

Project Name: _____
Location: _____
Date: _____

**DIVISION 7
THERMAL AND MOISTURE PROTECTION**

Section 07840 - FIRESTOPPING

Project Timetable:

Beginning: _____

Completion: _____

Project Name: _____

Location: _____

Arch / Engr: _____

Consultant: _____

General: _____

Sub Contr's: _____

NELSON - PROJECT ASSIGNED PERSONNEL

Project Engineer: _____

Technical Advisor: _____

Field Contacts: _____

NELSON FIRESTOP PRODUCTS
P.O. BOX 726, TULSA, OK 74101
Direct: 918-627-5530 Toll-free: 800-331-7325 Fax: 918-627-2941

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PART 1. GENERAL

1.01 SCOPE OF WORK

- A. Perform all work required, and furnish all materials necessary to complete proper installation of firestops in fire rated walls, floors and partitions, around penetrations of pipe, conduit, duct, cable, cable tray, bus duct, and all other devices, or in blank openings, as required by the job Contract Documents.
- B. The requirements of Division X, "Bidding and Contract Requirements," and Division 1, "General Requirements," shall apply to all work required in this section.

1.02 RELATED WORK

- A. Related work which requires the placement of material, other than closure devices such as doors, for closing openings in fire rated barriers may be contemplated under other sections of the project manual, and shall refer back to this section. Only tested firestop systems shall be used in the locations/sections listed below.

1. Section 03300	Poured in Place Concrete
2. Section 04200	Unit Masonry Construction
3. Section 05800	Expansion Joint
4. Section 07250	Fireproofing / Grease Ducts
5. Section 07900	Sealants, Caulking and Joint Seals
6. Section 09200	Lath and Plaster
7. Section 13080	Sound, Vibration, and Seismic
8. Section 13900	Fire Suppression
9. Section 15250	Mechanical Insulation
10. Section 15300	Fire Protection - Sprinkler Systems
11. Section 15400	Plumbing
12. Section 15500	Heating, Ventilating and Air Conditioning
13. Section 16050	Basic Electrical Components and Methods

- B. A single contractor to maintain consistency and accountability on the project shall perform Firestopping work.
- C. Sections include firestop penetration/membrane protection in the following areas.
 - 1. Penetrations for the through passage of cable, cable tray, conduit, pipe, duct, electrical busway, or other raceways through fire rated floor/ceiling (vertical barriers) and/or/wall/partitions (horizontal barriers).
 - 2. Through penetrations in hazardous locations (Class 1 – Division 1) or those requiring environmental seals against water/dust, or those requiring cable strain relief security.
 - 3. Stopping slot openings between edge of floor slabs and curtain walls.
 - 4. Gaps between the top of wall and ceiling, or roof assemblies.
 - 5. Expansion joints in fire rated walls and floors.
 - 6. Openings around structural support members, which penetrate floors/walls.
 - 7. Openings and penetrations in fire rated walls or partitions containing fire doors.

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1.03 REFERENCES

- A. American Society for Testing and Materials (ASTM®) standard test methods for:
 - 1. ASTM E84: Surface Burning Characteristics of Building Materials
 - 2. ASTM E119: Fire Tests of Building Construction and Materials
 - 3. ASTM E814: Fire Tests of Through-Penetration Firestops
 - 4. ASTM E1399: Standard Test Methods for Cyclic Movement and Measuring of Joint Systems
 - 5. ASTM E1966: Standard Test Methods for the Fire Testing of Joint Systems

- B. Underwriters Laboratories Inc. (UL®)
 - 1. UL263: Fire Test of Building Construction Materials
 - 2. UL723: Surface Burning Characteristics Test of Building Materials
 - 3. UL1479: Fire Test of Through-Penetration Firestops
 - 4. UL 1978: Grease Duct
 - 5. UL 2079: Tests for Fire Resistance of Building Joint Systems
 - 6. UL910: Tests for the Blanket Wrap Protection of Rated Plenum Cables
 - 7. UL1887: Tests for the Blanket Wrap Protection of Rated Plenum Non-Metallic Pipes and Tubes

- C. UL® Fire Resistance Directory - *Current Year Edition* - Section Classifications
 - 1. (CLIV) Wall Opening Protective Materials
 - 2. (XHEZ) Through-Penetration Firestop Systems
 - 3. (XHHD) Duct Wrap Materials
 - 4. (XHHW) Fill, void or Cavity Materials
 - 5. (XHJI) Firestop Devices
 - 6. (XHKU) Forming Materials
 - 7. (XHLU) Pipe Covering Materials
 - 8. (YYET) Grease Duct Blanket & Shaft Enclosures

