont.

The screenshot displays the UL Product iQ search interface. The top navigation bar includes 'SEARCH', 'MY SEARCHES', 'MY TAGS', 'RICH', and the UL logo. The left sidebar, titled 'REFINE RESULTS', provides filters for 'Keyword', 'System Number', 'Company Name', 'Firestop System Type', 'Through-Penetration Firestop System', 'Penetrating Item', and 'F Rating'. The 'System Number' filter is active, showing 'C-AJ-1014'. The main content area shows '2 Results' for the search template 'Firestop Systems'. A table lists the results with columns for Document Name, Company Name, UL CCN Description, and My Tags. The first result is 'XHEZ.C-AJ-1014' by 'BM COMPANY'. A red circle highlights the '2 Results' text, and a red arrow points from the 'System Number' filter to the first result. A 'Power Search' tip banner is on the right, and a 'LEARN MORE' button is at the bottom right.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH UL

Dashboard / Search

2 Results :: Bas Template: Firestop Systems :: System Number: C-AJ-1014

Display: General Rows: 100

Search Template Firestop Systems

Keyword

Filter by Keyword Search

System Number

C-AJ-1014

Company Name

Click to view and filter values

Firestop System Type

Click to view and filter values

Through-Penetration Firestop System

Click to view and filter values

Penetrating Item

Click to view and filter values

F Rating

to hr

Document Name	Company Name	UL CCN Description	My Tags
XHEZ.C-AJ-1014	BM COMPANY	THROUGH-PENETRATION FIRESTOP SYSTEMS	
XHEZ7.C-AJ-1014	BEELE ENGINEERING B V	THROUGH-PENETRATION FIRESTOP SYSTEMS CERTIFIED FOR CANADA	

1 of 1

Product iQ tip

Power Search


Hand pick specific criteria for your search query

LEARN MORE

UL

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH 

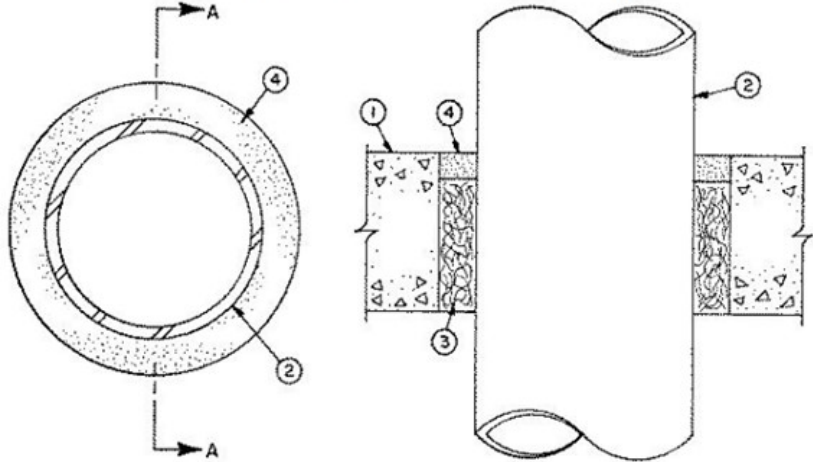
Add Tag

XHEZ - Through-penetration Firestop Systems

[See General Information for Through-penetration Firestop Systems](#)

System No. C-AJ-1014
May 09, 2013

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



UL Product iQ Cont.

iQ Plus Search under Building Materials and Systems for firestop systems based on specific parameters

- 4-1/2 in. concrete slab floor assembly
- 2 hour rating
- ABS plastic pipe
- Firstopping material supplied by the Specified Technologies Inc.



UL Product iQ Cont.

iQ Plus Search

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH

UL Architectural Services
Find enhanced information related to fire rated walls, floors, roofs, beams, columns, joints and firestops.

Product iQ tip
Confirmation Letters
Shareable document confirming a Product iQ listing
[LEARN MORE](#)

Building Materials and Systems

Search for designs, systems, assemblies, and products that include, or are related to, hourly fire-resistance ratings.

