SECTION 07 8400

FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Work of this Section consists of firestopping used in locations including, but not limited to, the following:

1. Penetrations for the passage of duct, cable, cable trays, conduit, piping, electrical busways, and electrical raceways through fire-rated vertical barriers (walls and partitions), horizontal barriers (floor slabs and floor/ceiling assemblies), and vertical service shafts.
2. Openings between structurally separate sections of walls or floors or building joints.
3. Between stories unless within a fire-rated shaft.
4. Above walls or partitions extending to underside of ceiling or roof assemblies above.
5. Concealed furring spaces behind finishes.
6. Where pipes, conduits, ducts, and other items pass through fire-rated assemblies.
7. Openings for items mounted on or within fire-rated assemblies.

B. Related Documents and Sections: Examine Contract Documents for requirements that directly affect or are affected by Work of this Section. Other Documents and Sections that directly relate to work of this Section include, but are not limited to:

1. General provisions of the Contract, including General and Supplementary Conditions, and Division 01 General Requirements Specification Sections.
2. Section 07 9200 - JOINT SEALANTS.
1. Section 08 4000 - ALUMINUM-FRAMED FACADE SYSTEMS.
3. Section 09 2116 - GYPSUM BOARD ASSEMBLIES.
4. Division 22, PLUMBING.
5. Division 23, HVAC.
6. Division 26, ELECTRICAL.

1.2 SYSTEM DESCRIPTION

A. General System Description: Through-penetration firestop systems that delay spread of fire to minimum standard requirements, delay passage of smoke and other gases, and maintain original fire-resistance rating of construction penetrated.

B. Design Criteria:

1. Provide products that upon curing, do not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.
2. Provide fire-resistive joint sealants designed to accommodate a specific range of movement and tested for this purpose in accordance with a cyclic movement test criteria as outlined in Standards, ASTM E1399, ASTM E1966 or ANSI / UL 2079.
3. Pipe insulation shall not be removed, cut away or otherwise interrupted through wall or floor openings. Provide products appropriately tested for the thickness and type of insulation utilized.
4. Fire rated pathway devices shall be the preferred product and shall be installed in locations where frequent cable moves, add-ons and changes will occur.
5. When mechanical cable pathways are not practical, openings within walls and floors

designed to accommodate voice, data and video cabling shall be provided with re-enterable products specifically designed for retrofit.

6. Penetrants passing through fire-resistance rated floor-ceiling assemblies contained within chase wall assemblies shall be protected with products tested by being fully exposed to the fire outside of the chase wall.

C. Performance Criteria

1. Rated Systems: Provide firestop systems with the following ratings determined per ASTM E814 or UL 1479:
   a. F-Rated Systems: Provide firestop systems with F-ratings indicated, but not less than that equaling or exceeding fire-resistance rating of constructions penetrated or adjacent to.
   b. T-Rated Systems: For the following conditions, provide firestop systems with T-ratings indicated, as well as F-ratings, where systems protect penetrating items exposed to potential contact with adjacent materials in occupiable floor areas:
      1). Penetrations located outside wall cavities.
      2). Penetrations located outside fire-resistance-rated shaft enclosures.
   c. L-Rated Systems: Where firestop systems are indicated in smoke barriers, provide firestop systems with L-ratings of not more than 3.0 cfm/ft^2 at both ambient temperatures and 400 deg F.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's printed descriptions of materials and systems, performance criteria, use limitations, recommendations and installation information.

B. System Drawings: Submit drawings indicating each different firestop system, showing each type of construction condition, relationships to adjoining construction, and type of penetrating item. Include firestop design designation of qualified testing and inspecting agency that evidences compliance with requirements for each condition indicated.

C. Firestop System Schedule: Submit a schedule that indicates locations of each firestop system, along with the following information:

1. Types of penetrating items
2. Types of constructions penetrated, including fire-resistance ratings and, where applicable, thicknesses of construction penetrated
3. Firestop systems for each location identified by firestop design designation of qualified testing and inspecting agency

D. Quality Assurance Submittals:

1. Test Reports.
2. Certificates.
3. Manufacturer’s Installation Instructions.
4. Qualification Statements:
   a. Manufacturer Approved Installer.

1.4 QUALITY ASSURANCE:

A. Qualifications:

1. Manufacturer Qualifications: A firm experienced a minimum five (5) years in manufacturing products or systems similar to those indicated for this Project and with a record of successful

in-service performance.

