

**FCIA
FIRESTOP
DIIM**

**Design
Installation
Inspection
Maintenance &
Management**

**Bill McHugh, FCIA
Rich Walke, CTI for FCIA**

FCIA – Firestop Contractors International Association

- FCIA Members
 - Firestop Contractors
 - Firestop Manufacturers
 - Firestop Consultants
 - Firestop Distributors, Reps, Friends
- 3rd Party Contractor Programs – FM 4991, UL Qualified
- 3rd Party Inspection Company Accreditation, IAS AC291; FM/UL/IFC Exams
- ASTM E2174/E2393 Inspection Standards
- FREE PDF MOP - Specifiers @ AE Firms, AHJ's
- FREE Life Safety Digest – PDF FOR ALL
- Tools for Specifiers – 07-84-00

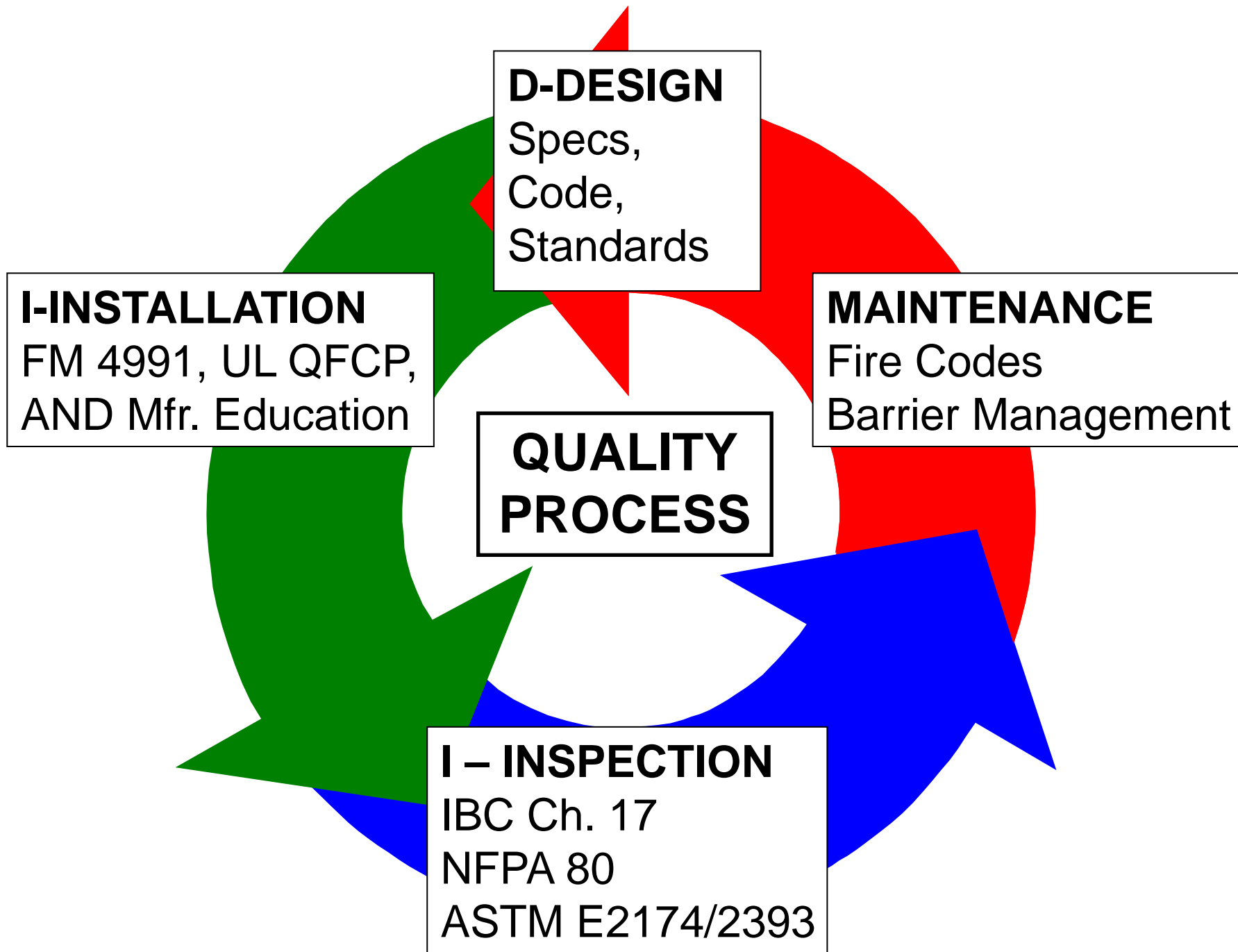


Outline

- FCIA – DIIM – Firestopping
 - Who is FCIA?
 - Design – Specs, Codes, Testing, Products
 - Installation –
 - FM 4991, UL/ULC Qualified Firestop Contractor Programs
 - Inspection –
 - ASTM E2174 / E2393 Inspection Standards
 - IAS AC 291, Inspector Qualifications
 - Maintenance – Fire Codes; Barrier Management
 - Firestopping for Safety –
 - Repairs??

“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



Firestopping for Safety “DIIM”

- Properly **Designed** and Specified Firestopping
 - FCIA – 07-84-00 - Specification
- **Tested and Listed Systems** – ASTM E814 / UL 1479, ASTM E1966 / UL 2079, FM 4990, ULC-S115, ASTM E2837, E2307, E3037, more
- Professional **Installation** – FCIA Member, FM 4991 Approved, UL/ULC Qualified Contractors
- Properly **Inspected** – ASTM E2174 / 2393 Processed by IAS AC 291 Accredited Inspection Agencies, Inspectors w/FM, UL, ULC,IFC Exam Success
- **Maintained & Managed** – Annually – FCIA Members – NFPA 1, 101, International Fire Code

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
- **Many other Country Codes...**
- ***Minimum Requirements – Construction & Maintenance*** ⁷

Building & Fire Code Requirements

[BF] FIRE RESISTANCE. That property of materials or their assemblies that prevents or retards the passage of excessive heat, hot gases or flames under conditions of use. [IBC 2018 202]

[BF] FIRE-RESISTANCE RATING. The period of time a building element, component or assembly maintains the ability to confine a fire, continues to perform a given structural function, or both, as determined by the tests, or the methods based on tests, prescribed in Section 703. [IBC 2018, 202]

Fire Resistance

703.3 Methods for determining fire resistance. The application of any of the methods listed in this section shall be based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263. The required *fire resistance* of a building element, component or assembly shall be permitted to be established by any of the following methods or procedures:

1. *Fire-resistance* designs documented in approved sources.
2. Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721.
3. Calculations in accordance with Section 722.
4. Engineering analysis based on a comparison of building element, component or assemblies designs having *fire-resistance ratings* as determined by the test procedures set forth in ASTM E119 or UL 263.
5. Alternative protection methods as allowed by Section 104.11.
6. *Fire-resistance* designs certified by an approved agency.

Building & Fire Code Requirements

- Fire-Resistance Rated Barriers – Defined Terms
 - *Exterior Walls*
 - *Fire Walls*
 - *Fire Barriers*
 - *Fire Partitions (Not 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**

Smoke Barriers & Firestopping

- Smoke Barriers differ from Smoke Partitions?
 - **Smoke Barrier** –
 - **IBC** – Hourly Rated, Quantified Firestop “L” Rating
 - < 5cfm/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*....

