1 General
1.1 The bidding requirements, contracting requirements, and applicable parts of Division 1 - General Requirements, as listed in the Table of Contents, shall be included in and made a part of this Section.

2 Summary
2.1 Provide firestop systems consisting of a material, or combination of materials installed to retain the integrity of fire-rated construction by maintaining an effective barrier against the spread of flame, smoke, and/or hot gases through penetrations, blank openings, construction joints, or at perimeter fire containment in or adjacent to fire-rated barriers in accordance with the requirements of the Building Code for this project.

2.2 Firestop systems shall be used in locations including, but not limited to, the following:
- Penetrations through fire-resistance-rated floor and roof assemblies requiring protected openings including both empty openings and openings that contain penetrations.
- Penetrations through fire-resistance-rated wall assemblies including both empty openings and openings that contain penetrations.
- Membrane penetrations in fire-resistance-rated wall assemblies where items penetrate one side of the barrier.
- Joints in fire-resistance-rated assemblies to allow independent movement.
- Perimeter Fire Barrier System between a rated floor/roof and an exterior wall assembly.
- Joints, through penetrations and membrane penetrations in Smoke Barriers and Smoke Partitions.

2.3 All firestopping shall be in accordance with this section, and all disciplines of firestopping (mechanical, electrical and general) shall be by the same subcontractor.

3 Related Work
3.1 Examine Contract Documents for requirements that affect Work of this Section. Other Specification Sections that relate directly to Work of this Section include, but are not limited to:
- Division 3 - Concrete; Concrete work
- Division 4 - Masonry
- Division 5 - Metals
- Division 7 - Thermal and Moisture Protection
- Division 8 - Openings
- Division 9 - Finishes
- Division 21 – Fire suppression
- Division 26 - Electrical

4 References
4.1 Comply with applicable requirements of the following standards. Where these standards conflict with other specified requirements, the most restrictive requirement shall govern.

4.1.1 American Society for Testing and Materials (ASTM)
- E 84 Test Method for Surface Burning Characteristics of Building Materials
- E 119 Test Method for Fire Tests of Building Construction and Materials
- E 136 Test Method for Behavior of Materials in a Vertical Tube Furnace at 750F
- E 814 Fire Tests of Through-Penetration Fire Stops

4.2 Factory Mutual (FM) Research
- FM Approval Standard of Firestop Contractors – Class 4991

4.3 Underwriters Laboratories, Inc. (UL)
- UL 263 Fire Tests of Building Construction and Materials
- UL 723 Surface Burning Characteristics of Building Materials
- UL 1479 Fire-Tests of Through-Penetration Fire Stops
- UL 2079 Tests for Fire Resistance of Building Joint Systems

5 System Performance Requirements
5.1 Penetrations: Provide and install firestopping systems that are produced to resist the spread of fire, and the passage of smoke and other gases according to requirements indicated, including but not limited to the following:

5.1.1 Firestop all penetrations passing through fire resistance rated wall and floor assemblies and other locations as indicated on the drawings.

5.1.2 Provide and install complete penetration firestopping systems that have been tested and approved by third party testing agency.
- F - Rated Through-Penetration Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E 814, but not less than one hour or the fire-resistance
rating of the construction being penetrated.

- **T - Rated Through-Penetration Firestop Systems:** Provide firestop systems with T ratings, in addition to F ratings, as determined per ASTM E 814, where indicated by Code.
- **L – Rated Through-Penetration Firestop Systems:** Provide firestop systems with L ratings, in addition to F and T ratings, as determined per UL 1479, where indicated by Code.
- **W – Rated Through-Penetration Firestop Systems:** Provide firestop systems with W Water Resistance ratings, in addition to F, T and L ratings, as determined per UL 1479, where indicated.

5.2 **Perimeter Fire Containment Systems:** Provide interior perimeter joint systems with fire-resistance ratings indicated, as determined per ASTM E 2307, but not less than the fire-resistance rating of the floor construction.

