# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 and 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

A. Section Includes:
   1. Joints in or between fire-resistance-rated constructions.
   2. Joints in smoke barriers.

B. Related Requirements:
   1. Section 018113 “Sustainable Design Requirements.”
   2. Section 078413 "Penetration Firestopping" for penetrations in fire-resistance-rated walls, horizontal assemblies, and smoke barriers and for wall identification.
   3. Section 092216 "Non-Structural Metal Framing" for firestop tracks for metal-framed partition heads.

## 1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

## 1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. LEED Submittals: Credit EQc4.1. Refer to Division 01 Section “Sustainable Design Requirements” for additional submittal requirements.

C. Product Schedule: For each joint firestopping system. Include location, illustration of firestopping system, and design designation of qualified testing agency.
   1. Engineering Judgments: Where Project conditions require modification to a qualified testing agency's illustration for a particular joint firestopping system condition, submit illustration, with modifications marked, approved by joint firestopping system manufacturer's fire-protection engineer as an engineering judgment or equivalent fire-resistance-rated assembly.

## 1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each joint firestopping system, for tests performed by a qualified testing agency.

1.6 CLOSEOUT SUBMITTALS

A. Installer Certificates: From Installer indicating that joint firestopping systems have been installed in compliance with requirements and manufacturer's written instructions.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: A firm that has been approved by FM Global according to FM Global 4991, "Approval of Firestop Contractors," or been evaluated by UL and found to comply with UL's "Qualified Firestop Contractor Program Requirements."

B. Firestop Manufacturer: Do not use firestop material produced by any manufacturer who will not agree to send a direct employee as a qualified technical representative to the project site, during the initial installation and when requested, for the purpose of training appropriate installer personnel in proper selection and installation procedures and for rendering advice concerning the proper installation of materials. Manufacturer shall employ a professional Fire Protection Engineer with qualifications acceptable to the Society of Fire Protection Engineers (SFPE).

C. Compatibility: Provide only the firestop materials which are explicitly recommended by the manufacturer for the application, and which have been determined to be compatible with the adjoining construction and each other, as stated in the manufacturer’s published data or certified for each application.

1.8 PROJECT CONDITIONS

A. Environmental Limitations: Do not install joint firestopping systems when ambient or substrate temperatures are outside limits permitted by joint firestopping system manufacturers or when substrates are wet due to rain, frost, condensation, or other causes.

B. Fungal Resistance: Source Firestop products with manufacturer's standard antimicrobial formulation to result in no (zero or one) mold growth on specimens per ASTM G 21. Reference - ASTM G21, Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

C. Install and cure joint firestopping systems per manufacturer's written instructions using natural means of ventilation or, where this is inadequate, forced-air circulation.

1.9 COORDINATION

A. Coordinate construction of joints to ensure that joint firestopping systems can be installed according to specified firestopping system design.

B. Coordinate sizing of joints to accommodate joint firestopping systems.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Fire-Test-Response Characteristics:
   1. Perform joint firestopping system tests by a qualified testing agency acceptable to authorities having jurisdiction.
   2. Test per testing standards referenced in "Joint Firestopping Systems" Article. Provide rated systems complying with the following requirements:
      a. Joint firestopping systems shall bear classification marking of a qualified testing agency.
         1) UL in its "Fire Resistance Directory."
         2) Intertek Group in its "Directory of Listed Building Products."

2.2 JOINT FIRESTOPPING SYSTEMS

A. Joint Firestopping Systems: Systems that resist spread of fire, passage of smoke and other gases, and maintain original fire-resistance rating of assemblies in or between which joint firestopping systems are installed. Joint firestopping systems shall accommodate building movements without impairing their ability to resist the passage of fire and hot gases.

B. LEED Material Credit EQc4.1 (inside the weatherproofing system and applied on-site): Refer to Division 01 Section “Sustainable Design Requirements” for additional product requirements.

C. Joints in or between Fire-Resistance-Rated Construction: Provide joint firestopping systems with ratings determined per ASTM E 1966 or UL 2079.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Hilti, Inc. (Basis-of-Design)
      b. Specified Technologies Inc.
      c. 3M Fire Protection Products.
      d. Or Equal.
   2. Fire-Resistance Rating: Equal to or exceeding the fire-resistance rating of the wall, floor, or roof in or between which it is installed.

D. Joints at Exterior Curtain-Wall/Floor Intersections: Provide joint firestopping systems with rating determined per ASTM E 2307.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Hilti, Inc. (Basis-of-Design)
      b. Specified Technologies Inc.
      c. 3M Fire Protection Products.
      d. Roxul, Inc.
      e. Thermafiber, Inc.
      f. Or Equal.
   2. F-Rating: Equal to or exceeding the fire-resistance rating of the floor assembly.
   3. W-Rating: To resist rain or washout of spray applied material provide water resistance to Wind driven rain. Provide perimeter joint firestopping system sealant

which is water resistant tested in accordance with ASTM D6904 (modified) and UL1479.