Fire Resistance SYSTEMS

- **Products Become Systems Through....**
- **Test Standard References**
 - **Structural Elements & Assemblies** – ASTM E119, UL 263
 - **Fire & Smoke Barriers** – ASTM E119, UL 263
 - **Firestopping** – ASTM E814 / UL 1479, ULC-S115, UL 2079, ASTM E1966, E2307, E2837, ...test method...”
 - **Fire/Smoke Dampers** – UL 555, UL 555S
 - **Swinging/Rolling Fire Doors** – UL 10B, 10C
 - **Fire Rated Glazing** – UL 9, NFPA 252
- **SYSTEM Testing = Suitability statement for use of a product in a specific system/design application**

Specs – Starts Barrier Management Process

- **NEW Buildings – 07-84-00 Specs**
 - www.FCIA.org
- **Part I – Focus on**
 - **Systems**
 - **Not Products**
 - **Manufacturers**
- **“Single Manufacturer to the greatest extent possible” – EJ’s**



Specs – Key Parts

- **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 Qualified Firestop Contractor Program**
 - **AND**
 - **Manufacturer Accredited, Approved, Trained**

Specs – Key Parts

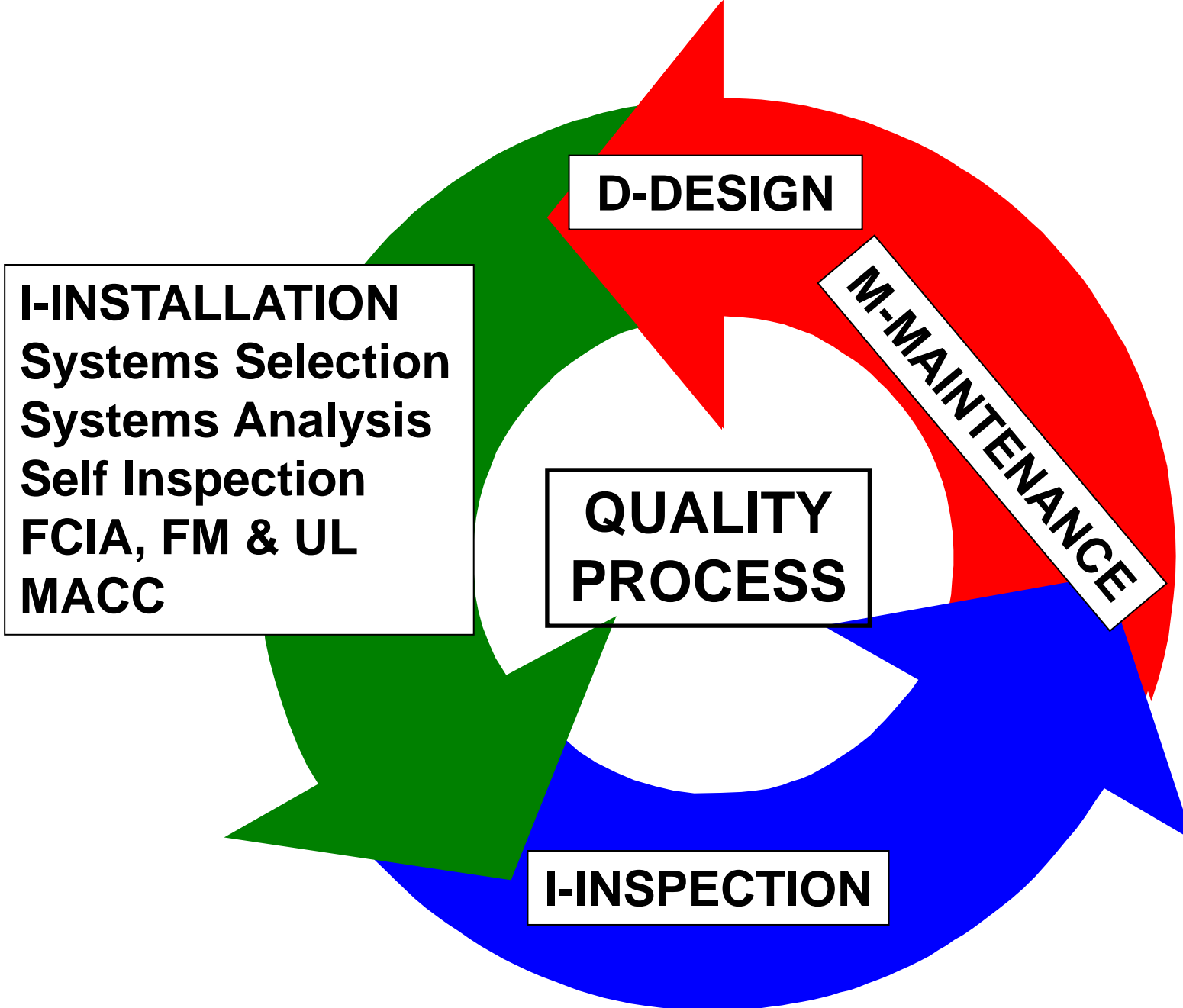
- **NEW Buildings – 07-84-00 Specs**
 - **www.FCIA.org**
- **Part II – Qualifications – Special Inspection**
 - **Special Inspection Agency –**
 - **IAS AC 291 Accredited Special Inspection Agencies**
 - **Special Inspector Qualifications**
 - **FM Firestop Exam**
 - **UL Firestop Exam**
 - **AND**
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

Specs – Key Parts

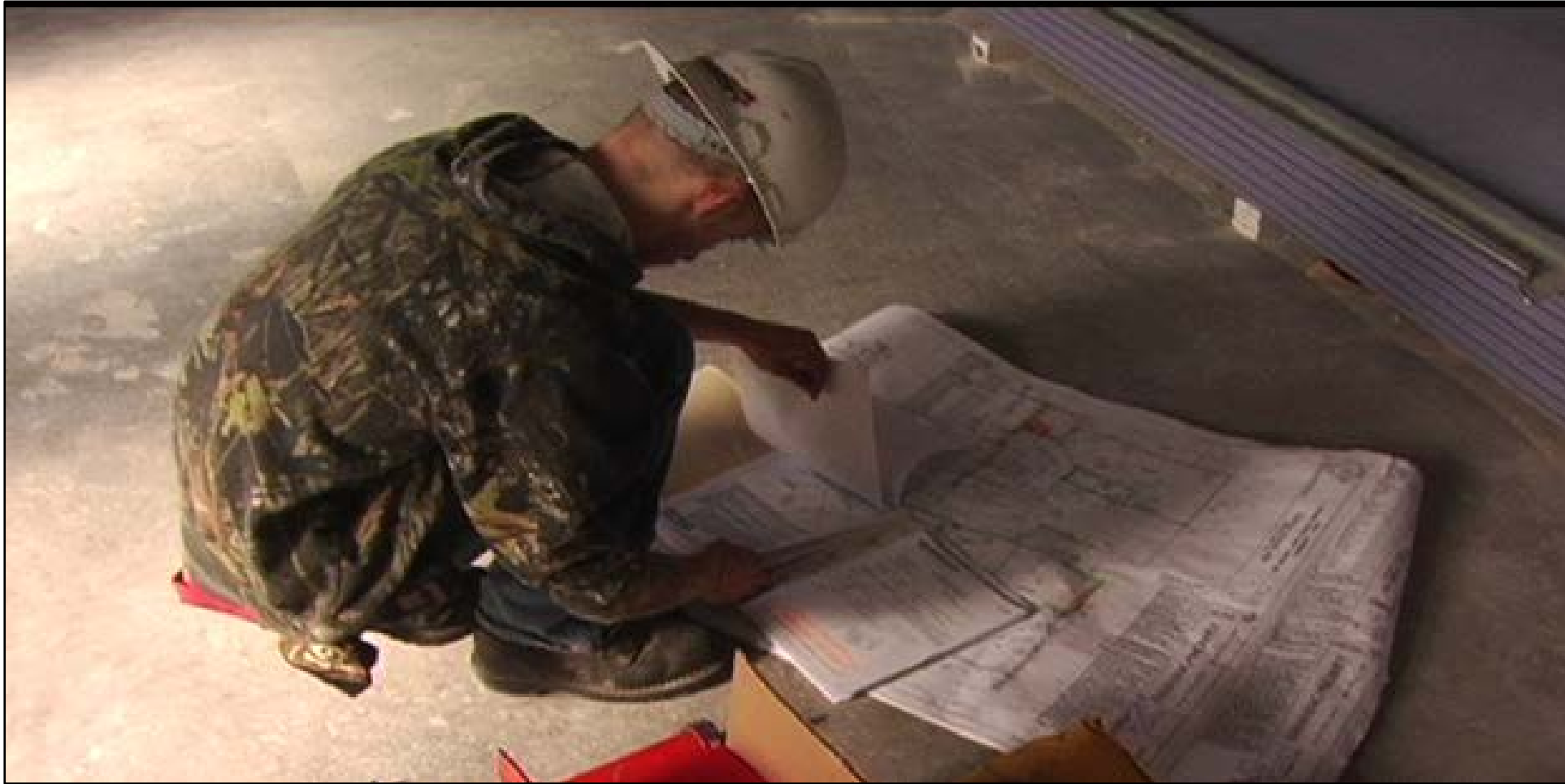
- **NEW Buildings – 07-84-00 Specs**
- **Part III – Execution**
 - **Special Inspection**
 - **ASTM E 2174 - Penetrations**
 - **ASTM E 2393 - Joints**

