(Note: In the design using EZ-Path - do not pass cable tray through wall: Coordinate with drawings to show cable tray terminating at wall or floor and resuming on other side.)

SECTION 270528.28 - FIRESTOPPING, SMOKE, AND ACOUSTICAL SEALING TELECOMMUNICATIONS AND DATA CABLING

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. This section includes labor, materials and equipment necessary to complete the installation required for the items specified under this Section, including but not limited to:

Firestopping of Through Penetrations in Fire Rated Assemblies.

Smoke and Acoustical Sealing in Non-Rated Assemblies.

(Note: Coordinate drawings to show cable tray terminating at wall or floor and resuming on other side.)

* + - 1. SUBMITTALS
				1. Product Data: Provide manufacturer’s standard catalog data for specified products demonstrating compliance with referenced standards and listing numbers of systems in which each product is to be used.
				2. Schedule of UL System Drawings for Fire Rated Construction: Submit schedule of all expected opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance ratings.
				3. UL System Drawings for Fire Rated Construction: Furnish copies of all UL Systems identified in schedule above. Include any engineering recommendations.
				4. Certificates: Product Certificate of Compliance from the by manufacturer certifying material compliance with applicable code and specified performance characteristics.
				5. Installation Instructions: Submit manufacturer’s printed installation instructions.
			2. QUALITY ASSURANCE
				1. Products/Systems: Provide firestopping systems that comply with the following requirements:

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 system acceptable to authorities having jurisdiction.

Firestopping products bear the classification marking of qualified testing and inspection agency.

* + - * 1. Installer Qualifications: Experience in performing work of this section who is qualified by the firestopping manufacturer as having been provided the necessary training to install firestop products in accordance with specified requirements.
			1. DELIVERY, STORAGE, AND HANDLING
				1. Delivery:

Manufacturer’s original, unopened, undamaged containers, identification labels intact identifying product and manufacturer, date of manufacture; lot number; shelf life, if applicable; qualified testing and inspection agency’s classification marking; and mixing instruction for multi-component products.

Handle and store products according to manufacturer’s recommendations published in technical materials. Leave products wrapped or otherwise protected and under clean and dry storage conditions until required for installation.

* + - * 1. Storage and Protection:

Store materials protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer.

* + - 1. PROJECT CONDITIONS
				1. Do not install products when ambient or substrate temperatures are outside limitations recommended by manufacturer.
				2. Do not install products when substrates are wet due to rain, frost, condensation, or other causes.
				3. Do not use materials that contain flammable solvents.
				4. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
				5. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.
				6. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings
1. PRODUCTS
	* + 1. PERFORMANCE REQUIREMENTS
				1. References:

ANSI/TIA-1179-A “Healthcare Facility Telecommunications Infrastructure”.

ANSI/TIA-EIA-569-D “Telecommunications Pathways and Spaces”

ASTM E90, “Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements”.

ASTM E814, “Fire Tests of Through Penetration Firestops”.

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

CAN/ULC S115, "Standard Method of Fire Tests of Firestops Systems."

UL 1479, “Fire Tests of Through Penetration Firestops”.

National Fire Protection Association (NFPA) – NFPA 101: Life Safety Code.

National Fire Protection Association (NFPA) – NFPA 70: National Electrical Code.

Underwriters Laboratories Inc. (UL) – Fire Resistance Directory

* + - * 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. As an alternate to using a fire-rated or non-rated cable pathway device for a single or tow low voltage cables (up to an aggregate cross sectional area of 0.52 in. (14mm) O.D.) penetrating one or two-hour, gypsum board/stud wall assemblies or non-rated assemblies, either as a through-penetration or as a membrane-penetration, a fire-rated cable grommet may be substituted. The product shall consist of a molded, two-piece, plenum-rated grommet having a foam fire and smoke sealing membrane that conforms to the outside diameter of the individual cable. The grommet product shall be capable of locking into place to secure the cable penetration within the wall assembly. The grommet shall be UL Classified and tested to the requirements of ASTM E814 (UL 1479) and CAN/ULC S115.
				2. Where non-mechanical pathways must be utilized, such as sealing (caulking) around single or grouped conduits, provide products that upon curing do no 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 or after construction. Provide letter from manufacturer certifying compliance with this section.
				3. Cable pathway shall replace conduit sleeves in walls and floors, and the following;

When installed individually in floors, devices shall pass through core-drilled or preformed opening utilizing tested floor plates.

When multiple units are ganged in floors, devices shall be anchored by means of a tested grid.

When installed individually in walls, devices shall pass through core drilled opening utilizing tested wall plates or integrated flanges.

When multiple units are ganged in walls, devices shall be anchored by means of a tested adjustable gang bracket.

