

SECTION 078400 (Formerly 07840, 07270)
FIRESTOPPING

PART I - GENERAL

1.01 RELATED DOCUMENTS

- A. The requirements of the GENERAL CONDITIONS, SUPPLEMENTARY CONDITIONS, and DIVISION 1 GENERAL REQUIREMENTS apply to the work of this SECTION.
- B. Coordinate work of this Section with the work of the following Sections and Divisions to properly execute the work in order to maintain the hourly ratings of the walls and floors where firestopping and smoke-seals are applied.
 - 1. Division 3 - Concrete
 - 2. Division 4 - Masonry
 - 3. Division 7 - Thermal and Moisture Protection
 - 4. Division 9 - Gypsum Wall Assemblies
 - 5. Division 21 - Fire-Suppression
 - 6. Division 22 - Plumbing
 - 7. Division 23 - HVAC
 - 8. Division 26 - Electrical

1.02 DESCRIPTION

- A. This SECTION describes the requirements for furnishing and installing firestopping for fire-rated construction. This includes:
 - 1. All openings in fire-rated floor and wall assemblies, both blank (empty) and those accommodating penetrating items such as cable conduits, pipes, ducts, etc.
 - 2. Gaps (openings) between exterior curtain walls and the outer perimeter edge of structural floor.
 - 3. Openings at each floor level in shafts or stairwells.
 - 4. Joints in rated walls and floors between similar and dissimilar construction materials.

1.03 QUALITY ASSURANCE

- A. Firestopping materials shall conform to Flame (F) and Temperature (T) ratings as required by applicable building codes and tested by nationally accepted test agencies per ASTM E 814 or UL 1479 fire tests for through penetrations, and ASTM E 1966 or UL 2079 for construction joints, and UL 2307 for perimeter edge joints.
- B. Firestopping material shall be free of asbestos, PCBs, ethylene glycol, and lead.
- C. Do not use any product containing solvents or that requires hazardous waste disposal.
- D. Firestopping shall be performed by a contractor trained or approved by firestop manufacturer.
- E. Equipment used shall be in accordance with firestop manufacturer's written installation instructions.
- F. Firestopping shall be inspected by a third party independent inspection service and a report furnished to the architect or owners representative during all phases of construction. Should defects be discovered, subsequent inspections will be at the cost of the installing contractor.
- G. Single Source Responsibility: Provide firestop systems for all conditions from a single manufacturer.
- H. Firestop manufacture will provide written documentation from Underwriters Laboratories that firestop material has passed UL accelerated aging and environmental exposure test for UL 1479/ASTM E 814 test standards for firestopping material.
- I. Firestop materials must have a minimum shelf life of 2 years from production and visible expiration or packaging date.

- J. Firestop systems for Smoke Barriers (Section 709) must have L- rating of < 5cfm/lf(cf).
- K. Firestop material must have manufacturer published application temperature range of 35°F to 120°F, and material to still be useable after being frozen and thawed.

1.04 SUBMITTALS

1. Submit manufacturer's product literature for each type of firestop material to be installed. Literature shall indicate product characteristics, typical uses, performance and limitation criteria, and test data.
2. Material safety data sheets (MSDS): Submit MSDS for each firestop product.
3. Shop drawings: Show typical installation details for methods of installation. Indicate which firestop materials will be used where.
4. Submit manufacturer's installation procedures for each type of product.
5. Submit manufacturer's Warranty. If Manufacturer's states that the Owner or user shall determine the suitability of the product for its intended use, or Warranty states that that the Owner or user shall test application for specific use, then the Contractor shall have independently monitored tests performed on the construction configurations identical to the proposed construction on this project, and Contractors shall submit copies of Test Reports covering same, for review by the Architect.
6. Prepare job mock-up of the materials and systems proposed for use in the project as directed by architect. Approved mock-ups may be left in place as part of the finished project and will constitute the standard for remaining works.
7. Pre-installation Conference: Construction Manager to schedule conference approximately two weeks prior to scheduled commencement of firestopping installation and associated work, meet at project site with firestopping Subcontractor; Contractors, Subcontractors and installers of associated work including architectural, mechanical, electrical, and communication work: Construction Manager; Owner; Firestopping Manufacturers Representative; and other representatives directly concerned with the performance of the work, including (where applicable) Owner's Insurers, Test Agencies, and Governing Authorities.
 1. Review foreseeable methods related to Firestopping work, including but not necessarily limited to the following:
 - a. Tour representative areas where firestopping is to be installed; inspect and discuss each type of condition and each type of substrate that will be encountered and preparatory work to be performed by other trades.
 - b. Construction Manager to record discussion, including agreement or disagreement on matters of significance; furnish copy of recorded discussions to each participant. If substantial disagreements exist at the conclusion of conference, determine how disagreements will be resolved and set date for reconvening conference.
8. Owner shall provide the services of an independent and qualified inspection agency. Contractor shall provide access, notify inspection agency, and receive approval prior to concealment. Contractor shall replace any applications damaged by inspection and applications deemed unacceptable.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver material in the manufacturer's original, unopened containers or packages with manufacturers' name, product identification, lot numbers, UL-labels, and mixing and installation instructions, as applicable.
- B. Store materials in the original, unopened containers or packages, and under conditions recommended by manufacturers.
- C. All Firestop materials shall be installed prior to material expiration date.