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**
 - **01 78 43 Spare Parts**
 - **01 78 46 Extra Stock Materials**
 - **01 78 53 Sustainable Design Closeout Documentation**



Firestopping for Continuity I – Listed Systems

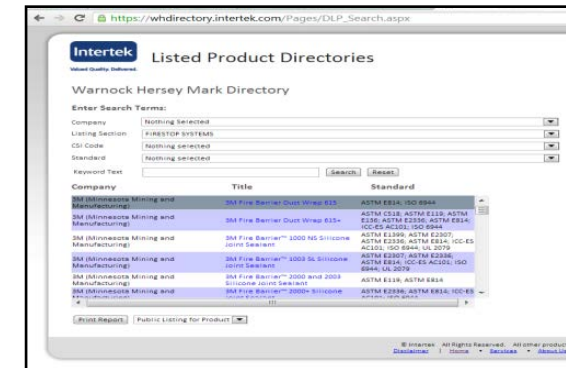


Firestopping for Continuity Products Become Systems

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



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



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

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

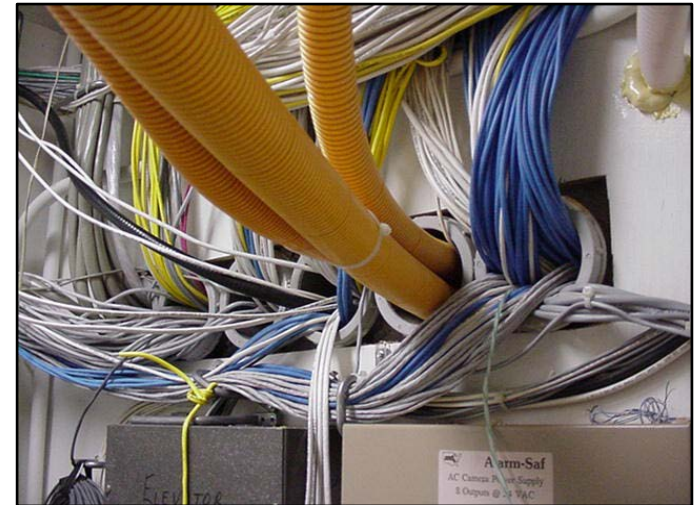
= *Rated Firestop System*



STI Graphic

Engineering Judgments/EFRRRA

- Field or other Variances to Tested and Listed Systems?
 - No System Exists, period....
- Why???
 - Lack of Planning
 - Unique Conditions



Fire Stop Technologies, Inc.
Photo

Engineering Judgments/EFRRA

- **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*
- *Inspection Agency?*

