

**SECTION 07840
FIRESTOPPING**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire caulking, stopping and sealing of all penetrations in a fire rated assembly, and head of wall joint to deck.
- B. Fire stopping of all pipe, conduit, sleeves, cables, outlet devices, etc. where penetrating a fire rated wall, floor, ceiling or other assembly.
- C. Fire sealing around all ductwork, louver(s), access doors, equipment, etc., penetrating a fire rated assembly.
- D. Fire stopping of all construction and expansion joints, where fire rated walls and floors intersect, where fire rated walls intersect with other fire rated walls, and where fire rated walls and floors intersect with curtain wall or other fire rated and/or exterior construction.
- E. Fire stopping around all shafts, stairwells, horizontal exits or other service/egress enclosures where they penetrate a rated floor, partition, ceiling, or wall.
- F. Labeling of all floors, walls, ceilings, and other fire rated assemblies with labels or stenciling indicating fire rating.
- G. Installing labels on all through penetrations with Owner approved "labels".

1.02 RELATED SECTIONS

- A. Section 01700 -Execution Requirements: Cutting and patching.
- B. DIVISION 3 - CAST-IN-PLACE CONCRETE; Concrete work
- C. DIVISION 4 – MASONRY
- D. DIVISION 5 – METALS
- E. DIVISION 6 - WOODS & PLASTICS
- F. DIVISION 7 – THERMAL AND MOISTURE PROTECTION
- G. DIVISION 8 – GLASS, GLAZING, AND METAL CURTAIN WALL SYSTEMS
- H. DIVISION 9 - GYPSUM WALLBOARD
- I. DIVISION 15 – MECHANICAL
- J. DIVISION 16 - ELECTRICAL, LIGHTING, POWER, ALARMS and COMMUNICATIONS

1.03 REFERENCES

- A. Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.
 - 1. American Society for Testing and Materials (ASTM).
 - a) E 84 Test Method for Surface Burning Characteristics of Building Materials
 - b) E 119 Test Method for Fire Tests of Building Construction and Materials
 - c) E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750F
 - d) E 814 Fire Tests of Through-Penetration Fire Stops
 - e) E 1399 Cyclic Movement and Measuring Minimum and Maximum Joint Widths
 - f) E 1966 Test Method for Resistance of Building Joint
 - g) E 2174 Standard Practice for On-Site Inspection of Installed Fire Stops
 - h) E 2393 Standard Practice for On – Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers

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- i) E 05.11.14 Standard Test Method for Determining the Fire Endurance of Perimeter Fire Barrier Systems Using the Intermediate-Scale, Multi Story Test Apparatus (ISMA); ASTM permanent number assignment pending approval of Draft
- 2. Factory Mutual (FM) Research:
 - a) FM Approval Standard of Firestop Contractors – Class 4991
- 3. National Fire Protection Association (NFPA):
 - a) NFPA 70 - National Electric Code
 - b) NFPA 101 - Life Safety Code
 - c) NFPA 221 - Fire Walls and Fire Barriers (preliminary to be released)
 - d) NFPA 251 - Fire Tests of Building Construction and Materials
- 4. Underwriters Laboratories, Inc. (UL):
 - a) UL Qualified Firestop Contractor Program
 - b) UL 263 Fire Tests of Building Construction and Materials
 - c) UL 723 Surface Burning Characteristics of Building Materials
 - d) UL 1479 Fire-Tests of Through-Penetration Fire Stops
 - e) UL 2079 Tests for Fire Resistance of Building Joint Systems
 - f) UL CLIV Tests for Wall Opening Protective Materials

1.04 SUBMITTALS

- A. Submit manufacturer's product literature for each type of "Firestop" material to be installed. Literature shall indicate product characteristics, typical uses, performance, limitation criteria, test data, and Material Safety Data Sheets.
- B. Submit manufacturers certification of products conformance with requirements.
- C. Submit shop drawings showing typical installation details for methods and procedures. Indicate which firestop materials will be used and installation requirements for different hourly ratings.
- D. Provide test reports of compliance and detailed drawings, identifying the UL systems proposed for all installations.
- E. Provide sample copies of proposed labels, or painted "stenciling" on actual material where proposed to be installed.

1.05 QUALITY ASSURANCE

- A. Fire Testing: Provide firestopping assemblies of designs which provide the specified fire ratings when tested in accordance with methods indicated.
 - 1. Listing in the current classification or certification books of UL, FM, OPL (Omega Point Laboratory) , or ITS (Warnock Hersey) will be considered as constituting an acceptable test report.
 - 2. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
- B. Installer Qualifications: Firestop Contractor specializing in performing the work of this section having been in business a minimum of five (5) years, and can provide documentation to the Owner verifying the following:
 - 1. Approved by Factory Mutual Research under FM Standard 4991, Approval of Firestop Contractors / or UL Qualified Firestop Contractor Program.
 - 2. Contractor shall have at least one (1) person who holds the highest level of certification available from the manufacturer at their corporate headquarters. This individual shall function as

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a supervisor, and shall have held said level of certification for a minimum of two prior consecutive years. Training by a manufacturer's field representative will not be accepted.