2. Installer Qualifications: Perform installation with trained personnel who are certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience and training to install manufacturer's products per specified requirements, and who have at least three (3) years successful experience in installations of similar size and scope.
    a. A manufacturer's willingness to sell its firestopping products to the Contractor or to an Installer engaged by the Contractor does not in itself confer qualification on the buyer.

B. Regulatory Requirements:

1. Firestop each penetration through rated construction as required by AHJ.
2. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1, "Polarized Light Microscopy."
3. Fire-Resistance: Provide materials and construction identical to fire-rated assemblies tested in compliance with ASTM E119, ASTM E814, UL 263, or NFPA 251, by independent agencies acceptable to Architect and authorities having jurisdiction.
4. Burning Characteristics: Provide products with maximum ASTM E84 surface burning characteristics of flame spread 25 and smoke developed 25.
    a. Firestop systems shall have been tested in accordance with ASTM E814 or UL 1479 under a minimum positive pressure of 1 inch of water.

C. Industry Standard Requirements:

1. Firestopping tests are performed by a qualified testing and inspecting agency. A qualified testing and inspecting agency is UL, Warnock Hersey, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
2. Firestop systems are identical to those tested per ASTM E814 under conditions where positive furnace pressure differential of at least 1 inch of water is maintained at a distance of 3/4 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
    a. Products bear classification marking of qualified testing and inspecting agency.
    b. Firestop systems referenced by UL, Intertek / Warnock Hersey, or another qualified testing and inspecting agency.
3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E119 under conditions where the positive furnace pressure differential is at least 1 inch of water, as measured 3/4 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
    a. Fire Joint Sealants -Resistance Ratings: Design designation references as listed by UL or another qualified testing and inspecting agency.
    b. Joint sealants and backing materials bearing classification markings of qualified testing and inspection agency.

D. Source Limitations: Obtain each firestop system through one source from a single manufacturer.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle materials and products in strict compliance with manufacturer's instructions and recommendations and industry standards. Protect from damage.

1. Sequence deliveries to avoid delays, but minimize on-site storage.

1.6 WARRANTY

A. Manufacturer shall warrant firestopping materials to be free of defects and to meet the conditions listed in the UL / ULC Fire Resistance Directory.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide firestopping products by one of the following:

1. Nelson Firestop Products; 800.331.7325; www.nelsonfirestop.com
2. Hilti Firestop Systems; 866.445.88227; www.us.hilti.com
3. The Rectorseal Corporation; 800.231.3345; www.rectorseal.com
4. Specified Technologies, Incorporated (STI); 800.992.1180; www.stifirestop.com
5. 3M Fire Protection Products; 800.328.1687; www.3m.com
6. Tremco Firestop System; 800.321.7906; www.tremcofirestop.com

2.2 MATERIALS

A. Wall Opening Protective Materials: Intumescent, non-curing pads or inserts for protection of electrical switch and receptacle boxes to reduce horizontal separation to less than 24 inches.

B. SpecSeal Series SSP Firestop Putty Pads by STI.

C. SpecSeal Series EP PowerShield Insert Pads by STI.

D. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds.

E. FSP, by Nelson Firestop Products.

F. Metacaulk Fire Rated Putty, by RectorSeal.

G. SpecSeal Putty, by STI.

H. Moldable Putty+, by 3M.

I. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film.

J. WRS, by Nelson Firestop Products.

K. Metacaulk Wrap Strip, by RectorSeal.

L. SpecSeal SSWRED Wrapstrip, by STI.

M. FS-195+ Wrap/Strip, by 3M.

N. TREMstop WS, by Tremco.

O. SpecSeal Series SSB Firestop Pillows by STI.

P. Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to form a non-shrinking, water-resistant, homogenous mortar.

Q. Packing Material: Manufacturer's standard fire resistive mastic, putty, ceramic fiber blanket, or mineral wool to be used as fill or backing material for firestopping.

R. Mineral Wool or Slag Wool Fiber or Rock Wool Fiber Blanket Insulation for Fire Safing

1. Unfaced, Slag-Wool-Fiber / Rock Wool Fiber Blanket Insulation: ASTM C665, Type I (blankets without membrane facing); consisting of glass fibers.
   a. Surface Burning Characteristics per ASTM E136: Class A
      1). Maximum flame spread and smoke developed values of 15 and zero, respectively.
      2). Types IA and IB: Nominal density of 4.0 pcf, R-value of 4.0 at 75 deg F.