- D. Other Test Agencies and Jurisdictional Authorities which publish design performance or design evaluation services shall be acceptable, e.g.
 - 1. Factory Mutual Approval Guide - *Current Year Edition* (FM)
 - 2. FM4991: FM Approval Standard of Firestop Contractors – Class4991
 - 3. Omega Point Laboratories – Listing Services (OPL)
 - 4. Inchcape Testing Services (Warnock Hersey,) (WH)
 - 5. Southwest Research (SwRI)
 - 6. Underwriters Laboratories of Canada (U LC)
 - 7. Underwriters Laboratories Products Certified for Canada (CU L)
 - 8. Jurisdictional Authorities – ICC - BOCA - CABO - ICBO - SBCCI, Individual States, Cities, and Municipalities

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1.04 DEFINITIONS

- A. *FIRESTOPS*: Specially tested materials used to reestablish the integrity of a fire rated wall, floor, or other partition after the structure has been breached for the through-penetration of building utility items.
- B. *THROUGH PENETRATION*: Pipes, conduits, ducts, cable trays, cable, wire, or any other element passing completely through an opening in a fire rated barrier/assembly.
- C. *MEMBRANE PENETRATION*: Any penetration of a fire rated barrier that breaches one side, but does not pass completely through to the other side.
- D. *SYSTEM*: The combination of specific materials and/or devices, including the penetrating item(s) required to complete the firestop, as tested by an independent third party test facility.
- E. *BARRIER/ASSEMBLY*: A wall, floor, or other partition with a fire - smoke rating of 1, 2, 3 or 4 hours.
- F. *F-RATING*: The time a firestop - penetrating item/building material/firestop material - can withstand direct flame without a burn through as tested to ASTM E814 / UL 1479 / UL 2079.
- G. *T-RATING*: The amount of time a through-penetration firestop limits the temperature rise on the cold side - outside the test furnace - as tested to ASTM E814 / UL 1479 / UL 2079.
- H. *L-RATING*: The L-Rating criteria determines the amount of air leakage, in cubic feet per minute, per square foot of opening (CFM/sq ft), through the firestop system at ambient and/or 4000 F air temperature at an air pressure differential of 0.30 in. W.C. L-Ratings are used to determine the suitability of a firestop to stop smoke and toxic gases in accordance with the National Fire Protection Association Life Safety Code, NFPA 101.

1.05 SYSTEM REQUIREMENTS

A. *TECHNICAL CONSIDERATIONS*:

1. Designs selected for installation shall provide a fire resistance rating that is at least equal to the hourly resistance rating of the floor, wall or partition into which the firestop design will be installed.
2. Firestop systems and materials shall not require special tools for installation, and shall not emit hazardous, combustible, or irritating fumes during installation, curing, or use.
3. When more than one firestop design is acceptable, individual product characteristics shall be evaluated for secondary performance benefits, e.g. environmental sealing of water and dust, or for ease of retrofit modifications.

B. *GENERAL CONSIDERATIONS*:

1. Firestop systems do not re-establish the structural integrity of load bearing barriers. Consult structural engineer prior to cutting or core drilling any load bearing assembly.
2. Firestop systems are not designed for, or intended to support live loads and traffic. Curbs or steel plates may be required to restrict or accommodate potential traffic. Contractor shall notify Engineer if there is reason to believe these limitations may be violated.

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1.06 SUBMITTALS

- A. Submit manufacturer's technical data/product literature, for each type of firestop material to be installed. Literature shall provide at minimum, product description, characteristics, test data, typical usage examples, independent test agency information, a product specification, and storage requirements.
- B. Submit Material Safety Data Sheets (MSDS) for each product delivered to jobsite.
- C. Submit complete listing of all materials and systems to be used include UL® or FM ® Classification information or other third party test documentation.
- D. Submitted system information or drawings must indicate specific products by catalog number, and the required installation thickness to be used in each through penetration opening.
- E. Submit manufacturers "engineering determination" drawings for non-standard installations where no UL® tested system exist.
- F. Submit certificate, or other documentation, from manufacturer stating that the installer has been trained in the proper installation of said manufacturers product, and is recognized as qualified to install such manufacturers product. In lieu of this documentation, installer shall submit a list of past projects to demonstrate capability to satisfactorily perform intended installations.
- G. Submit product from "One Manufacturer" for entire project. Said manufacturer must be the entity producer of the products sold. Said manufacturer must have been producing firestop products for a minimum of 10 years.

