SECTION 260000 - THROUGH-PENETRATION FIRESTOPPING FOR ELECTRICAL SYSTEMS

1. GENERAL
	* + 1. RELATED DOCUMENTS
				1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			2. SUMMARY
				1. Section includes:

Penetrations in floor-ceiling assemblies.

Penetrations in roof-ceiling assemblies.

Penetrations in walls and partitions.

Penetrations in smoke barriers.

Construction enclosing compartmentalized areas.

* + - 1. SUBMITTALS
				1. Product Data: For each type of through-penetration firestop system product indicated.
				2. System Drawings: Submit documentation from a qualified third-party testing agency that is applicable to each through-penetration firestop system configuration for construction and penetrating items.
				3. Product Certificates: Certificate of conformance signed by manufacturers of through-penetration firestop system products certifying that products comply with requirements.
			2. QUALITY ASSURANCE
				1. Provide through-penetration firestop systems that comply with the following requirements and those specified in “Performance Criteria” Article:

Firestopping tests are performed by a qualified, testing and inspection agency. A qualified testing and inspection agency is UL, or another agency performing testing and follow-up inspection services for firestop systems acceptable to authorities having jurisdiction.

Through-penetration firestop system products bear classification marking of qualified testing and inspection agency.

* + - * 1. Engage an experienced installer who is certified, licensed or otherwise qualified by the firestopping manufacturer as having been provided the necessary training to install firestop products per specified requirements. A manufacturer’s willingness to sell its through-penetration firestop system products to Contractor or to an installer engaged by Contractor does not in itself confer qualifications on buyer.
				2. Obtain through-penetration firestop systems for each type of penetration and construction condition indicated from a single manufacturer.
				3. Conduct conference at Project site to comply with requirements in Division 01.
			1. DELIVERY, STORAGE AND HANDLING
				1. Deliver through-penetration firestop system products to Project site in original, unopened containers or packages with intact and legible manufacturer’s labels identifying product and manufacturer, date of manufacture; lot number; shelf life, if applicable; qualified testing and inspection agency’s classification marking; and mixing instructions for multicomponent materials.
				2. Store and handle materials for through-penetration firestop systems to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes.
			2. PROJECT CONDITIONS
				1. Do not install through-penetration firestop systems when ambient or substrate temperatures are outside limitations recommended by manufacturer.
				2. Do not install through-penetration firestop systems when substrates are wet due to rain, frost, condensation, or other causes.
				3. Do not use materials that contain flammable solvents.
				4. Do not install water-based or products that are conductive when wet in contact with energized electrical conductors. Exercise care when energizing penetrants.
			3. COORDINATION
				1. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
				2. Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.
				3. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
1. PRODUCTS
	* + 1. FIRESTOPPING, GENERAL
				1. Provide through-penetration firestop systems that are compatible with one another, with the substrates forming openings, and with the items, if any, penetrating through-penetration firestop systems, under conditions of service and application, as demonstrated by through-penetration firestop system manufacturer based on testing and field experience.
				2. Provide components for each through-penetration firestop system that are needed to install fill materials. Use only components specified by the firestopping manufacturer and approved by the qualified testing agency for the designated fire-resistance-rated systems.
			2. PERFORMANCE CRITERIA
				1. Fire Test Requirements:

ASTM E814, “Fire Tests of Penetration Fire Stops”.

ASTM E119, “Fire Tests of Building Construction and Materials”.

ASTM E84, “Surface Burning Characteristics of Building Materials”.

ASTM E1725, “Standard Test Methods for Fire Tests of Fire-Resistive Barrier Systems for Electrical System Components”.

UL 1479, “Fire Tests of Through Penetration Firestops”

UL 263, “Fire Tests of Building Construction and Materials”.

UL 723, “Surface Burning Characteristics of Building Materials”.

* + - * 1. References:

Underwriters Laboratories (UL); “Fire Resistance Directory”.

Through Penetration Firestop Systems (XHEZ)

Fill, Void or Cavity Materials (XHHW)

Firestop Devices (XHJI)

Forming Materials (XHKU)

All major building codes:

International Building Code published by ICC.

(Note to specifier: Retain or delete the building codes listed above as applicable).

National Fire Protection Association (NFPA); “NFPA 101: Life Safety Code”.

National Fire Protection Association (NFPA); “NFPA 70: National Electrical Code”.

* + - * 1. Performance Requirements:

Provide products that upon curing, do not re-emulsify, dissolve, leach, breakdown or otherwise deteriorate over time from exposure to atmospheric moisture, sweating pipes, ponding water or other forms of moisture characteristic during and after construction.

Openings within walls and floors designed to accommodate cabling systems subjected to frequent cable changes shall be provided with re-enterable products specifically designed for retrofit.