S. SpecSeal Series SSM Firestop Mortar by STI.

T. Silicone Foam: Multi-component, silicone-based liquid elastomers, that when mixed, expand and cure in place to produce a flexible, non-shrinking foam.

U. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or non-sag) or vertical surface (non-sag).

2.3 MANUFACTURED UNITS

A. Firestop Devices: Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item.

B. Firestop Pillows: Re-enterable, non-curing, mineral fiber core encapsulated with an intumescent coating contained in a flame retardant poly bag.

C. Fire Rated Cable Pathways: Device modules comprised of steel raceway with intumescent foam pads allowing 0 to 100 percent cable fill.

PART 3 EXECUTION

3.1 PROJECT CONDITIONS

A. Environmental Limitations: Install firestop systems only when ambient or substrate temperatures are inside limits permitted by firestop system manufacturers.

1. Do not install when substrates are wet due to rain, frost, condensation, or other causes.

B. Ventilate firestop systems per manufacturer's written instructions by natural means or, where this is inadequate, forced-air circulation.

C. Compatibility: Provide firestop systems that are compatible with one another.

D. Coordination.

E. Sequencing and Scheduling.

3.2 EXAMINATION

A. Carefully examine installation areas with Installer present, for compliance with requirements affecting Work performance.

1. Verification of Conditions: Verify that field measurements, surfaces, substrates, opening configurations, penetrating items, structural support, utility connections, tolerances, levelness, plumbness, humidity, moisture content level, cleanliness and other conditions are as required by the manufacturer, and ready to receive Work.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.3 PREPARATION

A. Surface Cleaning: Clean out openings and surfaces immediately before installing firestop systems to comply with firestop system manufacturer's written instructions and with the following requirements:

1. Remove foreign materials from surfaces that could interfere with adhesion of firestop systems.
2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestop systems. Remove loose particles remaining from cleaning operation.
3. Remove laitance and form-release agents from concrete.

B. Priming: Prime substrates where recommended in writing by firestop system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

C. Masking Tape: Use masking tape to prevent firestop systems from contacting adjoining surfaces that will remain exposed on completion of Work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestop system materials. Remove tape as soon as possible without disturbing firestop system's seal with substrates.

3.4 FIRESTOP SYSTEM INSTALLATION

A. General: Install firestop systems to comply with requirements, and with firestop system manufacturer's written installation instructions and published drawings for products for applications indicated.

B. Install forming/damming/backing materials and other accessories of types required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.

1. After installing fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.

C. Install fill materials for firestop systems by proven techniques to produce the following results:

1. Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance rating indicated.
2. Apply materials so they contact and fully adhere to substrates formed by openings and penetrating items.

D. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.5 IDENTIFICATION

A. Identify firestop systems with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of edge of the firestop systems so that labels will be visible to anyone seeking to remove penetrating items or firestop systems. Use mechanical fasteners for metal labels. For plastic labels, use self-adhering type with adhesives capable of permanently bonding labels to surfaces on which labels are placed and, in combination with label material, will result in partial destruction of label if removal is attempted.

3.6 FIELD QUALITY CONTROL

A. Field Inspection:

1. Independent Testing Agency to conduct inspections, test and prepare test reports according to ASTM E2174 and ASTM E2393.
2. Inspection Services: Inspection of completed firestop system installations shall take place in successive stages as installation of firestop systems proceeds.
3. Remove and replace firestop systems where inspections indicate that they do not comply with specified requirements.
4. Additional inspection services will be performed, at Contractor's expense, to determine compliance of replaced or additional Work within specified requirements.
5. Proceed with enclosing firestop systems with other construction only after inspection reports are issued and firestop installations comply with requirements

3.7 CLEANING AND PROTECTING

A. Clean off excess fill materials adjacent to openings as Work progresses by methods and with cleaning materials that are approved in writing by firestop system manufacturers and that do not damage materials in which openings occur, nor reduce the fire rating below that required.

B. Provide final protection and maintain conditions during and after installation that ensure that firestop systems are without damage or deterioration at time of Substantial Completion.

END OF SECTION

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