

Workforce Education & Jurisdiction

FCIA Firestop Containment Worker
Education +Program

Bill McHugh, FCIA Executive Director

Ken Slama, FCIA Past-President, TEA Chair

Tracy Smith, FCIA Past-President, Standards
Chair



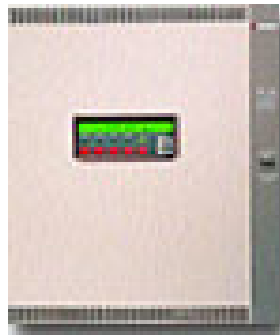
FCIA – Firestop Contractors International Association

- FCIA Members
 - Firestop Contractors
 - Firestop Manufacturers
 - Firestop Consultants
 - Firestop Distributors, Reps, Friends
- FREE MOP/Spec - Specifiers @ AE, Independent
- FREE Life Safety Digest
- FREE Webinars
- 3rd Party Contractor/Inspection Company Accreditation Programs
- Chair, ASTM Inspection Standards
- Tools for Specifiers, Contractors, Consultants, Manufacturers, Distributors, Manufacturers Reps
- Join FCIA Today! www.FCIA.org , Membership



“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 & Egress—
 - Building Owners & Managers, Building Occupants and Firefighters



“DIIM”

- Barriers are for Safety – DIIM
 - Properly **Designed** and Specified
 - **Tested and Listed Systems** – Directories,
 - Professional **Installation** - Companies
 - Properly **Inspected** – Commissioned
 - **Maintained** - Annually –
 - NFPA 101
 - International Fire Code
 - International Property Maintenance Code
 - It's required by Code
 - Minimize Liability
 - Protect Occupants

Firestop Products become SYSTEMS

- After Installation...
- **'Field Erected Construction...Tested to...'**
 - Standards - ASTM E814/UL 1479–UL 2079, ASTM E 1966, ASTM E 2307, ULC S-115, FM 4990
 - **F Rating - Flame**
 - T Rating – Temperature
 - H Rating – Hose
 - **L Rating – Smoke**
 - **W Rating – Water**



Graphics – 3M



Products become Systems

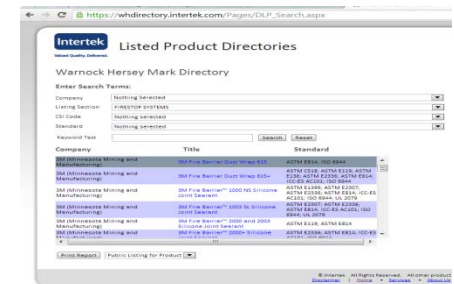
Hose Stream = Shock Test



Products become SYSTEMS

- Fire Rated Systems Directories –
 - FM Approvals
 - Intertek
 - UL Fire Resistance Directory

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



Engineering Judgments/EFRRA

- 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 – “EFRRA”*
 - ***Based on engineering, IFC Protocol***

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*.

IFC EJ Guidelines - Engineering Judgments for firestop systems should:

- 1. Not be used in lieu of tested systems when available;**
- 2. Be issued only by a firestop manufacturer's qualified technical personnel or in concert with the manufacturer by a knowledgeable registered Professional Engineer, Fire Protection Engineer, or an independent testing agency that provides listing services for firestop systems;**
- 3. Be based upon interpolation of previously tested firestop systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the judgment is to be given.**

Additional knowledge and technical interpretations based upon accepted engineering principles, fire science and fire testing guidelines (e.g. ASTM E 2032 – Standard Guide for Extension of Data from Fire Endurance Tests, ULC Subject C263E – Criteria for Use in Extension of Data from Fire Endurance Tests, or ASTM E2750 – Standard Guide for Extensions of Data for Penetration Seals) may also be used as further support data;

IFC EJ Presentation Guidelines – What's Seen?

IFC recommends that these guidelines be considered when evaluating whether any firestop system engineering judgment meets minimal requirements. Questions concerning the EJ request should be addressed to the initiator of the judgment.

FCIA Recommends that the manufacturer on their listing state that they believe the EJ will pass based on the ASTM E 814, 1966, 2307, 2837, or UL 1479, 2079 test standard fire tests.

