SECTION 07 84 00

FIRESTOPPING

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

A. X

1.3 SECTION INCLUDES

A. Firestopping systems.
B. Firestopping of all joints and penetrations in fire-resistance rated and smoke-resistant assemblies, whether indicated on drawings or not, and other openings indicated.
C. Firestopping between floor and adjacent external vertical framing.

1.4 REFERENCE STANDARDS

A. ASTM E2174 - Standard Practice for On-Site Inspection of Installed Firestops; current edition.
B. ASTM E2393 - Standard Practice for On-Site Inspection of Installed Fire Resistive Joint Systems and Perimeter Fire Barriers; current edition.
C. ITS (DIR) - Directory of Listed Products; current edition.
D. FM 4991 - Approval Standard for Firestop Contractors; current edition.
E. FA (AG) - FM Approval Guide; Factory Mutual Research Corporation; current edition.
F. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
G. UL (FRD) - Fire Resistance Directory; current edition.
H. Omega Point Laboratory Directory; current edition.

1.5 SUBMITTALS

A. See Division 01 for submittal procedures.
B. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
C. Product Data: Provide data on product characteristics, performance ratings, and limitations.
D. Sustainable Design Submittal: Submit VOC content documentation for all non-preformed materials.
E. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
F. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
G. Installer Qualification: Submit qualification statements for installing mechanics.
H. Engineering Judgement identification number and document details when no qualified tested system is available for the required application. Include project name and name of contractor that will be installing the firestop system as described in the judgement.

1.6 QUALITY ASSURANCE

A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
   1. Listing in the current-year classification or certification books of UL, FM, or ITS (Warnock Hersey) or Omega Point Laboratory will be considered as constituting an acceptable test report.
   2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
   3. Submission of actual test reports is required for assemblies for which none of the above substantiation exists.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

C. Installer Qualifications: Company specializing in performing the work of this section and:
   1. Approved by Factory Mutual Research Corporation under FM 4991, or meeting any two of the following requirements:
      a). With minimum 3 years documented experience installing work of this type.
      b). Able to show at least 5 satisfactorily completed projects of comparable size and type.
      c). Licensed by authority having jurisdiction.

D. Installing Mechanic's Qualifications:
   1. Trained by firestopping manufacturer and able to provide evidence thereof.
   2. Trained mechanic with at least one of the following qualifications:
      a). FM 4991 Approved Contractor.
      b). UL Approved Contractor.
      c). Manufacturer approved specialty contractor.

1.7 MOCK-UP

A. Install one firestopping assembly representative of each fire rating design required on project.
   1. Where one design may be used for different penetrating items or in different wall constructions, install one assembly for each different combination.
B. Obtain approval of authorities having jurisdiction (AHJ) before proceeding.
C. If accepted, mock-up will represent minimum standard for the Work.
D. If accepted, mock-up may remain as part of the Work. Remove and replace mock-ups not accepted.

1.8 FIELD CONDITIONS

A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation. Maintain minimum temperature before, during, and for 3 days after installation of materials.

PART 2 – PRODUCTS

2.1 FIRESTOPPING - GENERAL REQUIREMENTS

A. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.2 FIRESTOPPING SYSTEM

A. Firestopping at Uninsulated Metallic Pipe and Conduit Penetrations, of diameter 4 inches or less: Any material meeting requirements.
   1. Area Separation Walls: UL Design No. WJ 1000 Series, F Rating 2 or 3 hour.
   2. Corridor Walls: UL Design No. WL 1000, F Rating 1-1/2 hour.
   3. Other Interior Partitions: UL Design No. WL 1000, F Rating 3/4 hour.
B. Firestopping at Combustible Pipe and Conduit Penetrations, of diameter 4 inches or less: Any material meeting requirements.
   1. Area Separation Walls: UL Design No. WJ 2000 Series, F Rating 2 or 3 hour.
   2. Corridor Walls: UL Design No. WL 2000, F Rating 1-1/2 hour.
   3. Other Interior Partitions: UL Design No. WL 2000, F Rating 3/4 hour.
C. Firestopping at Cable Tray Penetrations - not in Conduit or Cable Tray: Any material meeting requirements:
   1. Area Separation Walls: UL Design No. WJ 4000 Series, F Rating 3 hour.
   2. Corridor Walls: UL Design No. WJ 4000 Series, T Rating 1-1/2 hour.
   3. Other Interior Partitions: UL Design No. WJ 4000 Series, F Rating 3/4 hour.
D. Construction Joints:
   1. Area Separation Walls: UL Design No. FWD, F Rating 3 hour. HWD F Rating 1 or 2 hour.
   2. Corridor Walls: UL Design No. WWD, F Rating 1-1/2 hour. HWD F Rating 1 or 2 hour.
   3. Other Interior Partitions: UL Design No. WWD, F Rating 3/4 hour.
E. Firestopping at Cable Penetrations, not in Conduit or Cable Tray: Caulk or putty.
   1. Area Separation Walls: UL Design No. WJ 3000, F Rating 3 hour.
   2. Corridor Walls: UL Design No. WJ 3000, F Rating 1-1/2 hour.
   3. Other Interior Partitions: UL Design No. WJ 3000, F Rating 1 or 2 hour.
F. Firestopping Between Edge of Floor Slab and Curtain Wall (without Penetrations): System to be behind shadow back assembly.
   1. Intertek: CEJ 127 P.

2.3 MATERIALS

A. Firestopping Sealants: Provide only products having lower volatile organic compound (VOC) content than required by South Coast Air Quality Management District Rule No.1168.