5.3 **Fire-Resistive Joints:** Provide joint systems with fire-resistance ratings indicated, as determined per UL 2079, but not less than the fire-resistance rating of the construction in which the joint occurs.

5.4 **For firestopping exposed to view, traffic, moisture, and physical damage, provide appropriate firestop systems for these conditions.**

5.5 **Where there is no specific third party tested and classified Firestop System available for particular firestop configuration, the firestopping contractor shall obtain from the firestop manufacturer an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) for submittal.**

6 **Submittals**

6.1 **General:** Submit in accordance with Section 01300

6.2 **Submit Manufacturers Product Data Sheets** for each type of product selected. Certify that Firestop Material shall be asbestos free and complies with local regulations.

- Certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOC’s) and are nontoxic to building occupants.

6.3 **Submit system design listings,** including illustrations from a qualified testing and inspection agency that is applicable to each firestop configuration

- Where there is no specific third party tested and classified Firestop System available for particular firestop configuration, the firestopping contractor shall obtain from the firestop manufacturer an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) for submittal.

6.4 **Submit contractor qualifications as noted in “Quality Assurance” article.**

6.5 **Firestop Penetration Log:** The firestopping subcontractor shall provide a log listing the location of each protected penetration, the firestop system manufacturer, and the listed system. Reference the identification labels required in Section 3.08.

6.6 **SDS for each product to be used shall be provided to the individual responsible for site coordination of SDS information.**

7 **Quality Assurance**

7.1 **Fire-Test-Response Characteristics:** Provide firestopping System Design Listing by a testing and inspection agency in accordance with the appropriate ASTM Standard(s) per article 1.04. A qualified testing and inspection agency may be UL, FM Research, Intertek Testing Services, Omega Point Laboratories (OPL) or another agency performing testing and follow-up inspection services for firestop materials that is acceptable to the authority having jurisdiction.

7.2 **Contractor Qualifications:** Acceptable contractors shall meet at least two (2) of the following criteria:

7.2.1 **FM Approved in accordance with FM Standard 4991 – Approval of Firestop Contractors.**

7.2.2 **UL Qualified Firestop Contractor.**

7.2.3 **Shown to have successfully completed not less than 5 comparable scale projects.** Demonstrating successful completion includes, but is not limited to providing:

- Letters of reference from the building owner and design firm attesting to the contractor’s performance on the project in question.
- Ability to provide a listing of the number and types of penetrations on each job.

7.2.4 **Completion of the manufacturer’s certified product installation training for each manufacturer of firestopping installed.** A
manufacturer’s willingness to sell its firestop system products to a contractor or to an installer engaged by the contractor does not, in itself, confer qualification on the buyer.

7.3 Single Source Responsibility: Obtain firestop systems for each kind of penetration and construction condition indicated from a single primary firestop systems manufacturer.

7.3.1 Materials of different manufacture than allowed by the tested and listed system shall not be intermixed in the same firestop system or opening.

7.3.2 Tested and listed firestop systems are to be used before an Engineering Judgment (EJ) or Equivalent Fire Resistance Rated Assembly (EFRRA) is installed.

8 Delivery, Storage, And Handling

8.1 Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers’ labels identifying product and manufacturer.

8.2 Store and handle firestopping materials in accordance with manufacturers written instructions.

9 Project Conditions

9.1 Environmental Conditions: Install firestopping in accordance with manufacturers written instructions.

9.2 Ventilation: Ventilate per firestopping manufacturers’ instructions or Safety Data Sheet (SDS)

10 Sequencing And Scheduling

10.1 Project coordination is essential to inform and educate all the parties involved with the firestopping process of their role and how they can affect firestopping on the project. A pre-construction meeting shall be scheduled and required for all parties involved prior to the start of construction. Attendance is mandatory for those contractors / subcontractors performing firestopping work as well as those for whom the fs contractor has been subcontracted.

11 Environmental Regulations

11.1 All materials shall be asbestos free and comply with local VOC Regulations.

11.2 If required, hazardous disposal of firestop materials shall be strictly observed as noted on the individual SDS.

12 General Firestopping Products

12.1 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.