1.07 QUALITY ASSURANCE

- A. Workmanship:
 - 1. Installation shall conform to requirements of qualified system designs, or manufacturer approved modification, as supported by engineering reports, or as approved by Project Engineers and accepted by the authority having jurisdiction. All manufacturers engineering determinations or modifications shall be made, and signed by one of the manufacturers, in house, staff graduate engineers.
 - 2. Exposed surfaces of the firestop shall be finished to the standard of adjacent faces of the barrier being penetrated.
- B. Regulatory Requirements:
 - 1. Firestop systems shall be installed in all openings and around all penetrating items as required by these Contract Documents, and as required by applicable design, building and construction codes, subject to the interpretation of the jurisdictional authorities.
 - 2. Firestop materials shall have the approval of the authority having jurisdiction.
- C. Certification:
 - 1. The performance of the intended firestop designs shall have been demonstrated by third party testing in accordance with the applicable reference standards of Paragraph 1 .03A and 1 .03B. Evidence of third-party acceptance shall include labeling or listing by an acceptable agency, as found in said agencies directory, or via written report.
 - 2. Manufactured assemblies and material formulations shall be prepared under third party monitored Quality Control Program, e.g., UL® Follow-up Service.
 - 3. Manufacturer shall be ISO 9001 compliant.
 - 4. Contractor shall certify compliance with this section.

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1.08 DELIVERY, STORAGE, AND HANDLING

- A. All Firestop materials must be delivered to the jobsite in original unopened containers, or bags bearing the name of the manufacturer, product name, type, grade, and UL® Classification Mark (or other acceptable approval or listing mark) where applicable.
- B. Coordinate delivery of materials with scheduled installation date to allow minimum storage time at jobsite.
- C. Storage of products shall comply with manufacturer's requirements for each product.
- D. Comply with recommended procedures, precautions or remedies as described in the Material Safety Data Sheets (MSDS) as applicable.

1.09 SEQUENCING AND SCHEDULING

- A. Other subcontractors under related sections of the Project Specification may create Firestopping requirements. The contractor shall:
 - 1. Identify all locations requiring firestopping
 - 2. Schedule installation of firestopping after completion of duct, piping, electrical runs, etc., but prior to the covering or concealing of openings, or eliminating access thereto.
 - 3. Schedule inspections of firestopping prior to the completion of this phase, floor or unit to avoid the concealment of these firestop installations from the inspectors during said inspection process.

PART 2. PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. EGS Nelson Firestop Products, Tulsa, OK. (800) 331-7325

2.02 MATERIALS

- A. Only firestop products that have been third party tested in accordance with ASTM E-814/UL1479; ASTM E-1966/UL2079 - for specific fire rated construction penetrations or construction joints shall be considered and used. Items shall be tested to specific parameters including the type and number of penetrating items, the size of the penetrating items, the maximum allowable annular space, joint width (& expansion/contraction), and rated for the hourly requirement of the structure.
- B. Acceptance products for the sealing of wall opening protection, UL (CLIV), such as electrical devices as provided for in the National Electrical Code, NFPA 70.
 - 1. Nelson FSP Firestop Putty Pad
 - 2. Nelson EBI Firestop Electrical Box Insert
- C. Acceptance products for sealing nominal openings with penetrations of non-combustible items including; cast and steel pipe, copper pipe, conduit, and electrical metallic tubing (EMT).
 - 1. Nelson ES-1399 Firestop Elastomeric Sealant
 - 2. Nelson CLK Firestop Silicone Sealant
 - 3. Nelson LBS3 Firestop Intumescent Latex Based Sealant

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2.02 MATERIALS (cont.)

