“What to Expect when being Inspected”

Firestop Inspection
ASTM E2174 & 2393

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Overview

- Code Requirements for Inspection – NFPA 1
- Qualification of Firestop Installation Company & Inspector
- Discuss Pre-Inspection Documents and Meeting
- Firestop Inspection
  - Standards: ASTM E2174 & E2393
  - Report, Transmittal & Final Report
  - Process & Procedures of a firestop inspection – KEY CHECK POINTS
    - Penetrations
    - Joints
Code Requirements
NFPA 1 – Chapter 12 Features of Fire Protection
National Fire Protection Association – *New & Existing Construction*

12.2.2 Fire Safety construction features for new and existing occupancies shall comply with this Code and the referenced in edition of NFPA 101
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 penetrations and joints shall be prepared and monitored by the RDP responsible for design.

12.3.2.1 Inspection of firestop systems of the types tested in accordance with ASTM E814 or UL 1479, shall be conducted in accordance with ASTM E2174 “Standard Practice for On-site Inspection of Installed Firestops.”
NFPA 1 – Chapter 12 Features of Fire Protection
National Fire Protection Association

• 12.3.2.2 Inspection of fire-resistive joint systems of the types tested in accordance with ASTM E1966 or UL 2079, shall be conducted in accordance with ASTM E2393 “Standard Practice of On-site inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers”
Qualifications of firestop Installation Company & Inspector

- Do the specifications call for a UL Qualified contractor or FM 4991?
- If required has the RDP submitted inspector qualification to the AHJ for approval (special inspection certificate) ?
- Is there an approved Special inspector list for that municipality ?
- Is there additional requirements under the specifications?
Passive Fire Protection
Pre-Inspection Documents

- Life Safety Drawings
- Submittal Packages
- Mechanical Drawings
- Curtain Wall Design
- Wall Type Designs

FCIA
Firestop Contractors International Association
Firestop Inspection – Standards

• ASTM E2174
  • Standard Practice for On-site Inspection Installed Firestops

• ASTM E2393
  • Standard Practice for On-site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers
Firestop Inspection – Standards

Product Review Inspection

• The Standards calls for the Inspector to verify that the materials bear a Listing Label

• Manufacturer’s container labels shall include
  • Manufacturer’s name
  • Product name
  • Manufactured Date or Expiration Date

• Where the material is being stored, does it comply with Manufacturer guidelines
Firestop Inspection – Standards

Inspection Reminders

• The inspector shall not supervise or in any manner direct any aspect of the installation process. This includes, but is not limited to:
  • Handling and storage of material
  • Mixing of materials
  • Cutting or fastening of material
  • Preparations of substrates
Firestop Inspection – Standards

• ASTM E2174

2 Different methodology’s

• Visual Inspection: Randomly witnessing approximately 10% of each type of firestop installed
• Post-Installation Testing: destructively sampling 2% of like firestop systems within a 10,000 sq. ft. area or less
Key check points of Penetration Listed Systems

• What is the building assembly type (I.E. wall, floor, floor/ceiling)?
• What is the building assembly made of Concrete, CMU, Gypsum, Wood Frame, Other?
• Is the Penetrating item Metallic, Non-metallic, Cables, Insulated Pipe, etc.?
• What are the specific descriptions regarding the penetrants?
  Diameter, quantity, type of plastic, type & thickness of insulation, etc.
• What ratings apply - F Rating, T Rating, L Rating, W Rating, etc.?
• Are there any special considerations, such as movement, environmental exposure?
Key check points

- Annular space will be measured as per the listed system

- Where required, packing material must be installed per the listed system as well as the manufacturer installation instructions

- Required firestopping material must be installed per the listed system as well as the manufacturer installation instructions

- Understand some sealants may shrink when installed and the amount of shrinkage may be in the listing or as otherwise provided in the manufacturer's installation instructions
Firestop Inspection – Standards

