

SECTION 07 84 00 - Canada

FIRESTOPPING

PART 1 GENERAL

1.00 RELATED DOCUMENTS

- A. The BIDDING/TENDER REQUIREMENTS, CONTRACTING REQUIREMENTS, and applicable parts of DIVISION 1 - GENERAL REQUIREMENTS shall be included in and made a part of this Section.

1.01 SUMMARY

- A. Firestop systems shall be installed in full compliance with the current edition of the applicable Canadian Building Code (or the project-specific adopted Building Code) for this project. Tested and listed firestop systems shall be used wherever possible. All installations and wherever installation is referenced in this document it is expected that firestop systems shall be installed to the tested and listed system specifications and manufacturers' installation instructions by a single Specialty Firestop Contractor who meets the qualification and quality assurance requirements specified in Section 1.06.

Firestop systems shall consist of materials, or combinations of materials, installed to the tested and listed system specifications and manufacturer's installation instructions to retain or restore the integrity of fire separations and fire-resistance-rated construction by maintaining an effective barrier against the spread of flame, smoke, and/or noxious gases through penetrations, blank openings, and construction joints, or at the perimeter gap of the horizontal fire-resistance-rated assembly or non-fire-resistance-rated exterior walls, and in or adjacent to either fire-resistance-rated or non-fire-resistance-rated barriers.

Where no specific tested and listed firestop system is available for a particular configuration, an Engineering Judgment (EJ), Technical Evaluation (TE) or Equivalent Fire Resistance Rated Assembly (EFRRA) may be used, subject to the requirements of this specification.

- B. Provide firestop systems in accordance with the National Building Code of Canada (NBC) and CAN/ULC-S115. Firestop systems shall be installed in all locations requiring protection, including, but not limited to the following:
 - 1. Single- or multi-service or membrane penetrations (metallic, plastic, cables, cable trays, cable pathway devices, bus ducts, ducts, sleeves, insulated pipes, duct wrap, and miscellaneous steel).
 - 2. Blank or abandoned openings.
 - 3. Construction joints (gaps) between rated assemblies, including, but not limited to:
 - 3.1. Bottom of wall (gypsum board to floor)
 - 3.2. Wall-to-wall
 - 3.3. Head of wall

- 3.4. Interface conditions between fire-resistance-rated vertical fire separations and protected structural members, including joints, gaps, and voids, to maintain continuity at beams, columns, girders, or other structural framing members.
 - 3.5. Fire-rated enclosures/bulkheads.
 4. Control/Expansion joints (wall to wall, floor to floor, floor to wall, perimeter wall).
 5. Membrane penetrations.
 6. Structural members.
 7. Where also indicated on drawings and specification documents.
- C. Firestop systems shall be rated as required to retain or restore the integrity of the breached assembly.
1. Firestop system ratings shall have an assigned time for the fire-resistance ratings of the fire separations as indicated on the drawings, unless otherwise indicated in the specification.
 2. ¾-hour fire separations shall be assigned a 1-hour fire-resistance rating and have 1-hour F-rating firestop systems installed.
 3. Construction joints (gaps) that are required to be protected shall have FT-rated firestop systems installed, as per NBC, 3.1.8.3.3.
 4. Outlet and electrical boxes penetrating a membrane of a fire-resistance-rated assembly shall comply with NBC Article 3.1.9.3.
 - 4.1. Where outlet or electrical boxes are installed in staggered stud, double-stud, acoustic separation, non-communicating stud space, continuous-cavity, or similar wall assemblies, the exceptions permitted by NBC Article 3.1.9.3 shall not be used to omit outlet or electrical box protection.
 - 4.2. In these assemblies, each outlet and electrical box shall be protected with an FT-rated firestop system tested to CAN/ULC-S115, with an FT-rating not less than the fire-resistance rating of the assembly.
 5. In buildings more than 3 stories in height and where required, combustible piping requiring protection shall have F-rated 50 Pa pressure differential firestop systems installed, as per NBC 3.1.9.4.4.b.
 6. Where applicable, firewall fire separations shall have a minimum of 2-hour FT-rated firestop systems installed.
 7. Where applicable, floor fire separations demising a parking garage and the main floor shall have 2-hour FT-rated firestop systems installed. Horizontal fire separations over a storage garage considered a separate building shall have a minimum of 2-hour FT-rated firestop systems installed, as per NBC, 3.1.9.1.2.
 8. All other penetrations through horizontal or vertical fire separations shall have F-rated firestop systems installed.