1.06 PROJECT CONDITIONS

- A. Conform to Manufacturer's printed instructions for installation and when applicable, curing in accordance with temperature and humidity. Conform to ventilation and safety requirements.

1.07 WARRANTY

- A. Firestop installer shall warrant that firestopping systems used meet firestopping requirements as herein specified up to and including sustainable life of the building. Limitations contained in the manufacturer's warranty do not release the installing contractor from providing the warranties required by the contract documents.
- B. Firestop manufacturer must provide a written warranty statement that firestop material will perform as tested in properly installed firestop systems for the sustainable life of the building, a no time limit warranty.

1.08 SEQUENCING

- A. Coordinate this work as required with work of other trades.
- B. Include firestopping into the general/project schedule.
- C. Firestopping shall precede gypsum board finishing.
- D. The project construction schedule must contain firestopping installation timelines coordinated with trades.

1.09 PROTECTION

- A. Where firestopping is installed at locations which will remain exposed in the completed work, provide protection as necessary to prevent damage to adjacent surfaces and finishes, and protect as necessary against damage from other construction activities.

PART 2 - PRODUCTS

2.01 GENERAL

- A. Firestopping shall meet the specified requirements.
- B. Firestop material must be manufactured in the United States of America.

2.02 FIRESTOPPING

A. Acceptable Manufacturers:

1. Bio Fireshield™ (whose products are listed as a standard)
2. RectorSeal®
3. Metacaulk®
4. FlameSafe®

B. Firestop Mortars:

1. K-10+™ Firestop Mortar
2. Metacaulk® Mortar
3. Rectorseal Firestop Mortar
4. FlameSafe® FSM 22 Mortar Seal

C. Firestop Sealants and Caulks:

1. Bio Fireshield™ Biotherm™ 100 Firestop Sealants
2. Bio Fireshield™ Biostop™ 500+, 750, and BF150+ Intumescent Firestop Caulk
3. Metacaulk® 950, 835+, 1000, 1200, MC150+ Intumescent Firestop Caulks
4. Rectorseal Intumescent Firestop Caulks
5. FlameSafe® FS 4000 Silicone Sealant, FS 1900, FS 900

D. Firestop Putty:

1. Metacaulk® Putty & Putty Pads
2. Bio Fireshield™ BIOSTOP™ Moldable Putty & Putty Pads
3. Rectorseal Putty & Putty Pads
4. FlameSafe® FSP 1000 Putty, 1077 Putty Pads

E. Firestop Collars:

1. BIOSTOP® Plastic Pipe Collar
2. Metacaulk® Plastic Pipe Collar
3. Rectorseal Plastic Pipe Collar
4. FlameSafe® Firestop Device, Intumescent Sleeve, Intumescent Collar

F. Intumescent Fire Retardant Firestop Mastic - Spray, Brush, or Trowel applied:

1. Metacaulk® 1100 Firestop Mastic
2. Bio Fireshield™ 700 Firestop Mastic
3. Rectorseal Firestop Mastic

G. Non-Intumescent Firestop Spray Sealant:

1. BIOSTOP® 750 Firestop Spray
2. Metacaulk® 1200 Firestop Spray
3. Rectorseal Firestop Spray
4. FlameSafe® FS 3000 Spray

H. Wrap Strips:

1. Bio Fireshield™ BIOSTOP™ Intumescent Wrap Strips
2. Metacaulk® Intumescent Wrap Strips
3. Rectorseal Intumescent Wrap Strips
4. FlameSafe® Intumescent Wrap Strip and Devices

I. Firestop Pillows:

1. Metacaulk® Firestop PILLOWS
2. BIOSTOP® Firestop PILLOWS
3. Rectorseal Firestop PILLOWS
4. FlameSafe® Bags and PILLOWS

J. Wall Opening Protective Materials:

1. LECTRA-STOP™ Fire Rated Electrical Box Inserts, by BIO FIRESHIELD™
2. BIOSTOP® Fire Rated Putty Pads
3. Metacaulk® BOX GUARD™ Fire Rated Electrical Box Inserts, By RectorSeal Corporation
4. Metacaulk® Putty Pads
5. Metacaulk® Cover Guard™
6. Bio Fireshield™ Firestopping Gasket
7. FlameSafe® Putty Pads