Dampers
The category Dampers for Fire Barrier and Smoke Applications covers fire dampers, smoke dampers (leakage-rated dampers), combination fire and smoke dampers (fire and leakage-rated dampers), and corridor dampers.

Electrical Circuit Protective Systems (FHIT)
Electrical Circuit Protective Systems consist of components and materials that are intended for installation as protection for specific electrical wiring systems, with respect to the disruption of electrical circuit integrity upon exterior fire exposure.


Fire Door and Fire Window Related Certifications
Fire door assemblies and window assemblies are construction details and the fire ratings for fire door assemblies and fire window assemblies that are more complex than those typically associated with these assemblies.

Fire Rated Roofs, Walls, Floors, Beams and Columns
This category covers floor-ceiling, roof-ceiling, beams, columns, walls and partitions.

Firestop Systems
This category covers firestop systems, which are specific constructions consisting of a wall or floor assembly, a penetrating item passing through an opening in the wall or floor assembly, and the materials designed to prevent the spread of fire.

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH 

REFINE RESULTS

Build or filter your results by keyword and/or adding criteria like document type, file number and country name.

Search Template Firestop Systems

Keyword

Filter by Keyword Search

System Number

Click to view and filter values

Through-Penetration Firestop System

Click to view and filter values

File Number

Penetrating Item

Click to view and filter values

Company Name

Click to view and filter values

F Rating

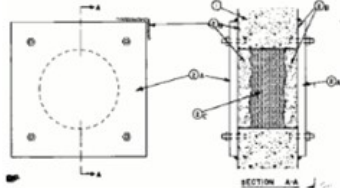
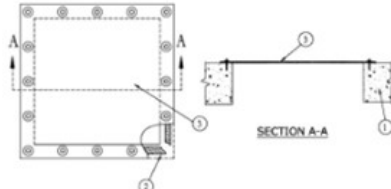
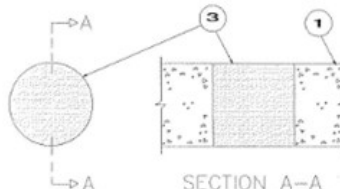
(0,0) to (4,0) hr

T Rating

Dashboard / Search

13802 Results :: *Base Template: Firestop Systems :: No Search Criteria*

Display: images Rows: 100

Document Name	UL CCN Description	Related Images	My Tags
XHEZ.C-AJ-0003	THROUGH-PENETRATION FIRESTOP SYSTEMS		
XHEZ.C-AJ-0004	THROUGH-PENETRATION FIRESTOP SYSTEMS	 <div>(+1 more)</div>	
XHEZ.C-AJ-0005	THROUGH-PENETRATION FIRESTOP SYSTEMS		

UL Product iQ Cont.

UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH

REFINE RESULTS

Build or filter your results by keyword and/or adding criteria like document type, file number and country name.

Search Template Firestop Systems

Keyword

ABS Search

System Number

Click to view and filter values

Through-Penetration Firestop System

Concrete floors with a minimum thickness less than or equal to 127 mm (5 in.)

File Number

Penetrating Item

Nonmetallic pipe, conduit or tubing

Company Name

SPECIFIED TECHNOLOGIES INC

F Rating

to hr

Dashboard / Search

12 Results :: Base Template: Firestop Systems :: Keyword: ABS :: Through-Penetration Firestop System: Concrete floors with a minimum thickness less than or equal to 127 mm (5 in.) :: Penetrating Item: Nonmetallic pipe, conduit or tubing :: Company Name: SPECIFIED TECHNOLOGIES INC


Display: Images Rows: 100

Document Name	UL CCN Description	Related Images	My Tags
XHEZ.C-AJ-2297	ROUGH-PENETRATION FIRESTOP SYSTEMS		
XHEZ.C-AJ-2281	THROUGH-PENETRATION FIRESTOP SYSTEMS		
XHEZ.C-AJ-2588	THROUGH-PENETRATION FIRESTOP SYSTEMS		

Also added 2 hr as required T Rating

UL Product iQ Cont.