ASTM E2393

2 Different types of inspections

• Visual Inspection: randomly witnessing approximately 5% of the total linear feet of each type of fire resistive joint system

• Post-installation Testing (destructive): consist of minimum of 1 sample (12”) per type of joint system per 500 lineal feet
Firestop Inspection – Standards

ASTM E2393

Joints*

- For coatings applied in joint systems need to take measurements within 12 inch for every 500 lineal feet

- Within the 12” sample, measure the thickness in 8 places. Measure the points of adhesion on each end of the sample and also on 4” centers

*Source: IFC Recommended Guidelines for Performing Destructive Testing for Installed Penetration Firestop Systems, Fire-Resistive Joint Systems, or Perimeter Fire Barrier Systems
Key check points of Penetration Listed Systems

• What is the building assembly type (I.E. wall, floor, floor/ceiling)?
• What is the building assembly made of Concrete, CMU, Gypsum, Wood Frame, Other?
• What are the specific descriptions regarding the joint?
• What ratings apply - F Rating, T Rating, L Rating, W Rating, etc.?
• Are there any special considerations, such as movement, environmental exposure?
Firestop Product Shrinkage

From XHHW and XHEZ Category Guide Info page in UL Product IQ

The fill, void or cavity material thickness published in the fire-resistance designs is measured wet and may be susceptible to a percentage of shrinkage during the curing process. Firestop systems are investigated after the fill, void or cavity materials are fully cured. Refer to the individual certifications (under Fill, Void or Cavity Materials (XHHW)) for the investigated percentage of shrinkage.
Reporting the Firestop Inspection, Overview

• Did the inspector inspect to the approved UL Listed Assembly or Engineering Judgement?
• Did the inspector/inspection firm quantify the inspections based on the contract documents?
• Did the inspector offer a useable form to report to? Was that report distributed throughout the project team in a timely manner?
• Did the inspections that were incomplete receive a report that was trackable?
• Did the inspections that were a true discrepancy get reported that way?
Reporting the Firestop Inspection, Per listed assembly

• Were the contract documents and approved submittals delivered to the inspection firm/inspector 10 days prior to the inspection?

• Did the inspection firm review the submittal prior to scheduling the Precon?

• Were the submittals approved by the Architect and AHJ?

• Was one of the approved submitted systems used by the installer, and produced in the field by the installer at the time of inspection?

• Was a field supplied EJ produced and handed to the inspector onsite during the installation? How did/does that get approved as a design document once the inspection is complete?
Reporting the Firestop Inspection, Quantities

- Did the inspector and installer discuss the scope of inspection that will need to occur? I.e. are all the systems that were submitted going to be used?

- Did the inspector and build team discuss the "as installed inspection" vs "post installation inspection"?

- Did the inspector and build team agree to the type of inspection that is requested on the project and those quantities associated with that type?

- How did the inspection firm and installing contractor(s) quantify how many of each system was to be inspected based on 10.12 of the standard? How did that get reported?
Reporting the Firestop Inspection, Transmittal 1

- Did the inspection firm deliver a report for every system inspected, or one general daily report?

- Did the reports that were delivered, include the necessary information that is required? Was the location described sufficient to relocate that system in the future if needed?

- Did the inspection firm deliver the reports within one working day? Verbally or electronically?

- Did the inspection firm's transmittal process allow for the contractor to ensure they were delivered to the design/build team?
Reporting the Firestop Inspection, Transmittal 2

- Did the reporting procedure allow the ability to track open discrepancies over the course of the project? PASS, WIP, FAIL? How were the WIP's tracked and closed?
- Was a final report generated by the inspection firm?
- Were all daily reports included in the final report and all final discrepancies closed out if possible?
- Were all the remaining open discrepancies listed on the final report?
- Was the report accepted by the design team/AHJ?
Good, the Bad and the UGLY !!!
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[Images of a construction site with a red pipe and a close-up of a concrete floor with signs of wear and tear]
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