1.02 DEFINITIONS

Barrier/Assembly: A wall, floor, ceiling, or roof assembly, or other partition with a fire-smoke rating of 0-, 1-, 2-, 3-, or up to 4-hours.

Engineering Judgment (EJ) / Technical Evaluation (TE) / Equivalent Fire-Resistance-Rated Assembly (EFRRRA): A manufacturer-prepared document used when no specific third-party tested and listed firestop system exists for a particular configuration. The EJ, TE or EFRRRA must state that the proposed assembly will pass the fire tests referenced in the

specification section for the specific application if tested. All EJs/TEs/EFRRAs shall be obtained from the firestop manufacturer and submitted for review.

F-Rating: The time in hours that an installed firestop system can withstand direct flame without allowing burn-through from the fire side to the non-fire side of an assembly, as determined by testing in accordance with CAN/ULC-S115 or ASTM E814/UL 1479. The F-rating shall be equal to the fire-resistance-rating of the assembly penetrated.

FT- Rating: Provides the dual performance of preventing both the burn-through from the fire side to the non-fire side of an assembly (F-Rating) and an excessive temperature rise on the non-fire side of the assembly (T-Rating), as determined by testing in accordance with CAN/ULC-S115 or ASTM E814/UL 1479. The installed FT-rated firestop system shall be equal to the fire-resistance-rating of the assembly penetrated.

FCIA Member in Good Standing: FCIA Members are deemed 'Members in Good Standing' after two years of continuous membership in the Firestop Contractors International Association. In the event a company is bought by an external entity, the effective 'Member Since' date is the date the company re-joined under its' new ownership.

Field Quality Control: Requirements intended to verify that the installed firestopping work complies with the approved tested and listed systems, project specifications, manufacturer installation instructions, and applicable codes and standards.

Fire Block/Fire-Blocking: A material, component, or system installed strictly within a concealed space to restrict the spread of fire, smoke, and noxious gases within that concealed space or from a concealed space to an adjacent space. Fire blocking products are not tested and listed firestop systems and shall not be used as a substitute for CAN/ULC-S115 listed firestop systems to seal penetrations or joints through fire-resistance-rated assemblies.

Fire-Resistive Joint: Any joint or opening, whether static or dynamic, within or between adjacent sections of fire-resistance-rated interior or exterior walls, floors, ceilings, or roof decks.

Firestop System: A tested and listed system consisting of a fire-resistance-rated assembly, material, component, and/or device, including the penetrating item(s) and means of support, used to fill gaps between fire separations or between fire separations and other assemblies or used around items that wholly or partially penetrate a fire separation.

Fire Wall: A type of fire separation of non-combustible construction that subdivides a building or separates adjoining buildings to resist the spread of fire and that has a fire-resistance rating as prescribed in the NBC and has structural stability to remain intact under fire conditions for the required fire-rated time.

Intumescent: Materials that expand when exposed to heat to seal around objects threatened by fire.

Independent Third-Party Review Agency (ITPR Agency)/Firestop Consultant: An independent, qualified third-party entity (or individual consultant) engaged by the owner and not affiliated with the contractor, installer, manufacturer, or material supplier to provide specialized review, inspection, testing, and consulting services related to firestop systems and fire-resistance-rated assemblies.

L-Rating: (Air Leakage Rating): A measure of air leakage through an installed firestop system that measures in cubic feet per minute (CFM) the rate of airflow passing through the

firestop system. L-ratings are required for fire separations that must also resist the passage of smoke.

Membrane Penetration: Any penetration of a fire-resistance-rated barrier, including recessed electrical devices, that breaches one side but does not pass completely through to the other side.

Multi-Penetration: Two or more service penetrations within a single opening through a fire separation. Spacing, framing, annular space, opening construction, and allowable penetrant configurations shall comply with the applicable tested and listed firestop system or approved EJ, TE, or EFRRA.

Perimeter Fire Barrier System: (also referred to as Perimeter Fire Containment System): Perimeter joint protection that provides fire- and/or smoke-resistance to prevent the passage of fire and smoke from floor to floor within the building at the opening between the exterior wall assembly and floor assembly.

Quality Assurance: Requirements intended to ensure the firestopping scope is performed by qualified parties using approved systems, products, procedures, and documentation practices.

Single Penetration: One service penetration within a single opening through a fire separation.

Specialty Firestop Contractor: The single, specialized contractor responsible for the supply and installation of all firestop systems on a project.

T-Rating: (Temperature Rating): The amount of time in hours for an installed firestop system to reach a temperature of 162 °C (325 °F) plus ambient on the non-fire side of the assembly, as determined by testing in accordance with CAN/ULC-S115 or ASTM E814/UL 1479.