INSTALL FIRESTOP SYSTEM

Firestop Sealant, MW installation, SAFELY, to Tested and Listed System Limits

= Firestop System



Pack

1



Apply Sealant

2



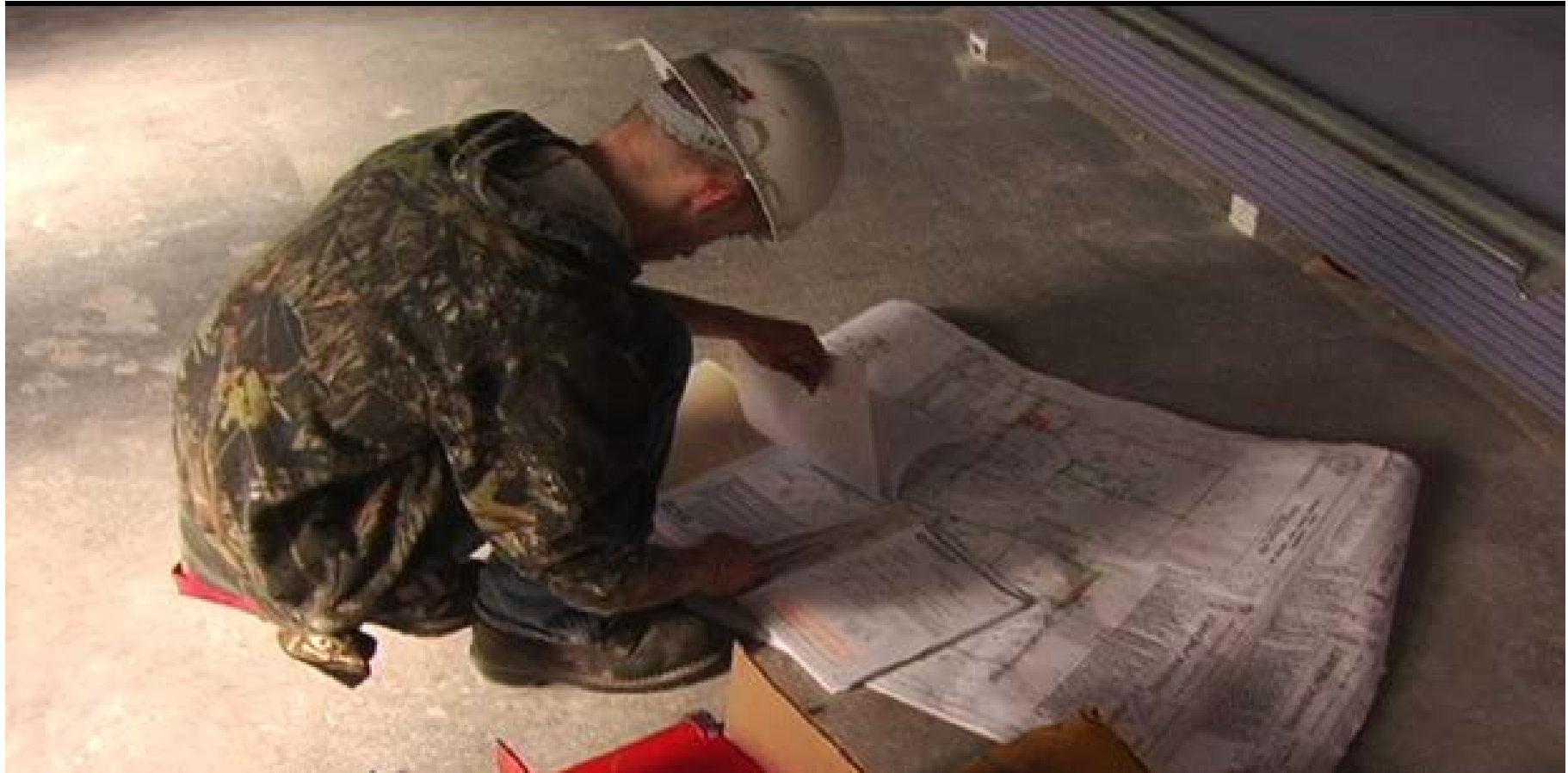
Tool/Smooth

3

