

## **SECTION 078400**

### **FIRESTOPPING**

#### **PART 1 GENERAL**

##### **1.01 REFERENCES**

- A. UL 263 Fire Tests of Building Construction and Materials.
- B. UL 1479 Fire Tests of Through-Penetration Firestops.
- C. UL 2079 Standard for Safety Tests for Fire Resistance of Building Joint Systems.
- D. ASTM E 119 Methods of Fire Tests of Building Construction and Materials.
- E. ASTM E 814 Method of Fire Tests of Through-Penetration Fire Stops.

##### **1.02 DEFINITIONS**

- A. UL Fire Resistance Directory: Product directory published yearly, with supplements, by Underwriters Laboratories Inc., containing listings and classifications in effect as of the published date for product categories covered by UL.
- B. Inchcape Directory of Listed Products: Product directory published yearly by Inchcape Testing Services containing listings which reflect certifications granted for materials, products, systems and equipment which have been tested by Inchcape Testing Services to recognized governing standards.
- C. Omega Point Laboratories Listings Directory: Product Directory published yearly by Omega Point Laboratories, Inc. containing listed building products, materials, and assemblies which have been tested by Omega Point Laboratories to recognized governing standards.
- D. Factory Mutual Approval Guide: Product directory published yearly, with supplements, by Factory Mutual Research Corp., containing listed building products, materials, and assemblies which have been tested by Factory Mutual Research Corp., to recognized governing standards.
- E. F Rating: Prohibits flame passage through the system and requires acceptable hose stream test performance.
- F. T Rating: Prohibits flame passage through the system and requires the maximum temperature rise on the unexposed surface of the wall or floor assembly, on the penetrating item and on the fill material not to exceed 325 degrees F above ambient, and requires acceptable hose stream test performance.
- G. Company Field Advisor: An employee of the Company which lists and markets the primary components of the system under their name who is certified in

writing by the Company to be technically qualified in design, installation, and servicing of the required products or an employee of an organization certified by the foregoing Company to be technically qualified in design, installation and servicing of the required products. Personnel involved solely in sales do not qualify.

### **1.03 DESIGN REQUIREMENTS**

- A. Devices and materials shall meet the hourly fire resistance ratings required by the Project as determined by UL 263, UL 1479, UL 2079, ASTM E 119 or ASTM E 814 and be listed and detailed in the UL Fire Resistance Directory, Inchcape Directory of Listed Products, Factory Mutual Approval Guide, or the Omega Point Laboratories Listings Directory.
  - 1. Exception: Where no listed designs exist that meet the requirements of a specific project condition, submit details and manufacturer's written recommendations for a design meeting the requirements. Include evidence of engineering judgment and extrapolation from listed designs.

### **1.04 SUBMITTALS**

- A. Submittals Package: Submit the following items specified below the same time as a package:
  - 1. Product Data.
  - 2. Samples.
  - 3. Quality Control Submittals.
  - 4. Firestop Schedule.
- B. Product Data: Catalog sheets, specifications and installation instructions for each firestop device and material.
  - 1. Indicate design number for each firestop proposed to be used which is detailed in the UL Fire Resistance Directory, Inchcape Directory of Listed Products, Factory Mutual Approval Guide, or the Omega Point Laboratories Listings Directory.
  - 2. State the specific locations where each firestop system is proposed to be installed.
- C. Samples: One of each product if requested.
- D. Quality Control Submittals:
  - 1. Design Data: Show details and include engineering information and manufacturer's written recommendations required under Design Requirements Article for each proposed firestop if other than a design detailed in the UL Fire Resistance Directory, Inchcape Directory of Listed Products, Factory Mutual Approval Guide, or the Omega Point Laboratories Listings Directory.
    - a. State the specific locations where each firestop is proposed to be installed.
  - 2. Installer's Qualifications Data:
    - a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.

- b. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.
- 3. Company Field Advisor Data:
  - a. Name, business address and telephone number of Company Field Advisor secured for the required services.
  - b. Certified statement from the Company listing the qualifications of the Company Field Advisor, and listing of services and each product specifically listed for this Project for which Company Field Advisor is given authorization by the Company to render advice.
- E. Firestop Schedule: Submit schedule itemizing the following:
  - 1. Manufacturer's product reference numbers and/or drawing numbers.
  - 2. UL, Inchcape Testing Services, Factory Mutual Research Corp., or Omega Point Lab design number.
  - 3. Location of firestop material.
  - 4. Penetrating Item Description/Limits: Material, size, insulated or uninsulated, and combustibility.
  - 5. Maximum allowable annular space or maximum size opening.
  - 6. Wall type construction.
  - 7. Floor type construction.
  - 8. Hourly Fire resistance rating of wall or floor.
  - 9. F rating.