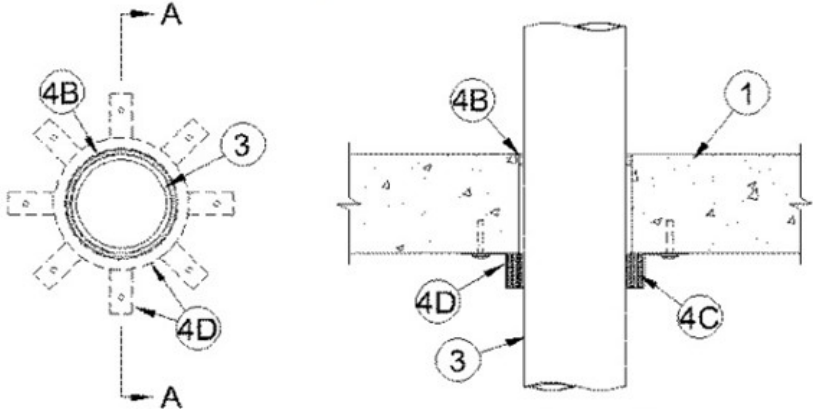
UL Product iQ™

SEARCH MY SEARCHES MY TAGS RICH 

System No. C-AJ-2297

March 18, 2014

F Ratings — 2 and 3 Hr (See Item 4C)
T Ratings — 0, 1, 2 and 3 Hr (See Item 4C)
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

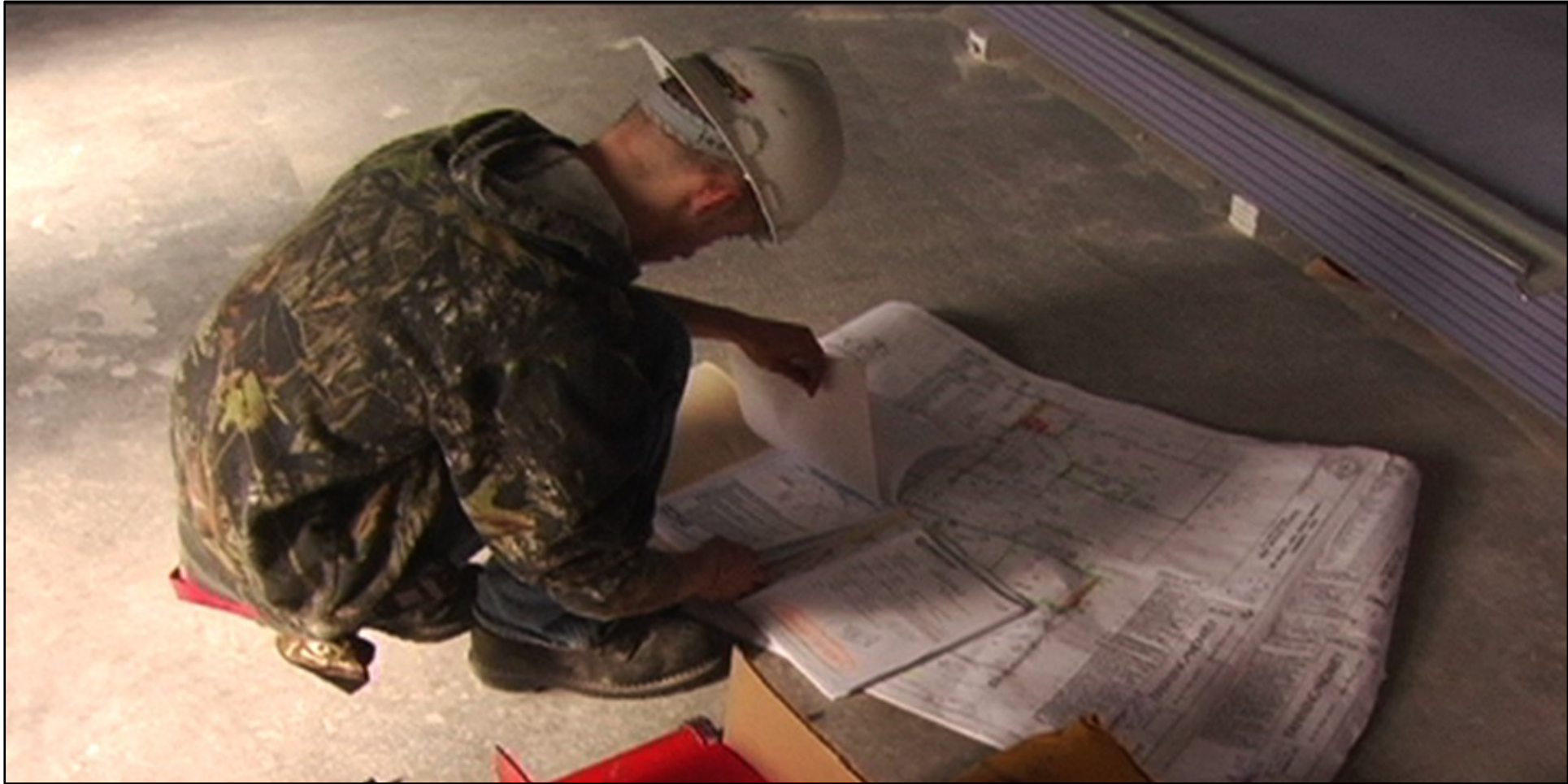
1. **Floor or Wall Assembly** — Lightweight or normal weight (100-150 pcf or 1600-2400 kg/ m³) concrete. Except as footnoted in the table under Item 4C, min thickness of concrete floor or wall assembly is 4-1/2 in. (114 mm). Floor may also be constructed of any min 6 in. (152 mm) thick hollow-core **Precast Concrete Units***. Wall may also be constructed of any UL Classified **Concrete Blocks***. Diam of opening to be min 1/8 in. (3.2 mm) to max 1-1/2 in. (38 mm) larger than outside diam of pipe or conduit.