12.2 Available Products: Subject to compliance with requirements, through-penetration firestop systems that may be incorporated into the work include, but are not limited to, those systems indicated on the drawings.

12.3 Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:

- Specified Technologies Incorporated
- 3M Fire Protection Products
- RW Grace
- Tremco
- Or owner approved equal

13 Execution Examination

13.1 Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Notify the responsible party or parties of any unsatisfactory conditions. Do not proceed with installation until unsatisfactory conditions have been corrected.

14 Execution Preparation

14.1 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.

14.2 Masking Tape: Use masking tape to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work. Remove tape as soon as it is possible to do so without disturbing the firestopping seal with substrates.

14.3 Verify that system components are clean, dry, and ready for installation.

14.4 Verify that field dimensions are as shown on the Drawings and as recommended by the manufacturer.
15 Installing Penetration Firestops

15.1 General: Comply with the "System Performance Requirements" article in Part 1 and the through-penetration firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.

15.1.1 Coordinate with other trades to assure that all pipes, conduit, cable, and other items, which penetrate fire rated construction, have been permanently installed prior to installation of firestop assemblies.

15.1.2 Schedule the work to assure that partitions and all other construction that conceals penetrations are not erected prior to the installation of firestop and smoke seals.

15.2 Install forming/damming materials and other accessories in accordance with manufacturers written instructions.

15.3 Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:

- Completely fill voids and cavities formed by openings, forming materials, accessories, and penetrating items.
- Install materials so they contact and adhere to substrates formed by openings and penetrating items.
- For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces.

16 Installing Firestop Joint Systems

16.1 General: Comply with the "System Performance Requirements" article in Part 1 and with the firestop manufacturer’s installation and drawings pertaining to products and applications indicated.

16.1.1 Install joint fillers to provide support of firestop materials during application and at the position required to produce the cross-sectional shapes and depths of installed firestop material relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.

16.2 Install systems by proven techniques that result in firestop materials

16.2.1 Directly contacting and fully wetting joint substrates.

16.2.2 Completely filling recesses provided for each joint configuration,

16.2.3 Providing uniform, cross-sectional shapes and depths relative to joint width that optimize movement capability.

16.3 Tool non-sag firestop materials immediately after their application and prior to the time skinning or begins. Form smooth, uniform beads of configuration indicated or required to:

- Produce fire-resistance rating
- Eliminate air pockets
- Ensure contact and adhesion with sides of joint

17 Installing Perimeter Fire Barrier Systems

17.1 General: Comply with “System Performance Requirements” article in Part 1 and with the firestop manufacture’s installation and drawings pertaining to products and applications indicated.

17.2 Install metal framing, curtain wall insulation, mechanical attachments, safing materials and firestop materials as applicable within the system design.

18 Field Quality Control

18.1 The inspector shall advise the contractor of any deficiencies noted.

18.2 Do not proceed to enclose firestopping with other construction until inspection agency has verified that the firestop installation complies with the requirements.

18.3 Where deficiencies are found, repair or replace the firestopping so that it complies with requirements of tested and listed system design.

19 Cleaning

19.1 Clean off excess fill materials and sealants adjacent to openings and joints as work progresses. Use methods and cleaning materials approved by manufacturers of firestopping products and or assemblies in which openings and joints occur.

19.2 Protect firestopping during and after curing period from contact with contaminating substances. If damage caused by others, owner and general contractor to instruct firestop contractor to make appropriate repairs and charge to appropriate trades.

20 Labeling

20.1 Identify through-penetration firestop systems with pressure-sensitive, self-adhesive, preprinted vinyl labels. Attach labels permanently
to surfaces of penetrated construction on both sides of each firestop system installation where labels will be visible to anyone seeking to remove penetrating items or firestop systems. Include the following information on labels:

- Contractor’s name, address and phone number
- Through-penetration firestop system designation of applicable testing and inspecting agency
- Date of installation
- Through-penetration firestop system manufacturer’s name
- Installer’s name