**NOTE:** Firestop Schedule is for information only, and will not be acted on for approval.  
Refer to Sample Firestop Schedule bound in Appendix.

## **1.05 QUALITY ASSURANCE**

- A. Installer Qualifications: The persons installing the firestopping and their supervisor shall be personally experienced in firestop work and shall have been regularly employed by a company installing firestopping for a minimum of 3 years.
- B. Pre-Installation Conference: Before the firestop work is scheduled to commence, a conference will be called by the Director's Representative at the Site for the purpose of reviewing the Contract Documents and discussing requirements for the Work. The conference shall be attended by related trade Contractors (if any), their qualified firestopping installers, and associated firestopping manufacturer's Company Field Advisors.
- C. Container/Package Labels: Include manufacturer's name and identifying product number, date of manufacturer, lot number, shelf life (if applicable), qualified testing and inspecting agency classification marking, curing time, and mixing instructions for multi-component materials.
- D. Company Field Advisor: Secure the services of a Company Field Advisor for the following:
  - 1. Render advice regarding suitability of firestopping materials and methods.
  - 2. Assist in completing firestop schedule.

3. Attend pre-installation conference.
- E. Field-Constructed Sample Installations: Prior to installing firestopping, erect sample installations for each type through-penetration firestop system indicated in the Firestop Schedule to verify selections made and to establish standard of quality and performance by which the firestopping work will be judged.
  1. Build sample installations to comply with the following requirements, using materials indicated for final installations.
    - a. Locate sample installations on site at locations where directed.
    - b. Obtain Director's Representative's acceptance of sample installations before start of firestopping installation.
    - c. Retain and maintain sample installations during construction in an undisturbed condition.
    - d. Accepted sample installations in an undisturbed condition at time of substantial completion of Project may become part of completed firestopping work.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver firestopping materials to the Site in original, new unopened containers or packages bearing manufacturer's printed labels.
- B. Store and handle firestopping materials to prevent deterioration or damage due to moisture, temperature changes, contaminants, etc.

#### **1.07 PROJECT CONDITIONS**

- A. Environmental Requirements:
  1. Temperature: Do not install firestopping materials when ambient or substrate temperatures are outside limits permitted by manufacturer of firestopping materials.
  2. Humidity and Moisture: Do not install the Work of this Section under conditions that are detrimental to the application, curing, and performance of the materials.
  3. Ventilation: Provide sufficient ventilation wherever firestopping materials are installed in enclosed spaces. Follow manufacturer's recommendations.

#### **1.08 SEQUENCING AND SCHEDULING**

- A. Leave exposed those firestopping installations that are to be concealed behind other construction until the Director's Representative has examined each installation.

### **PART 2 PRODUCTS**

#### **2.01 FIRESTOPPING-GENERAL**

- A. Through-Penetration Firestop Devices, Forming Materials, And Fill, Void or Cavity Materials: As listed in the UL Fire Resistance Directory, Inchcape

Directory of Listed Products, Factory Mutual Approval Guide, or the Omega Point Laboratories Listings Directory.

1. For firestopping exposed to moisture, furnish products that do not deteriorate when exposed to this condition.
  2. For firestopping systems exposed to view, furnish products with flame-spread values of less than 25 and smoke developed values less than 50, as determined per ASTM E 84.
  3. For penetrations for piping services below ambient temperature, furnish moisture-resistant through-penetration firestop systems.
  4. For penetrations involving insulated piping, furnish through-penetration firestop systems not requiring removal of insulation.
- B. Accessories: Components required to install fill materials as recommended by the firestopping manufacturer for particular approved fire rated system.
- C. Identification Labels:
1. Furnished by fire stopping manufacturer of suitable material for permanent field identification of through-penetration firestops.
  2. Identify the following:
    - a. "WARNING - FIRESTOP MATERIAL".
    - b. Company Name.
    - c. Product Catalog number.
    - d. F rating.
    - e. T rating, if available.
  3. Field fabricated labels are not acceptable.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Examine existing through-penetrations of floors, walls, partitions, ceilings and roofs in the Work areas.
- B. Examine existing junctures, control joints, and expansion joints in the Work areas.
- C. Where firestopping is missing or not intact, submit a written report to the Director's Representative describing the existing conditions.

