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IFTI SPEC NOTE: This master specification is written to include SPEC NOTES noted as “IFTI Spec Note” to assist designers in their decision-making process. SPEC NOTES precede the text to which they apply. This section should serve as a guideline only and should be edited by a knowledgeable person to meet the requirements of each specific project.

Text indicated in bold and by square brackets is optional. Make appropriate decisions and delete the optional text as well as the brackets in the final copy of the specification. Delete or hide the SPEC NOTES in the final version of the document.

This specification section is written to follow the recommendations of the Construction Specifications Institute/Construction Specifications Canada (CSI/CSC) such as MasterFormat™, SectionFormat™, and PageFormat™. It is also written with metric and imperial units of measurement.

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PART 1 - GENERAL

1.1 GENERAL INSTRUCTIONS

- A. Read and conform to: The general provisions of the [**Contract Type**], including General and Supplementary Conditions; and the requirements of Division 01 Specifications and any additional documents referred to in this Section.

1.2 SUMMARY

- A. Provide labor, materials, products, equipment and services to complete the firestopping and smoke seals work specified herein. This includes, but is not necessarily limited, to:
 - 1. Penetrations in fire-resistance-rated walls.
 - 2. Penetrations in horizontal assemblies.
 - 3. Penetrations in smoke barriers.
 - 4. Joints in or between fire-resistance-rated constructions.
 - 5. Joints at exterior curtain-wall/floor intersections.
 - 6. Joints in smoke barriers.
- B. Related Requirements: Specifications throughout all Divisions of the Project shall be read and may be directly applicable to this Section.

1.3 REFERENCES

IFTI SPEC NOTE: Edit the following paragraphs, deleting those REFERENCES not required for the specific project.

- A. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
- B. All reference amendments adopted prior to the Bid Closing date of this Project shall be applicable to this Project.
- C. All materials, installation and workmanship shall comply with all applicable requirements and standards.
- D. American Society of Testing and Materials (ASTM):
 - 1. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials
 - 2. ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials
 - 3. ASTM E814: Standard Test Method for Fire Tests of Penetration Firestop Systems
- E. Underwriters Laboratories (UL)
 - 1. UL1479: Fire Tests of Through-Penetration Firestops

1.4 DEFINITIONS

- A. Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

- B. Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.
- C. Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.
- D. Head-of-Wall Joint Firestop Systems (HW): Systems generally intended for installation in vertical separations between wall and floor or roof structures. These systems are generally not limited in length unless indicated but are limited in width and depth as specified. These firestop systems do not incorporate penetrating items such as pipe or cable. The use of such penetrating items can significantly affect the rating(s) of the systems.
- E. Joint Firestop Systems (JF): Systems generally intended for installation in openings such as construction joints, gaps and spaces in floors or walls or at floor and wall intersections, as indicated in the illustrated assemblies. These systems are generally not limited in length unless indicated but are limited in width and depth as specified. These firestop systems do not incorporate penetrating items such as pipe or cable. The use of such penetrating items can significantly affect the rating(s) of the systems.
- F. Perimeter Joint Firestop Systems (PJ): Systems consist of a floor with a fire-endurance rating, an exterior wall with or without a fire-endurance rating, and a perimeter joint system. The individual components are not assigned ratings and are not intended to be interchanged between systems. These perimeter joint firestopping systems do not incorporate penetrating items such as pipe or cable. The use of such penetrating items may significantly affect the rating(s) of the systems.
- G. Service Penetration Firestop Systems (SP): Systems generally intended for installation in openings of limited dimensions and shape in floor or wall assemblies, as specified in the testing agency's listed systems. If tested, permitted penetrating items such as pipe, cable, cable trays, etc., will be specifically identified in the testing agency's listed systems and corresponding text. Unless specifically described in the individual systems, the use of penetrating items of alternate size, type, quantity, etc., can significantly affect the rating(s) of the system.
- H. Service Penetration for Combustible Systems (SPC): Systems generally intended for installation in openings of limited dimensions and shape in floor or wall assemblies, as specified in the testing agency's listed systems. These systems are tested with a minimum differential pressure of 50 Pa between the exposed and unexposed surfaces of the assembly to meet the requirements for combustible pipe for use in drain, waste and vent piping as referenced in the "National Building Code of Canada."
- I. F Rating: A firestop system is considered as meeting the requirements for an F rating if it remains in the opening during the fire test for the rating period without permitting the passage of flame through openings, or the occurrence of flaming on any element of the unexposed side of the assembly.
- J. FT Rating: A firestop system is considered as meeting the requirements for the FT rating if it remains in the opening during the fire test within the limitations as specified for an F rating and, additionally, the transmission of heat through the firestop system during the rating period will not have been such as to raise the temperature of any thermocouple on the unexposed surface of the firestop system more than 181°C above its initial temperature.
- K. FH Rating: A firestop system is considered as meeting the requirements for an FH rating if it remains in the opening during the fire test and hose stream within the limitations for an F rating and, additionally, during the hose stream test, the firestop system will not develop any opening that would permit a projection of water from the stream beyond the unexposed side.
- L. FTH Rating: A firestop system is considered as meeting the requirements for an FTH rating if it remains in the opening during the fire test and hose stream test within the limitations as described for F, FT and FH ratings.