Walls - BOTH SIDES

Firestopping is a Trade

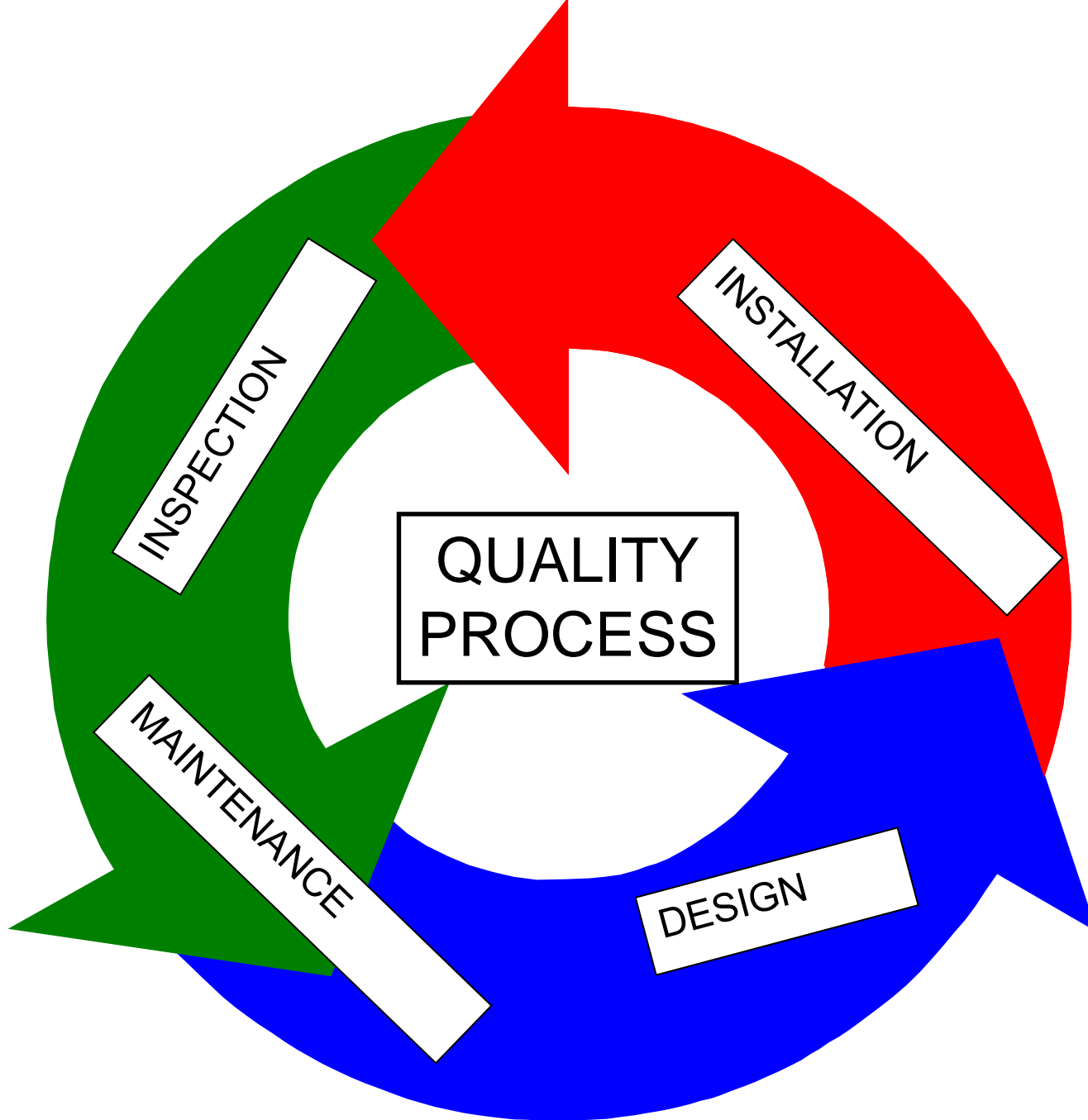
I – Installation – Listed Systems



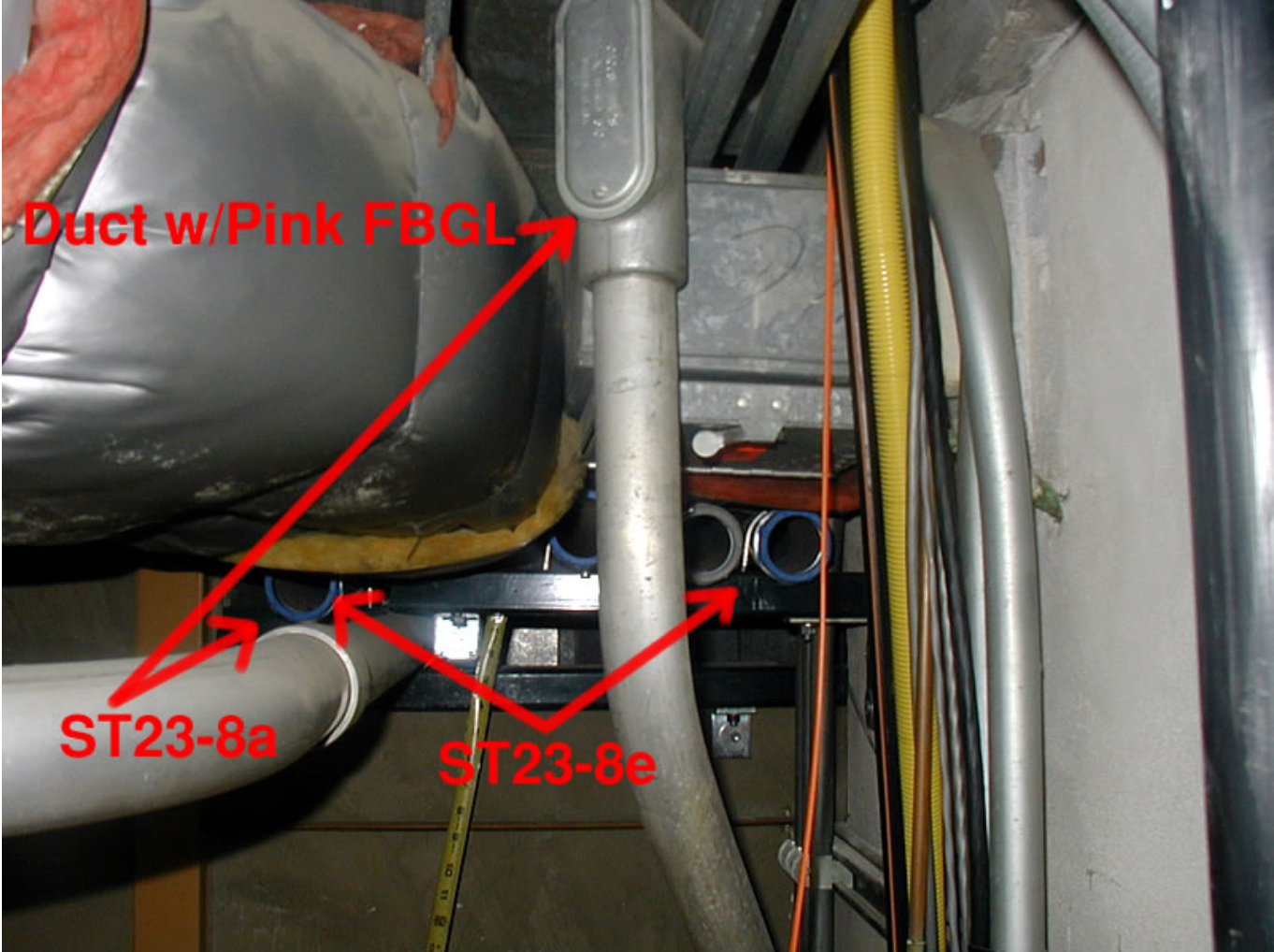
Firestopping is a Trade

Specs State Contractor Qualifications

- **FM 4991 – Standard for the Approval of Firestop Contractors**
- **UL Qualified Firestop Contractors**
- **FCIA Members**
- **FM & UL Programs Require Worker Training Documentation AND Systems Documentation**