* + - 1. MANUFACTURERS
				1. Subject to compliance with through-penetration firestop systems (XHEZ) listed in Volume 2 of the UL Fire Resistance Directory, provide products of the following manufacturers as identified below:

Acceptable Manufacturer: Specified Technologies Inc., 210 Evans Way, Somerville, NJ 08876. Tel: (800) 992-1180, Fax: (908) 526-9623, Email: specseal@stifirestop.com, Website: [www.stifirestop.com](http://www.stifirestop.com/).

Substitutions: Not permitted.

* + - * 1. Single Source: Obtain firestop systems for each type of penetration and construction condition indicated only from a single manufacturer.
			1. MATERIALS
				1. General: Use only through-penetration firestop system products that have been tested for specific fire-resistance-rated construction conditions conforming to construction assembly type, penetrating item type, annular space requirements, and fire-rating involved for each separate instance.
				2. Latex Sealants: Single component latex formulations that upon cure do not re-emulsify during exposure to moisture, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSS Intumescent Sealant

Specified Technologies, Inc. (STI) SpecSeal Series LCI Intumescent Sealant

Specified Technologies, Inc. (STI) SpecSeal Series LC Endothermic Sealant

* + - * 1. Firestop Devices: Factory-assembled steel collars lined with intumescent material sized to fit specific outside diameter of penetrating item, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSC Firestop Collars

Specified Technologies, Inc. (STI) SpecSeal Series LCC Firestop Collars

* + - * 1. Firestop Putty: Intumescent, non-hardening, water resistant putties containing no solvents, inorganic fibers or silicone compounds, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSP Firestop Putty

* + - * 1. Firestop Putty Pads: Intumescent, non-hardening putty pads to be installed on metallic and nonmetallic electrical switch and receptacle boxes to reduce horizontal separation between boxes to less than 24”, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSP Firestop Putty Pads

* + - * 1. Wrap Strips: Single component intumescent elastomeric strips faced on both sides with a plastic film, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series RED2 Wrap Strip

Specified Technologies, Inc. (STI) SpecSeal Series BLU2 Wrap Strip

Specified Technologies, Inc. (STI) SpecSeal Series 1000EX Wrap Strip

* + - * 1. Firestop Pillows: Re-enterable, non-curing, mineral fiber core encapsulated with an intumescent coating contained in a flame retardant poly bag. Pillows shall require no modification such as cutting or shaving in order to maintain fire and leakage ratings. The following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSB Firestop Pillows

* + - * 1. Firestop Blocks: Intumescent Urethane foam blocks used for medium and large openings as well as complex penetrations made to accommodate cables, cable trays, and various pipe constructions. The intumescent foam blocks may be used in both temporary or permanent applications. The following products are acceptable:

1. Specified Technologies, Inc. (STI) SpecSeal Series SBR Firestop Blocks

* + - * 1. Mortar: Portland cement based dry-mix product formulated for mixing with water at Project site to form a non-shrinking, water-resistant, homogenous mortar, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series SSM Firestop Mortar

* + - * 1. Silicone Sealants: Moisture curing, single component, silicone elastomeric sealant for horizontal surfaces (pourable or nonsag) or vertical surface (nonsag), the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal SIL300 Silicone Firestop Sealant

Specified Technologies, Inc. (STI) SpecSeal SIL300SL Self-Leveling Silicone Firestop Sealant

* + - * 1. Composite Sheet: Intumescent material sandwiched between a galvanized steel sheet and steel wire mesh protected with aluminum foil, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal CS Composite Sheet

* + - * 1. Cast-In Place Firestop Device: Molded plastic sleeve with integral, encapsulated, tamper-proof, intumescent firestop system and smoke- and water-sealing gasket, installed on forms prior to concrete placement. Plastic body to accommodate concrete thicknesses from 2-1/2 to 36 inches. A single device may be used for both metal and plastic piping accommodating heights up to 8” via cutting or for heights over 8” with extensions utilizing an adjustable pin. The sleeve is bidirectional and is designed to allow for both floor and ceiling penetration. Class I W-Rating per UL 1479 without the use of plugs, sealants, or any other additional materials. The following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal CID Cast-In Firestop Device

* + - * 1. Firestop Plugs: Re-enterable, foam rubber plug impregnated with intumescent material for use in blank openings and cable sleeves, the following products are acceptable:

Specified Technologies, Inc. (STI) SpecSeal Series FP Intumescent Firestop Plug

* + - * 1. Fire rated cable pathway devices shall be used in fire-rated construction for ALL low-voltage, video, data and voice cabling, optical fiber raceways and certain high-voltage cabling where frequent cable moves, adds and changes may occur. Pathways required for high voltage cabling will be detailed on the prints. Such devices shall:

Meet the hourly fire-rating of fire rated wall and or floor penetrated.

Be tested for the surrounding construction and cable types involved.

Have UL Systems permitting cable loads from; “Zero to 100% Visual Fill.” This requirement eliminates need for fill-ratio calculations to be made by cable technicians to ensure cable load is within maximum allowed by UL System.