Review of UL Firestop and Joint Systems on UL Product iQ

- Review:
- U410 W-L-2154
- C-AJ-1155 W-L-5001
- C-AJ-3313 BW-S-0002
- C-AJ-4036 FF-D-1001
- C-AJ-8001 HW-D-0221
- W-L-1078 CW-D-1046
- W-L-2030

Barrier Continuity

I – Installation – Listed Systems



3 Firestop Installation Methods

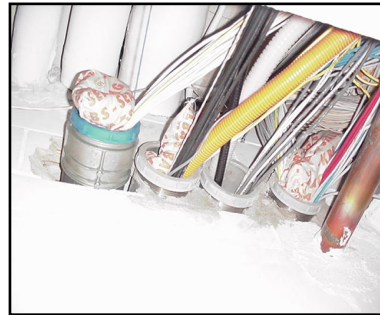
- **Each Trade**
 - “He/She who pokes hole, fills hole”
- **Multiple Contracts**
 - Firestop Contractors, Trades
- **Single Source Firestop Contractor**
 - *FCIA Member in Good Standing*
 - *FM 4991, UL, ULC Qualified*

Installation – Who?

- Firestopping wrong, missing
- Systems Documentation?
- As Built Documentation??

**Conclusion –
Without Single Firestop Installation
Contractor....**

Fire & life safety risks



Adler Photo

Why Contractor Qualifications?

- **Firestopping** Ratings - F, T, L, W, M
- **Zero Tolerances?**
 - Annular Space Sizes, Gap Sizes
- **Product Properties**
 - Movement
 - Compatibility
 - Storage, Application, Curing Temps
- **SYSTEMS DOCUMENTATION**

Spec Contractor Qualifications

- FM 4991 – Standard for the Approval of Firestop Contractors
- UL / ULC Qualified Firestop Contractors
- Other Industries???
- ***FM 4991 / UL-ULC CONTRACTORS UNDERSTAND SYSTEMS, INVENTORY – DOCUMENTATION***



Why Contractor Qualifications?