* + - * 1. Cable tray shall terminate at each barrier and resume on the other side such that cables pass independently through devices. Cable tray shall be properly supported on each side of the barrier.
			1. MANUFACTURERS
				1. Acceptable Manufacturer: Specified Technologies Inc., 210 Evans Way, Somerville, NJ 08876. Tel: (800) 992-1180, Fax: (908) 526-9623, Email: techserv@stifirestop.com, Website: [www.stifirestop.com](http://www.stifirestop.com).
				2. Substitutions: Not permitted. No known equal.
				3. Single Source: Obtain firestop systems for each type of penetration and construction condition indicated only from a single manufacturer.
			2. MATERIALS
				1. General: Use only products that have been tested for specific fire resistance rated construction conditions or acoustical and smoke related requirements conforming to construction assembly type, penetrating item type, annular space requirements, and rating involved for each separate instance.
				2. Firestop 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 Sealant.

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

* + - * 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 Putty.

* + - * 1. Firestop Pillows: Re-enterable, non-curing, mineral fiber core encapsulated on six sides with intumescent coating contained in a flame retardant poly bag, the following products are acceptable:

Specified Technologies Inc. (STI) SpecSeal Series SSB 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:

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

* + - * 1. Fire-Rated Cable Grommet: Molded, two-piece grommet with an integral fire and smoke sealing foam membrane for sealing individual cable penetrations through framed wall assemblies. Grommet snaps together around cable and locks tightly into the wall.

Specified Technologies Inc. (STI) EZ-Firestop Grommets.

* + - * 1. Fire-Rated Cable Pathways: Device modules comprised of steel pathway with self-adjusting intumescent foam pads allowing 0 to 100 percent cable fill, the following products are acceptable:

Specified Technologies Inc. (STI) EZ-PATH Fire Rated Pathway.

* + - * 1. Smoke and Acoustical Pathways: Device module comprised of a nonmetallic pathway with integral self-adjusting smoke and sound sealing system for cable penetrations through non-fire-resistance rated wall or floor assemblies, the following products are acceptable:

Specified Technologies Inc. (STI) EZ-PATH Smoke & Acoustical Pathway.

* + - * 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. EXAMINATION
				1. Before beginning installation, verify that substrate conditions previously installed under other sections are acceptable for installation of firestopping in accordance with manufacturer’s installation instructions and technical information.
				2. Surfaces shall be free of dirt, grease, oil, scale, laitance, rust, release agents, water repellants, and any other substances that may inhibit optimum adhesion.
				3. Provide masking and temporary covering to protect adjacent surfaces.
				4. Do not proceed until unsatisfactory conditions have been corrected.
			2. INSTALLATION
				1. General: Install systems in accordance with Performance Criteria 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 products.
			3. FIELD QUALITY CONTROL
				1. Keep areas of work accessible until inspection by authorities having jurisdiction.
				2. Where deficiencies are found, repair firestopping products so they comply with requirements.
			4. 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 firestopping materials and soiling as work progresses.
			5. SCHEDULES

(Note: Review this list and update as required, Contact STI for assistance)

| Penetrant Type | Concrete Floor | Concrete Wall | Gypsum Board Wall |
| --- | --- | --- | --- |
|  |  |  |  |
| Blank Opening | C-AJ-0100, C-AJ-0101, C-AJ-0113, C-AJ-0116 | C-AJ-0100, C-AJ-0101, C-AJ-0113, C-AJ-0116 | W-L-0020, W-L-0034 |
| Metal Conduits | C-AJ-1080, C-AJ-1240, C-AJ-1353 | C-AJ-1080, W-J-1098, W-J-1100 | W-L-1049, W-L-1222, W-L-1168 |
| Plastic Conduits/Raceways | C-AJ-2140, C-AJ-2292, F-A-2186, F-A-2210, F-A-2225 | C-AJ-2038, C-AJ-2108, C-AJ-2578, C-AJ-2586, W-J-2018, W-J-2076 | W-L-2059, W-L-2074, W-L-2093, W-L-2241 |
| Cables | C-AJ-3214, C-AJ-3231, F-A-3015, F-A-3021, F-A-3054 | C-AJ-3214, C-AJ-3231, W-J-3098, W-J-3099,W-J-3124, W-J-3150, W-J-3180 | W-L-3219, W-L-3248, W-L-3287, W-L-3356, W-L-3377, W-L-3378, W-L-3379, W-L-3390 |
| Cable Trays | C-AJ-3317, C-AJ-8181, C-AJ-4029, F-A-3015, F-A-3037 | C-AJ-8181, W-J-4021, W-J-4022, W-J-4033, W-J-3098, W-J-3145, W-J-3158 | W-L-3218, W-L-3271, W-L-3286, W-L-3306, W-L-4008, W-L-4029, W-L-4043, W-L-8073 |

* + - 1. DOCUMENTATION
				1. Place system stickers on each side of wall penetrations.
				2. Place a reproduction (photo copy) of the UL System description in a document protector and mount to the wall next to the wall penetration

Highlight the section of the system description that list the allowed cable types.

END OF SECTION