Installation & Inspection

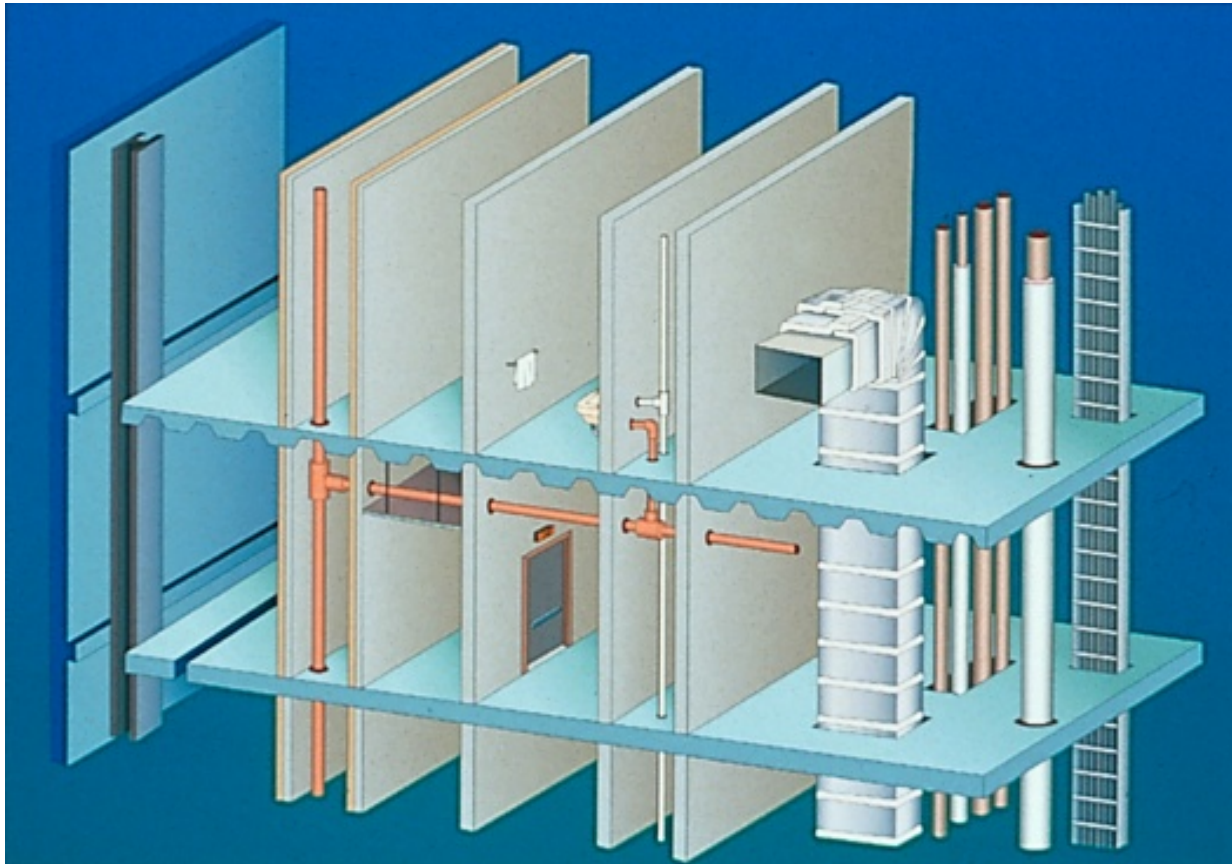


Firestopping is a Trade

I – Inspection

- **Contractor Self Inspection**
 - Verify Management System validity
 - FSCW Inspects Own Work in Addition to SIA
- **Manufacturer Inspection?**
 - Does not exist ... Survey, maybe
- **Special Inspection/Commissioning**
 - Independent 3rd Party
 - Destructive, Non Destructive
 - Specified Frequency
 - Inspection Agency Accreditation – IAS AC 291

M – Maintenance (& Management)



Fire Code Requires Fire & Smoke Resistance Maintenance Firestopping Workers ...