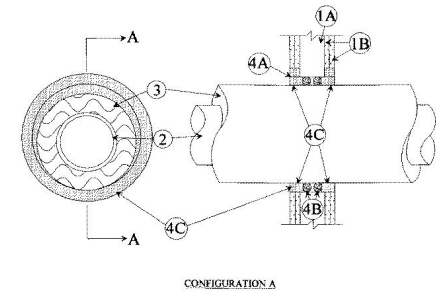
- **Built right the first time...**
- **Documentation = Inventory**
- **Fire-Resistance SYSTEMS Selection**
- **SYSTEMS Analysis & As Builts**
 - F, T, L, W, M Rated Systems
 - Tolerances - Annular Space Sizes, Angles
 - Gap Sizes - Undercuts – Framing
 - Anchors - Spacing – Hardware
 - Closers - Activation Sensors, more...

FM 4991 & ULC QFC

- **ULC Firestop Exam @ 80% min.**
- **Management System (MS) Written**
- **MS Procedures implemented**
- **Audit**
 - Contractor Office – Records & Documents
 - Jobsite – Observation, possible destructive
- **DRI – Appointed by Contractor, CEU's**
- **Listed @ www.FCIA.org & www.UL.com**

Management System & Audit – UL, FM 4991

- Facility Tour
- Review MS Manual
- Construction Document Requirements and Review
 - Systems Selection & Analysis
- Procurement
- Storage, Handling, Preservation and Delivery
- Labeling
- Installation, Application and Field Quality Assurance Procedures
 - Systems Installation, Self Inspection/Survey



Management System & Audit – UL, FM 4991

- **Inspection, Testing and Calibration**
 - Tape Measures
- **Control of Nonconforming Product**
- **Training and Qualification of Staff**
 - DRI's, Workforce
- **Corrective/Preventive Action**
- **Quality System Monitoring and Improvement**
- **Documentation and Record Keeping**
 - 7 years

Master Audit Certificate of Compliance Program

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

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.

UL Slide



UL Certificate Number: 1000-0001
Audit Date: 08/03/2018
Expiration Date: 12/31/2019

Qualified Firestop Contractor Program
Master Audit
Certificate of Compliance

This certificate reports the findings of an audit by UL to the management system requirements of the Qualified Firestop Contractor Program. The audit was conducted to the requirements specified in the Qualified Firestop Contractor Program requirements. The UL qualified contractor was found to be in compliance with the requirements at the time of the site audit.

Structure Name: Underwriters Laboratories
Job Number: 0001
Address: 333 Pfingsten Rd.
Northbrook, IL 60062


Qualified Contractor: PCIA
Address: 4415 W. Harrison Street, Suite 540
Hillside, IL 60162

Qualified Contractor Scope of Work:
For Project # 0001 Firestopping Head and Bottom of Interior Fire Walls and all Trade Penetrations / Except Cable Tray

UL LLC makes no representations or warranties, expressed or implied, that the installed firestop system will prevent any loss or damage in the event of a fire or similar event, or that the system will in all cases provide the protection for which it is installed or intended. The certificate is evidence that the installing contractor's management system was in compliance with the applicable requirements of the Qualified Firestop Contractor Program.

UL LLC is not an insurer and does not assume any obligation or undertake to discharge any liability of the Qualified building Contractor, or any other party for any loss, which may result in failure, incorrect installation, use contrary to requirements, cancellation of this certificate, or withdrawal by the Qualified building Contractor from the Qualified Firestop Contractor Program.

