

SECTION 22 84 00 FIRESTOPPING

PART 1.00 – GENERAL

1.01 RELATED DOCUMENTS

- A. The Contractor is referred to the “Bid Book”; the “Standard Agreement” between the Construction Manager (CM) and the Contractor(s); “Division 01 - General Requirements” of the Contract Specifications”; the “Contract Drawings” and all Amendments and Addenda thereto; all of which govern the Work of this Section

1.02 SCOPE OF WORK

- A. The Work of this Section includes all labor, materials, equipment and services necessary to complete the required through-penetration firestopping installation in renovated/reconfigured apartments and cellar spaces as indicated on the Drawings and/or specified herein including, but not limited to, the following (coordinate installation as required with General & Electrical Contractors):
 1. Existing/enlarged/new penetrations in existing concrete floor slabs (2-hr. fire-rated / 1st – 6th Floors typical unless noted otherwise) for new domestic water/gas/heating risers/returns and drainage/vent stacks (including firestopping as required at existing penetrations/risers to remain as specified herein).
 2. New penetrations in existing concrete roof slabs (2-hr. fire-rated) for new stack vents for relocated kitchens.
 3. Existing/new penetrations in existing/new demising plumbing chase walls between apartments (1-hour fire-rated) for new branch piping.
 4. New penetrations in existing fire-rated cellar masonry partitions for new piping.
 5. Existing concealed penetrations/openings in fire-rated floors/ partitions where existing risers/returns and other piping have been removed.
 6. Coordinate firestopping installation with CM, who shall obtain approvals for Controlled Inspection from NYC Buildings Department (TR-1 Applications to be filed by the Authority).
 7. Provide all other labor and materials as may be reasonably inferred to make the Work of this Section complete.

1.03 RELATED WORK SPECIFIED ELSEWHERE

- A. The following Sections/Divisions contain requirements that relate to the Work of this Section:
- B. Section 02 05 00 – Selective Demolition/Removals/Cutting/Patching
- C. Section 09 25 00 – Gypsum Wallboard System
- D. Division 26 – Electrical

1.04 SUBMITTALS

- A. The following Shop Drawings, Catalog Cuts, Material Samples and other submittals pertaining to the Work of this Section shall be submitted in accordance with Division 01- General Conditions, Section 1.7 Submittals:
 1. Manufacturer’s catalog cuts for each type of firestopping material to be installed. Literature shall include product characteristics, performance and limitation criteria, test data, and indicate that products comply with specified requirements.

1.05 WORK STANDARDS

- A. Firestopping materials shall conform to Flame (F) and Temperature (T) ratings as required by N.Y.C. Building Code and as tested by nationally accepted test agencies per ASTM E814 or UL 1479, “Fire Tests of Through-Penetration Firestops”. The F rating must be a minimum of one

(1) hour, but not less than the fire resistance rating of the assembly being penetrated. The T rating, when required by code authority, shall be based on measurement of the temperature rise on the penetrating item(s). The fire test shall be conducted with a minimum positive pressure differential of 0.01 inches of water column.

- B. Firestopping materials shall conform to UL Fire Hazard Classification Requirements. Firestopping shall be classified as a fill, void or cavity material and system for “UL Through Penetration Firestop Systems”.
- C. Firestopping materials shall be tested and classified non-combustible as per ASTM E84.
- D. Firestopping products shall be asbestos-free and free of any PCBs.
- E. Do not use any product containing solvents or that requires hazardous waste disposal.
- F. Do not use products which, after curing, dissolve in water.
- G. Do not use products that contain ceramic fibers or ethylene glycol.
- H. Firestopping Installer Qualifications: Firestopping application shall be performed by a qualified installer who specializes in the installation of firestopping systems, including the types specified herein. Personnel to be utilized for firestopping installation shall be properly trained and certified as required for this work.
- I. For firestopping exposed to view, traffic, moisture and/or physical damage, provide products that do not deteriorate when exposed to these conditions.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver firestopping materials to the project site in original, unopened containers or packages, with intact and legible manufacturer’s labels identifying product, manufacturer, lot number, shelf life, qualified testing and inspection agency’s classification marking including UL labels, curing time and product identification, lot numbers, etc., and mixing and installation instructions, as applicable.
- B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes in accordance with manufacturer’s recommendations.
- C. Rotate stock of firestopping materials as required. All materials shall be installed prior to expiration of shelf life. Do not use materials that show signs of damage.

