

SECTION 07840

FIRESTOPPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. The Contractor is required to implement practices and procedures to meet the project's environmental goals, which include achieving a LEED™ Building rating. DIVISION 1 – GENERAL REQUIREMENTS include LEED procedures and project goals which impact work of this Section.

1.2 DESCRIPTION OF WORK

- A. Scope: Provide U.L. listed firestopping materials, systems, and/or devices for the following:
 - 1. Penetrations through fire-resistance rated floor and roof construction including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 2. Penetrations through fire-resistance rated walls and partitions including both empty openings and openings containing cables, pipes, ducts, conduits, and other penetrating items.
 - 3. Penetrations through smoke barriers and construction enclosing compartmentalized areas involving both empty openings and openings containing penetrating items.
 - 4. Sealant joints in fire-resistance rated construction.
 - 5. Perimeter conditions at curtainwalls.
 - 6. Where otherwise indicated on Drawings or required to maintain fire resistance of assemblies.
- B. Design Requirements
 - 1. Fire-rated construction: Maintain barrier and structural fire resistance ratings including resistance to cold smoke at all penetrations, connections with other surfaces or types of construction, at separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
 - 2. Smoke barrier construction: Maintain barrier or other structural resistance to cold smoke at all penetrations, connection with other surfaces and types of construction and at all separations required to permit building movement and sound or vibration absorption, and at other construction gaps.
 - 3. All firestopping materials, systems, and devices must be listed by Underwriter's Laboratories, Inc.
- C. Related Sections and Divisions:
 - 1. Division 3 Section "Cast-In-Place Concrete"

2. Division 4 Section "Unit Masonry Assemblies"
3. Division 7 Section "Building Insulation"
4. Division 7 Section "Joint Sealants"
5. Division 13 Section ""Sprinkler System."
6. Division 15 sections specifying ducts and pipe penetrations
7. Division 16 sections specifying cable and conduit penetrations

1.3 QUALITY ASSURANCE

- A. Installer's qualifications: The installer must be experienced in installation or application of systems similar in complexity to those required for this project, plus the following:
 1. Acceptance to or licensed by manufacturer, state, or local authority;
 2. At least 2 years experience with systems; and
 3. Have a record of successful completion of at least 5 comparable scale projects using this system.
- B. Materials shall have been tested to provide a fire rating at least equal to that of the construction.
- C. Guarantee: Submit copies of written guarantee agreeing to repair or replace joint sealers which fail in joint adhesion, co-adhesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance, or general durability or appear to deteriorate in any other manner not clearly specified by submitted manufacturer's data as an inherent quality of the material for the exposure indicated. The guarantee period shall be one year from date of substantial completion.
- D. Codes and Standards: Provide firestopping listed in the U.L. Fire Resistance Directory as follows:
 1. Through-penetration firestop devices (XHCR)
 2. Fire resistance ratings (BXUV)
 3. Through-penetration firestop systems (XHEZ)
 4. Fill, void, or cavity material (XHHW)
- E. Other References: American Society for Testing and Material Standards
 1. ASTM E-814 - 88; Standard Test Method for Fire Tests of Through Penetration Firestops.

1.4 DEFINITIONS

- A. Assembly: Particular arrangement of materials specific to given type of construction described or detailed in referenced documents.
- B. Barriers: Time rated fire walls, smoke barrier walls, time rated ceiling/floor assemblies and structural floors.
- C. Firestopping: Methods and materials applied in penetrations and unprotected openings to limit the spread of heat, fire gases, and smoke.
- D. Penetration: Opening or foreign material passing through or into barrier or structural floor such that full thickness of rated material is not obtained.

- E. Construction Gap: Gaps between adjacent sections of walls, exterior walls, at wall tops between the top of wall and ceiling, and structural floors or roof decks; and gaps between adjacent sections of structural floors.
- F. System: Specific products and applications, classified and numbered by Underwriter's Laboratories, Inc. to close specific barrier penetrations.
- G. Sleeve: Metal fabrication or pipe section extending through the thickness of the barrier and used to permanently guard the penetration. Sleeves are described as part of penetrating systems in other sections and may or may not be required.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and technical data including the following:
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Catalog cut listing system components.
- B. Shop Drawings: Indicate dimensions, description of materials and finishes, general construction, specification modifications, component connections, anchorage methods, hardware, and installation procedures, plus the following specific requirements:
 - 1. Details of each proposed assembly identifying intended products and applicable U.L. system number or U.L. classified devices.
 - 2. Manufacturer or manufacturer's representative shall provide qualified engineering judgements and drawings relating to non-standard applications as needed.
- C. Quality Control Submittals:
 - 1. Submit a statement of qualifications.
- D. Applicators' Qualifications Statement:
 - 1. List past projects indicating required experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Packaging and Shipping:
 - 1. Deliver products in original unopened packaging with legible manufacturer's identification.
 - 2. Coordinate delivery with scheduled installation date, allow minimum storage at site.
- B. Storage and Protection: Store materials in a clean, dry, ventilated location. Protect from soiling, abuse, moisture, high temperatures, and freezing where required. Follow manufacturer's instructions.

1.7 PROJECT CONDITIONS

- A. Existing Conditions:

1. Verify existing conditions and substrates before starting work. Correct unsatisfactory conditions before proceeding.
2. Proceed with installations only after penetrations of the substrate and supporting brackets have been installed.

B. Environmental Requirements:

1. Furnish adequate ventilation if using solvent.
2. Furnish forced air ventilation during installation if required by manufacturer.
3. Keep flammable materials away from sparks or flame.
4. Provide masking and drop cloths to prevent contamination of adjacent surfaces by firestopping materials.
5. Comply with manufacturer's recommendations for temperature and humidity conditions before, during, and after installation of firestopping.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

- A. Provide firestopping materials, systems, and devices that are suitable for the application and are U.L. listed for such an application.

PART 3 - EXECUTION

3.1 EXAMINATION AND CLEANING

- A. Verification of Conditions: Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.
- B. Verify barrier penetrations are properly sized and in suitable condition for application of materials.
- C. Do not proceed until unsatisfactory conditions have been corrected.
- D. Cleaning: Clean surfaces to be in contact with penetration seal materials of dirt, grease, oil, loose materials, rust, or other substances that may affect proper fitting, adhesion, or the required fire resistance.

3.2 INSTALLATION

- A. Install penetration seal materials in accordance with printed instructions of the U.L. Fire Resistance Directory and in accordance with manufacturer's instructions.
- B. Seal holes or voids made by penetrations to ensure an effective smoke barrier.
- C. Where floor openings without penetrating items are more than 100 mm in width and subject to traffic or loading, install firestopping materials capable of supporting same loading as the floor.
- D. Protect materials from damage on surfaces subject to traffic.
- E. Place firestopping in annular space around fire dampers before installation of damper's

- F. Anchoring flanges which are installed in accordance with the fire damper manufacturer's recommendations.
- G. Where large openings are created in walls or floors to permit installation of pipes, ducts, cable trays, bus ducts or other items, close unused portions of the opening with firestopping material tested for the application.
- H. Install smoke stopping as specified for firestopping.
- I. Where rated walls are constructed with horizontally continuous air space, double width masonry, or double stud frame construction, provide vertical, 300 mm wide fiber dams for full thickness and height of air cavity at maximum 4.5 m intervals.

3.3 FIELD QUALITY CONTROL

- A. Examine penetration-sealed areas to ensure proper installation before concealing or enclosing areas.
- B. Keep areas of work accessible until inspection by applicable code authorities.
- C. Perform, under this section, patching and repairing of firestopping caused by cutting or penetration by other trades.

3.4 ADJUSTING AND CLEANING

- A. Clean up spills of liquid components.
- B. Neatly cut and trim materials as required.
- C. Remove equipment, materials, and debris, leaving the area in undamaged, clean condition.

END OF SECTION 07840