FCIA DIIM & Firestopping
Fire Resistance
Design, Installation, Inspection, Maintenance

GCC Fire Safe Congress
30 March 2015
Welcome

• FCIA – A Trade Association
  – Total Fire Protection & Effective Compartmentation
  – Codes, Testing, Products - Materials
  – Firestopping for Safety – A Quality Protocol
• DIIM, Life Safety Digest, MOP
• www.FCIA.org
“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”

• Firestopping for Safety – DIIM

  • Properly *Designed* and Specified Firestopping
    FCIA - 07-84-00 - Specification

  • *Tested and Listed Systems* - ASTM E 814 / UL
    1479 - UL 2079, FM 4990, ULC-S-115, ASTM
    E2307

  • Professional *Installation* – FCIA Member, FM
    4991 Approved, UL/ULC Qualified Contractors

  • Properly *Inspected* - ASTM E 2174 / 2393
    Protocol by IAS AC 291 Accreditation Criteria
    for Inspection Agencies

• *Maintained & Managed* (Annually - FCIA
Building & Fire Code Requirements

• NFPA 5000 – 101- Chapter 8
• National Building Code – Canada
• UAE Fire and Life Safety Code – Chapter 21
• International Codes –
  – New and Existing Buildings International Building Code Chapter 7
  – International Fire Code – Chapter 7

• Minimum requirements - Construction & Maintenance
  – AD – IBC, IPMC
Building & Fire Code Requirements

- Compartmentation Codes – IBC, AD IBC, NFPA
  - **Fire Resistance** – Time, in minutes or hours that materials or assemblies have withstood a fire exposure as determined by tests, methods based on tests, or this code …. NFPA, Ch 8.
  - ICC adds… “**Systems**”
  - **Continuity** – **Openings & Penetrations**
AD IBC, IBC, NFPA Codes
ASTM E 119, UL 263

• Compartmentation Codes – Abu Dhabi, USA
  – Exterior Walls
  – Fire Walls
  – Fire Barriers
  – Fire Partitions (Not NFPA)
  – Smoke Barriers
  – Smoke Partitions

• AD IBC Chapter 7
• NFPA 101/5000 Chapter 8
Building & Fire Code Requirements

- Fire Barriers
  - Fire Area Separations
  - Mixed Use Occupancies
  - Incidental Uses
  - Hazardous Area Separations
  - Exit Enclosures
  - Shaft enclosures
  - Horizontal Exits
  - Corridor Walls - NFPA
Building & Fire Code Requirements

- Compartmentation Codes – Healthcare, others
  - Smoke Barrier – **Firestopping** for Continuity
    - IBC – Hourly Rated, “L” Rating
      - <5cfm/sf (IBC 2006)
      - < 50 cfm, 100sf of Wall Area (IBC 2009)
    - NFPA – … ‘restricting the passage of smoke’…
      - No quantified “L” Rating … YET
    - Continuous, Barrier to Barrier, … through concealed spaces,
      - Not always fire resistance rated.

- Smoke Partition
  - IBC – Continuous barrier, not rated…’retard’.
  - NFPA – Continuous membrane that is designed to form a barrier to **limit the transfer of smoke**….
Building & Fire Code Requirements

• **Continuous Fire Resistance - Breaches**
  – Walls / Horizontal Assemblies – Continuity
    • Firestop Products Become Firestop Systems
      – Penetrations
      – Joints – Head / Bottom of Wall – Perimeter Joints
    • Fire & Smoke Damper Duct Systems
    • Fire Doors and Hardware Systems
      – Rolling & Swinging
    • Fire Rated Glazing

• Critical Circuits
Building & Fire Code Requirements

• Standards?
  – R - Nuclear Power Plant Standards
  – E – Blast Strength? Check with manufacturer – High Rise..
  • Soft Body Impact Classification Level 2, ASTM C 1629/C 1629M.
  • Two layers of Level 2, or 1 layer of Level 3
  • Concrete Block Deemed to Comply
  – C – Which Chemicals? Check with manufacturer
  – B – Which Agents? Check with manufacturer
  – G – Germ – Check with MFR & industrial hygenist
Buildings are Safe Because….

- **Total Fire Protection Stats - North America High Rise**
  - **11,025 Tall Buildings - 20 + stories**
  - **70% in NY, SF, LA, CHI, HI, Toronto…**
    - 2/3 Canada’s high rise built before 1985

= **Fire Resistance & Compartmentation Primary**
  - Chicago, NY, Toronto – Older stock of buildings
  - SF, LA, HON – Earthquakes

» Source, Emporis.com
Buildings are Safe Because….

- National Institute of Standards & Technology ‘NIST Reports - World Trade Center 7 –
- Chapter 4.6, 'Factors that could have mitigated structural collapse'
  - ‘..improved compartmentation in tenant areas to limit the spread of fires‘

- ‘But first…DIIM’
Build it right
Effective Compartmentation & Continuity
Firestopping for Continuity
D – Listed Systems – Standards
Firestopping for Continuity
D - DIIM – Systems

SECTION A-A

1. Floor or Wall Assembly—Use 1/12 in. thick lightweight or normal weight 1:10 to 10:1 concrete. All types will also be concealed with 3-1/2 in. Class A Insulation Blanket. Cover forms are through opening or floor or wall assembly to be 1/2 in. In 1-1/2 in. larger than the size of flexible metal, conduit (Steel) inserted through opening. Max size of opening is 6 in.

See Conduit Blank (CAB) category in the Fire Resistance Directory for names of manufacturers.

2. Through Penetrating Product—Use 4 in. cement (or similar) pipe or use 3-1/2 in. steel (or similar) metal Flexible Metal Conduit. Most metal Flexible metal conduit to be installed near center or circular opening in floor or wall assembly. Flexible metal conduit to be tightly supported on both sides of floor or wall assembly.

Allied Wire & Cable Corp.

3. Packing Material—Use 1 hr., thickness of concrete (aluminized silica) over blanket of mineral wool batt insulation firmly packed into opening as a permanent form. Concrete is to be pumped with 1 in. from top surface or floor or from both surfaces at all.

4. Fill, Void or Cavity Material—Caulk.—Applied to fill the annular space around the flexible metal conduit. In floors, a 1 in. depth of bitumen to be installed flush with the surface of floor. In walls, a 2 in. depth of fill, rigid to be installed flush with wall, and on both sides of wall assembly.

Minnesota Mining & Mfg. Co.—UL Listed

*Marking the UL Listed Product
*Marking the UL Listing Mark
Firestopping for Continuity

• Firestop Products Become Firestop Systems --
  – “A Specific field erected construction, consisting of an assemblage of materials to prevent the spread of fire through openings in fire rated walls and floors using ASTM E 814 / UL 1479 / FM 4990, ULC-S-115, UL 2079, E-2307 as the test method…”
  – Testing = Suitability statement for use of a firestop product in a specific system application
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

Graphics, STI, 3M, AD, HILTI, Nelson
DI – Design & Installation
SYSTEMS SELECTION
SYSTEMS ANALYSIS
Who’s Responsible, How to Choose???
Firestopping for Continuity
Products become SYSTEMS

• After Installation…

• ‘Field Erected Construction…Tested to…’
  – F Rating - Flame
  – T Rating – Temperature
  – H Rating – Hose
  – L Rating – Smoke
  – W Rating – Water

Graphics – 3M
Products become Systems
Hose Stream = Shock Test
Firestopping for Continuity
Products become Systems

- Firestop Systems Directories –
  - UL
  - Intertek
  - FM Approvals

*Systems Selection & Analysis...Not as easy as it looks...*
Engineering Judgments/EFERRA

• 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* – “EFERRA”

– Based on engineering, IFC Protocol
INSTALL FIRESTOP SYSTEM
Firestop Sealant, MW installation
to Tested and Listed System Limits
= Firestop System

1. Pack
2. Apply Sealant
3. Tool/Smooth

Walls - BOTH SIDES

STI Graphic
Sleeved Pipes
Unlisted, Untested Firestop Systems
Firestopping for Safety
Unlisted, Untested Firestop Systems
Joint Compound
Incomplete is ineffective
Fire/Smoke Dampers & Firestops

• Dampers are UL 555, 555S Listed Systems
  – Installed to manufacturer’s written instructions (Systems
    – Angles…no sealants)
  – Consult the Damper Manufacturer, UL, FM
    or Intertek System & the Authority Having Jurisdiction
Installing an Incorrect System May Void the Fire / Smoke Damper Manufacturer’s Warranty
Firestop Joint Systems Definition

• UL 2079, ASTM E 1966, ULC-S-115
  – “A joint system is a specific construction consisting of adjacent wall and floor assemblies, and the materials designed to prevent the spread of fire through a linear opening between the wall and / or floor assemblies”
  – Definition
    • Joint?
    • Breach?
    • Opening?
Firestopping for Safety

- **Firestop Joint Systems Definition – UL 2079**
  - Min. Positive Pressure – .01 Water, 12” below assy.
  - Movement Cycling
    - Class I – min. 500 cycles, min. 1 cycle / minute
    - Class II- min. 500 cycles, min. 10 cycles / minute
    - Class III-min 100 cycles, min. 30 cycles / minute
  - Fire Tested at Maximum Joint Width
  - No Load Bearing Characteristics, unless noted
  - Assembly, L or W Ratings
Gypsum Wall assembly running up to concrete over metal deck

Fire Stop Technologies, Inc.
Firestop Applications

Floor to Wall

Top of Wall

Fire Stop Technologies, Inc.

Graphics – Firestop Solutions
Joints and Seams

Head of Wall

Graphics – Firestop Solutions
Joints and Seams

I-Beam to Fluted Deck
Penetrations in Head of Wall
Unacceptable
Results of Improperly Installed Mineral Wool
Firestop Perimeter Fire Containment Systems

• Firestop Perimeter Systems
  Definition – ASTM E 2307
    – “A Perimeter Fire Containment System is a specific field erected construction consisting of a floor with a fire resistance rating, and an exterior curtain wall with no hourly resistance rating, and the fill material installed between the floor and the curtain wall to prevent the vertical spread of fire in a building.”
Tamweel Towers, Dubai
Perimeter Fire Protection

*Tamweel - A discarded cigarette Torch?*
Firestop Perimeter Fire Containment Systems

Graphic – Intertek
Proper Installation of Mineral Wool

- Compressed mineral wool must be inserted perpendicular to the joint to allow for movement between the slab and wall.
Firestop Installed at Perimeter of Floors at Curtainwall
I- Installation

Who’s Responsible, How to Choose???
Firestop Products Become Systems when Installed to SYSTEM
Installation – Who?

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

**Conclusion –**

*Without Single Firestopping Trade…*

*fire & life safety risks*
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*
Firestop Contractor Qualifications

FM & UL/ULC – 4 Components

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

- Employee Training & Education
- Systems Selection
- Communicate systems to Field
- Material Controls
- Systems installation “protocol”
- Labeling
- Record keeping - Variance Procedures
- Non-Conformances
- Documentation
- Project closeout
Annual Audit
FM 4991 UL / ULC
Contractor Company Personnel

• Continued satisfactory performance
  • Quality Manual Implementation
• Documented - Archived record keeping
• Employee Training Documentation
• Jobsite Visit
• DRI CEU Verification
• Find @www.fcia.org
UL-ULC/FM 4991 Contractor
Company Benefits

Quantified Differentiation …
– Focus on the Company & Individual
– Investment in Company Procedures
– Investment in People Education
– Investment in FCIA Manual of Practice
  • Project Successful Proven Contractor
  • Education, Training, Accountability
    – Reduced Risk – Life, Property, Business
Wednesday, February 10, 2010

Mr. Randy Perry
Adler Firestopping Ltd.
#23, 5316 Hwy 60
Acheson, AB T7T 1M9
Canada

Re: Qualified Firestop Applicator

As the firestop manufacturer with more UL and ULC Classified Firestop System Coverage than any other, we are intimately familiar with UL and ULC’s QFC Program. We recognize the program as one of two best-in-class, third-party, quality assurance methods available to building project decision-makers to help ensure applicator quality. As such, we fully endorse the program and those applicators that have invested heavily to earn their way to become a member of this elite group of professionals.

It is our understanding that Adler Firestopping Ltd. is a UL (Underwriters Laboratories of Canada) Qualified Firestop Contractor (QFC) in good standing. This can be verified at the bottom of the page at the following link:
http://www.ul.com/products/services/industries/build-materials/qualified-contractor
program/qualified/firestop

Moreover, Randy Perry has successfully attended our intensive, two-day FT Level II program, taken the exam, earned a passing score and is within the two-year expiry period before renewal will be required. A copy of his certificate can be made available upon request.

Regards,

John Hurley
Regional Manager, Western US and Canada

Certificate Number: 1816

QUALIFIED FIRESTOP CONTRACTOR CERTIFICATE

Company Name: Adler Firestopping Ltd.
File number: NC12757
Issued: 2/1/2010
Expires: 2/1/2011
Address: Edmonton Office, #23, 5316 Hwy 60, Acheson, AB, T7T 1M9 CANADA
Telephone #: (780)-962-9450
Fax #: (780)-962-2794
Email Address: randy@adlerfirestopping.com

This company has demonstrated that it complies with UL’s Qualified Firestop Contractor Program Requirements for Canada. Under this programme, the Contractor has demonstrated knowledge of selection and installation of firestop systems as evidenced by the successful performance in a written examination by a “Designated Responsible Individual” (DRI). The Contractor has also established a Management System specifically focused on the proper selection and installation of ULC Listed Firestop Systems.

This certificate is not transferable and expires one (1) year after the issue date. This certificate may be displayed, copied and shared with others but must be used in its entirety. Only those companies listed in ULC’s Online Certifications Directory for the Qualified Firestop Contractor Program at www.ulca.ca/contractor are considered eligible for this program and to use this Certificate and the ULC marking (shown here) in its advertising and promotional material in accordance with the marking guidelines provided with this Certificate.

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FIRESTOP CONTRACTORS INTERNATIONAL ASSOCIATION
Membership Certificate

This certifies that

Adler Firestopping, Ltd.
Edmonton, Alberta

is a Firestop Contractor Voting Member of the Firestop Contractors International Association and pledges to further the mission of FCIA.

Robert N. LeClair, Jr., President, FCIA
Don Murphy, Vice President
Don Sibert, Secretary
Scott Rankin, Treasurer
Randall Boncavena, Director
Mike Dominguez, Director
Aidan Gleeson, Director
Bob Neatley, Director

I – Inspection
Systems Analysis
Firestop Installation & Inspection

I – Inspection –
Code Requirements

[A] 110.3 AD IBC Required inspections. The building official, upon notification, shall make the inspections set forth in Sections 110.3.1 through 110.3.10.

[A] 110.3.8 AD IBC Fire- and smoke-resistant penetrations. Protection of joints and penetrations in fire-resistance rated assemblies, smoke barriers and smoke partitions shall not be concealed from view until inspected and approved.
[A] 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]

[A] APPROVED. Acceptable to the building official or authority having jurisdiction. [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]
I – Inspection –
Code Requirements

ADIBC 1704.17 Through-penetration firestop systems, concealed draftstop and fireblock systems. All through-penetration firestopping, draftstopping and fireblocking shall be subject to periodic special inspection prior to concealment to determine compliance with the approved construction documents. … more.
I – Inspection –
Code Requirements

AD IBC 1704.17, Cont’d.
Listed systems shall be inspected for compliance with their listing.

Exception: Through-penetration firestop systems may be inspected in accordance with ASTM E 2174-04 when authorized by the registered design professional of record and when the contractor applies the procedures established in that standard.
Firestop Systems Inspection
ASTM E 2174 - ASTM E 2393

• “Standard Practice for On-Site Inspection of Installed Fire Stops – Penetrations - Joints”
  – Standard Inspection Procedure
  – Special Inspection Agency Companies
  – Other Qualified Firms
  – Report to Building Owner, Fire Marshals & Code Officials
Inspection Firm & Individual Qualifications

ASTM E 2174 - ASTM E 2393

• Inspector Personnel meet at least one criteria…..
  – 2 years experience (Construction, Field), education, and credentials acceptable to AHJ
  – Accredited by AHJ
  – Meet ASTM E699

• NEW Inspection Agency Company Qualification
Firm and Individual Qualifications

IAS AC 291

• Inspector Firm shall have at least one staff.
  – PASS UL or FM Firestop Exam
  – 1 year Quality Assurance

  Or...
  – PASS UL/FM Firestop Exam, and PE, FPE, Registered Architect, or
  – PASS UL/FM Firestop Exam, and Education by Certified Agency
Inspection Company & Individual Qualifications

ASTM E 2174 - ASTM E 2393

• Inspector Firm & Inspectors

  – ‘Independent of, and Divested from’ Installing firm, Distributor, Manufacturer, Competitor, Supplier…

  – ‘Not a Competitor of the Installer, contractor, manufacturer, or supplier ….

  – Submit notarized statements of …
Firm and Individual Qualifications
IAS AC 291

• Specify IAS AC 291 –
  – Quantified Qualifications
  – Helps AHJ with “Approved Agency”
  – Not in ASTM Standards, Code

• Specify Individual Certifications
  – 3rd Party, Independent Exams verify Knowledge
    • FM Firestop Exam
    • UL Firestop Exam
Inspection Methods
ASTM E 2174 - ASTM E 2393

• During Construction
  – Random witness, Each Floor
    • 10%, each type of Penetration Firestop,
    • 5% of Total Lineal Feet of Fire Resistance Rated Joint System, each type
Inspection Methods
ASTM E 2174 - ASTM E 2393

• Post Construction - Destructive Testing
  – Minimum 2% , no less than 1, each type per 10,000 SF of floor area
  – Minimum 1 / 500 LF of Joint Area, mandatory
  – If 10% variance per firestop type
    – Inspection stops
    – Installer inspects, repairs
    – Inspector reinspects
Inspection Methods
ASTM E 2174 - ASTM E 2393

• Variances….
  – ASTM E 2174 & ASTM E 2393
    • One Day Notice after discovery to Contractor
  – International Building Code 1704.2.4
    • ‘Brought to IMMEDIATE attention of contractor’
    • ‘If not corrected, Building Official AND RDP… prior to completion of that phase’
1704.1.2 Report requirement. Special inspectors shall keep records of inspections. The special inspector shall furnish inspection reports to the building official, and to the registered design professional in responsible charge. Reports shall indicate that work inspected was or was not completed in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the building official and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and correction of any discrepancies noted in the inspections shall be submitted at a point in time agreed upon prior to the start of work by the applicant and the building official.
Inspection Final Report
ASTM E 2174 - ASTM E 2393

• Name, address, location – project, installer, inspector
• Type and quantity of firestops inspected
• Verification method
• Percentage Deviation
• Copies of all documents sent to Authorizing Agency
Contractor Closeout Documents

- Copies of all documents sent to Authorizing Agency
- Product Data Sheets
- ‘SYSTEMS’, Fire Rated Assemblies = As Builts
- Inspection Docs
- Warranty Docs
- Maintenance Requirements
- Letters of Compliance
- FCIA Member in Good Standing Certificate
Firestopping & Compartmentation for Safety
QUALITY PROCESS

- Design
- Installation
- Inspection
- Maintenance
07-84-00 Specifications (FREE @ FCIA.org)