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

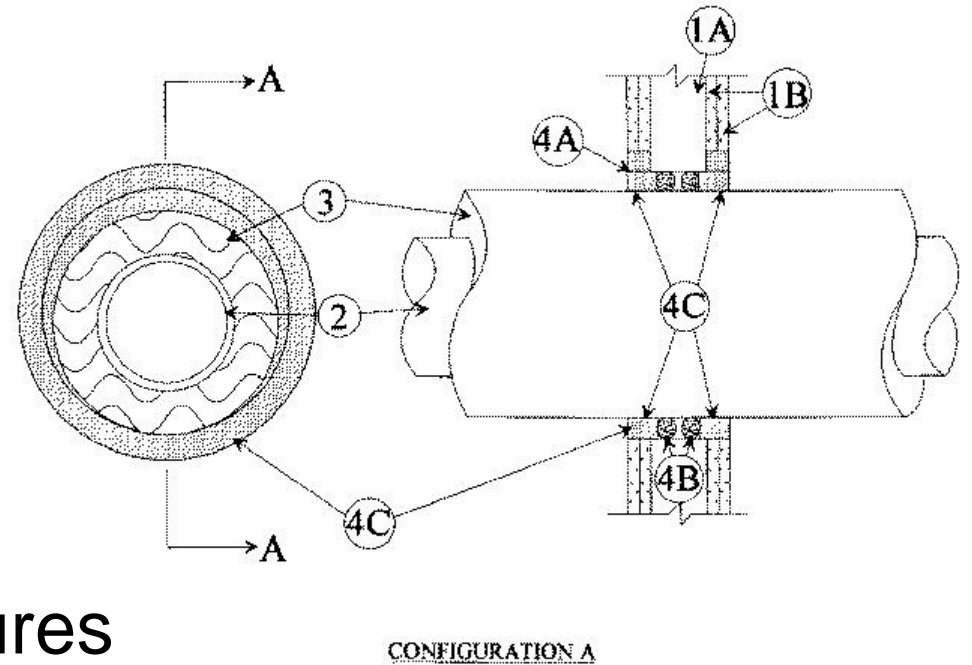
FM & UL/ULC – 4 Components

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



FM, UL/ULC 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



Master Audit Certificate of Compliance Program

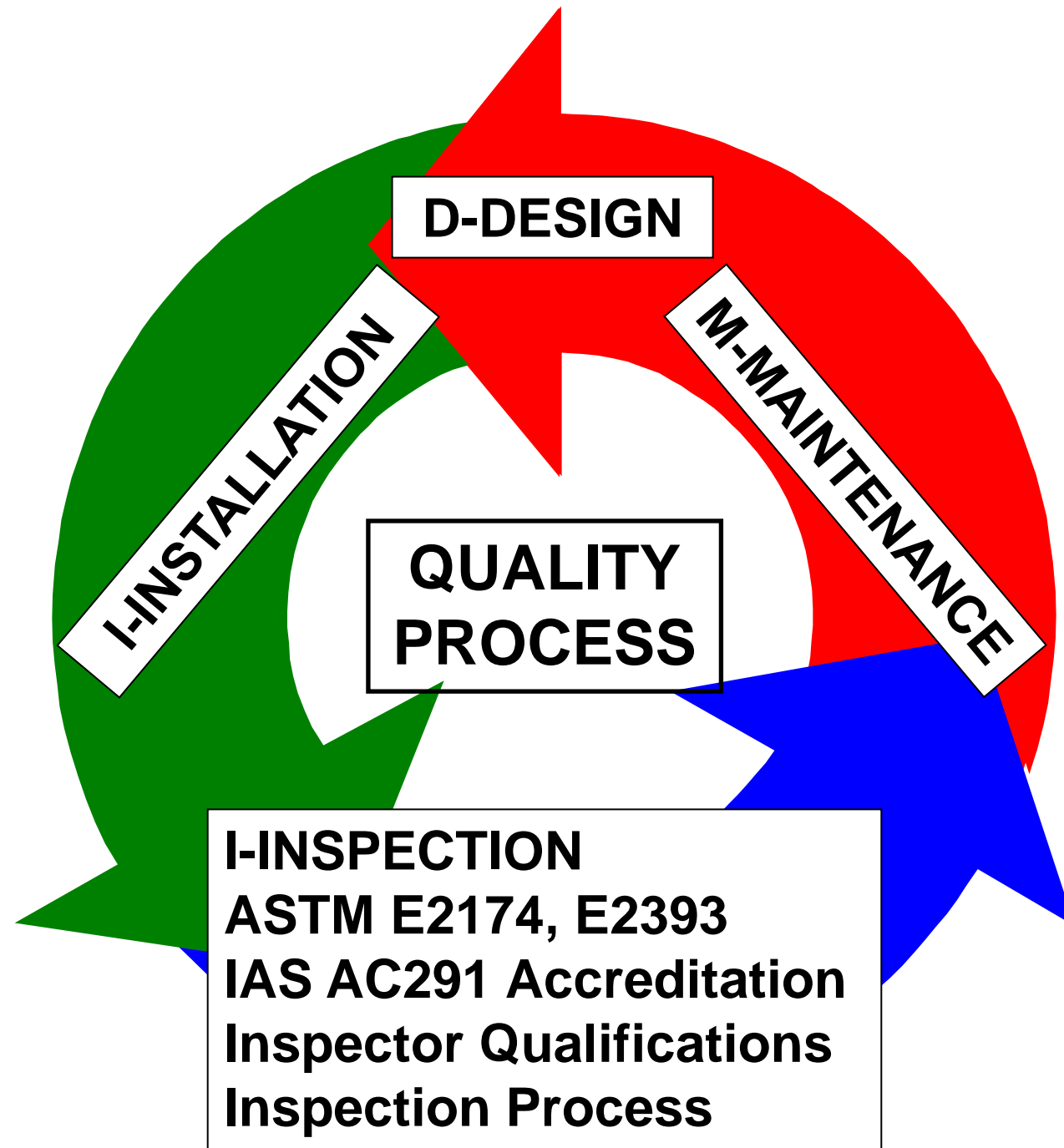
A **Jobsite Specific Management System Audit** – Our audit provides verified processes were followed to properly installed firestop systems.

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





Why Inspection?

Firestop Installation Methods

- **Each Construction Discipline – MEP, etc.**
 - “He/She who pokes hole, fills hole”
- **Multiple Contracts**
 - Firestop Contractors, Trades
- **Single Source Firestop Contractor**
 - *FCIA Member in Good Standing*
 - *UL/ULC Qualified, or FM 4991*

Inspection in Codes

ASTM E2174 – ASTM E2393

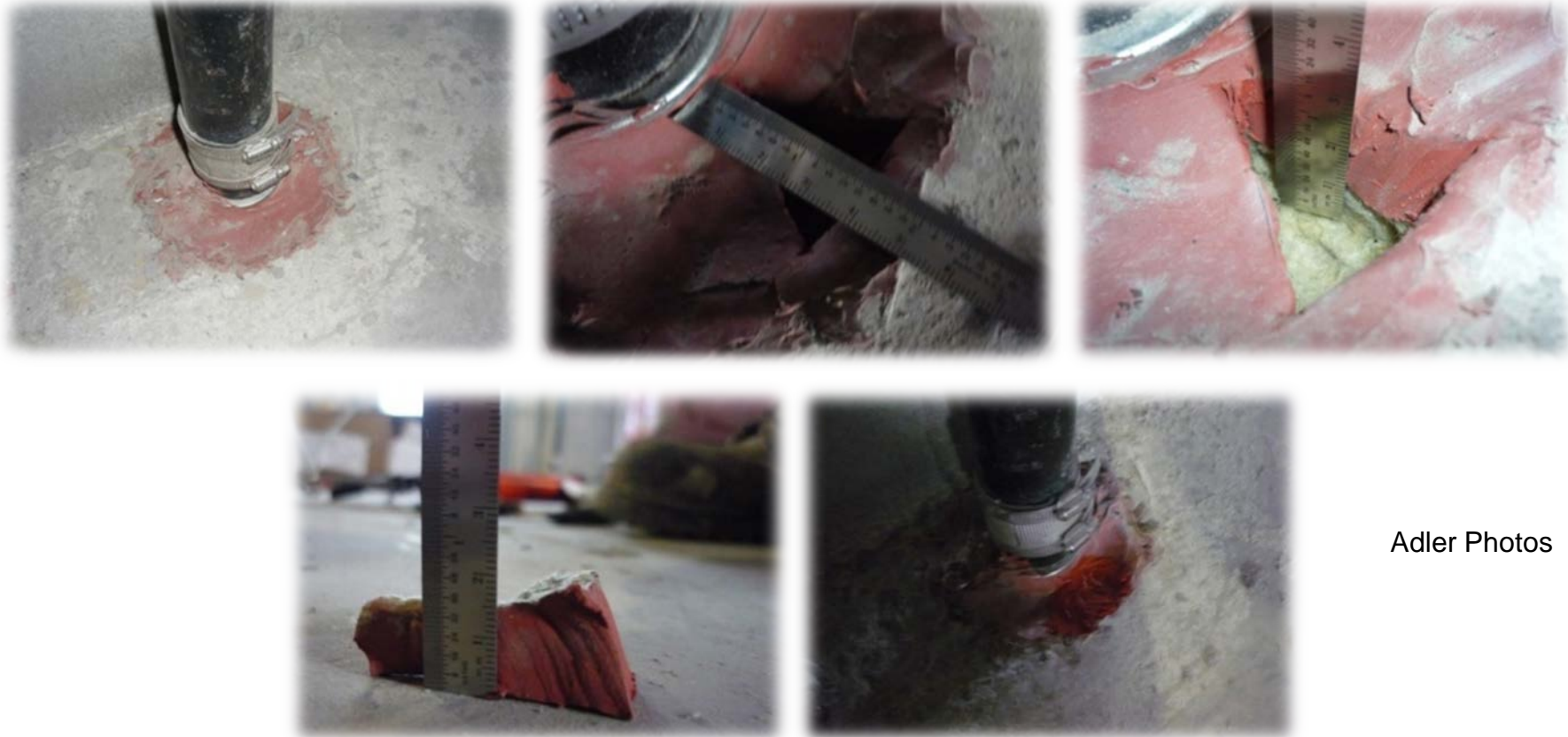
- NFPA 101 / 5000 – Chapter 8 – Annex
- 2012 International Building Code
 - CH 17 – Special Inspections (FCIA Proposals)
 - Buildings 75' & higher above Fire Department Access
 - Occupancy Type III, IV, Chapter 16 Table 1604.5
 - Residential > 250 Occupants – 2021 (FCIA Proposal)
- Abu Dhabi International Building Code