Technical Evaluation Developer Program (TEDp): A voluntary qualification program administered by UL Solutions that accredits firestop manufacturers to develop and issue Technical Evaluations (TEs), also known as Engineering Judgments (EJs), under a standardized, audited quality management system that includes individual competency requirements, company process audits, and random UL verification testing of issued evaluations.

Through Penetration: An opening or foreign material (pipes, conduits, ducts, cable trays, cables, wires, structural components or any other element) passing completely through an opening in a fire-resistance-rated barrier/assembly such that the full thickness of the rated material(s) is breached either in total or in part.

W-Rating: (Water-Resistance Rating): The water leakage rating for firestop systems installed at floor penetrations, as determined by testing in accordance with UL 1479 (optional rating).

NOTE: All definitions in this section are provided for clarity only and do not supersede the requirements of the National Building Code of Canada (NBC), CAN/ULC-S115, or Specification 084.

1.03 RELATED WORK

- A. Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that relate directly to Work of this Section include, but are not limited to:

1. 00 00 00 – Procurement and Contracting Requirements
2. 01 00 00 – General Requirements
3. 02 00 00 – Existing Conditions
4. 03 00 00 – Concrete
5. 04 00 00 – Masonry
6. 05 00 00 – Metals
7. 06 00 00 – Wood, Plastics, and Composites
8. 07 00 00 – Thermal and Moisture Protection
9. 08 00 00 – Openings
10. 09 00 00 – Finishes
11. 10 00 00 – Specialties
12. 13 00 00 – Special Construction
13. 21 00 00 – Fire Suppression
14. 22 00 00 – Plumbing
15. 23 00 00 – Heating, Ventilating, and Air Conditioning
16. 26 00 00 – Electrical
17. 27 00 00 – Communications
18. 28 00 00 – Electronic Safety and Security
19. 32 00 00 – Exterior Improvements
20. 33 00 00 – Utilities

NOTE: References to “Division” within this section mean Division, Specification Section, or Clause. This section does not supersede or take precedence over the requirements contained in Specification 084.

1.04 REFERENCES

1. American Society for Testing and Materials (ASTM):
 - a) ASTM E2174 – Standard Practice for On-Site Inspection of Installed Fire Stops
 - b) ASTM E2307 – Standard Test Method for Determining the Fire Endurance of Perimeter Fire Barrier Systems Using the Intermediate-Scale, Multi-Story Test Apparatus (ISMA)
 - c) ASTM E2393 – Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems
 - d) ASTM E2837 – Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies
 - e) ASTM E3038 – Standard Practice for Assessing and Qualifying Candidates as Inspectors of Firestop Systems and Fire-Resistive Joint Systems
 - f) ASTM E3456 – Standard Practice for On-Site Identification of Firestop Systems and Judgments
2. Factory Mutual (FM) Approvals:
 - a) FM 4991 Approval Standard for Firestop Contractors – Class Number 4991
 - b) FM Approval Standard for Firestopping – Class Number 4990
3. Firestop Contractors International Association (FCIA):

- a) MOP – FCIA Firestop Manual of Practice
 - b) FCIA Recommended Professional Practice RPP-L-2018-1 for the Identification of Fire-Resistance-Rated and Smoke Resistant Penetration and Joint Firestopping
4. International Firestop Council (IFC):
- a) Ref. 1 Recommended IFC Guidelines for Evaluating Firestop Engineering Judgments (April 2001)
 - b) Ref. 2 Inspectors Field Pocket Guide
 - c) Ref. 3 IFC Recommended Guidelines for Performing Destructive Testing for Installed Penetration Firestop Systems, Fire Resistive Joint Systems, or Perimeter Fire Barrier Systems
5. International Accreditation Services (IAS):
- a) IAS Accreditation Criteria for Special Inspection Agencies AC-291
6. National Fire Protection Association (NFPA):
- a) NFPA 1 – The Fire Code
 - b) NFPA 101 – Life Safety Code
 - c) NFPA 221 – Fire Walls and Fire Barriers
 - d) NFPA 251 – Fire Tests of Building Construction and Materials
7. National Research Council Canada (NRC):
- a) Best Practice Guide on Fire Stops and Fire Blocks and Their Impact on Sound Transmission
8. Testing, Certification, and Listing Agencies:
- a) FM Approvals
 - i) Approval Guide and Firestop System Listings, where applicable
 - b) Intertek
 - i) Directory of Building Products, including Intertek-listed and Warnock Hersey-listed firestop systems
 - c) ULC / UL Solutions
 - i) Fire-Resistance Directory and Firestop System Listings
 - d) Other accredited testing and certification organizations
 - i) As acceptable to the Consultant and Authority Having Jurisdiction
9. Underwriters Laboratories, Inc – UL Solutions:
- a) CAN/ULC-S115 Fire Tests of Firestop Systems
 - b) CAN/ULC-S102 Surface Burning Characteristics of Building Materials and Assemblies
 - c) CAN/ULC-S101 Fire Endurance Tests of Building Construction and Materials
 - d) UL Qualified Firestop Contractor Program (UL QFCP)