Any modification to any firestop system of the structure will affect the complete firestopping system and may render protection effected by the system ineffective. Any changes will invalidate this certificate unless the organization does, in the building owner's responsibility for an annual visual inspection of the inventory of



UL Certificate Number: 1000

QUALIFIED FIRESTOP CONTRACTOR CERTIFICATE

Company Name: Underwriters Laboratories Inc. File number: R12345 Issued: January 31, 2018
Address: 333 Pfingsten Rd. Expires: December 31, 2019
Telephone: 480.290.6987 Email Address: Ruben.SandovalJr@UL.com

This company has demonstrated that it complies with UL's Qualified Firestop Contractor Program Requirements. This certificate is not transferable and expires on December 31st of the following Year. This certificate may be displayed, copied and shared with others but must be used in its entirety.

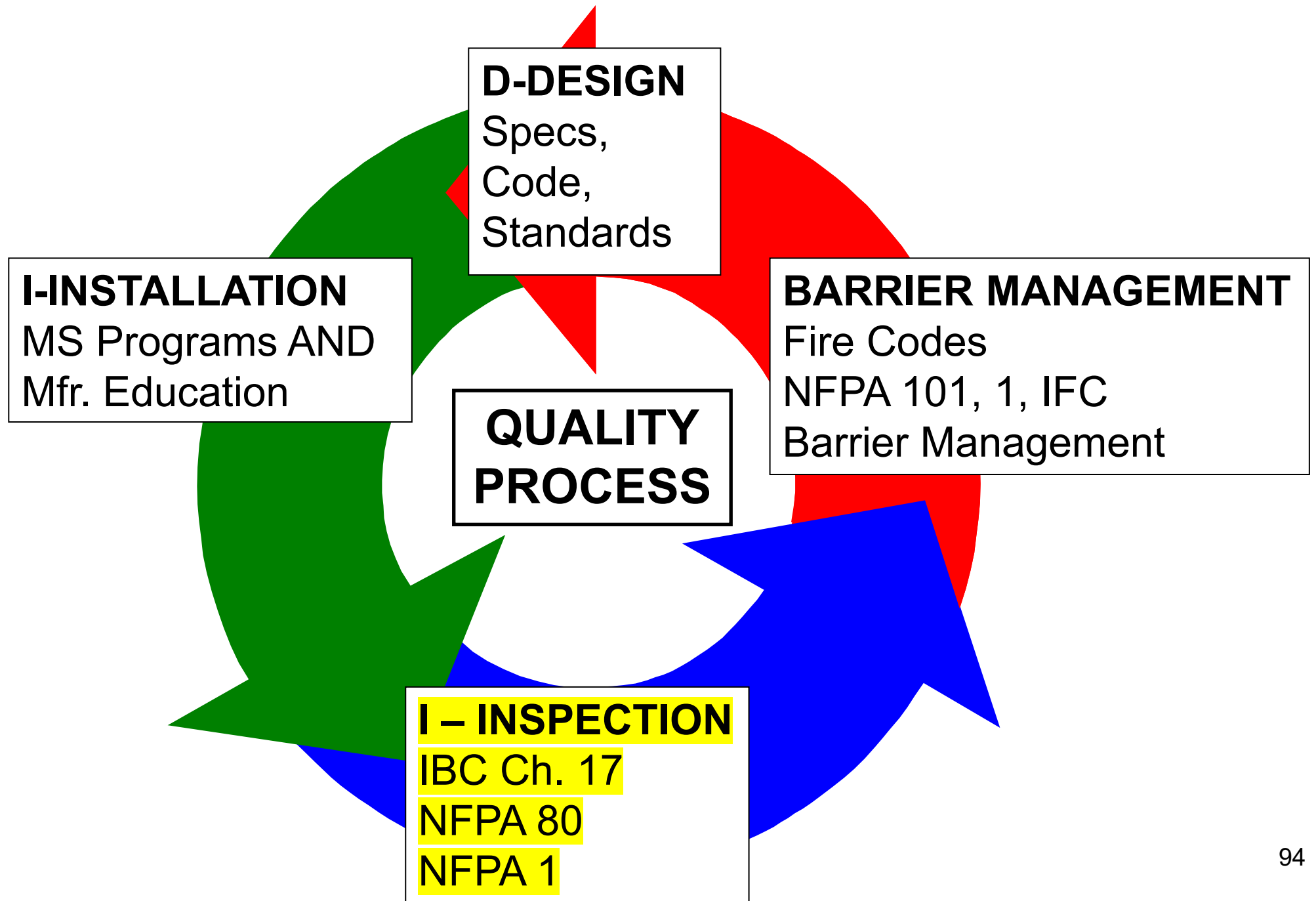
Only those companies listed in UL's online Directory for the Qualified Firestop Contractor Program at www.ul.com/contractor are considered eligible for this program and to use this Certificate and the UL Qualified Firestop Contractor Program Marking (shown here) in its advertising and promotional material in accordance with marking guidelines provided at www.ul.com/contractor.