Firestop Systems Inspection

ASTM E2174 – ASTM E2393

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

Measure Sealant Thickness at Bond Lines to Pen./Assy. – Not Middle of Annular Space



Adler Photos

Firestop Inspection

ASTM E2174 – ASTM E2393

- Equipment –
 - Tapes
 - Tablets w/Systems
 - Borescope to explore areas that are concealed or partially concealed
 - NOT MICROMETERS

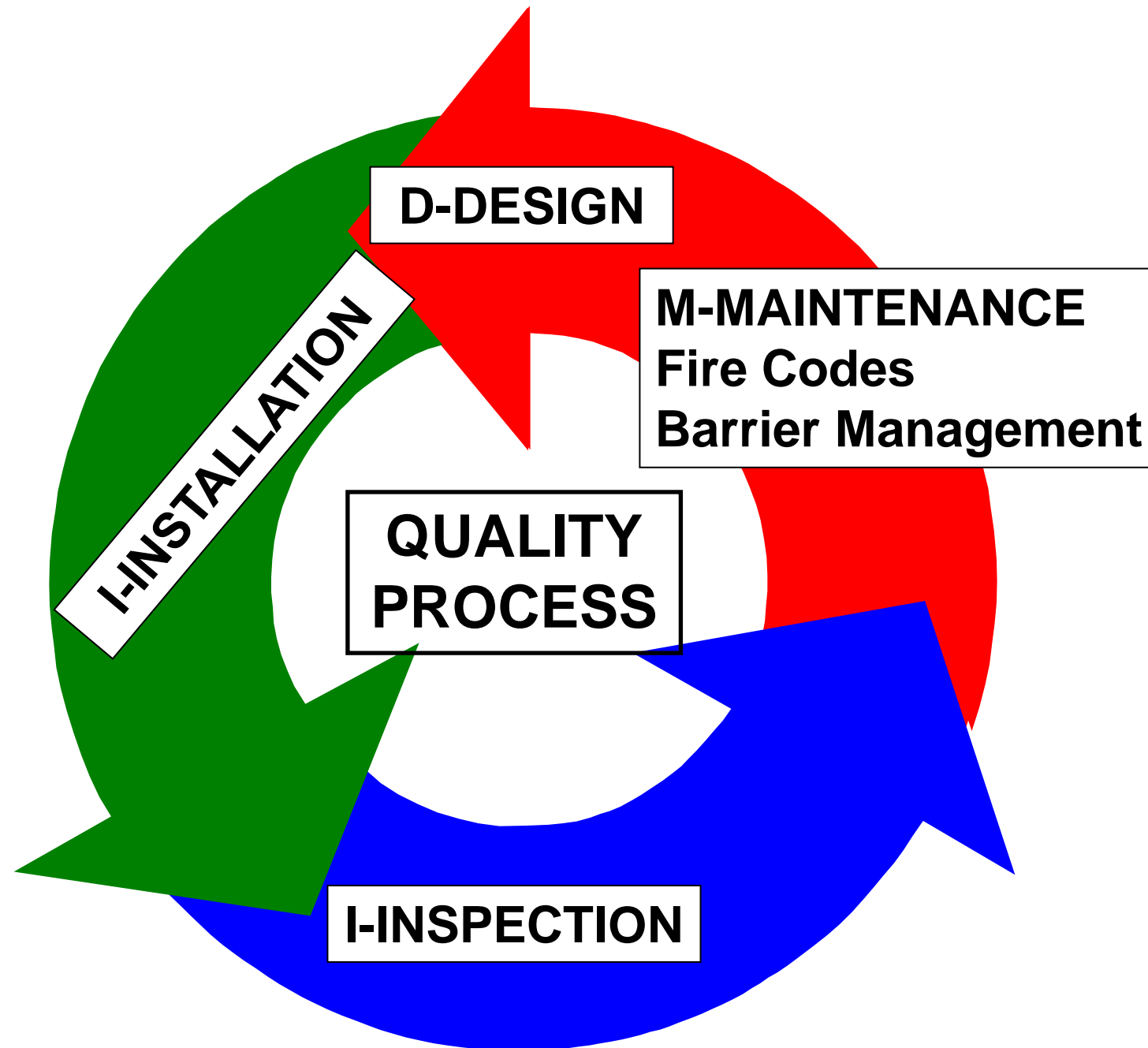


Firestop Repairs

- Repairs
 - Instruction requirements by manufacturer
 - Listed systems
 - Patching
 - Systems.....
 - Adhesion
 - Movement
 - T, L, W Ratings
 - ***As recommended by MFR***

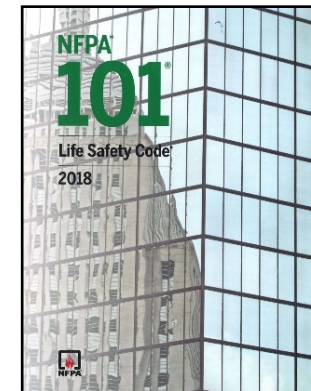
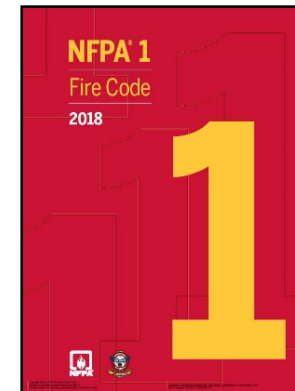
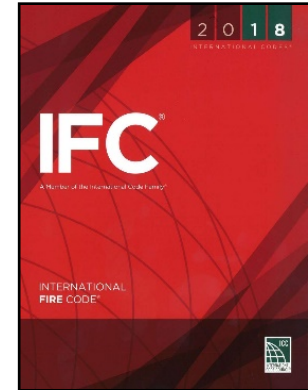


Affinity Firestop Photo



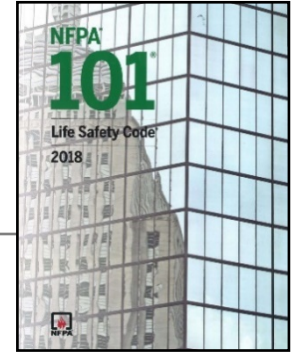
Fire Codes Require Maintenance

- NFPA 101
- NFPA 1
- International Fire Code
 - Minimum Requirements Stated
 - Frequency
 - **What really happens?**



National Fire Protection Association

NFPA 101 – 2018

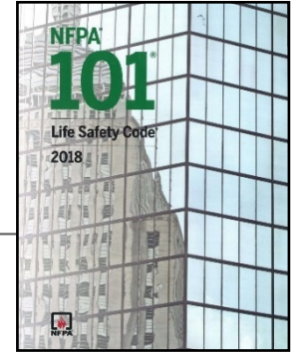


- **SECTION 4.6.12 Maintenance, Inspection, and Testing.**

- **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 101 – 2018



- 4.6.12.2 **No existing life safety feature shall be removed or reduced** where such feature is a requirement for new construction.
- 4.6.12.3* **Existing life safety features **obvious to the public**, if not required by the Code, shall be either maintained or removed.**
- 4.6.12.4 **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.
- 4.6.12.5 **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.