1.05 SUBMITTALS

- A. The Specialty Firestop Contractor shall submit as a single combined digital PDF file the following, including, but not limited to, for review and approval:
- 1. ULC/cUL tested and listed firestop systems that include documentation demonstrating that firestopping materials and systems have been tested and listed in accordance with

CAN/ULC-S115, certificates of conformance, and other required documentation referenced by the listing or certification, including, but not limited to applicable aging, environmental exposure, durability requirements, and expected product service life, as well as product data sheets, manufacturers' installation instructions, and Safety Data Sheets (SDS) for each type of firestop system proposed for the project.

2. Detailed firestop system submittals (shop drawings) showing all required materials, including reinforcement, anchorage, fastenings, and the exact method of installation. Each submittal shall include illustrations applicable to every firestop configuration on the project.
 3. A title sheet labelled "Firestop Systems" indicating the project name, date, installation company, and product/system manufacturer.
 4. When more than one product or backer/damming material is acceptable for a firestop system, the Specialty Firestop Contractor shall clearly identify the specific item selected for use on this project.
 5. Manufacturer's certification that all firestop products supplied:
 - 5.1. Comply with local regulations controlling the use of volatile organic compounds (VOC's) and are non-toxic to building occupants.
 - 5.2. Have a maximum volatile content below 250 g/L.
 - 5.3. Comply with ASTM E595 and EPA Method 24.
 - 5.4. Are free of asbestos, polychlorinated biphenyls (PCB), ethylene glycol, and lead and do not incorporate or require the use of hazardous solvents.
 - 5.5. Comply with applicable local regulations.
 6. Manufacturers' published data indicating the expected service life of each product to be installed on this project.
 7. Documentation confirming that the Specialty Firestop Contractor's personnel responsible for firestop system selection, supervision, and installation have received training applicable to the firestop products and systems proposed for the project. Documentation may include manufacturer training certificates, FCIA education records, or other acceptable evidence of firestop training and competency. Manufacturer training certificates shall not replace the contractor qualification requirements specified in Section **1.06.A**.
 8. Documentation that shows the Specialty Firestop Contractor meets the qualification requirements specified in Section **1.06.A**.
- B. Engineering Judgments (EJs) / Technical Evaluations (TEs) / Equivalent Fire-Resistance-Rated Assemblies (EFRAs):
1. Where no specific tested and listed firestop system exists for a particular condition, the Specialty Firestop Contractor shall obtain an EJ, TE, or EFRA from the firestop manufacturer in accordance with the International Firestop Council's EJ Guidelines. All manufacturers issuing Engineering Judgments shall be qualified by an accredited testing laboratory that tests, lists systems, and conducts follow up services of the materials in the category the judgment is issued (such as the Technical Evaluation Developer Program by UL Solutions).
 2. EJs shall be supported by applicable fire test data, identify the materials and application, and be submitted for review prior to installation. EJs issued by TEDp-qualified manufacturers do not require additional third-party review and seal unless required by the AHJ or project documents. EJs issued by non-TEDp-qualified manufacturers shall be reviewed and sealed by a qualified registered design professional, fire protection engineer, or approved qualified third-party.

3. Each EJ shall include a description of the proposed installation, the specific project name and date, the signature of the approving engineer, and may include a detailed drawing. It shall reference extension of the fire test data used to construct the EJ or other similar tested firestop systems and may not be transferred to any other project.
 4. EJs shall be based on interpolation of previously tested systems that are sufficiently similar or that bracket the actual field conditions, supported by accepted engineering principles and fire testing guidelines (e.g., ASTM E2032 and/or ASTM E2750).
 5. EJs shall be required to be submitted for review and approval to the Authority Having Jurisdiction (AHJ).
- C. Firestop submittal documents shall be treated as living documents. The Specialty Firestop Contractor shall update and re-submit the changed or updated documents as necessary prior to installation, including, but not limited to: site changes or field conditions encountered during construction.