- M. L Rating: An L rating is based on the volume of air flowing, per unit of time, through the openings around the test sample under a specified pressure difference applied across the surface of the system. The rating is intended to assist Authorities Having Jurisdiction and others in determining the acceptability of firestop systems with reference to the control of air movement through the assembly. The rating is expressed in cubic feet per minute (cfm) per linear foot of opening for joint systems.

1.5 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section, with contractor's representative and Architect in accordance with Division 01 requirements to:
1. Verify project requirements.
 2. Review installation and substrate conditions.
 3. Co-ordination with other building subtrades.
 4. Review manufacturer's installation instructions and warranty requirements.

IFTI SPEC NOTE: Use the following paragraph when manufacturer's services are specified during construction operations to verify the installation and application, and co-ordinate with PART 3 - FIELD QUALITY CONTROL as specified below or co-ordinate with appropriate Section used in project. If no field inspections are required, delete the following paragraph.

- B. Site Meetings: as part of Manufacturer's Services described in this Section, schedule site visits, to review Work, at stages listed.
1. After delivery and storage of products, and when preparatory Work is complete, but before installation begins.
 2. Twice during progress of Work at 25% and 60% complete.
 3. Upon completion of Work, after cleaning is carried out.
- C. Coordination:
1. Verify openings and penetrating items to ensure firestopping is installed according to specified requirements.
 2. Coordinate sizes of sleeves, openings, holes and openings can house firestopping.

Retain paragraph below if Owner plans to engage a testing agency to examine firestopping.

3. Notify independent testing and inspection agency minimum seven (7) days in advance of installations.

1.6 ACTION SUBMITTALS

- A. Submit all submittals in accordance with Section [01 33 00 - Submittal Procedures].
- B. Product Data:

IFTI SPEC NOTE: Include requests for relevant data to be furnished by the Contractor, before, during or after construction.

1. Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.

C. Shop Drawings:

1. Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
2. Construction details should accurately reflect actual job conditions.
3. Include listings, locations and designations from testing and inspecting agency (UL, FM, WH or similar agency).
4. Where Project conditions require modification to a qualified testing and inspecting agency's illustration for a firestopping condition, submit illustration, with modifications marked, approved by firestopping manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

1.7 INFORMATIONAL SUBMITTALS

- A. Test reports: Submit reports in accordance with ASTM E119 for fire endurance, ASTM E84 for surface burning characteristics, ANSI/UL 1479 for through penetrations and ANSI/UL 2079 for construction joints.
1. Submit certified test reports from approved independent testing laboratories, indicating compliance of applied fire stopping with specifications for specified performance characteristics and physical properties.
- B. Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
1. Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

IFTI SPEC NOTE: Confirm job size warrants field reports by manufacturer prior to specifying.

- A. Manufacturer's Field Reports: submit to Architect, manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in this Section.

Spec Note: Include the information below only if the Project is attempting to meet some very specific LEED criteria. Verify with the rest of the Project team to see if the products specified in this Section have any significant LEED credit impact.