### **3.02 PREPARATION**

- A. Clean out openings immediately before installation of through-penetration firestopping. Comply with recommendations of firestopping manufacturer and the following requirements:
  1. Remove foreign materials from surfaces of openings, and from penetrating items that could interfere with adhesion of firestopping.
  2. Clean opening 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.

- B. Clean out openings, and juncture, control, and expansion joints immediately before installation of firestopping. Comply with recommendations of firestopping manufacturer and the following requirements:
  - 1. Remove foreign materials from surfaces of openings and joint substrates, and from penetrating items that could interfere with adhesion of firestopping.
  - 2. Clean opening joint substrates 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.
- C. Protection:
  - 1. Protect surfaces adjacent to through-penetration firestops with non-staining removable masking tape or other suitable covering to prevent firestopping from contacting adjoining surfaces that will remain exposed upon completion of Work and that would otherwise be permanently stained or damaged by such contact or that would be caused by cleaning methods used to remove smears from firestopping materials.
- D. Substrate Priming:
  - 1. Prime substrates in accordance with the firestopping manufacturer's printed installation instructions using recommended products and methods.
  - 2. Do not allow primer to spill or migrate onto adjoining exposed surfaces.

### **3.03 INSTALLATION OF THROUGH PENETRATION FIRESTOPS**

- A. Use through-penetration firestop devices, forming materials, and fill, void or cavity materials to form through-penetration firestops to prevent the passage of flame, and limit temperature rise of the unexposed surface as detailed in the UL Fire Resistance Directory, Inchcape Directory of Listed Products, Factory Mutual Approval Guide, or the Omega Point Laboratories Listings Directory.
  - 1. Where applicable design is not detailed in the Directories, use forming materials and fill, void or cavity material to form through-penetration firestop in accordance with approved printed details and installation instructions from the company producing the forming materials and fill, void or cavity material.
  - 2. If the construction type(s) of the building cannot be determined, provide firestopping with fire resistance ratings as specified in the Building Code of New York State, Tables 720.1(1), 720.1(2), 720.1(3), and 302.3.2.
- B. Provide through-penetration firestop systems with F ratings that shall equal or exceed the fire resistance rating of the penetrated building construction.
- C. Provide through-penetration firestop systems with T ratings, in addition to F ratings, at floors where the following conditions exist:
  - 1. Where firestop systems protect penetrations located outside the wall cavities.
  - 2. Where firestop systems protect penetrations located outside fire resistive shaft enclosures.

3. Through-penetration firestop systems protecting floor penetrations require a T-rating of at least 1 hour, but not less than the required floor fire-resistance rating.
- D. Firestop through-penetrations of floors, walls, partitions, ceilings, and roofs.
- E. Firestop through-penetrations associated with the new Work.
- F. Firestop through-penetration of partitions identified on the Construction Work Drawings as smoke partitions and fire rated assemblies.
- G. Firestop through-penetrations of floors, walls, partitions, ceilings, and roofs in accordance with the fire resistance rating assigned to the walls, partitions, floors, ceilings, and roofs on the Construction Work Drawings.
- H. Permanently affix label at each firestop. Use adhesive compatible with surface construction at firestop location.

#### **3.04 INSTALLATION OF JUNCTION, CONTROL, AND EXPANSION JOINT FIRESTOPS**

- A. Use joint treatment materials to form firestop to prevent the passage of flame and limit temperature rise of the unexposed surface, as detailed in the UL Fire Resistance Directory, Inchcape Directory of Listed Products, Factory Mutual Approval Guide or the Omega Point Laboratories Listings Directory.
  1. Where applicable design is not detailed in the Directories, use forming materials and fill, void or cavity material to form firestop in accordance with approved printed details and installation instructions from the company producing the forming materials and fill, void or cavity material.
  2. If the construction type(s) of the building cannot be determined, provide firestopping with fire resistance ratings as specified in the Building Code of New York State, Tables 720.1(1), 720.1(2), 720.1(3), and 302.3.2.

#### **3.05 CLEANING**

- A. Clean off excess fill materials and sealants adjacent to penetrations by methods and cleaning materials recommended by manufacturers of firestopping products and of products in which penetrations occur.
- B. Remove masking tape as soon as practical so as not to disturb the firestopping's bond with substrate.
- C. Protect firestopping during and after curing period from contact with contaminating substances, or damage resulting from adjacent Work.
- D. Cut out and remove damaged or deteriorated firestopping immediately, and install new materials as specified in firestop schedule.

#### **END OF SECTION**