K. Fire Rated Joint Backing Material:

1. Metacaulk® Joint Strips
2. BIOSTOP® Joint Strips
3. Rectorseal Joint Strips

L. Composite Sheet Materials:

1. Metacaulk® Composite Sheet
2. BIOSTOP® Composite Sheet
3. Rectorseal Composite Sheet

M. Firestop Cast in Place Sleeves:

1. Metacaulk® Cast-in-Place Devices
2. BIOSTOP® Cast-in-Place Devices
3. Rectorseal Cast-in-Place Devices

N. Cable Transit Devices:

1. Metacaulk® Firestop Pass-Thru Device
2. Bio Fireshield™ Firestop Pass-Thru Device
3. Rectorseal Firestop Pass-Thru Device

O. Accessories; as specified by the tested assembly and:

1. Forming/Damming Materials: Mineral fiberboard or other type recommended by Manufacturer's tested system.
2. Primer, Sealant and Solvent Cleaner: As recommended by manufacturer's tested system.
3. Fasteners, universal restricting collars, etc: As recommended by the manufacturer's tested system.

PART 3 - EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions where Firestop is to be installed and notify the architect of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected by the contractor in a manner acceptable to the architect.
- B. Verify that environmental conditions are safe and suitable for installation of Firestop product(s).
- C. Provide labels at each location, which state:

Firestop System: Do Not Disturb & Date Installed
Manufacturer's name _____
System Number _____
Contractor _____
Material Installed _____
Date of Installation _____

3.02 CONDITIONS REQUIRING FIRESTOPPING

A. General:

1. Provide firestopping for conditions specified whether or not firestopping is indicated, and, if indicated, whether such material is designated as insulation, safeing, or otherwise.
2. Insulation types specified in other SECTIONS shall not be installed in lieu of firestopping material specified herein.

B. Building Exterior Perimeters:

1. Where exterior facing construction is continuous past a structural floor, and a space would otherwise remain open between the inner face of the wall construction and the outer perimeter edge of the

structural floor, provide firestopping to equal the fire resistance of the floor assembly. Mineral wool by itself is not an acceptable firestop, neither is mineral wool used with beads of caulking applied along length of mineral wool/curtain wall or mineral wool/floor slab junctures. If mineral wool is part of firestop system, the mineral wool must be completely covered by appropriate thickness of UL Listed Firestop Sealant, in accordance to building code and ASTM E 2307 testing standard.

2. Firestopping shall be provided whether or not there are any clips, angles, plates, or other members bridging or interconnecting the facing and floor systems, and whether or not such items are continuous.
3. Where an exterior wall of composite type construction passes a perimeter structural member, such as a girder, beam, or strut, and the finish on the interior wall face does not continue in proximity with the underside of the structural floor above, thus interrupting the fire-resistive integrity of the wall system, and a space would otherwise remain open between the interior face of the wall and lower edge of the structural member; provide firestopping to continuously fill such open space.
4. Perimeter firestop systems must match exactly to installation conditions, systems that are not tested to ASTM E 2307 standard will not be accepted.

C. Interior Walls and Partitions:

1. All fire rated interior joint, gap and linear openings are required to be firestopped in accordance with ASTM E 1966 and UL 2079.
2. Fire rated construction joints must have a minimum class II movement capability of 12% compression and extension as tested by ASTM E 1399, unless stated to have greater requirements for movement.
 - a. Exception: Bottom of wall joints may have static joint firestop systems as tested by UL 2079 or ASTM E 1966.
3. Where a wall or partition is continuous past a structural floor, such as a stairwell and vertical shafts, and a space would otherwise remain open between the wall face and perimeter edges of the adjoining structural floor provide firestopping.
4. Provide firestopping whether or not there are any clips, angles, plates, or other members bridging or interconnecting the wall and floor systems, and whether or not such items are continuous.
5. Where the top edge of a fire-rated wall or partition abuts and is at right angles to fluted-type metal decking, and the construction is such that would otherwise leave the flute spaces open, provide firestopping.

D. Penetrations:

1. Penetrations include conduit, cable, wire, pipe, duct, or other elements which pass through one or both sides of a fire rated floor, wall, or partition. Except for floors on grade, where a penetration occurs through a structural floor or roof and a space would otherwise remain open between the surfaces of the penetration and the edge of the adjoining structural floor or roof, provide firestopping to fill such spaces in accordance with ASTM E 814 and UL 1479.
2. Where penetrations occur at fire-rated walls or partitions of solid-type construction, provide firestopping to completely fill spaces around the penetration, in accordance with ASTM E 814 and UL 1479. Where penetrations occur at fire-rated walls or partitions of hollow-type construction, provide firestopping to completely fill spaces around the penetration, on each side of the wall or partition, in accordance with ASTM E 814 and UL 1479.
3. These requirements for 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, firestop annular space - if any - between sleeve and wall of opening.