- B. Sustainable Design Submittals (LEED): Submit following information for products used in this Section.
1. Recycled Content: Submit listing of recycled content products used, including details of required percentages of recycled content materials and products, showing their costs and percentages of post-consumer and post-industrial content, and total cost of materials for project.
 2. Local/Regional Materials: Indicate location of manufacturing facility; indicate distance between manufacturing facility and the project site and cost.
 3. VOC data (Adhesives – Field Applied): Submit manufacturer's product data for adhesives. Indicate VOC limits of the product. Submit MSDS highlighting VOC limits.

1.8 QUALITY ASSURANCE

A. Qualifications:

1. **[Installer: company specializing in fire stopping installations with 5 years documented experience and approved by manufacturer.]**
2. **[Installer: company specializing in fire stopping installations and approved by [FM Global] [UL] [FCIA]].**

- B. Manufacturers:
 - 1. Provide products by a firm specializing in the fabrication of firestopping who has successfully produced work similar in design and extent to that required for the project, in not less than three (3) projects of similar size and scope and whose work has resulted in construction with a record of successful in-service performance for a minimum period of ten (10) years.
 - 2. Manufacturer shall have a program of continuous quality management implemented conforming to the requirements of ISO 9001. Submit proof of certification upon request.
- C. Source Limitations: Obtain each firestopping and smoke seal system from single source from single manufacturer or provide a system approved in writing by firestopping manufacturer.

1.9 DELIVERY, STORAGE AND HANDLING

- A. Packing, shipping, handling and unloading:
 - 1. Deliver, store and handle materials in accordance with manufacturer's written instructions.
 - 2. Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, and testing agency's listings and markings.
- B. Storage and Protection:
 - 1. Store materials in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - 2. Replace defective or damaged materials with new.

1.10 PROJECT CONDITIONS

- A. Environmental Limitations: Do not install firestopping when ambient or substrate temperatures are outside of the limits permitted by manufacturers or when substrates are wet.
- B. Install and cure firestopping in accordance with manufacturer's written instructions.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Materials specified in this Section are based on products by International Fireproof Technology Inc; 6208, 17528 Von Karman Ave, Irvine, CA 92614, United States Tel: (949) 975-8588 Web: www.painttoprotect.com; as listed in this Specification.
- B. Substitution Limitations: **[No further substitutions are acceptable.] [Conforming to requirements of Section 01 25 00 - Substitution Procedures]**

2.2 REGULATORY REQUIREMENTS

- A. Products shall meet requirements of municipal, state, or federal authorities having jurisdiction.
- B. Firestopping systems shall comply with the following requirements:

1. Provide rated systems complying with the following requirements based on tests performed by a qualified testing agency acceptable to authorities having jurisdiction:
2. All systems and products shall bear the classification rating and listing of a qualified testing agency based on designations listed by one of the following:

Retain only subparagraph(s) below that reference the directories of testing agency or agencies approved by authorities having jurisdiction.

- a. UL "Fire Resistance Directory."
- b. Intertek ETL SEMKO "Directory of Listed Building Products."
- c. **[WH-Intertek Directory]**
- d. **[FM Approvals].**

2.3 DESIGN AND PERFORMANCE REQUIREMENTS

- A. Provide asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of ASTM E814 or UL1479 and not exceeding opening sizes for which they are intended.
 1. F-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 2. T-Rating: At least 1 hour, but not less than the fire-resistance rating of constructions penetrated.
 3. L-Rating: Not exceeding 5.0 cfm/sq. ft. of penetration opening at both ambient and elevated temperatures.
 4. Retain first paragraph below if horizontal assemblies require W-ratings. W-rating indicates resistance to water leakage. W-Rating: Provide firestopping showing no evidence of water leakage when tested according to UL 1479.
- B. Design firestopping to resist spread of fire according to requirements indicated, resist passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.
- C. Ensure firestopping systems are compatible with each other, and with substrates forming parts of the assembly.

2.4 MATERIALS

IFTI SPEC NOTE: Retain only those paragraphs below that apply to the Project.