1.07 VERIFICATION AND COORDINATION OF PROJECT CONDITIONS

- A. Contractor shall carefully verify existing conditions and substrates before starting work. Any unsatisfactory conditions shall be corrected in accordance with manufacturer’s recommendations before installing firestopping materials.
- B. Coordinate sizing of core-drilled holes, sleeves or other cut openings as required to accommodate through-penetration firestopping systems.
- C. Coordinate preparation of openings and penetrations to ensure that firestopping assemblies are installed according to specified requirements.

PART 2.00 – PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Compatibility: Provide firestopping systems composed of components that are compatible with each other, the substrates forming openings and the items penetrating the firestopping under conditions of service and application as demonstrated by the firestopping manufacturer based on testing and field experience.

- B. Applications: Provide firestopping systems composed of materials specified in this Section that comply with system performance and other requirements.

2.02 FILL MATERIALS FOR THROUGH-PENETRATION FIRESTOPPING SYSTEMS

- A. Endothermic Latex Compound Sealant: Single-component, endothermic, latex formulation.
- B. Intumescent Latex Sealant: Single-component, intumescent, latex formulation.
- C. Intumescent Putty: Non-hardening, dielectric, water-resistant putty containing no solvents, inorganic fibers or silicone compounds.
- D. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side.
- E. Job-Mixed Vinyl Compound: Prepackaged vinyl-based, powder product for mixing with water at project site to produce a paintable compound conforming to ASTM E136, with flame-spread and smoke-developed ratings of zero in accordance with ASTM E84.
- F. Mortar: Prepackaged dry-mix composed of a blend of inorganic binders, fillers and lightweight aggregate formulated for mixing with water at project site to form a non-shrinking, homogeneous mortar.
- G. Pillows/Bags: Reusable, heat-expanding pillows/bags composed of glass-fiber cloth cases filled with a combination of mineral-fiber, water-insoluble expansion agents and fire-retardant additives.
- H. Silicone Foam: Two-component, silicone-based liquid elastomer that, when mixed at the project site, expands and cures in-place to produce a flexible, non-shrinking foam.
- I. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant with pourable (self-leveling) formulation for openings in floors and other horizontal surfaces, and non-sag formulation for openings in partitions and other vertical surfaces requiring a non-slumping/gunnable sealant, unless firestopping system limits use to non-sag grade for both opening conditions.

2.03 MIXING OF FILL MATERIALS

- A. For those products requiring mixing prior to application, comply with firestopping manufacturer's instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time and other procedures needed to produce firestopping products of uniform quality with optimum performance characteristics for application indicated.

2.04 ACCESSORIES

- A. Provide related components for each firestopping system that are required to install fill materials. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated systems. Accessories include, but are not limited to, the following items:
 - 1. Permanent forming, damming and backing materials, including the following:
 - a. Semi-refractory fiber (mineral wool) insulation.
 - b. Sealants used in combination with other forming and damming materials to prevent leakage of fill materials in liquid state.
 - 2. Temporary forming materials.
 - 3. Substrate primers.
 - 4. Collars.
 - 5. Steel sleeves.

2.05 ACCEPTABLE PRODUCTS/MANUFACTURERS

- A. Subject to compliance with specified requirements, provide appropriate firestopping products by one or more of the following manufacturers (all components for each firestopping system shall be by one manufacturer):
 - 1. TREMstop Products by Tremco Inc.
 - 2. BioFireshield Products by RectorSeal Corp.
 - 3. 3M Fire Protection Products by 3M.
 - 4. SpecSeal Firestop Products by STI/Specified Technologies Inc.
 - 5. Nelson Firestop Products.
 - 6. Or approved equal.

PART 3.00 – EXECUTION

3.01 EXAMINATION, SEQUENCING AND SCHEDULING

- A. Examine substrates at proposed installation locations for compliance with requirements for opening sizes/configurations, penetrating items and other conditions affecting performance of firestopping. Do not proceed with firestopping installation until all unsatisfactory conditions have been corrected.
- B. Complete all required firestopping work before reinsulation/insulation of existing/new domestic water risers/returns (insulation shall not be required to extend through floor/partition penetrations).
- C. Perform work of this Section in proper sequence in accordance with manufacturer's recommendations to prevent damage to firestopping systems.
- D. Do not cover, conceal or enclose any firestopping installations until they have been properly inspected and accepted by the authority having jurisdiction (Controlled Inspection as required by NYC Buildings Department shall be performed by the CM).