1.06 QUALITY ASSURANCE

A. Contractor Qualifications

Acceptable Specialty Firestop Contractor firms shall be:

1. A Firestop Contractors International Association Contractor Member in Good Standing
AND
2. FM Approved in accordance with the FM 4991 Standard for the Approval of Firestop Contractors,

OR;

1. A Firestop Contractors International Association Contractor Member in Good Standing.
AND
3. UL Qualified in accordance with the UL Qualified Firestop Contractor Program.

B. Single-Source Installation Responsibility

Firestopping work shall be performed by a single qualified Specialty Firestop Contractor responsible for firestop system selection, submittals, coordination, installation, quality control, documentation, and closeout for all firestop systems included in this Section. Firestopping shall not be divided among mechanical, electrical, plumbing, drywall, masonry, or other trades unless specifically approved in writing by the Consultant and AHJ.

1.07 INDEPENDENT THIRD-PARTY INSPECTIONS

- A. A qualified Independent Third-Party Review Agency (ITPR Agency)/Firestop Consultant shall be selected to review the firestop installations throughout the project.
 1. The ITPR Agency/Firestop Consultant shall have no affiliation with the firestop manufacturer, the Specialty Firestop Contractor, or any other party involved in the supply or installation of the firestop systems, in accordance with the conflict-of-interest statement in ASTM E3038, Section 7.0.

2. Manufacturer site visits shall be for technical support only and shall not constitute inspection, approval, or sign-off of the installed work.

B. ITPR Agency/Firestop Consultant Qualifications

Acceptable ITPR Agencies/Firestop Consultants shall be:

1. Established and experienced in the firestop industry for a minimum of three years, having successfully completed projects of similar scale and type. Both the competence and experience shall be acceptable to the Authority Having Jurisdiction.
2. Firestop Contractors International Association Special Inspection Agency Member in Good Standing.

AND documentation demonstrating successful completion of one of the following:

- 2.1. UL Firestop Exam and Canadian Supplement
- 2.2. IFC Firestop Special Inspection
- 2.3. FM Firestop Exam

C. The ITPR Agency/Firestop Consultant shall provide the following reviews and/or inspections and oversight during the project:

1. Shop drawing reviews
2. Start-up meeting
3. Mock up review
4. General reviews
5. Observation reviews
 - 5.1. Observational inspections/reviews shall be performed randomly in general conformance with ASTM E2174 and ASTM E2393.
 - 5.2. The ITPR Agency/Firestop Consultant shall be physically onsite and conduct all inspection activities for visual determination of the thickness, depth, and/or width of the system to ensure they meet the approved firestop system(s).
6. Destructive reviews
 - 6.1. Destructive inspections/reviews shall be performed randomly in general conformance with ASTM E2174 and ASTM E2393.
 - 6.2. The ITPR Agency/Firestop Consultant shall be physically onsite and conduct all inspection activities for destructive determination of the thickness, depth, and/or width of the system to ensure they meet the approved firestop system(s).
 - 6.3. Once the review is completed and accepted, the Specialty Firestop Contractor shall restore the firestop system(s).
7. Substantial Performance

D. During Mock up, General, and Substantial Performance reviews, inspection reports shall indicate the following where applicable:

1. The Qualified Specialty Firestop Contractor performing firestop system installation.
2. Installations comply with approved tested and listed system specifications and/or EJs/TEs/EFRRAs and manufacturers' installation instructions.
3. Required product storage and handling.
4. Location of installed firestop identification labels adjacent to penetrations and joints, where practical, and include system number, rating, installer, and date.

5. EJs/TEs/EFRRAs are used only where approved and correspond to actual field conditions.

1.08 PROJECT CONDITIONS

- A. Firestop systems shall be installed in/on assemblies & substrates prepared in accordance with the tested and listed system specifications and manufacturers' installation instructions.
- B. Maintain minimum temperature and other environmental conditions before, during, and after installation as published in the tested and listed system specifications and manufacturers' installation instructions.