- **International Fire Code**
- **NFPA 101**
- **National Building Code of Canada**
- **UAE Fire and Life Safety Code of Practice**
- **Frequency – ANNUAL INSPECTION**

Existing Firestopping is a Trade

- **Who does the Inspection/Survey?**
 - **Depends on Service Provider**
 - **Management?**
 - **Superintendents?**
 - **Foremen?**
 - **Workers?**

National Fire Protection Association - NFPA 101-2012

- **SECTION 4.5.8 Maintenance, Inspection, and Testing.**
- **4.5.8.1** **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.
[101:4.6.12.1]

National Fire Protection

Association - NFPA 101-2012

- **4.5.8.2** **No existing life safety feature shall be removed or reduced** where such feature is a requirement for new construction. [101:4.6.12.2]
- **4.5.8.3*** **Existing life safety features **obvious to the public**, if not required by the Code, shall be either maintained or removed**. [101:4.6.12.3]
- **4.5.8.4** **Any device**, equipment, system, condition, arrangement, level of protection, fire-resistive construction, or any other feature **requiring periodic testing, inspection, or operation** to ensure its maintenance **shall be tested, inspected, or operated** as specified elsewhere in this Code or as directed by the AHJ. [101:4.6.12.4]
- **4.5.8.5** **Maintenance, inspection, and testing shall be performed under the supervision of a responsible person who shall ensure** that testing, inspection, and maintenance **are made at specified intervals** in accordance with applicable NFPA standards or as directed by the AHJ. [101:4.6.12.5]

International Fire Code Maintenance



SECTION 703 FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. The required fire resistance rating of fire-resistance rated construction (including walls, fire stops, shaft enclosures, partitions, smoke barriers, floors, fire resistive coatings and sprayed fire resistant materials applied to structural members and fire resistive joint systems) shall be maintained. Such elements shall be visually inspected by the owner annually and properly repaired, restored or replaced when damaged, altered, breached or penetrated.

Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings, **and holes** made for any reason shall be protected with approved methods capable of resisting the passage of smoke and fire.

2015 International Fire Code Maintenance

SECTION 703 FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. The required *fire-resistance rating* of fire-resistance-rated construction, including, but not limited to, walls, firestops, shaft enclosures, partitions, *smoke barriers*, floors, fire-resistive coatings and sprayed fire-resistant materials applied to structural members and fire-resistant joint systems, shall be maintained. Such elements **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..



2015 International Fire Code Maintenance

SECTION 703 FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. (continued) Where concealed, such elements shall not be required to be visually inspected by the *owner* unless the concealed space is accessible by the removal or movement of a panel, access door, ceiling tile or similar movable entry to the space. Openings made therein for the passage of pipes, electrical conduit, wires, ducts, air transfer openings and holes made for any reason **shall be protected with *approved* methods** capable of resisting the passage of smoke and fire. Openings through fire-resistance-rated assemblies shall be protected by self- or automatic-closing doors of *approved* construction meeting the fire protection requirements for the assembly.



2015 International Fire Code Maintenance

SECTION 703

FIRE-RESISTANCE-RATED CONSTRUCTION

703.1 Maintenance. (continued) **703.1.1 Fireblocking and draftstopping.** Required *Fireblocking* and draftstopping in combustible concealed spaces shall be maintained to provide continuity and integrity of the construction.

703.1.2 Smoke barriers and smoke partitions. Required *smoke barriers* and smoke partitions shall be maintained to prevent the passage of smoke. Openings protected with *approved* smoke barrier doors or smoke dampers shall be maintained in accordance with NFPA 105.

703.1.3 Fire walls, fire barriers and fire partitions. Required *fire walls, fire barriers* and *fire partitions* shall be maintained to prevent the passage of fire. Openings protected with *approved* doors or fire dampers shall be maintained in accordance with NFPA 80.