National Fire Protection Association

NFPA 1 – 2018

- **12.2* Construction.**
 - **12.2.2 Fire safety construction features for new and existing occupancies shall comply with this Code and the referenced edition of NFPA 101.**
- **12.3 Fire-Resistive Materials and Construction.**
 - **12.3.1** The design and construction of fire walls and fire barrier walls that are required to **separate buildings or subdivide a building to prevent the spread of fire** shall comply with Section 12.3 and NFPA 221.

FCIA Added Emphasis



National Fire Protection Association

NFPA 1 – 2018

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



FCIA Added Emphasis

National Fire Protection Association

NFPA 1 – 2018

- 12.3.2.1 ... Penetrations ... shall be inspected in accordance with **ASTM E2174 ...**
- 12.3.2.2 ... Joint systems ... shall be inspected in accordance with **ASTM E2393 ...**
- FCIA INTIATIVE WITH KOFFEL ASSOC....**

FCIA Added Emphasis



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



National Fire Protection Association

NFPA 1 – 2018

- 12.3.3.2** Where required, **fire-rated gypsum wallboard** walls or ceilings that are damaged to the extent that through openings exist, the damaged gypsum wallboard shall be **replaced or returned to the required level of fire-resistance using a listed repair system or using materials and methods equivalent to the original construction.**
- 12.3.3.3** Where readily accessible, required fire-resistance-rated assemblies in high-rise buildings shall be visually inspected for integrity at least once every 3 years.

FCIA Added Emphasis



National Fire Protection Association

NFPA 1 – 2018

- 12.3.3.3.1** The **person responsible** for conducting the visual inspection shall demonstrate appropriate **technical knowledge and experience in fire-resistance-rated design and construction** acceptable to the AHJ.
- 12.3.3.3.2** A written report prepared by the person responsible for conducting the visual inspection shall be submitted to the AHJ documenting the results of the visual inspection.

FCIA Added Emphasis



2009 International Fire Code Maintenance



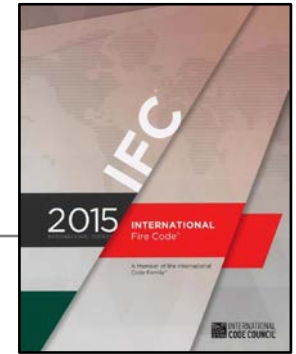
SECTION 703

FIRE-RESISTANCE-RATED CONSTRUCTION

- **703.1 Maintenance.** The required fire-resistance rating of fire-resistance-rated construction (including walls, 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 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



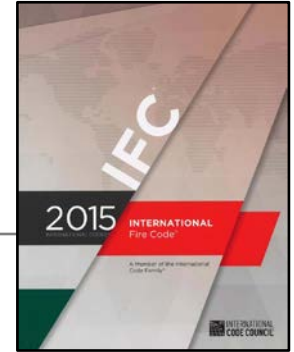
SECTION 703

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 when damaged, altered, breached or penetrated. **Records of inspections and repairs shall be maintained. ...**

FCIA Added Emphasis

2015 International Fire Code Maintenance

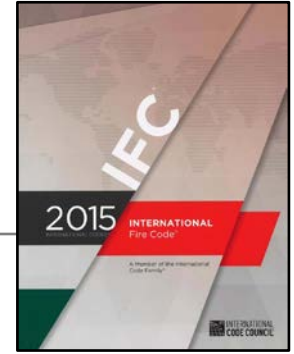


SECTION 703

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

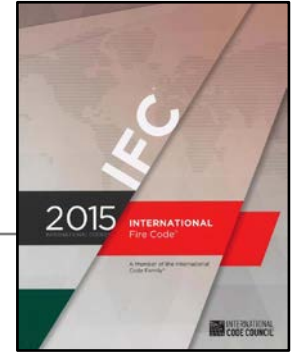


SECTION 703

FIRE-RESISTANCE-RATED CONSTRUCTION

- **703.1.1 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.

2015 International Fire Code Maintenance



SECTION 703

FIRE-RESISTANCE-RATED CONSTRUCTION

- **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.

2018 International Fire Code Maintenance

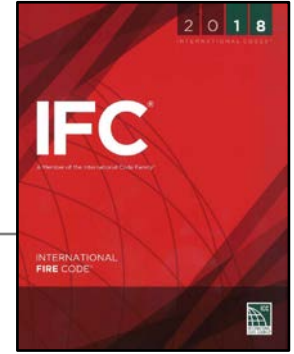


SECTION 701 GENERAL

- **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

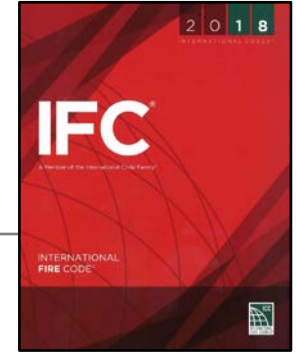
2018 International Fire Code Maintenance



SECTION 701 GENERAL

- **701.2 Fire-resistance-rated construction.** The *fire-resistance rating* of the following *fire-resistance-rated* construction shall be maintained:
 1. Structural members
 2. *Exterior walls*
 3. *Fire walls, fire barriers, fire partitions*
 4. *Horizontal assemblies*
 5. Shaft enclosures

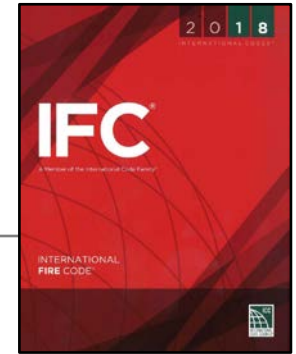
2018 International Fire Code Maintenance



SECTION 701 GENERAL

- **701.3 Smoke barriers.** The *fire-resistance rating* and smoke-resistant characteristics of smoke barriers shall be maintained.
- **701.4 Smoke partitions.** The smoke-resistant characteristics of smoke partitions shall be maintained.

2018 International Fire Code Maintenance

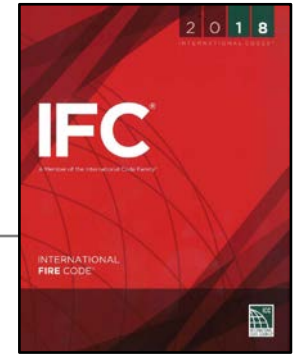


SECTION 701 GENERAL

- **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

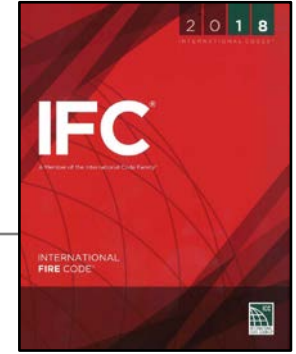


SECTION 701 GENERAL

- **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

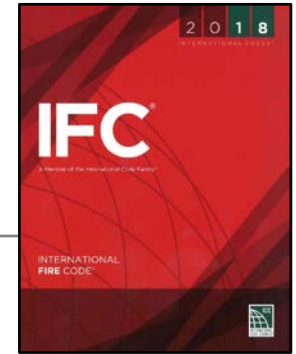


SECTION 701 GENERAL

- **701.6 Owner's responsibility Cont. Records of inspections and repairs shall be maintained.** 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.