- D. Acceptable product for sealing openings in area's requiring hazardous location protection as in Class 1 Division 1 locations, or in those which require an environmental seal against water or dust, or for clean room applications, or for those area's where cables - electrical/data telecommunications - require strain relief security against cable pull out.
1. Nelson MCT Firestop Multi-Cable Transit System Assemblies
 2. Nelson MPS Firestop Multi-Plug System Assemblies
- E. Acceptable products for sealing openings with penetrations of combustible items (penetrants which are consumed by high heat and fire) including; plastic pipe - PVC/CPVC etc., insulated metallic pipe, electric all data/telecommunications cable, cable bundles, in closed pipe systems.)
1. Nelson ES-1399 Firestop Elastomeric Sealant
 2. Nelson FSP Firestop Putty
 3. Nelson LBS3 Firestop Latex Based Sealant
 4. Nelson PCS Firestop Pipe Choke Systems/Devices
 5. Nelson PLW Firestop Pillows
 6. Nelson WRS3 Firestop Intumescent Wrap Strips & Restraining Collars
- F. Acceptable products for penetrations of combustible pipes in open pipe systems.
1. Nelson LBS3 Firestop Latex Based Sealant.
 2. Nelson PCS Firestop Intumescent Pipe Choke System Collar/Devices.
 3. Nelson WRS3 Firestop Intumescent Wrap Strips & Restraining Collars.
- G. Acceptable products for large size – complex penetrations which accommodate individual or combinations of cable trays, multiple steel or copper pipes, electrical conduits, busways, or electrical / data / telecommunications cables.
1. Nelson PLW Intumescent Firestop Pillows
 2. Nelson CPS Firestop Intumescent Composite Sheet
 3. Nelson CMP Firestop Mortar Compound
- H. Acceptable products for use in openings or gaps between structurally separate sections of walls and floors, and at the top of walls to ceilings tested in accordance to ASTM E-1399, E-1966 and/or UL2079.
1. Nelson CLK Firestop Non-Sag Silicone Sealant
 2. Nelson ES-1399 Firestop Elastomeric Sealant
 3. Nelson FSC3 Firestop Coating (3rd generation)
 4. Nelson LBS3 Firestop Latex Based Sealant
- I. Installer must provide a tested firestop system with an "F" rating which is equal to, or surpasses, the time requirements of the "F" rated construction barrier being penetrated. In lieu of third party testing for a particular installation a manufacturer's "Engineered Judgement" as determined by said manufacturers on *Staff-Graduate Engineer* shall be submitted, and considered acceptable. All determinations must comply with required results from ASTM E814 / UL 1479 test procedures for through penetrations and UL2079 for the test of head of wall joints, expansion joints, curtain wall joints and perimeter wall joints.

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PART 3. EXECUTION

3.01 EXAMINATION

- A. Verify those all-penetrating elements and supporting devices have been properly installed, and that all temporary lines, and markings, have been removed.

3.02 PREPARATION

- A. Provide drop clothes, or other satisfactory coverings for protection of adjacent areas in accordance with safe, and good work practices.
- B. Surfaces, which will be in contact with penetration seal materials, shall be clean and free of dust, dirt grease, oil, loose materials, rust or any other substances.

3.03 INSTALLATION

- A. Install penetration firestop seal materials in accordance with design requirements, and manufacturers installation procedures.
- B. Follow design requirements pertaining to cable separation.
- C. Follow manufacturer's recommendations to obtain a smooth, professional finish.
- D. If forms or damming materials are used, they shall be removed after the designated cure/dry time unless the support materials used are of a fire resistant, or noncombustible nature.
- E. All installed through penetration firestops shall be identified via label, or stencil. Label shall state that the fill material around the penetrating item is a firestop, and that it shall not be disturbed except by authorized personnel. The label shall include the firestop brand name, product type or catalog number, and the UL® classified system number for which it was installed.

3.04 REPAIRS AND MODIFICATIONS

- A. Identify damaged or re-entered seals requiring repair or modification.
- B. Remove loose or damaged materials.
- C. If penetrating items are to be added, remove sufficient material to insert new elements. Care must be used not to cause damage to the balance of the seal.
- D. Insure that surfaces to be sealed are clean and dry.
- E. Install materials in accordance with Paragraph 3.03 as required. Use only materials approved by manufacturer as suitable for repair of original seal. Never mix different manufacturer's products.

3.05 FIELD QUALITY CONTROL

- A. Examine firestop penetration seals for proper installation, labeling, adhesion, and curing as may be appropriate for the respective seal materials.
- B. Keep areas of work accessible and notify code authorities, or designated inspectors, of work completion released for inspection.
- C. Document completion, and inspection as required.

3.06 CLEAN-UP

- A. Remove equipment, excess materials, and debris, leaving area in a clean undamaged condition.