E. Construction Joints:

1. Where openings occur for expansion, at intersections of dissimilar rated construction, or control joints provide a rated joint system in accordance with ASTM E 1966 or UL 2079.
2. Fire-resistant joint systems shall be securely installed in or on the joint for its entire length so as not to dislodge, loosen or otherwise impair its ability to accommodate expected building movements and to resist the passage of fire and hot gases.
3. Fire-resistant joint systems shall be tested in accordance with the requirements of either ASTM E 1966 or UL 2079. Nonsymmetrical wall joint systems shall be tested with both faces exposed to the furnace, and the assigned fire-resistance rating shall be the shortest duration obtained from the two tests.

F. Firestop Cast in Place Devices:

1. Firestop Cast in Place devices must have third party tested systems to the required F and T ratings of the floor penetrated.
2. Cast in Place devices must be tested to ASTM E 814 and UL 1479 test standards for through penetration firestop systems, and have written verification of passing UL accelerated aging and environmental exposure test.
3. Every Cast in place device must have sufficient intumescent material to completely close the floor opening without a penetration passing through the device.
4. A single Cast in Place device must provide protection for all types of penetrations in a single device including but not limited to:
 - a. Cables, MC cable, data
 - b. Plastic penetrations
 - c. Metal penetrations
 - d. Insulated metal and plastic penetrations
 - e. Mixed multiple penetrations
 - f. Blank opening or zero series in the UL classification directory

G. Cable Transit Devices:

1. Cable transit device or cable pass through device (cable sleeve) must have ASTM E814 and UL1479 tested F ratings equal to the penetrated assembly, and L ratings of <5cfm at 0% through 100% visual fill.
2. Cable transit device must be a stand alone firestop system capable of new installation of cables and retrofit installation for existing cables with same device.
3. Cable transit device must not apply mechanical pressure, pinch, or twist penetrating cables or items.
4. Cable transit device must have approved UL systems for high voltage cable, conduit, EMT, metal pipes, PVC, and CPVC penetrations.
5. Cable transit device must allow for 100% visual fill of cable installation.
6. Approved cable transit devices must be available in round as well as square configurations, where round devices can be installed inside of metallic conduit.
7. Cable transit devices must be available with pre manufactured brackets allowing single, double, triple, and six gang installation of cable transit device.

- H. Provide firestopping to fill miscellaneous voids and openings in fire-rated construction in a manner essentially the same as specified herein before:

3.03 INSTALLATION

A. General

1. Installation of Firestop shall be performed by either a specialty contractor specializing in firestop application (FM G 4991 or UL Qualified Firestop Contractor), or general or sub-contractors with experience in similar applications and projects with installers qualified, trained, and certified by the firestop manufacturer. Installation shall be performed in strict accordance with manufacturer's detailed installation procedures.
2. Apply Firestop in accordance with fire test reports, fire resistance requirements, acceptable sample installations and manufacturer's recommendations.
3. Coordinate with plumbing, mechanical, electrical and other trades to assure that all pipe, conduit, cable, and other items which penetrate fire rated construction have been permanently installed prior to installation of Firestop, schedule and sequence work to assure that partitions and other construction, which would conceal penetrations, are not erected prior to the installation of Firestop.

B. Dam Construction

1. Install dams when required to properly contain Firestopping materials within openings and as required to achieve required fire resistance rating. Combustible damming material must be removed after appropriate curing. Incombustible damming materials may be left as a permanent component of the Firestop system.

C. Field Quality Control

1. Prepare and install firestopping systems in accordance with manufacturer's printed instructions and recommendations.
2. Follow safety procedures recommended in the Material Safety Data Sheets.
3. Finish surfaces of firestopping which is to remain exposed in the completed Work to a uniform and level condition.
4. All areas of Work must be accessible until inspection by the applicable Code authorities.
5. Correct unacceptable firestop and provide additional inspection to verify compliance with this specification at no additional cost.

D. Third Party Inspection:

1. During installation, provide periodic Third Party inspections to assure proper application.
2. After installation is complete, submit findings in writing with certification that Systems and Designs were followed.
3. Inspector will utilize ASTM E 2174 and 2393 standards for inspection of installed firestop. (Inspector is to be contracted by owner)

3.04 CLEANING

- A. Remove spilled and excesses materials adjacent to firestopping without damaging adjacent surfaces.
- B. Leave finished Work in neat, clean condition with no evidence of spillovers or damage to adjacent surfaces.

END OF SECTION 07 84 00