E. Joints in Smoke Barriers: Provide fire-resistive joint systems with ratings determined per UL 2079 based on testing at a positive pressure differential of 0.30-inch wg.
   1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      a. Hilti, Inc. (Basis-of-Design)
      b. Specified Technologies Inc.
      c. 3M Fire Protection Products.
      d. Or Equal.
   2. L-Rating: Not exceeding 5.0 cfm/ft. of joint at both ambient and elevated temperatures.

F. Exposed Joint Firestopping Systems: Flame-spread and smoke-developed indexes of less than 25 and 450, respectively, as determined per ASTM E 84.
   1. Sealant shall have a VOC content complying with CalGreen requirements.

G. Accessories: Provide components of fire-resistive joint systems, including primers and forming materials, that are needed to install elastomeric fill materials and to maintain ratings required. Use only components specified by joint firestopping system manufacturer and approved by the qualified testing agency for conditions indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for joint configurations, substrates, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

A. Surface Cleaning: Before installing fire-resistive joint systems, clean joints immediately to comply with fire-resistive joint system manufacturer's written instructions and the following requirements:
   1. Remove from surfaces of joint substrates foreign materials that could interfere with adhesion of elastomeric fill materials or compromise fire-resistive rating.
   2. Clean joint substrates to produce clean, sound surfaces capable of developing optimum bond with elastomeric fill materials. Remove loose particles remaining from cleaning operation.
   3. Remove laitance and form-release agents from concrete.

B. Prime substrates where recommended in writing by joint firestopping system manufacturer using that manufacturer's recommended products and methods. Confine primers to areas of bond; do not allow spillage and migration onto exposed surfaces.

## 3.3 INSTALLATION

A. General: Install fire-resistive joint systems to comply with manufacturer's written installation instructions and published drawings for products and applications indicated.

B. Install forming materials and other accessories of types required to support elastomeric fill materials during their application and in position needed to produce cross-sectional shapes and depths required to achieve fire ratings indicated.
   1. After installing elastomeric fill materials and allowing them to fully cure, remove combustible forming materials and other accessories not indicated as permanent components of fire-resistive joint system.

C. Install elastomeric fill materials for fire-resistive joint systems by proven techniques to produce the following results:
   1. Elastomeric fill voids and cavities formed by joints and forming materials as required to achieve fire-resistance ratings indicated.
   2. Apply elastomeric fill materials so they contact and adhere to substrates formed by joints.
   3. For elastomeric fill materials that will remain exposed after completing the Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

## 3.4 IDENTIFICATION

A. Joint Identification: Identify joint firestopping systems with legible metal or plastic labels. Attach labels permanently to surfaces adjacent to and within 6 inches of joint edge so labels are visible to anyone seeking to remove or joint firestopping system. Use mechanical fastened, self-adhering-type labels with adhesives capable of bonding labels to surfaces on which labels are placed. Include the following information on labels:
   1. The words "Warning - Joint Firestopping - Do Not Disturb. Notify Building Management of Any Damage."
   2. Contractor's name, address, and phone number.
   3. Designation of applicable testing agency.
   4. Date of installation.
   5. Manufacturer's name.
   6. Installer's name.

## 3.5 FIELD QUALITY CONTROL

A. Inspecting Agency: Owner will engage a qualified testing agency to perform tests and inspections according to ASTM E 2393.

B. Where deficiencies are found or joint firestopping systems are damaged or removed due to testing, repair or replace joint firestopping systems so they comply with requirements.

C. Proceed with enclosing joint firestopping systems with other construction only after inspection reports are issued and installations comply with requirements.

3.6 CLEANING AND PROTECTION

A. Clean off excess elastomeric fill materials adjacent to joints as the Work progresses by methods and with cleaning materials that are approved in writing by joint firestopping system manufacturers and that do not damage materials in which joints occur.

B. Provide final protection and maintain conditions during and after installation that ensure joint firestopping systems are without damage or deterioration at time of Substantial Completion. If damage or deterioration occurs despite such protection, cut out and remove damaged or deteriorated fire-resistive joint systems immediately and install new materials to produce fire-resistive joint systems complying with specified requirements.

3.7 JOINT FIRESTOPPING SYSTEM SCHEDULE

A. Where UL-classified systems are indicated, they refer to system numbers in UL's "Fire Resistance Directory" under product Category XHBN or Category XHDG.