- A. Intumescent Acrylic Sealants: single component water-based acrylic intumescent firestop sealant used for sealing gaps around single or multiple penetrations through interior walls and floors, or for sealing gaps around doors and window frames in critically fire rated structures.
 1. Acceptable Product: "INSS1440 Fire Barrier Caulk" by International Fireproof Technology Inc.
- B. Silicone Sealants: one-part, neutral-curing silicone sealant used to control the spread of fire, smoke, toxic gases, and water during fire conditions designed to seal gaps around penetrations through fire-rated floors, walls or other assemblies as well as for sealing gaps around window and door frames in critically fire-rated structures.
 1. Acceptable Product: "INSS2460 & INSS2460+ Fire Barrier Silicone Sealant" by International Fireproof Technology Inc.
- C. Fire-rated Elastomeric Sealants: water based acrylic elastomeric fire rated sealant that does not re-emulsify.
 1. Acceptable Product: "INSS1186 Elastomeric FireCaulk" by International Fireproof Technology Inc.

- D. Intumescent Putties: Nonhardening dielectric, water-resistant putties containing no solvents, inorganic fibers, or silicone compounds designed to seal gaps around through-penetrations and block the passage of flame, toxic fumes and smoke.
1. Acceptable Product:
 - a. "FM012 Firestop Putty" by International Fireproof Technology Inc.
 - b. "FM011 Moldable Firestop Putty" by International Fireproof Technology Inc.
 - c. "Putty Pad" by International Fireproof Technology Inc.
- E. Smoke and Acoustic Sealant: high performance acrylic based sealant for sealing construction joints and through penetrations in non-fire-rated assemblies to reducing the transmission of sound through wall openings.
1. Acceptable Product: "INSS0285 Smoke and Acoustic Sealant" by International Fireproof Technology Inc.
- F. Firestop Collars: Factory-assembled collars formed from stainless steel and lined with intumescent material sized to tightly fit specific diameter of penetrant to restore the fire resistance rating of walls, floors and seals against the passage of flames, toxic fumes and smoke.
1. Acceptable Product: "SSCI Firestop Collar" by International Fireproof Technology Inc.
- G. Firestop Sheets: fabricated by bonding proprietary intumescent materials to metal sheets to securely block flame and seal large penetrations through fire-rated walls and floors; and used for shielding cable trays, conduit, HVAC and vital process equipment from radiant heat, flame spread and smoke.
1. Acceptable Product:
 - a. "FP-02 Firestop Sheet" by International Fireproof Technology Inc.
 - b. "FP-04+ Firestop Sheet" by International Fireproof Technology Inc.
- H. Intumescent Wrap Strips: Single-component intumescent elastomeric sheets with aluminum foil on one side, designed to block the spread of fire, smoke, toxic gases, when used with combustible penetrants such as plastic pipe.
1. Acceptable Product: "INFS0812" by International Fireproof Technology Inc.
- I. Firestop Blankets: Fire-resistant wrap consisting of ceramic fiber blanket encapsulated with scrim-reinforced foil to provide flexible, non-combustible enclosure for duct or cable tray applications.
1. Acceptable Product: "FB01-15" by International Fireproof Technology Inc.
- J. Slag-wool-fiber or rock-wool-fiber insulation board with intumescent coating: 50mm thick high-density mineral fiberboard coated with an intumescent coating used to create a fire barrier system, which can restore up to 2 hours fire rating.
1. Acceptable Product: "FP05 Coated Firestop Board" by International Fireproof Technology Inc.
- K. Mortars: Prepackaged mix comprised of proprietary blend of gypsum and cement, non-shrinking, paintable, fast drying mortar formulated for mixing with water at Project site to form a no shrinking, homogeneous mortar to prevent passage of flame, smoke, and toxic fumes.
1. Acceptable Product: "CFS01 Mortar" by International Fireproof Technology Inc.