FCIA Added Emphasis

2018 International Fire Code Maintenance

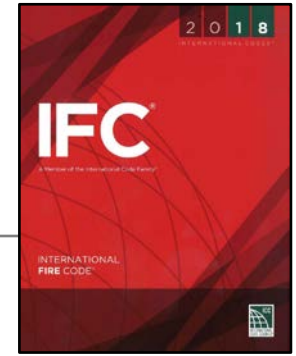


SECTION 701 GENERAL

- **701.7 Unsafe Conditions.** Where **any components in this chapter are not maintained and do not function as intended** or do not have the *fire-resistance* or the resistance to the passage of smoke required by the code under which building was constructed, remodeled or altered, **such component(s) or portions thereof shall be deemed an unsafe condition** in accordance with Section 111.1.1.

FCIA Added Emphasis

2018 International Fire Code Maintenance

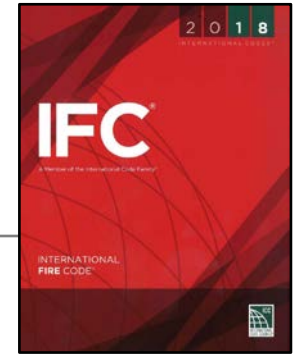


SECTION 701 GENERAL

- **701.7 Unsafe Conditions Cont.** Components or portions thereof determined to be unsafe shall be repaired or replaced to conform to the code under which building was constructed, remodeled or altered, as deemed appropriate by the *fire code official*. Where the condition of components is such that any building, structure or portion thereof presents an imminent danger to the occupants of the building, structure or portion thereof, the *fire code official* shall act in accordance with Section 111.2.

FCIA Added Emphasis

2018 International Fire Code Maintenance

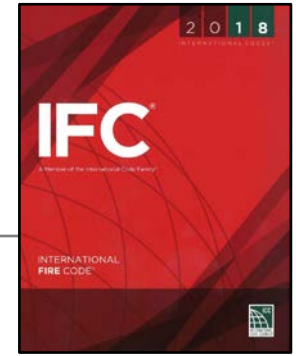


SECTION 703 PENETRATIONS

- **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

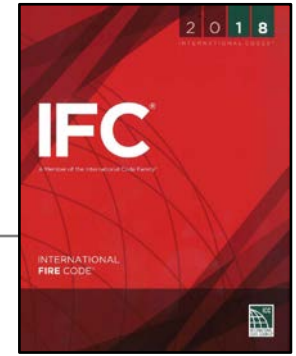


SECTION 703 PENETRATIONS

- **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 Maintenance

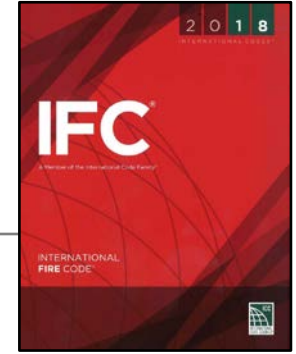


SECTION 704 JOINTS AND VOIDS

- **704.1 Maintaining protection.** Where required when the building was originally constructed, materials and systems used to protect joints and voids in the following locations shall be maintained. The materials and systems shall be securely attached to or bonded to the adjacent construction, without openings visible through the construction.

FCIA Added Emphasis

2018 International Fire Code Maintenance

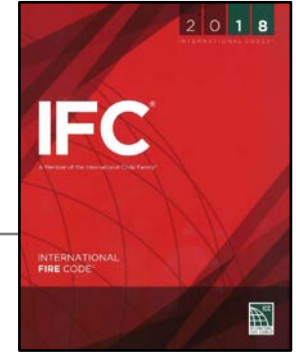


SECTION 704 JOINTS AND VOIDS

- **704.1 Maintaining protection cont.**
 - Subparagraphs 1 through 7 detail the types of joints and voids required to be maintained. This list corresponds to joints and voids which are required to be protected by the 2018 IBC.
- **Unprotected joints and voids do not need to be protected where such joints and voids were not required to be protected when the building was originally constructed.**

FCIA Added Emphasis

2018 International Fire Code Maintenance



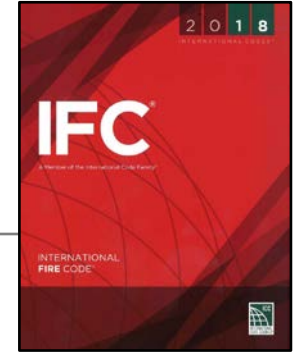
SECTION 705

DOOR AND WINDOW OPENINGS

- **705.1 Maintaining protection.** Where required when the building was originally constructed, opening protectives installed in *fire-resistance-rated* assemblies, *smoke barriers* and *smoke partitions* shall be inspected and maintained in accordance with this section.

FCIA Added Emphasis

2018 International Fire Code Maintenance



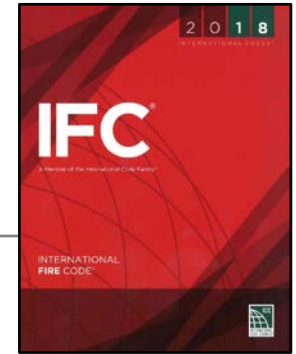
SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2 Inspection and maintenance.** *Opening protectives* in *fire-resistance-rated* assemblies shall be inspected and maintained in accordance with NFPA 80. *Opening protectives* in *smoke barriers* shall be inspected and maintained in accordance with NFPA 80 and NFPA 105. *Openings* in *smoke partitions* shall be inspected and maintained in accordance with NFPA 105.

FCIA Added Emphasis

2018 International Fire Code Maintenance



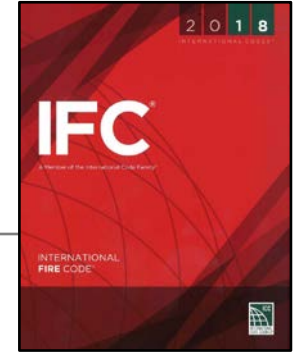
SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2 Inspection and maintenance cont.** **Fire doors and smoke and draft control doors shall not be blocked**, obstructed, or otherwise made inoperable. Fusible links shall be replaced promptly whenever fused or damaged. ***Opening protectives and smoke and draft control doors shall not be modified.***

FCIA Added Emphasis

2018 International Fire Code Maintenance

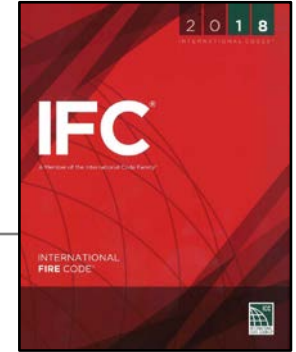


SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2.1 Labeling requirements.** Where approved by the *fire code official*, the application of field-applied labels associated with the maintenance of *opening protectives* shall follow the requirements of the *approved* third-party certification organization accredited for *listing* the opening protective.

2018 International Fire Code Maintenance

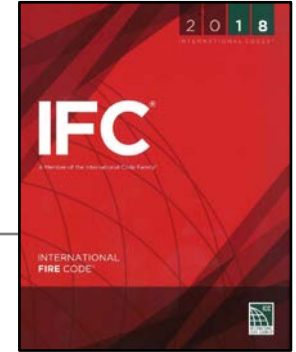


SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2.2 Signs.** Where required by the *fire code official*, a sign shall be permanently displayed on or near each *fire door* in letters not less than 1 inch (25 mm) high to read as follows:
 1. For doors designed to be kept normally open: FIRE DOOR—DO NOT BLOCK.
 2. For doors designed to be kept normally closed: FIRE DOOR—KEEP CLOSED.