B. Refer to Drawings for joint firestopping details and as noted:

| **Typical Gypsum Partition and Shaft Walls** | | |
|---|---|---|
| **Joint Type** | **Assembly Hr. Rating** | **UL System Reference** |
| HEAD OF PARTITION - PARALLEL TO FLUTED DECK | 1 and 2 Hr. | HW-D-0264 |
| HEAD OF PARTITION - PARALLEL TO FLUTED DECK | 1 and 2 Hr. | HW-D-0539 |
| HEAD OF PARTITION - PARALLEL TO FLUTED DECK WITH CATILEVERED RUNNER | 1 and 2 Hr. | HW-D-0687 |
| HEAD OF PARTITION - PERPENDICULAR TO FLUTED DECK | 1 and 2 Hr. | HW-D-0538 |
| HEAD OF PARTITION - CONCRETE SLAB | 1 and 2 Hr. | HW-D-0540 |
| HEAD OF PARTITION - PARALLEL OR PERPENDICULAR WITH STRUCTURAL STEEL OBSTRUCTION | 1 and 2 Hr. | HW-D-0388 |
| HEAD OF PARTITION - OFFSET I-BEAM WITH Z-CHANNEL | 1 and 2 Hr. | HW-D-0634, HW-D-0635 |
| HEAD OF PARTITION - ONE SIDE ACCESS DUE TO STRUCTURAL MEMBER | 1 and 2 Hr. | HW-D-0639 |
| HEAD OF PARTITION - PARALLEL TO FIREPROOFED STEEL BEAM | 1 and 2 Hr. | HW-D-0259 |
| HEAD OF PARTITION - FLUTED DECK WITH STRUCTURAL STEEL BEAM THROUGH PENETRATING | 1 and 2 Hr. | HW-D-0218 |
| | | |
| HEAD OF SHAFT WALL - TO CONCRETE SLAB | 2 hr. | HW-D-0342 |
| HEAD OF SHAFT WALL - TO CONCRETE SLAB | 1 and 2 Hr. | HW-D-0572 |

| | | |
|---|---|---|
| HEAD OF SHAFT WALL - PERPENDICULAR TO FLUTED DECK | 1 and 2 Hr. | HW-D-0569 |
| HEAD OF SHAFT WALL - PARALLEL TO FLUTED DECK | 1 and 2 Hr. | HW-D-0570 |
| HEAD OF SHAFT WALL - PARALLEL TO FIREPROOFED STEEL BEAM | 1 and 2 Hr. | HW-D-0571 |
| HEAD OF SHAFT WALL - OFFSET I BEAM WITH Z CHANNEL | 1 and 2 Hr. | HW-D-0636 |
| HEAD OF SHAFT WALL - ONE SIDE ACCESS DUE TO STRUCTURAL MEMBER | 1 and 2 Hr. | HW-D-0639, shaft HW-D-0640 |
| BOTTOM OF PARTITION | 1 and 2 Hr. | BW-S-0001, BW-S-0002 |
| BOTTOM OF SHAFT WALL PARTITION | 1 and 2 Hr. | BW-S-0023 |
| **Concrete Masonry Partitions** | | |
| TOP OF CONCRETE MASONRY PARTITION - PARALLEL TO FLUTED DECK | 2 Hr. | HW-D-0181 |
| TOP OF CONCRETE MASONRY PARTITION - PERPENDICULAR TO FLUTED DECK | 4 Hr. | HW-D-0294 |
| TOP OF CONCRETE MASONRY PARTITION - PERPENDICULAR TO FLUTED DECK | 2 Hr. | HW-D-0225 |
| TOP OF CONCRETE MASONRY PARTITION - ONE SIDE ACCESS WITH STRUCTURAL MEMBER. | 2 Hr. | HW-D-0389 |
| TOP OF CONCRETE MASONRY PARTITION - PARALLEL TO FIREPROOFED STEEL BEAM | 2 Hr. | HW-D-0440 |
| | | |
| **Concrete Floor to Floor Joints** | | |
| CONCRETE FLOOR TO FLOOR JOINT | 2 Hr. | FF-D-1012 |
| CONCRETE FLOOR TO FLOOR JOINT | 2 Hr. | FF-D-1013 |
| CONCRETE FLOOR TO FLOOR JOINT | 3 Hr. | FF-D-1011 |
| CONCRETE FLOOR TO FLOOR JOINT | 3 Hr. | FF-D-1026 |
| | | |
| **Edge of Concrete Floor Slab to Wall** | | |
| CONCRETE FLOOR TO WALL JOINT | 3 Hr. | FW-D-1011 |
| CONCRETE FLOOR TO WALL JOINT | 2 Hr. | FW-D-1012, FW-D-1013 |
| **Edge of Slab at Curtainwall / Ext. Glazing** | | |
| EDGE OF SLAB | 2 Hr. | Based on UL |
| | | CW-D-1015 |
| | | CW-D-2027 |
| | | Based on Intertek |
| | | HI-BP 150-01 |
| | | CEJ 127P |
| | | |

END OF SECTION