3.02 PREPARATION

- A. Surface Cleaning: Clean out floor/partition openings immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 - 1. Remove all foreign materials from surfaces of opening substrates and from penetrating items that could interfere with adhesion of firestopping.
 - 2. Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
- B. Priming: Prime substrates where recommended by firestopping 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. Protection: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of work and that would otherwise be permanently stained or damaged by such contact or by cleaning methods used to remove smears from firestopping materials. Remove tape as soon as it is possible to do so without disturbing firestopping's seal with substrates. Provide drop cloths as required to prevent firestopping materials from contaminating adjacent surfaces.
- D. DVentilation: Conform to ventilation requirements as required by firestopping manufacturer's installation instructions or Material Safety Data Sheet.
- E. Temperature: Install firestopping materials in accordance with manufacturer's recommendations.

3.03 CONDITIONS REQUIRING THROUGH-PENETRATION FIRESTOPPING

A. General

1. Penetrations include risers/stacks and other piping which pass through one or both outer surfaces of a fire-rated floor or partition.
2. Where a penetration occurs through a structural concrete floor or roof slab, and a space would otherwise remain open between the surfaces of the penetration and the edge of the adjoining slab, provide firestopping to fill such spaces in accordance with ASTM E814.
3. Requirements for firestopping penetrations shall apply whether or not sleeves have been provided, and whether or not penetrations are to be equipped with escutcheons or other trim. If penetrations are sleeved, fire-stop annular space, if any, between sleeve and wall of opening.
4. At locations where exposed gas risers and heating risers/returns have been removed by this Contractor, existing floor slab penetrations shall be sealed-up by the General Contractor.

REFERENCE STANDARDS

ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2023d.

ASTM E136 - Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2024.

ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems; 2023a.

UL 1479 - Standard for Fire Tests of Penetration Firestops; Current Edition, Including All Revisions.

A.

B. Floor/Roof Slab Penetrations (2-Hour Fire-Rated)

1. Provide firestopping at existing/enlarged/new penetrations in concrete floor slabs (1st – 6th Floors typical unless noted otherwise) for the following new piping/conduit installations (coordinate work as required with General & Electrical Contractors):
 - a. New domestic water risers/returns and drainage/vent stacks at new plumbing chase locations in relocated kitchens, including roof slab penetrations for stack vents.
 - b. Replacement domestic water risers/returns at existing kitchen plumbing chases.
 - c. New exposed gas risers at existing/new locations in kitchens.
 - d. New exposed “blind” heating risers/returns at existing/new locations in various kitchens.
2. Provide firestopping to seal-up existing penetrations in kitchen/bathroom plumbing chases (see note below) where concealed gas risers and other piping have been removed.
3. Replace deteriorated or missing firestopping as required at existing penetrations in kitchen/bathroom plumbing chases (see note below) for domestic water risers/returns and drainage/vent stacks to remain.

Note: Refers to locations where existing chase walls are indicated to be replaced and, where required, ACM pipe insulation is to be abated by General Contractor (existing domestic water risers/returns to be reinsulated).

C. Partition/Chase Wall Penetrations (1-Hour Fire-Rated)

1. Provide firestopping at existing/new penetrations in existing/new demising plumbing chase walls between apartments for new branch piping.
2. Provide firestopping at new penetrations in existing fire-rated cellar masonry partitions enclosing meter/service, compactor, tank/pump, etc. rooms for new piping.
3. Provide firestopping to seal-up existing penetrations/openings in existing fire-rated cellar masonry partitions where existing piping has been removed.

3.04 INSTALLATION OF THROUGH-PENETRATION FIRESTOPPING

- A. General: Select appropriate firestopping system for each type of through- penetration condition utilizing the products previously specified. Comply with the firestopping manufacturer's installation instructions and details pertaining to products and applications indicated.
- B. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire-ratings of designated through-penetration firestopping systems. After installing fill materials, remove any combustible forming materials and other accessories not indicated as permanent components of the selected firestopping systems.
- C. Install fill materials for through-penetration firestopping systems by proven techniques to produce the following results:
 - 1. Completely fill voids and cavities formed by openings, forming materials, accessories and penetrating items.
 - 2. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - 3. For fill materials that will remain exposed after completion of work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

3.05 CLEANING AND PROTECTION

- A. Clean off excess fill materials adjacent to openings as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of materials in which openings occur.
- B. Protect firestopping during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes. If, despite such protection, damage or deterioration occurs, cutout and remove damaged or deteriorated firestopping immediately and install new materials complying with specified requirements at no additional cost to the Authority.

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