2018 International Fire Code Maintenance



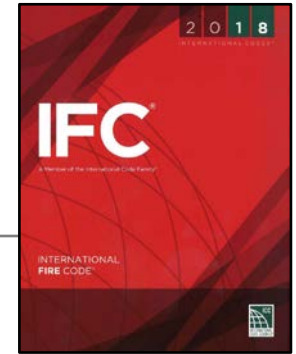
SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2.3 Hold-open devices and closers.** Hold-open devices and automatic door closers, where provided, shall be maintained. During the period that such device is out of service for repairs, the door it operates shall remain in the closed position.

FCIA Added Emphasis

2018 International Fire Code Maintenance



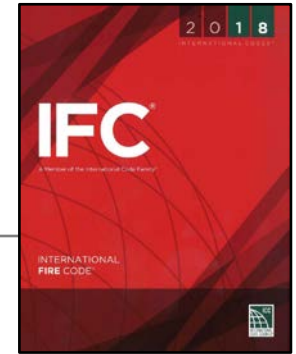
SECTION 705

DOOR AND WINDOW OPENINGS

- **705.2.4 Door operation.** *Swinging fire doors shall close from the full-open position and latch automatically.*
- **705.2.5 Smoke- and heat-activated doors.** *Smoke-activated doors shall be maintained to self-close or automatically close upon detection of smoke.* Existing fusible-link type automatic door-closing devices are permitted if the fusible link rating does not exceed 135°F (57°C).

FCIA Added Emphasis

2018 International Fire Code Maintenance

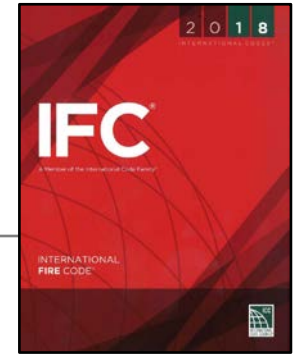


SECTION 705 DOOR AND WINDOW OPENINGS

- **705.2.6 Testing.** Horizontal and vertical sliding and rolling *fire doors* shall be inspected and tested annually to confirm proper operation and full closure. Records of inspections and testing shall be maintained.

FCIA Added Emphasis

2018 International Fire Code Maintenance



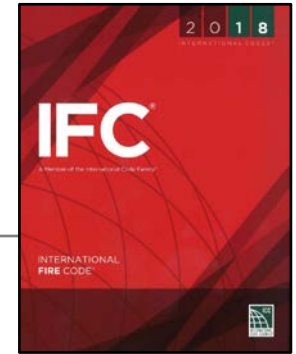
SECTION 706

DUCT AND AIR TRANSFER OPENINGS

- **706.1 Maintaining protection.** **Dampers** protecting ducts and air transfer openings **shall be inspected and maintained in accordance with NFPA 80 and NFPA 105.** Other products or materials used to protect the openings for ducts and air transfer openings shall be securely attached to or bonded to the construction containing the duct or air transfer opening, without visible openings through or into the cavity of the construction. **Any damaged products or materials protecting duct and air transfer openings shall be repaired, restored or replaced.**

FCIA Added Emphasis

2018 International Fire Code Maintenance



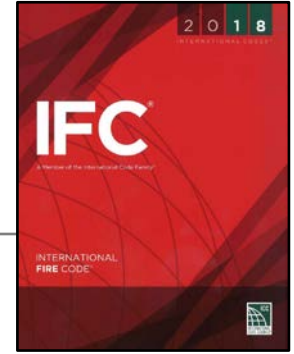
SECTION 706

DUCT AND AIR TRANSFER OPENINGS

- **706.2 Unprotected openings.** Unprotected duct and air transfer openings in *fire-resistance-rated* construction and construction installed to resist the passage of smoke shall be protected so as to comply with requirements that were in effect when the building was constructed.

FCIA Added Emphasis

2018 International Fire Code Maintenance

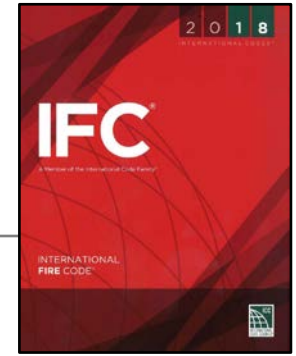


SECTION 707 CONCEALED SPACES

- **707.1 Fireblocking and draftstopping.** *Required fireblocking and draftstopping* in combustible concealed spaces *shall be maintained* to provide continuity and integrity of the construction.

FCIA Added Emphasis

2018 International Fire Code Owner's Responsibility



- **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.*
- **FCIA Initiative with Koffel Associates**

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

International Property Maintenance Code

2018 IPMC SECTION 703

- **703.1 Fire-resistance-rated assemblies.** The required fire-resistance rating of fire-resistance-rated walls, firestops, shaft enclosures, partitions and floors shall be maintained.
- **703.2 Opening protectives.** Required opening protectives shall be maintained in an operative condition. Fire and smokestop doors shall be maintained in operable condition. Fire doors and smoke barrier doors shall not be blocked or obstructed or otherwise made inoperable.

National Fire Code of Canada

National Fire Code of Canada

- **Division B – Part 2, Building and Occupant Fire Safety**

2.2.1.2 – Damage to Fire Separations – Where *fire separations* are damaged so as to affect their integrity, they shall be repaired so that the integrity of the *fire separation* is maintained...

- **FCIA Manual of Practice – Appendix, Maintenance**

FCIA recommends Barrier Management for Effective Compartmentation and Structural Protection



M–Barrier Management Systems

- **Visual Building Survey/Inspection....**
 - **Does it look like the assembly?**
 - Annular Space
 - Visible Breaches, unless listing allows
 - Joint Width
 - Penetrating Item Types, Coverings
 - # Penetrating Items, Types
 - Penetrations in Joints & Not in System/Listing...
 - Much more...
 - **Competent Personnel**

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

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

= *Rated Firestop System*



STI Graphic

C-AJ-8XXXX???

See Tag/Label
Identification
System



Affinity Firestop Photo

C-AJ-???



Affinity Firestop Photo

C-AJ-5209?



Affinity Firestop Photo

C-AJ-8XXX??



Affinity Firestop Photo

W-L-2XXX???
NOPE!!



Affinity Firestop Photo

W-L-2XXX
Wallboard
Patch??

NO!!



Affinity Firestop Photo

Good Luck!



Affinity Firestop Photo

M–Barrier Management Systems

Building Owner’s Policy Topics

- **Create a Budget to Meet Code Requirements**
- **Inventory – What Info?**
 - Life Safety Drawings
 - Manufacturers Instructions
 - Tested and Listed Systems (Listings)
- **Implement Fire Resistance Management**
 - In House Policy
 - Outside Contractor Policy
- **Monitor Process**
- **Annual Visual Inspection & Keep Records**
- **Show Fire Marshal....Insurance Company**

Contact

Firestop Contractors International Association

Hillside, IL – +1-708-202-1108 - office

Bill@FCIA.org

M–Barrier Management Systems

- **Electronic Best Practice Elements**
 - **Action Oriented**
 - Projects - Specifications
 - Ongoing Surveys – FCIA RPPS 2010-1
 - **Action Reminders**
 - **In Process Status**
 - **Record Retrieval**

M–Barrier Management Systems

- **Visual Building Survey/Inspection....**
 - Tested and Listed Systems (Listings)
 - Manufacturers installation instructions

Questions??



Thanks for Attending!!!

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