MasterFormat - 07 84 00 - Firestopping

- **Part I & 2** – FCIA Member, FM 4991 Approved or UL Qualified Firestop Installer/Contractor - Valid DRI, Test Standards

- **Part II – Products** – Testing, Properties
  - Pipes, cables, ducts, cable trays, MEP&C Systems -
  - Fire Resistance Rated Joints –
    - Head of Wall, Wall to Wall, Wall to Floor
  - Perimeter Fire Containment Joints
    - Floor Slab edge/Exterior Wall

- **Part III, Execution, Quality Assurance** (DIV 1 Reference)
  - ASTM E 2174 & ASTM E 2393 Inspection
  - IAS AC 291 Special Inspection Agency Qualifications –
    • Individual on staff passed FM or UL Firestop Exam
07-84-00 Specifications

- **Systems Testing – Part 1 – DIIM References**
  - Penetrations - ASTM E 814 & UL 1479,
  - Joints - ASTM E 1966, UL 2079, S115 -
  - Perimeter - ASTM E 2307 –
  - FM 4991 Standard for the Approval of Firestop Contractors
  - UL Qualified Firestop Contractor Program
  - ASTM E 2174 & ASTM E 2393 - Inspections
  - IAS AC 291 Accredited Special Inspection Agency
07-84-00 Specifications

• **Single Source Product??**

• **YES, BUT…..**
  – ‘…to the greatest extent possible.’
  – Number of Systems v. EJ’s
  – IFC Protocol for EJ’s
    • *No EJ if Tested/Listed System Available*
07-84-00 Specifications

• Part 1 - Systems
  – “T” Ratings - = F & T??
  – “H” Ratings – Hose Stream
  – “L” Ratings = Smoke Resistance
  – “W” Ratings – Floors, Walls

• Materials & Physical Property Requirements
  – Chemicals, Movement, Exposure
M – Maintenance ( & Management)
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]
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]
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.
Chapter 1, SECTION 21
Firestopping

21.15.2 The required fire resistance rating of installed firestop systems shall be **visually inspected by the owner or owner’s inspection agency annually**. Damaged, altered or breached firestop systems shall be properly repaired, restored or replaced to comply with applicable codes as per the guidelines of Civil defense.

21.15.3 Any new **Openings** made therein for the passage of through penetrants, **shall be protected with approved firestop system** to comply with applicable codes as per the guidelines of Civil defense.
National Fire Code of Canada

• Division B – Part 2, Building and Occupant Fire Safety
  2.2.1.2 – Damage to Fire Separations – where fire separations are damaged so as to affect their integrity, they shall be repaired so that the integrity of the fire separation is maintained…

• FCIA Manual of Practice – Appendix, Maintenance
  FCIA recommends Barrier Management for Effective Compartmentation and Structural Protection

Includes Fire Dampers, Fire Doors…and Continuity
“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
Proper ‘DCIIM’ Means Reliable Systems…

• **Properly Designed** - A/E - Consultant
  – Tested and Listed Systems, FCIA Member Mfr’s., Compartments per IBC, NFPA Codes, SUBMITTALS….Specified (CCS, CDT, RSW)

• **Properly Coordinated & Installed**
  – FCIA Member, FM 4991, or UL Qualified Contractors

• **Properly Inspected**
  – ASTM E 2174 & ASTM E 2393, by IAS Qualified Inspectors at IAS AC 291 Accredited Inspection Firms

• **Properly Maintained & Managed** –
  – FCIA Member, FM 4991, or UL Qualified, IAS Accredited Firms
FCIA DIIM & Firestopping I & I - Inspection Webinar

• Free Subscription to Life Safety Digest
  – Business Card

• Specifications @ FCIA.org,
Effective Compartmentation
is a SYSTEM

New UL test standards for Life Safety Dampers will take effect in July 2002
Contacts

Firestop Contractors International Association
Hillside, IL – +1-708-202-1108 - office
Bill McHugh – bill @ fcia.org
FCIA DIIM & Firestopping
Fire Resistance
Questions??

GCC Fire Safe Congress
30 March 2015