- L. Firestop Bricks: Reusable heat-expanding bricks of medium density, flexible polyurethane foam designed to firestop large openings containing various penetrants.
 - 1. Acceptable Product: "US150 Firestop Brick" by International Fireproof Technology Inc.
- M. Fire-Barrier Foam: Multicomponent, two component foam, which when mixed, forms a flexible medium-density fire-retardant foam designed to seal large openings containing multiple penetrations such as cable bundles, cable trays and metallic pipes.
 - 1. Acceptable Product:
 - a. "US110 Fire Barrier Foam" by International Fireproof Technology Inc.
 - b. "US150 Fire Barrier Foam" by International Fireproof Technology Inc.

2.5 ACCESSORIES

- A. Provide components for each firestopping system that are needed to install firestopping materials and to maintain ratings required. Use only those components specified by firestopping manufacturer and approved in tested assemblies.
- B. Primers: to manufacturer's recommendation for specific material, substrate, and end use.
- C. Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
- D. Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

2.6 MIXING

- A. Comply with firestopping manufacturer's written instructions for proportioning of materials and mixing requirements to produce products of uniform quality.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

- A. Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
- B. Ensure substrates and surfaces are clean, dry and frost free.
- C. Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
- D. Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

- A. Install firestopping and smoke seal material and components in accordance with manufacturer's certified tested system listing.
- B. Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
- C. Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
- D. Tool or trowel exposed surfaces to neat finish.
- E. Remove excess compound promptly as work progresses and upon completion.

3.4 IDENTIFICATION

IFTI SPEC NOTE: Retain this article if labels are required.

- A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge to ensure labels are visible to maintenance staff. Include following information on labels:
 - 1. The words "Warning - Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
 - 2. Contractor's name, address, and phone number.
 - 3. Designation of applicable testing and inspecting agency.
 - 4. Date of installation.
 - 5. Manufacturer's name.
 - 6. Installer's name.

3.5 FIELD QUALITY CONTROL

- A. Inspections:
 - 1. Owner will engage an independent testing agency to inspect installed firestopping and to prepare reports indicating whether the installed work complies with the contract documents.
 - 2. notify [Architect] [independent inspection and testing agency] when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

IFTI SPEC NOTE: Co-ordinate with Submittals as specified below. When manufacturer's services are specified during construction operations to verify the installation, include the following paragraph. If no field inspections are required, delete the following paragraph. Field quality control may incur additional expenses. Confirm job size warrants field reports by manufacturer prior to specifying.

- B. [Manufacturer's Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
 - 1. Report any inconsistencies from manufacturer's recommendations immediately to Architect.
 - 2. Schedule site visits to review work at stages listed:
 - a. After delivery and storage of products, and when preparatory activities on which work of this Section depends is complete, but before installation begins.

- b. Twice during progress of work: at **[25%]** and **[60%]** complete.
- c. Upon completion of Work, after cleaning is carried out.
- d. Obtain field reports within three days of review and submit immediately to Architect.]

3.6 CLEANING

- A. On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
- B. Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 SCHEDULE

IFTI SPEC NOTE: Schedule fire stopping and smoke seal materials at openings and penetrations in fire-resistance rated assemblies either in specification or on drawings.

- A. **[Provide UL-classified systems in accordance with system numbers in UL's "Fire Resistance Directory" under product Category XHEZ.]**

IFTI SPEC NOTE: Retain first paragraph below if Intertek ETL SEMKO-listed systems are required.

- B. **[Provide Intertek ETL SEMKO-listed systems are indicated, in accordance with system numbers in Intertek ETL SEMKO's "Directory of Listed Building Products".]**

IFTI SPEC NOTE: Retain first paragraph below if FM Global-approved systems are required.

- C. **[Provide Intertek FM Global-approved systems, in accordance with system numbers in FM Global's "Building Materials Approval Guide".]**

- D. Provide firestop and smoke seal at:
 - 1. Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
 - 2. Edge of floor slabs at curtain wall and precast concrete panels.
 - 3. Top of fire-resistance rated masonry and gypsum board partitions.
 - 4. Intersection of fire-resistance rated masonry and gypsum board partitions.
 - 5. Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
 - 6. Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
 - 7. Openings and sleeves installed for future use through fire separations.
 - 8. Around mechanical and electrical assemblies penetrating fire separations.
 - 9. Other locations required by local building codes.

END OF SECTION