FCAC F113-16

2018 International Fire Code

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

Firestopping Education

- Education & Industry Resources
 - **FCIA's Firestop Industry Manual of Practice (MOP)**
 - Contractors
 - Special Inspection Agencies
 - Others
 - FCIA MOP for Industry Influences...
 - Member Resource Document
 - FREE To Specifiers with Design Firms
 - FREE To Governmental Building, Fire Code Officials
- Published in 2000
 - Updated every few years or as changes occur

Workforce Education

- Education & Industry Resources
 - **FCIA Firestop Containment Worker Manual**
 - Industry History
 - Testing
 - Glossary
 - 22 Material Chapters
 - FSCW Manual - Inexpensive Educational Resource
 - FCIA Members - \$95 each
 - 900 page book
 - E-Version PDF

Workforce Education

- **FCIA Firestop Containment Worker Education Program – Instructor Edition – Approx. 144 hours/year**
 - FCIA FSCW Manual Book, ‘Paper & E’
 - Videos – 2.5 hours+ Delivered Electronically
 - Powerpoint Presentations – 22
 - 22 Quizzes With/Without Answers
 - 22 Instructor Guides
 - Approx. 144 hours per year, two years of material
- **Non-FCIA Education – Approx. 288 hours.**
 - OSHA 10, 30, 50
 - Construction Math
 - General Construction Knowledge
 - Etc....

Workforce Education

- Education & Industry Resources
 - **FCIA Firestop Containment Worker Education Program**
 - **Life Safety Digest**
 - **Firestop Articles @ FCIA.org**
 - **Audiences**
 - **Firestop Containment Workers**
 - **NEW Office Personnel**
 - **ANY Others interested in Firestopping**
 - **Purpose: Educate the Industry**



FCIA Firestop Containment Worker Chapters

- **3.0 Firestop Materials**
- 3.1 Forming, Damming, Packing Materials
- 3.2 Intumescent Latex Firestop Sealants
- 3.3 Intumescent Silicone Firestop Sealants
- 3.4 Latex Firestop Sealants
- 3.5 Silicone Elastomeric Firestop Sealants
- 3.6 Silicone Firestop RTV Foam
- 3.7 Ceramic Fiber Firestop Sealants
- 3.8 Firestop Spray Products

FCIA Firestop Containment Worker Chapters

- **3.0 Firestop Materials**
- 3.10 Field Fabricated Wrap Strips and Collars
- 3.11 Pre-Manufactured Firestop Collars
- 3.12 Pre-Manufactured Firestop Sleeves
- 3.13 Pre-Manufactured Cast in Place Firestop & Pre-Manufactured Firestop Units
- 3.14 Intumescent Composite Sheets
- 3.15 Firestop Boards

FCIA Firestop Containment Worker Chapters

- **3.0 Firestop Materials**
- 3.16 Intumescent Foam Bricks, Blocks, Plugs
- 3.17 Intumescent Pillows
- 3.18 Pre-Fabricated Intumescent MCT Electrical Firestop Devices
- 3.19 Open Path Electrical Firestop Devices
- 3.20 Mechanical Elastomeric Firestop Devices
- 3.21 Intumescent Putty

FCIA Firestop Containment Worker Chapter Content

- **Advantages**
- **Disadvantages**
- **Limitations**
- **Compatibility**
- **Storage**
- **Surface Preparation**
- **Storage Temperatures**
- **Application Temperatures & Conditions**

FCIA Firestop Containment Worker Chapter Content

- **Product Expiration / Expiry Dates**
- **Transport and Disposal**
- **Surface Preparation**
- **Installation**
- **Curing of Products, Shrinkage**
- **Self Review**
- **Tooling -**
- **Removing Tapes**

FCIA Firestop Containment Worker Chapter Content

- **Post Installation Inspection**
- **Flame Spread / Smoke Developed**
- **Sound Transmission Classes**
- **Service Temperatures**
- **Color**
- **Painting**
- **Clean Up**
- **F, T, L, W, H discussions**
- **Labeling**

FCIA Firestop Containment Worker Chapter Content

- All sections refer to:
 - Laboratory Listing – Tested and Listed System
 - Manufacturers Installation Instructions
- Both.... LL & MII....
 - Required by Code

WHY FCIA Firestop Containment Workers??