B. Mold Resistance: Mold and mildew resistance rating of one (1) or less per ASTM G21.

C. Rain and Water Resistance: Joint sealant tested in accordance with ASTM D6904 with less than one hour tack free time as tested in accordance with ASTM C679.

D. Head of Wall at Concrete Deck, conforming to the following:
   1. Manufacturer:
      a). Hilti Firestop Top Track (CFS-TTS).
      b). Substitutions: Not permitted.

E. Elastomeric Silicone Firestopping: Single component silicone elastomeric compound and compatible silicone sealant; conforming to the following:
   1. Manufacturers:
      a). Hilti, Inc; Product CFS-S-SIL-GG, CFS-S-SIL and CFS-SP-SIL.
      b). 3M Fire Protection Products; Product [Silicone 2000 NS].
      c). Substitutions: See Division 01.

F. Foam Firestoppping: Single component silicone foam compound; conforming to the following:
   1. Manufacturers:
      a). Hilti, Inc; Product CP-620.
      b). Substitutions: See Division 01.

G. Fiber Firestopping: Mineral fiber insulation used in conjunction with elastomeric surface sealer forming airtight bond to opening; conforming to the following:
   1. Manufacturers:
      a). Thermafiber
      b). Substitutions: Not permitted.

H. Firestop Devices - Wrap Type: Mechanical device with incombustible filler and sheet stainless steel jacket, intended to be installed after penetrating item has been installed; conforming to the following:
   1. Manufacturers:
      a). Hilti, Inc; Product CP 643N, CP 644N, CP 648E or CP 648S.
      b). 3M Fire Protection Products; Product [RC-1 Restraining Collars].
      c). Specified Technologies, Inc; Product LCC Intumescent Collars.
      d). Substitutions: Not permitted.

I. Re-penetrable, round cable management devices for use with new or existing cable bundels penetrating gypsum or masonry walls:
   1. Manufacturers:
      a). Hilti Speed Sleeve (CP 653) with integrale smoke seal fabric membrane.
      b). Hilti Gangplate (CFS-SL GP) for use with multiple cable management devices
      c). Substitutions: Not permtted.

J. Cast-In-Place Devices:
   1. Manufacturers:
      a). Hilti, Inc; Product CP 680P or CP 680M: www.us.hilti.com.
      b). 3M Fire Protection Products; Product [Product Cast-in Device].
      c). Substitutions: Not permitted.

K. Pre-installed firestop devices for use with noncombustible and combustible pipes (closed and open systems), conduit, and/or cable bundles penetrating concrete floors, conforming to the following:
   1. Manufacturers:
      a). Hilti Product CP 680P or CP 680M.
      b). 3M Fire Protection Products, Cast-In Device.
      c). Substitutions: Not permitted.

L. Non-curing, re-pentrable, intumescent putty or foam materials for use with flexible cable or cable bundles:
   1. Manufacturer:
      a). Hilti; Product CP 618.
      b). 3M Fire Protection: Product Moldable Pillows.
      c). Substitutions: Not permitted.

M. Reusable Firestopping: Removable intumescent compressible shapes, pillows, or blocks specifically tested in removable configuration; conforming to the following:

1. Manufacturers:
   a). 3M Fire Protection Products; Product, Fire Barrier Pillows.
   b). Hilti, Inc; Product CFS-BL, CFS-PL, CPT 675T.
   c). Specified Technologies, Inc; Product SSB Firestop Pillows.
   d). Substitutions: Not permitted.

N. Intumescent Sealants: Multiple component compounds conforming to the following:
1. Manufacturers:
   a). Hilti, Inc; Product FS One MAX.
   b). 3M Fire Protection Products: Product CP-25WB.
   c). Specified Technologies, Inc; Product SSS Intumescent Sealant.
   d). Substitutions: Not permitted.

O. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify openings are ready to receive the work of this section.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter that could adversely affect bond of firestopping material.
B. Remove incompatible materials that could adversely affect bond.

3.3 COORDINATION

A. Coordinate construction of openings, penetrations and construction joints to ensure that the fire stop systems are installed according to specified requirements.
B. Coordinate sizing of sleeves, openings, core-drilled, or cut openings to accommodate through-penetration fire stop systems. Coordinate construction and sizing of joints to ensure that fire-restive joint systems are installed according to specified requirements.
C. Coordinate fire stopping with other trades so that obstructions are not placed in the way prior to the installation of the fire stop systems.
D. Do not cover up through-penetration fire stop and joint installations that will become concealed behind other construction until each installation has been examined by the authority having jurisdiction, per requirements of Section 109, International Building Code 2015.

3.4 IDENTIFICATION

A. Identify penetration firestopping with preprinted metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of firestopping edge so labels will be visible to anyone seeking to remove penetrating items or firestopping. Use mechanical fasteners or self-adhering-type labels with adhesives capable of permanently bonding labels to surfaces on which labels are placed. Include the following information on labels:
   1. The words “Warning – Penetration Firestopping – Do Not Disturb. Notify Building Management of any Damage.”
   2. Contractor’s name, address and phone number.
   3. Designation of applicable testing and inspecting agency.
   4. Date of installation.
   5. Manufacturer’s name.
   6. Installer’s name.

3.5 INSTALLATION

A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
C. Install labeling required by code.

3.6 FIELD QUALITY CONTROL

A. Independent Testing Agency: Inspection agency employed and paid by Owner, will examine penetration firestopping in accordance with ASTM E2174, “Standard Practice for On-Site Inspection of Installed Fire Stops and ASTM E2393, “Standard Practice for On-Site Inspection of Installed Fire Stop Joint Systems.
B. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.7 CLEANING

A. Clean adjacent surfaces of firestopping materials.

END OF SECTION