UL Underwriters Laboratories
Qualified Firestop Contractor Program

Underwriters Laboratories reserves the right to void this certificate at any point. This certificate does not indicate compliance with any UL product certification program.

For additional information regarding the Qualified Firestop Contractor Program, please visit www.ul.com/contractor

Copyright© 2012 UL LLC



Firestop & Inspection

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



I – Inspection – Scope

- **ASTM E2174 & ASTM E2393**
 - Firestopping
- Other Scopes—Possibilities for IA's
 - Walls, Horizontal Assemblies
 - Fire Dampers
 - Fire Rated Glazing
 - Fire Doors

Firestop Systems Inspection Introduction

ASTM E2174 – ASTM E2393

- “Standard Practice for On-Site Inspection of Installed Fire Stops – Penetrations - Joints”
 - Standard Inspection Procedure
 - Special Inspection Agency Companies & Other Firms
 - Hired by & Report to Building Owner, Architect, Owners Rep, ...other than GC.
= Authorizing Authority

Firestop Inspection Firm & Individual Qualifications – IAS AC 291

- **Inspection Firm shall have staff..**
 - PASS UL / ULC or FM Firestop Exam, or IFC Exam
 - 1 year Quality Assurance
- *Or...*
- PASS UL/FM Firestop Exam, or IFC Firestop Exam, *and* PE, FPE, Registered Architect, or
- PASS UL/FM Firestop Exam, or IFC Firestop Exam, *and* Education by Certified Agency



Affinity Firestop Photo



DATE

GARDER HORS DE PORTEE DE
hygiénique. En cas de contact acci
l'aide de diluant de peinture sur les
minérale ou végétale pour libérer les
KEEP OUT OF REACH OF CHILDREN
case of accidental contact with
floors. Use ice, vegetable oil or
surfaces. Évitez le contact avec les
TAKE: les animaux de

Affinity Firestop Photo



Affinity Firestop Photo

Professional Installations





AFFINITY FIRESTOPPING LTD.
1111 1111 1111 1111 1111 1111 1111 1111
1111 1111 1111 1111 1111 1111 1111 1111

Project Name:	1111
Location:	1111
Date:	11/11
By:	1111
Check By:	1111

CAUTION! FIRESTOP SYSTEM

Affinity Firestop Photo



Affinity Firestop Photo



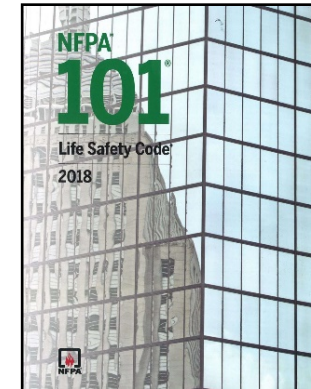
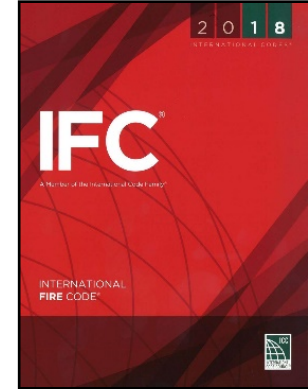
Affinity Firestop Photo