- Firestopping is a Trade
 - Technical in Nature
 - Product Usage Limitations
 - Systems.....
 - Available at Retail Stores?
 - ARE a 2 Year Education Program
 - Complex, with lots of detailed items
 - NOT sold with the Product
 - Dictate Suitability

Firestopping is a Trade

- Firestopping is....
 - Fire-Resistance - Continuity
 - Smoke Resistance – Continuity
 - Extending the Fire-Resistance Rating of the Wall or Horizontal Assembly Through a BREACH

Firestopping is...

- Firestopping is NOT...
 - Plumbing
 - Electrical
 - Ductwork
 - Sprinkler
 - Piping
 - Cabling

Firestopping is a Trade

- ***Work Result?***
 - ***Sheet Metal – Air Movement***
 - ***Plumbing – Move stuff***
 - ***Electrical – Transfer power***
 - ***Firestop – Extend the fire resistance through breaches***
- ***Firestopping***
 - ***Extends Fire & Smoke Resistance Continuity through Breaches in Assemblies...***

Firestopping is a Trade

- ***“Firestopping = Not Sealing Pipes”***
- Proof FIRESTOPPING is a Specialty
 - **Specifications** – Single Source
 - MasterFormat - 07-84-00, Firestopping
 - MasterSpec, SpecLink, SpexCA – 07-84-00 = FM, UL Contractors
 - **ICC’s Codes**
 - IBC Chapter 7
 - IFC Chapter 7
 - IMC, IPC refer to Chapter 7
 - **Penetration?**
 - Defined as the ‘Breach’
 - Sealing the penetration??
- ***Firestopping Extends Fire Resistance through Breaches***

Firestopping is a Trade

- ***“Firestopping = Not Sealing Pipes”***
 - Firestop Systems are Firestopping
 - Firestop Systems are not Plumbing
 - Firestop Systems are not Sheet Metal
 - Firestop System are not communications
- ***Firestopping Extends Fire Resistance through Breaches***

Firestopping is a Trade

- Proof This is a Specialty
 - **Onet & NAICS Classifications** sets benchmark for local areas to set Davis Bacon Wage Rate.
 - **Firestop Onet Classification – 47.4099**
 - **47.4099 Construction Worker, All Others**
 - Firestop Worker under development.
 - Insulation Worker assignment is for all types of firestopping including penetrations, expansion joints, walltops, perimeter joints and other situations.
 - **Firestop North American Industry Classification**
 - **(NAICS Code)**
 - **238310, under Drywall and Insulation Contractors - FIRESTOPPING**
 - USA, Canada, Mexico
 - **Prevailing Wage Determinations**



Firestopping is a Trade

- Firestop Containment Worker Union Local #1
- Washington/Oregon
 - 4 Year Journeyman Firestop Containment Workers
 - Joint Apprenticeship Training Committee
 - Instructor
 - Students
 - Apprentices
 - 1st Year
 - 2nd Year
 - 3rd Year
 - 4th Year

Firestopping is a Trade

- Firestop Containment Worker Local #1
 - Work Assigned by Employer
 - Firestop Containment Worker CAREER
 - Respect from Other Trades
 - Firestopping, AND other Containment Work



Firestopping is a Trade

- What about other States? Provinces? Feds? Emirates?
 - FSCW Local 1 is the only FSCW Union, JATC....so far.
 - SAC States – State Apprenticeship Committees
 - BAT States – US Department of Labor
 - Canada – Ministry of Education
 - Jr. Colleges
 - Union/Non Union
 - UAE & Qatar – Not yet.

Workforce Education Matters

- Stats - Estimates
 - 2000+ Firestop Contractors
 - Growing at 5-15% / Yr.
 - 10 – 20 workers each
 - 20,000 workers North America
- Education is Essential



Effective Compartmentation is a SYSTEM



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Contacts

Firestop Contractors International Association

Hillside, IL – +1-708-202-1108

Bill McHugh – bill @ FCIA . org

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