1.09 SEQUENCING AND SCHEDULING

- A. Project coordination is essential to inform and educate all the parties involved with the firestopping process of their role and how they can affect firestopping on the project. A pre-construction meeting shall be scheduled and required for all parties involved prior to the start of firestop system installations.
- B. Preconstruction Meeting (Start-up Meeting)
 1. After firestop systems (shop drawings) have been reviewed and approved by the Architect, AHJ, ITPR Agency/Firestop Consultant, and Specialty Firestop Contractor, a Firestop Start Up Meeting (pre-con) is to be scheduled with the project team. The project team shall include the Architect, General Contractor, ITPR Agency/Firestop Consultant, AHJ, all trades constructing and/or breaching fire-resistant-rated assemblies, and Specialty Firestop Contractor.
 2. It is the responsibility of the Specialty Firestop Contractor to schedule the pre-con. The meeting shall document key discussion items, decisions, and action items, and meeting minutes shall be issued to the project team. The ITPR Agency/Firestop Consultant shall participate and provide input on inspection/review requirements, mock-ups, documentation, and acceptance criteria.
 3. Each Subcontractor shall receive one copy of the firestop systems (shop drawings) as copied and distributed by the General Contractor.
 4. To ensure that all Subcontractors and the General Contractor understand the full complexity of the firestop installation, standard installation procedures based on the approved firestop systems (shop drawings) shall be reviewed, such as the scheduling or sequencing of other work around or that affects the outcome of the installation, precautions, annular opening sizes, single- and multi-penetration preparations.
 5. Other items covered within this meeting include, but are not limited to:
 - 5.1. Work covered by contract documents
 - 5.2. Independent third-party inspections throughout the project
 - 5.3. Unique site conditions
 - 5.4. Mock-up expectations
 - 5.5. Identification labelling requirements
 - 5.6. Installation documentation
 - 5.7. Jobsite walk to identify constructability concerns

1.10 FIELD CONSTRUCTED MOCK-UPS

- A. Prior to commencing firestop system installation, the Specialty Firestop Contractor shall erect field-constructed mock-ups as defined by the project team in the pre-con meeting.

- B. Mock-ups shall be constructed using the submitted and approved firestop systems (shop drawings) and reviewed by the ITPR Agency/Firestop Consultant to ensure compliance:
 - 1. Mock-up locations shall be directed by the General Contractor.
 - 2. ITPR Agency/Firestop Consultant shall inspect and determine acceptability of installed systems.
 - 2.1. Once the review is completed and accepted, the Specialty Firestop Contractor shall restore the installed firestop system(s).
 - 3. Report indicating reviewed and accepted mock-ups shall become the standards of workmanship and acceptance moving forward.

PART 2 PRODUCTS

2.01 FIRESTOPPING, GENERAL

- A. Systems listed by approved testing agencies, as identified in part 1 above, may be used, providing they conform to the construction type, penetrant type, annular space requirements, and fire-resistance-rating involved in each separate instance.
- B. The manufacturer of firestop products shall have been successfully producing and supplying these products for a period of not less than 3 years and be able to show evidence of at least 10 projects where similar products have been installed and accepted.
- C. Firestop products shall be approved for use in Canada and shall bear current ULC/cUL listings suitable for the specific application, construction type, penetrant type, annular space, and fire-resistance-rating involved.
- D. Manufacturers participating in the UL Canada **TED Program** are preferred. Firestop products produced by established manufacturers, particularly FCIA Manufacturer Members in Good Standing, are acceptable, provided they fully meet the Canadian approval and listing requirements stated above.

2.02 SINGLE SOURCE MATERIAL RESPONSIBILITY

- A. Materials from different manufacturers shall not be mixed, overlapped, or combined within the same firestop system unless specifically permitted by the tested and listed system or an approved EJ, TE, or EFRRA.

Where no tested and listed system is available from the primary manufacturer for a specific project condition, the Specialty Firestop Contractor shall make reasonable effort to identify and submit a tested and listed system from another approved manufacturer before submitting an EJ, TE, or EFRRA.

- B. Manufacturer shall provide confirmation that if their systems are exposed in finished areas, the installed products can be primed and painted over to match the architectural finishes within those areas. If the manufacturer deems that alternative methods may be required to allow their systems to be primed / painted over, they shall notify the Specialty Firestop Contractor. If applicable, the Specialty Firestop Contractor shall include any additional costs within their bid to suit this application.
- C. Tested and listed firestop systems shall be used wherever possible. Only when no tested and listed system is available from any manufacturer may an EJ, TE, or EFRRA be used.

2.03 DELIVERY, STORAGE, AND HANDLING

- A. Firestopping products shall be delivered to the project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying the product and manufacturer.

- B. Firestopping materials shall be stored, handled, and installed in accordance with manufacturers' written installation instructions.
- C. Damaged or expired materials shall not be used.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Substrate conditions shall be examined for acceptance of product installation in accordance with the tested and listed firestop systems specifications and manufacturers' installation instructions for each condition.
- B. Ensure no additional items have been installed through opening(s) that are not present within the firestop systems.
- C. Report to the General Contractor any defective substrates or conditions affecting the firestop system installation in accordance with ASTM E2174/E2393 and prior to commencing any installations.