- C. Each applicator shall have a minimum of two (2) years experience installing "Firestop" systems, after receiving the proper training from the qualified supervisor as describe in Paragraph 1.05.B.2.
- D. Single Source Responsibility: Obtain firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
 - 1. Materials of different manufacture shall not be intermixed in the same firestop system or opening.
 - 2. Tested and listed firestop systems are to be used before an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) is installed.
- E. Contractor shall carry General Liability and Workers Compensation Insurance that specifically covers firestop installation.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

1.07 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in the manufacturer's original, unopened containers or packages with manufacturer's name, product identification, lot numbers with date of manufacture and/or expiration date, and other appropriate labels.
- B. Store materials in the original, unopened containers or packages, and under conditions recommended by the manufacturer.
- C. All firestop materials shall be installed prior to expiration of shelf life.

1.08 PROJECT CONDITIONS

- A. Field verify existing conditions and inspect substrates before starting work. Commencement of work establishes that finishes, materials and construction are acceptable to this contractor and manufacturer for installation.
- B. During installation, provide masking, drop cloths and other means as needed to prevent firestopping products from contaminating any adjacent surfaces and finishes.
- C. Conform to ventilation requirements of manufacturer's installation instructions from Material Safety Data Sheet.
- D. Do not proceed with installation of firestop products when temperatures are in excess of or below the manufacturer's recommendations.
- E. Schedule installation of firestop products after completion of penetrating item installation but prior to covering or concealing of openings.

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- F. The General Contractor will coordinate this section of work with all trades. Failure to properly schedule efforts with trades, which results in the removal and/or demolition of completed work will be at no additional cost to the Owner / Architect.

PART 2 PRODUCT

2.01 FIRESTOPPING ASSEMBLIES

- 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 rating involved in each separate instance.
- B. 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. Forming/Damming: Fiberglass or mineral fiber boards or blankets compatible with proposed firestopping per manufacturer's recommendations.
- D. Firestop Collars: Prefabricated or molded collars, or prefabricated retaining strips of galvanized steel per manufacturer's recommendations.
- E. Labels/Stenciling: Preprinted self-adhering "Fire Rating" labels with white background with the following requirements:
 - 1. 2" high red lettering describing rated assembly.
 - 2. 1" high black lettering stating "Protect all openings and penetrations"
 - 3. Substrate shall be properly cleaned and or painted to accept labels.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify openings are ready to receive the work of this section.

3.02 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter which may affect bond of firestopping material.
- B. Remove incompatible materials which may affect bond.
- C. Install backing materials to arrest liquid material leakage.

3.03 INSTALLATION

- A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
- B. Do not cover installed firestopping until inspected by authority having jurisdiction.

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3.04 ASSEMBLY IDENTIFICATION

- A. Install preprinted labels and/or stenciling identifying all fire/smoke rated assemblies (wall, floors, ceilings, etc.) as to the designation of rating (i.e. 2 Hour, 1 Hour, Smoke Wall, etc.)
- B. Walls:
 - 1. Identification shall be located on each side of a rated wall (i.e. 2 hour, 1 hour, etc.) Smoke walls to be labeled on one side only, in conjunction with sealed penetrations.
 - 2. Identification shall be located above ceilings; in chases, mechanical/electrical/equipment rooms; pipe corridors and shafts; elevator shafts and stairwells; and all other areas where identifying markers do not present an objectionable presence.
 - 3. Location:
 - a. Labels shall be located approximately twenty five (25') feet on center at long continuous walls, such as a corridor, ten (10') feet above finish floor, or one (1') foot above ceiling grid.
 - b. Labels shall be on each side of an outside corner where walls change direction.
 - c. Labels shall be at other locations deemed necessary by Owner/Architect, and to comply with code recommendations.
- C. Ceilings/Floors:
 - 1. Identification shall be located in all areas where identifying labels do not present an objectionable presence, such as mechanical/electrical/equipment rooms, plumbing chases and pipe corridors, service closets, etc.
 - 2. Labels/stenciling comply with paragraph 2.01.E.
 - 3. Rated ceilings floors shall be identified at each opening type penetration. These locations shall be marked at the "opening" as stated in Paragraph 2.01.E
- D. Individual Penetrations:
 - 1. Each penetration through rated walls, floors and ceilings shall be labeled as deemed necessary by Owner / Architect.
 - 2. Contractor shall install each label and complete required information such as project name and number, date, 'UL' code for assembly, name of contractor, etc.

3.05 INSPECTIONS

- A. The Firestop Contractor shall conduct an inspection with a manufacturer's technical representative to determine that the firestopping assembly has been installed in accordance with the manufacturer's instructions.
- B. Where deficiencies are found, repair or replace the firestopping so that it complies with requirements of tested and listed system design.
- C. Do not proceed to enclose firestopping with other construction until any deficiencies have been addressed and the deficient firestop installation complies with the requirements set forth in this specification.
- D. Repair of deficient installations shall be the Contractor's responsibility, at no additional cost to the contract.

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- E. As deemed necessary by Owner/Architect an independent inspection agency employed and paid for by the owner, will examine firestopping penetrations and joints in accordance with ASTM E – 2174, "Standard Practice for On-Site Inspection of Installed Fire Stops" and ASTM E-2393, "Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers".

3.06 CLEANING AND PROTECTION

- A. Clean adjacent surfaces of firestopping materials.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION