
SECTION 07840 - FIRESTOPPING AND SMOKE BARRIER CAULKING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes sealant joints in fire rated construction at wall, partition and ceiling penetrations including both empty openings and openings containing cables, ducts, conduits, and other penetrating items.
- B. Related Sections:
 - 1. 03300 - Cast-In-Place Concrete.
 - 2. 04000 - Concrete Unit Masonry.
 - 3. 09250 - Gypsum Wallboard.
 - 4. Division 15
 - a. Automatic Sprinkler Systems.
 - b. Piping (Plumbing).
 - c. Piping (HVAC).
 - d. Ductwork.
 - e. HVAC Control System
 - 5. Division 16 - Raceways and Conduits.

1.02 REFERENCE STANDARDS

- A. Except as otherwise specified herein or shown on the Drawings, comply with the latest editions of all applicable codes and regulations including the applicable requirements of the following Reference Standards and Codes which are hereby made a part of this Section, as they relate to the firestopping and smoke barrier caulking.
 - 1. BOCA Building Code, latest Edition.
 - 2. American Society for Testing and Materials (ASTM):
 - a. E84-96a Test method for Surface Burning Characteristics of Building Materials.
 - b. E119-95a Test Methods for Fire Tests of Building Construction and Materials.
 - c. E814-94b Test Method for Fire Tests of Through-penetration Fire Stops.
 - 3. Underwriters Laboratories,(UL) 1479 and 2079.

1.03 SYSTEM PERFORMANCE REQUIREMENTS

- A. General: Provide firestopping systems that are produced and installed to resist the spread of fire and the passage of smoke and other gases.
- B. F-Rated Through-Penetrating Firestop Systems: Provide through-penetration firestop systems with F ratings indicated, as determined per ASTM E814, but not less than that equaling or exceeding the fire-resistance rating of the constructions penetrated.
- C. Fire-Resistive Joint Sealants: Provide joint sealants with fire-resistance ratings indicated, as determined per ASTM E119, but not less than that equaling or exceeding the fire-resistance rating of the construction in which the joint occurs.
- D. For Firestopping Exposed to View, Moisture, and Physical Damage: Provide products that do not deteriorate when exposed to these conditions.
 - 1. For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
 - 2. For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- E. For Firestopping Exposed to View: Provide products with flame-spread values of less than 25 and smoke-developed values of less than 450, as determined per ASTM E84.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who is certified, licensed, or otherwise qualified by the firestopping manufacturer as having the necessary experience, staff, and training to install manufacturer's products per specified requirements.
- B. Single-Source Responsibility: Obtain through-penetration firestop systems for each kind of penetration and construction condition indicated from a single manufacturer.
- C. Materials:
 - 1. Fire safing insulation, fire and smoke barrier caulk, putty, fire barrier wrap/strips, fire prevention pillows, fire barrier partitions, fire barrier covers complete with necessary metal clips, supports, fastenings, and covers shall meet ASTM E814 for a [2] [3] hour fire rating for floors and roofs and [1] [2] [3] hour fire rating for fire walls as indicated.
 - 2. Materials shall be listed in UL Building Materials Directory - Through Penetration Fire Stops Systems and Fill Void or Cavity Materials.
 - 3. Firestopping materials shall not contain lead, PCBs, ethylene glycol, or lead.
 - 4. Products containing solvents or requiring hazardous waste disposal are not allowed.
 - 5. Provide firestopping products containing no detectable asbestos as determined by the method specified in 40 CFR Part 763, Subpart F, Appendix A, Section 1,

"Polarized Light Microscopy."

- D. Fire-Test-Response Characteristics: Provide firestopping that complies with the following requirements and those specified under paragraph 1.03 of this Section:
1. Firestopping tests are performed by a qualified testing and inspecting agency such as UL, or another agency performing testing and follow-up inspection services for firestop systems that is acceptable to authorities having jurisdiction.
 2. Through-penetration firestop systems are identical to those tested per ASTM E814 under conditions where positive furnace pressure differential of at least 0.01 inch of water (2.5Pa) is maintained at a distance of 0.78 inch below the fill materials surrounding the penetrating items in the test assembly. Provide rated systems complying with the following requirements:
 - a. Through-penetration firestop system products bear classification marking of qualified testing and inspecting agency.
 - b. Through-penetration firestop systems correspond to those indicated by reference to through-penetration firestop system designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
 3. Fire-resistive joint sealant systems are identical to those tested for fire-response characteristics per ASTM E119 under conditions where the positive furnace pressure differential is at least 0.01 inch of water (2.5Pa), as measured 0.78 inch from the face exposed to furnace fire. Provide systems complying with the following requirements:
 - a. Fire-resistance ratings of joint sealants: As indicated by reference to design designations listed by UL in their "Fire Resistance Directory" or by another qualified testing and inspecting agency.
 - b. Joint sealants, including backing materials, bear classification marking of qualified testing and inspecting agency.
- E. Coordinating Work: Coordinate construction of openings and penetrating items to ensure that designated through-penetration firestop systems are installed per specified requirements.

1.05 SUBMITTALS

- A. Submit properly identified product data including material specifications, published installation details, material safety data sheets (MSDS), and directions. Provide UL classified fire test data for each slab edge, floor penetration, and fire wall penetration condition.
- B. Provide certification by firestopping manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs) and are nontoxic to building occupants.
- C. Shop drawings detailing materials, installation methods, and relationships to adjoining

construction for each through-penetration firestop system, and each kind of construction condition penetrated and kind of penetrating item. Include firestop design designation of qualified testing and inspecting agency evidencing compliance with requirements for each condition indicated.

1. Submit documentation, including illustrations, from a qualified testing and inspecting agency that is applicable to each through-penetration firestop configuration for construction and penetrating items.
- D. Product certificates signed by manufacturers of firestopping products certifying that their products comply with specified requirements.
- E. Product test reports from, and based on tests performed by, a qualified testing and inspecting agency evidencing compliance of firestopping with requirements based on comprehensive testing of current products.
- F. Qualification data for firms and persons specified in "Quality Assurance" article to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of Residents and Owners, and other information specified.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver firestopping products to Project site in original, unopened containers or packages with intact and legible manufacturers' labels identifying product and manufacturer; date of manufacture; lot number; shelf life, if applicable; qualified testing and inspecting agency's classification marking applicable to Project; curing time; and mixing instructions for multicomponent materials.
- B. Store and handle firestopping materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants, or other causes.

1.07 PROJECT CONDITIONS

- A. Environmental Conditions: Do not install firestopping when ambient or substrate temperatures are outside limits permitted by firestopping manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.
- B. Ventilation: Ventilate firestopping per firestopping manufacturers' instructions by natural means or, where this is inadequate, forced air circulation.

1.08 PROTECTION

- A. Protect finished firestopping and fire retardant caulking from tears and punctures. Replace torn or pierced firestopping and caulking material.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. Firestopping and Smoke Barrier Caulking:

1. AD Firebarrier.
2. Bio Fireshield Inc.
9. Dow Corning Corp..
3. Enerstop.
5. General Electric Co.
4. Hilti Construction Chemicals Inc.
6. International Protective Coatings Corp.
6. Specified Technologies Inc.(STI)
7. 3M Fire protection Products.
7. The RectorSeal Corporation.
8. Thermal Ceramics.
8. Tremco.
5. U.S. Gypsum Company (USG).

2.02 FIRESTOPPING GENERAL

- A. Compatibility: Provide firestopping composed of components that are compatible with each other, the substrates forming openings, and the items, if any, penetrating the firestopping under conditions of service and application, as demonstrated by firestopping manufacturer based on testing and field experience.

2.03 FILL MATERIALS

- A. Ceramic Fiber and Mastic Coating: Ceramic fibers in bulk form formulated for use with mastic coating, and ceramic fiber manufacturer's mastic coating.
1. FireMaster Bulk and FireMaster Mastic, Thermal Ceramics.
- B. Ceramic Fiber Sealant: Single component formulation of ceramic fibers and inorganic binders.
1. Metacaulk 525, The RectorSeal Corporation.
- C. Endothermic Latex Compound Sealant: Single-component, endothermic, latex formulation.
1. Fyre-Shield, Tremco Inc.
 2. Flame-Safe FS500/600 Series, International Protective Coatings Corp.
 3. Flame-Safe FS900/FST900 Series, International Protective Coatings Corp.
- D. Intumescent Latex Sealant: Single-component, intumescent, latex formulation.

1. Metacaulk 950, The RectorSeal Corporation.
 2. Fire Barrier CP 25WB Caulk, 3M Fire Protection Products.
- E. Intumescent Putty: Nonhardening, dielectric, water resistant putty containing no solvents, inorganic fibers, or silicone compounds.
1. Pensil 500 Intumescent Putty, General Electric Co.
 2. Flame-Safe FSP1000 Putty, International Protective Coatings Corp.
 3. Fire Barrier Moldable Putty, 3M Fire Protection Products.
- F. Intumescent Wrap Strips: Single-component, elastomeric sheet with aluminum foil on one side.
1. Dow Corning Fire Stop Intumescent Wrap Strip 2002, Dow Corning Corp.
 2. CS2420 Intumescent Wrap, Hilty Construction Chemicals, Inc.
 3. Fire Barrier FS-195 Wrap/Strip. 3M Fire Protection Products.
 4. Intumescent Wrap Strip, Tremco.
- G. Job-Mixed Vinyl Compound: Prepackaged vinyl-based powder product for mixing with water at Project site to produce a paintable compound, passing ASTM E136, with flame spread and smoke development ratings of zero per ASTM E84.
1. USG Firecode Compound, United States Gypsum Co.
- H. Mortar: Prepackaged dry mix composed of a blend of inorganic binders, fillers, and lightweight aggregate formulated for mixing with water at the Project site to form a non-shrinking, homogeneous mortar.
1. K-2 Firestop Mortar, Bio Fireshield, Inc.
 2. Novasit K-10 Firestop Mortar, Bio Fireshield, Inc.
 3. KBS-Mortar Seal, International Protective Coatings Corp.
- I. Silicone Foams: Two-component, silicone-based liquid elastomer that , when mixed, expands and cures in place to produce a flexible, non-shrinking foam.
1. Dow Corning Fire Stop Foam 2001, Dow Corning Corp.
 2. Pensil 200 Foam, General Electric Co.
- J. Silicone Sealant: Moisture-curing, single-component, silicone-based, neutral-curing elastomeric sealant of Grade for Horizontal Surfaces (Pourable, self-leveling grade for openings in floors and other horizontal surfaces), and Grade for Vertical Surfaces (Nonsag grade for openings in vertical and other surfaces).
1. Dow Corning Firestop Sealant 2000, Dow Corning Corp.

2. Dow Corning Firestop Sealant SL2003, Dow Corning Corp.
 3. Pensil 100 Firestop Sealant, General Electric Co.
 4. CS240 Firestop Sealant, General Electric Co.
 5. Metacaulk 835, The RectorSeal Corporation.
 6. Metacaulk 880, The RectorSeal Corporation.
 7. Fyre-Sil, Tremco Inc.
 8. Fyre-Sil S/L, Tremco Inc.
- K. Solvent-Release-Curing Intumescent Sealants: Solvent-release-curing, single-component, syntetic-polymer-based sealant of Grade for Horizontal Surfaces (Pourable, self-leveling grade for openings in floors and other horizontal surfaces) and Grade for Vertical Surfaces (Nonsag grade for openings in vertical and other surfaces).
1. Biostop 500 Intumescent Firestop Caulk, Bio Fireshield, Inc.
 2. Fire Barrier CP 25N/S Caulk, 3M Fire Protection Products.
 3. Fire Barrier CP 25S/L Caulk, 3M Fire Protection Products.
- L. Fire and Smoke Barrier Caulk:
1. AD Firebarrier Silicone.
 2. Biotherm 100/200 Sealant, Bio Fireshield Inc.
 3. 100 SL Sealant, 200 G Sealant, 300 C Compound, Enerstop.
 4. FS 601 Sealant, FS 604 Sealant, FS-ONE Hilti Construction Chemicals Inc.
 5. Spec Seal Series 100, STI.
 6. Pensil 300, General Electric Co.
- M. Fire Barrier Wrap/Strip:
1. Biostop Wrap Strip, Bio Fireshield Inc.
 2. 400 MW Mineral Wool, 600 P.I. Pipe Insulation, Enerstop.
 3. Spec Seal Wrap/Strip, STI.
- N. Trowelable Fire Barrier Compound:
1. AD Firebarrier Silicone.
 2. FS 635, Hilti Construction Chemicals Inc.
 3. Spec Seal mortar, putty, putty pads, STI.
- 2.04 ACCESSORIES
- A. Provide components for each firestopping system that are needed to install fill materials and to comply with this Section. Use only components specified by the firestopping manufacturer and approved by the qualified testing and inspecting agency for the designated fire-resistance-rated system. Accessories include but are not limited to the following items:

1. Fire Safing Insulation:
 - a. USG Thermafiber safing insulation complete with impaling clips for slab edges and firestop sealant.
 - b. Accepted equivalent.
2. Sheet Metal Fire Barrier Restricting Collars: Provide suitable galvanized bolts and expansion anchors.
 - a. STI: Spec Seal metal restraining collars.
 - b. 3M: Restricting Collar RC-1.
 - c. Tremco: MCR.
3. Prefabricated Firestop Collar:
 - a. AD Firebarrier Collars.
 - b. Bio Fireshield: Biostop Pipe Collar.
 - c. Hilti: CP 642.
 - d. STI: Spec Seal plastic pipe collars.
 - e. 3M: PPD.
 - f. Tremco: Tremstop D Firestop Collars.
4. Fire Prevention Pillows: Meeting ASTM E814 requirements and classified by UL.
 - a. Bio Fireshield: Bio Firestop Pillows.
 - b. Hilti: FS 657 Fire Block.
 - c. STI: Spec Seal.
 - d. Tremco: Tremstop.
5. Fire and Smoke Barrier Spray.
 - a. Bio Fireshield: Biostop 700, Biostop 750.
 - b. 3M: Fire Dam Spray.
 - c. Accepted equivalent.
6. Hose Clamps for Restricting Collars: Standard galvanized steel or stainless steel hose clamps.
7. Fire Barrier Partitions and Covers: 3M type PSS-7904 R device complete with front and back covers of 3M composite sheet CS-195 or accepted equivalent, all necessary related galvanized steel supports, cover plates and fastenings.
8. Metal Supports for Firesafing "Packing Material":
 - a. 30 gage by 1 inch wide galvanized sheet steel "Z" shaped clips to support

- "packing material" around floor penetrations.
- b. 10 gage galvanized steel wire hat shaped support hangers to support "damming material" or "packing material" at floor penetrations.
- c. Hardware cloth of 19 gage galvanized 1/2" mesh wire.

PART 3 EXECUTION

3.01 EXAMINATION

- B. Examine substrates and conditions, with Installer present, for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance of firestopping. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Surface Cleaning: Clean out openings and joints immediately prior to installing firestopping to comply with recommendations of firestopping manufacturer and the following requirements:
 - 1. Remove all foreign materials from surfaces of opening and joint substrates and from penetrating items that could interfere with adhesion of firestopping.
 - 2. Clean opening and joint substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestopping. Remove loose particles remaining from cleaning operation.
 - 3. Remove laitance and form release agents from concrete.
 - 4. Masonry, concrete, and gypsum board surfaces shall be smooth, clean, and free of loose debris, holes, and projections.

3.03 APPLICATION

- A. Through-Penetration Firestops:
 - 1. General: Comply with this Section and firestop manufacturer's installation instructions and drawings pertaining to products and applications indicated.
 - 2. Install forming/damming materials and other accessories of types required to support fill materials during their application and in the position needed to produce the cross-sectional shapes and depths required to achieve fire ratings of designated through-penetration firestop systems. After installing fill materials, remove combustible forming materials and other accessories not indicated as permanent components of firestop systems.
 - 3. Install fill materials for through-penetration firestop systems by proven techniques to produce the following results:
 - a. Completely fill voids and cavities formed by openings, forming

- materials, accessories, and penetrating items.
 - b. Apply materials so they contact and adhere to substrates formed by openings and penetrating items.
 - c. For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.
- B. Fire-Resistive Joint Sealants:
 - 1. General: Comply with this Section, with ASTM C 1193, and with the sealant manufacturer's installation instructions and drawings pertaining to products and applications indicated.
 - 2. Install joint fillers to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability and develop fire-resistance rating required.
 - 3. Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint width that optimum sealant movement capability. Install sealants at the same time joint fillers are installed.
 - 4. Tool non-sag sealants immediately after sealant application and prior to the time skinning or curing begins. Form smooth, uniform beads of configuration indicated or required to produce fire-resistance rating, as well as to eliminate air pockets, and to ensure contact and adhesion of sealants with sides of joint. Remove excess sealant from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
- C. Apply fire safing insulation, fire and smoke barrier caulk, and fire barrier wrap/strips according to manufacturer's published installation details, directions, UL classified fire test data, and as specified.
- D. Gaps at Floor and Roof Edges Abutting Exterior Walls:
 - 1. Install specified fire safing insulation continuously at each floor level above first floor and at roof between back of precast concrete wall panels, concrete beams, and columns of depth to achieve a [2] and [3] hour minimum fire resistance according to manufacturer's directions.
 - 2. Install fire stop insulation across exterior faces of columns at each floor level above first floor including roof before erection of precast concrete wall panels. Secure insulation in place across columns with suitable waterproof adhesive with flame spread rating of 25 or less and with impaling clips at each side of columns.
 - 3. Secure fire safing insulation to exterior faces of slab edges and beams with suitable impaling clips spaced 24 inches o.c. and adhesive with flame spread rating of 25 or less.
 - 4. Provide fire safing insulation of required thicknesses as required to compress insulation in joints.

5. Where gap is less than approximately 2 inches, bend clips slightly upward. Where gap is less than approximately 1 inch, apply adhesive to sides of joint and tightly pack safing insulation into joint.
 6. Recess top surface of fire safing insulation [1/2] [1] inch to receive fire and smoke barrier caulk to provide [2] and [3] hour fire resistance according to manufacturer's directions.
 7. Apply specified fire and smoke barrier caulk of required [1/2] [1] inch uniform depth over horizontal surfaces of fire safing insulation at each floor level above first floor and roof. Smooth surface of caulk at exposed areas.
- E. Floor and Roof Expansion Joints:
1. Provide 10 gage galvanized steel hat shaped wire support hangers at 8 inches o.c. with bottom of wire near bottom of slab or beam.
 2. Install specified fire safing insulation tightly packed in each suspended floor expansion joint and roof expansion joint with insulation resting on hardware cloth support and of depth to provide a [2] and [3] hour minimum fire resistance according to manufacturer's directions.
 3. Apply fire and smoke barrier caulk of required [1/2] [1] inch uniform depth over horizontal surfaces of fire safing insulation packed in suspended floor expansion joints. Fire and smoke barrier caulk is not required in roof expansion joints.
- F. Gaps at Tops of Non-Load Bearing Masonry Fire Walls:
1. Coordinate installation of solid concrete block or solid brick top course to provide solid back up for fire safing insulation.
 2. Pack space between top of masonry and underside of overhead structure with specified fire safing insulation. Recess insulation [1/2] [1] inch on each side of wall to receive fire and smoke barrier caulk to provide [2] and [3] hour fire resistance, according to caulk manufacturer's directions.
 3. Apply specified fire and smoke barrier caulk or putty of required [1/2] [1] inch uniform thickness on each side of walls to provide [1] [2] and [3] hour fire resistance as indicated according to manufacturer's directions.
- G. Floor and Fire Wall Penetrations - Metal Pipes, Conduits, and HVAC Duct Perimeters:
1. Where gaps between metal pipes, conduits, and duct openings are 1/4" or less, seal gaps with specified fire and smoke barrier caulk.
 2. Where gaps between metal pipes, conduits and ducts are more than 1/4":
 - a. Pack space between opening and pipe, conduit and duct with specified fire safing insulation and of depth of insulation to provide a [1] [2] and [3] hour minimum fire resistance as indicated according to fire safing manufacturer's directions.
 - b. Apply specified fire and smoke barrier caulk of required [1/2] [1] inch uniform depth over fire safing insulation support. Smooth surface of caulk

- at exposed areas.
- c. In place of specified fire and smoke barrier caulk, provide fire and smoke barrier wrap/strips, wire tied in place and covered with of specified fire and smoke barrier caulk according to manufacturer's directions.
- H. Floor and Fire Wall Penetrations - Plastic Pipe and Conduit Perimeters and Insulated Metal Pipe Perimeters:
1. Where gaps between plastic pipes and plastic conduits and floor and wall openings are 1/4" or less and where insulated metal pipes occur, provide sheet metal fire barrier restricting collar wrap/strip with fire and smoke barrier caulk on both sides of wall and at bottom of floor only to provide [1] [2] and [3] hour fire resistance as indicated according to manufacturer's directions.
 - a. Provide number of wrap/strips around pipes and conduits according to wrap/strip manufacturer's tables.
 - b. Enclose wrap/strips with sheet metal restricting collars bolted to each side of wall for fire wall penetrations and to underside of floor for floor penetrations. Bend support tabs back to pipe or insulation and secure collar with metal hose clamp.
 - c. Seal all seams and edges at wall and floor with 1/4" bead of specified fire and smoke barrier caulk.
- I. Where gaps between plastic pipes and plastic conduits and floor openings are more than 1/4":
1. Pack space between floor opening and pipe or conduit with specified fire safing insulation and of depth of insulation to provide [2] and [3] hour minimum fire resistance rating. Recess insulation 2-1/4" below floor to receive fire barrier wrap/strips to provide [2] [3] hour fire resistance according to wrap/strip manufacturer's directions.
 2. Support fire safing insulation with "Z" shaped galvanized sheet metal clips at 3 locations around pipes and conduits.
 3. Provide number of specified fire barrier wrap/ strips around pipes and conduits according to wrap/strip manufacturer's tables. Wire wrap/strips in place and slide down into opening to proper depth.
 4. Cover surface and seams of wrap/strip around pipe or conduit with uniform 1/4" depth of specified fire and smoke barrier caulk.
- J. Plastic pipe and insulated cable penetrations to fire walls:
1. Provide galvanized steel pipe sleeves equivalent to EMT, sized to allow annular space of not less than 3/4" around pipe or cable. Project pipe sleeve 3 inches on each side of wall. Tightly fit pipe sleeves to wall. Grout sleeves into masonry and fill openings in gypsum board with firecaulk.
 2. Fill space around pipe and cable to within 2-1/4" of end of pipe sleeve with fire

- safing insulation.
3. Provide number of specified fire barrier wrap/ trips around pipes and cable on each side of wall according to wrap/strip manufacturer's table to provide [1] and [2] [3] hour fire resistance as indicated according to wrap/strip manufacturer's directions. Wire wrap/strips in place and slide into pipe sleeve, recessing 1/4".
 4. Cover surface of wrap/strip around pipe and cable with uniform 1/4" depth of specified fire and smoke barrier caulk.

K. Floor and Fire Wall Penetrations - Bus Ducts:

1. Where cable trays and bus ducts penetrate floors and fire walls, provide necessary fiber packing and other materials required by manufacturers installation details and appropriate for conditions encountered to provide [1] [2] [3] hour fire resistance.
2. Where "packing material" is shown on the manufacturer's details, only specified fire stop mineral wool shall be used. Depth of "packing material" shall be of minimum 1 inch depth.

L. Floor and Fire Wall Penetrations - Cable Trays:

1. Where cable trays penetrate floors and fire walls, provide fire prevention pillow system placed into opening in a staggered brick style and other materials required by the manufacturer.

3.04 CLEANING

- A. Clean off excess fill materials and sealants adjacent to openings and joints as work progresses by methods and with cleaning materials approved by manufacturers of firestopping products and of products in which opening and joints occur.

END OF SECTION