3.02 PREPARATION

- A. Cleaning & Preparation:

Clean and prepare surfaces as recommended by the tested and listed firestop systems specifications and manufacturers' installation instructions.

1. Verify that system components are clean, dry, and ready for installation.
2. Protect adjacent work areas and finish surfaces from damage during system installation.
3. Verify that field dimensions accurately reflect the tested and listed system specifications and/or EJs/TEs/EFRRAs, as per the manufacturers' installation instructions.

3.03 INSTALLATION OF FIRESTOP SYSTEMS – GENERAL

- A. Firestop systems shall be installed in full compliance with the current edition of the applicable Canadian Building Code (or the project-specific adopted Building Code) for this project, along with the tested and listed system specifications, manufacturers' installation instructions, and approved submittals.
- B. Specialty Firestop Contractor shall coordinate with other trades to ensure that all penetrating items (pipes, conduits, cables, ducts, etc.) are permanently accessible for firestop installation and inspection and riser clamps are removed (where required) **prior to** installation of firestop assemblies.

Note: It is not the responsibility of the Specialty Firestop Contractor to remove the riser clamp(s).

- C. Work shall be scheduled so that firestopping installations are completed before concealment by partitions, walls, ceilings, or other construction.
- D. All backing, forming, packing, damming, and accessory materials shall be installed in strict accordance with the tested and listed system specifications and manufacturers' installation instructions.
- E. Material Installation:
 - 1. All voids and cavities created by openings, forming materials, accessories, and penetrating items shall be filled in accordance with the tested and listed system specifications and manufacturers' installation instructions.
 - 2. Ensure firestop materials make full and continuous contact with and adhere to all substrates and penetrating items.
 - 3. Tool or finish materials to produce smooth, uniform surfaces as required by the tested and listed system specifications and manufacturers' installation instructions.
- F. Refer to drawings for fire separation fire-resistance-ratings and F-, L-, T-, and W-rating locations.
- G. Installation of Perimeter Fire Barrier Systems:
 - 1. Comply with the firestop systems' tested and listed system specifications (or approved EJs/TEs/EFRRAs) and manufacturers' installation instructions for perimeter fire barriers in accordance with ASTM E2307.
 - 2. Install metal framing, curtain wall insulation, mechanical attachments, safing insulation, and all other required firestop system components exactly as detailed in the tested and listed system or approved equivalent.
- H. On Site Firestop Identification Systems:
 - 1. Install firestop identification systems in accordance with ASTM E3456.

3.04 FIELD QUALITY CONTROL

A. General

Specialty Firestop Contractor shall provide field quality control in the following forms:

- 1. Implement and maintain an internal quality control program including:
 - 1.1. Pre-installation verification of each firestop condition;
 - 1.2. Documentation of ongoing contractor installation QA/QC;
 - 1.3. Final inspection by an AHJ or Third-Party Inspector and verified as compliant prior to concealment.
- 2. Verify that all firestop systems comply with:
 - 2.1. CAN/ULC-S115 tested and listed system specifications;
 - 2.2. Manufacturers' written installation instructions;
 - 2.3. Approved submittals and EJs/TEs/EFRRAs;
 - 2.4. Requirements of this Section.

3. Coordinate with other trades to ensure firestop installations remain accessible for inspection.
4. Coordinate inspections prior to concealment of firestop systems.

B. Third-Party Inspection

1. Provide independent third-party inspection in accordance with ASTM E2174 and ASTM E2393.
2. The inspection agency shall be:
 - 2.1. Qualified in accordance with the ASTM E2174 and E2393 Inspection Standards AND the Independent Third-Party Inspections Section 1.07 of this specification.
 - 2.2. Acceptable to the AHJ
3. Coordinate inspection scheduling to allow for review prior to concealment of work.

C. Non-Conforming Work

1. Firestop systems found to be non-compliant shall be:
 - 1.1. Removed and replaced; or
 - 1.2. Repaired in accordance with the manufacturers' published repair procedures.
2. Repaired systems shall be re-inspected until compliance is achieved.
3. Non-compliant work shall not be concealed.

3.05 DOCUMENTATION AND CLOSEOUT

A. General

1. Specialty Firestop Contractor shall provide complete firestop documentation for all installed firestop systems as part of the project closeout in accordance with this section.
2. Documentation shall demonstrate that all firestop systems have been installed in accordance with:
 - 2.1. CAN/ULC-S115 tested and listed firestop system specifications;
 - 2.2. Approved submittals, EJs/TEs/EFRRAs, or other approved project-specific assessments;
 - 2.3. Manufacturers' written installation instructions; and the
 - 2.4. Requirements of this Section
3. Documentation shall be prepared and maintained to support ongoing inspection, maintenance of protection, and repair of firestop systems for the life cycle of the building.

B. Code Compliance and Life Cycle Requirements

1. Firestop documentation shall be provided in a format suitable to support building owner obligations under the **National Fire Code of Canada (NFC), including Article 2.2.1.2 – Damage to Fire Separations and Fire Protection Materials.**
2. Documentation shall enable identification, inspection, repair, replacement, re-entry, and maintenance of firestop systems throughout the life of the building.
3. Documentation shall provide sufficient detail to allow future verification that the continuity and integrity of required fire-resistance-rated fire separations, closures, firestop systems, fire-resistive joint systems, and related fire protection materials are maintained.

C. Firestop System Records (Location-Based)

1. Location-based firestop system records shall provide a comprehensive, location-based record of all installed firestop systems, including:
 - 1.1. Unique identification number(s) for each firestop installation, or for each approved grouped condition where installations are substantially identical and traceable by location;
 - 1.2. Location (room number, gridline, floor level, or equivalent reference);
 - 1.3. Type(s) of penetration, joint, or perimeter condition;
 - 1.4. Fire-resistance-rating of the assembly(ies);
 - 1.5. Tested and listed system number(s) or approved project-specific assessment reference(s), as applicable;
 - 1.6. Manufacturer and product name(s) used;
 - 1.7. Reference to applicable EJs/TEs/EFRRAs or other approved project-specific assessments.
2. Documentation shall align with and update the Firestop Schedule submitted under Part 1.

D. Inspection and Deficiency Records

1. Inspection and Deficiency Records shall include all field quality control documentation, including:
 - 1.1. Contractor quality control records;
 - 1.2. Third-party inspection reports (where applicable);
 - 1.3. Firestop inspection closeout letter (where applicable);
 - 1.4. Records of deficiencies identified;
 - 1.5. Corrective actions taken and verification of compliance;
 - 1.6. Records of any destructive testing performed.

E. Photographic Documentation

1. When possible, Specialty Firestop Contractor shall provide photographic records of installed firestop systems sufficient to demonstrate representative conditions for each system type and any atypical, concealed, or corrected conditions, including:
 - 1.1. Pre-installation condition (where practical);
 - 1.2. Installation in progress;
 - 1.3. Completed installation.
2. Photographs shall clearly identify:
 - 2.1. System configuration;
 - 2.2. Installed firestop materials;
 - 2.3. Identification labels;
 - 2.4. Location reference;
 - 2.5. Date of photograph (where available).

F. Engineering Judgements (EJs)/Technical Evaluations (TEs)/Equivalent Fire-Resistance-Rated Assemblies (EFRRAs)

1. Provide copies of all approved EJs/TEs/EFRRAs, and other approved project-specific assessments used on the project.
2. Each EJ/TE/EFRA, or project-specific assessment shall:
 - 2.1. Be project-specific;
 - 2.2. Be signed and sealed where required by the Consultant, AHJ, governing professional requirements, or this Section;
 - 2.3. Clearly identify applicable installation locations;
 - 2.4. Reference the tested and listed systems on which the EJ/TE/EFRA is based.

G. Closeout Submittal Requirements

Submit all firestop documentation to the Contractor, Consultant, and Owner as a consolidated digital package in PDF format as part of project closeout, prior to Substantial Performance unless otherwise accepted by the Consultant.

1. The closeout package shall include:
 - 1.1. Final firestop system schedule;
 - 1.2. Location-based firestop records;
 - 1.3. Inspection and deficiency reports;
 - 1.4. Photographic documentation;
 - 1.5. EJs/TEs/EFRRAs, and any other approved project-specific assessments;
 - 1.6. System listings for all installed systems, Product Data Sheets, product Safety Data Sheets, and manufacturers' installation instructions.

H. Record Documents and Maintenance

1. All firestop system information shall be incorporated into the most current project record drawings, firestop drawings, firestop schedule, or equivalent location-based documentation.
2. Documentation shall be provided in a format that supports ongoing inspection and maintenance in accordance with applicable fire code requirements (NFC 2.2.1.2).
3. Documentation shall be maintained as a living record and updated to reflect future modifications, repairs, project changes, re-entries, additional penetrations, and additional joints.
4. Ongoing inspection and maintenance shall be performed in accordance with applicable fire code requirements (NFC 2.2.1.2).

END OF SECTION 07 84 00

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