Affinity Firestop Photo

Fire Codes Require Maintenance

- NFPA 101
- NFPA 1
- International Fire Code
 - Minimum Requirements Stated
 - Frequency

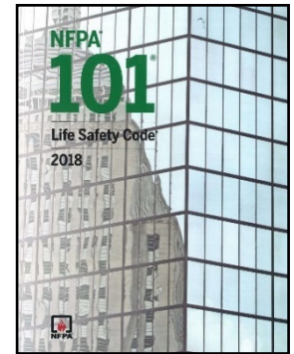


National Fire Protection Association

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

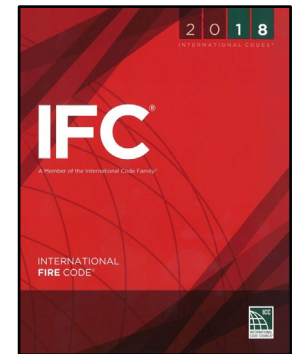


2018 International Fire Code Maintenance

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

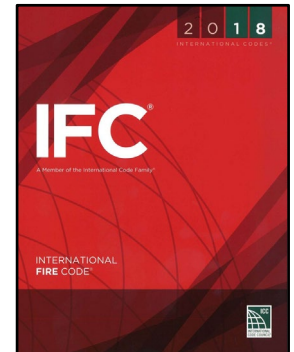


2018 International Fire Code Maintenance

SECTION 701 GENERAL

- **701.5 Maintaining protection.** Materials, systems and devices used to repair or protect breaches and openings in fire-resistance-rated construction and construction installed to resist the passage of smoke shall be maintained in accordance with Sections 703 through 707.

FCIA Added Emphasis

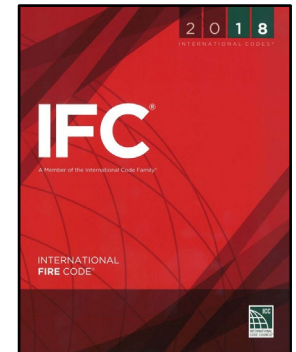


2018 International Fire Code Maintenance

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.**
- **FCIA Initiative with Koffel Assoc. – 'Inventory'...**

FCIA Added Emphasis

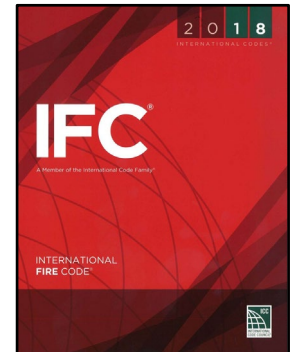


2018 International Fire Code Maintenance

SECTION 703 PENETRATIONS

- **703.1 Maintaining protection.** Materials and firestop systems used to protect membrane and through penetrations in *fire-resistance-rated* construction and construction installed to resist the passage of smoke shall be maintained.

FCIA Added Emphasis

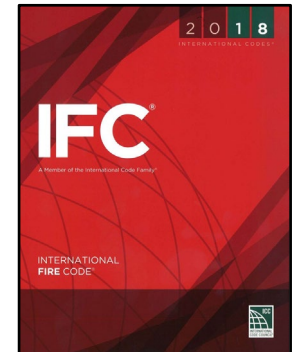


2018 International Fire Code Maintenance

SECTION 703 PENETRATIONS

- **703.1 Maintaining protection cont.** The materials and firestop systems shall be **securely attached** to or bonded to the construction being penetrated **with no openings visible** through or into the cavity of the construction. Where the system design number is known, the system shall be inspected to the **listing criteria and manufacturer's installation instructions**.
- **FCIA Initiative...**"Where the system design number is known"...

FCIA Added Emphasis



2018 International Fire Code

Fire-Resistance Inventory Explained

- **Life Safety Drawings**
- Designs, Systems and Assemblies – **Listings**
- **Manufacturers Installation and Maintenance Instructions**
- How?
 - Paper & Files
 - Spreadsheets
 - Software

Questions??



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Rich Walke, Consultant to the FCIA
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