Be “Maintenance-Free”, having a corresponding Evaluation Services Report from a Nationally Recognized Third Party Laboratory. Maintenance-Free is defined as; No action required by cabling technician to open and/or close pathway for cable moves, adds or changes, such as, but not limited to:

Opening or closing of doors.

Spinning rings to open or close fabric liner.

Removal and or replacement of any material such as, but not limited to, firestop caulk, putty, pillows, bags, foam muffins, foam, foam plugs, foam blocks, or foam closures of any sort.

Evaluation Services Report (ESR) from an accredited Nationally Recognized Third-party Laboratory certifying compliance with this definition of “Maintenance-Free” and all relevant codes and standards.

Pathways shall be engineered such that two or more devices may be ganged together for larger cable capacities.

Pathways shall be engineered to be re-enterable so they can be retrofitted and removed from around existing cables without cutting and re-splicing them.

Affix adhesive wall label immediately adjacent to devices to communicate to future cable technicians, authorities having jurisdiction and others the manufacturer of the device and the corresponding UL System number installed.

* + - * 1. Non-rated cable pathway devices shall be used in non-fire-rated construction for all low-voltage, video, data and voice cabling, optical fiber raceways and certain high-voltage cabling where frequent cable moves, adds and changes may occur. Pathways required for high voltage cabling will be detailed on the prints. Such devices shall:

Limit the movement of smoke and sound of wall and or floor penetrated.

Restore the STC Rating of the penetrated assembly.

Provide L Ratings of greater than 1 CFM when empty and greater than 2.5 CFM at all other loading up to 100 percent.

Accommodate cable loads from; “Zero to 100% Visual Fill.”

Not have inner fabric liner that tightens around and compresses cables tightly together encouraging potential cable damage or interference.

Be “Maintenance-Free”, maintenance-free is defined as; No action required by cabling technician to open and/or close pathway for cable moves, adds or changes, such as, but not limited to:

Opening or closing of doors.

Spinning rings to open or close fabric liner.

Removal and or replacement of any material such as, but not limited to, firestop caulk, putty, pillows, bags, foam muffins, foam, foam plugs, foam blocks, or foam closures of any sort.

Furnish letter from manufacturer certifying compliance with this definition of “Zero-Maintenance”.

Pathways shall be engineered such that two or more devices may be ganged together for larger cable capacities.

Pathways shall be engineered to be re-enterable so they can be retrofitted and removed from around existing cables without cutting and re-splicing them.

Affix adhesive wall label immediately adjacent to devices to communicate to future cable technicians, authorities having jurisdiction and others the manufacturer of the device and the corresponding UL System number installed.

* + - * 1. Fire-Rated Cable Grommet: Molded two-piece grommet made from plenum grade polymer with a foam inner core for sealing individual cable penetrations up to 0.27 in. (7 mm) diameter. Grommets shall be tested in single membrane or through-penetration conditions. The following products are acceptable:

Specified Technologies, Inc. (STI) EZ-Firestop Grommet

* + - * 1. Protective Wrap: Endothermic Wrap incorporating foil scrim evaluated for protection of cable pathways, liquid fuel lines, as well as in through-penetration and membrane-penetration firestopping. Testing to incorporate protection of Electrical Metallic Tubing (EMT), Rigid Metallic Conduit (RMC), Cable Trays, single and/or multi containment liquid fuel lines. Wrap to have a maximum weight of no greater than 1.4 lbs/ft2 and allow for the use of steel tie wire when installed around piping, conduits, and/or cable trays. The following products are acceptable:

Specified Technologies, Inc. (STI) E-Wrap™ Endothermic Wrap

1. EXECUTION
	* + 1. PREPARATION
				1. Examination of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
				2. Surfaces to which firestop materials will be applied shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellents, and any other substances that may inhibit optimum adhesion.
				3. Provide masking and temporary covering to prevent soiling of adjacent surfaces by firestopping materials.
				4. Do not proceed until unsatisfactory conditions have been corrected.
			2. THROUGH-PENETRATION FIRESTOP SYSTEM INSTALLATION
				1. General Requirements: Install through-penetration firestop systems in accordance with “Performance Criteria” Article and in accordance with the conditions of testing and classification as specified in the published design.
				2. Manufacturer’s Instructions: Comply with manufacturer’s instructions for installation of through-penetration firestop systems products.

Seal all openings or voids made by penetrations to ensure an air and water-resistant seal.

Protect materials from damage on surfaces subjected to traffic.

* + - 1. FIELD QUALITY CONTROL
				1. Inspections: Owner shall engage a qualified independent inspection agency to inspect through-penetration firestop systems.
				2. Keep areas of work accessible until inspection by authorities having jurisdiction.
				3. Where deficiencies are found, repair or replace through-penetration firestop systems so they comply with requirements.
			2. ADJUSTING AND CLEANING
				1. Remove equipment, materials and debris, leaving area in undamaged, clean condition.
				2. Clean all surfaces adjacent to sealed openings to be free of excess through-penetration firestop system materials and soiling as work progresses.

END OF SECTION