

SECTION 07 8400
FIRESTOPPING

PART 1 GENERAL

1.01 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.

1.02 RELATED REQUIREMENTS

- A. Section 27 0532 Firestopping for Telecommunications.
- B. Section 28 1300 Access Control.
- C. Section 28 2300 Video Surveillance.

1.03 REFERENCE STANDARDS

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials; 2015.
- B. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops; 2013a.
- C. ASTM E1966 - Standard Test Method for Fire Resistive Joint Systems; 2007 (Reapproved 2011).
- D. ASTM E2307 - Standard Test Method for Determining Fire Resistance of Perimeter Fire Barriers Using Intermediate-Scale, Multi-story Test Apparatus; 2015a.
- E. ASTM E2837 - Standard Test Method for Determining the Fire Resistance of Continuity Head-of-Wall Joint Systems Installed Between Rated Wall Assemblies and Nonrated Horizontal Assemblies; 2013.
- F. ITS (DIR) - Directory of Listed Products; current edition.
- G. FM 4991 - Approval Standard for Firestop Contractors; 2013.
- H. FM (AG) - FM Approval Guide; current edition.
- I. SCAQMD 1168 - South Coast Air Quality Management District Rule No.1168; current edition.
- J. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems; Current Edition, Including All Revisions.
- K. UL (FRD) - Fire Resistance Directory; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- C. Sustainable Design Submittal: Submit VOC content documentation for all non-preformed materials.
- D. Manufacturer's Installation Instructions: Indicate preparation and installation instructions.
- E. Installer Qualification: Submit qualification statements for installing mechanics.

1.05 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 UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
- B. Installer Qualifications: Company specializing in performing the work of this section and:
 - 1. Trained by the manufacturer.
 - 2. Approved by Factory Mutual Research Corporation under FM 4991.
 - 3. With minimum 3 years documented experience installing work of this type.

4. Able to show at least 5 satisfactorily completed projects of comparable size and type.

1.06 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

2.01 FIRESTOPPING - GENERAL REQUIREMENTS

- A. Manufacturers:
 1. Hilti, Inc: www.us.hilti.com/#sle.
 2. Substitutions: See Section 01 6000 - Product Requirements.
- B. Firestopping: Any material meeting requirements.
- C. Firestopping Materials with Volatile Content: Provide only products having lower volatile organic compound (VOC) content than required by SCAQMD 1168.
- D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Type required for tested assembly design.

2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS

- A. Perimeter Fire Containment Firestopping: Use any system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of the floor assembly.
 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
 2. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
 3. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
 4. Where floor assembly is not required to have a fire rating, provide systems that have been tested to show L Rating as indicated.
- B. Head-of-Wall Firestopping at Joints Between Non-Rated Floor and Fire-Rated Wall: Use any system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
- C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use any system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
 1. Movement: In addition, provide systems that have been tested to show movement capability as indicated.
 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.
- D. Through Penetration Firestopping: Use any system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
 1. Temperature Rise: In addition, provide systems that have been tested to show T Rating as indicated.
 2. Air Leakage: In addition, provide systems that have been tested to show L Rating as indicated.

2.03 FIRESTOPPING FOR FLOOR-TO-FLOOR, WALL-TO-FLOOR, AND WALL-TO-WALL JOINTS

- A. Concrete and Concrete Masonry Walls and Floors:
 1. Floor to Floor Joints:
 - a. 2 Hour Construction: UL System FF-D-1013; Hilti CFS-SP WB Firestop Joint Spray and CP 672.

2. Top of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Over Metal Deck Floor:
 - a. 2 Hour Construction: UL System HW-D-0181; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System HW-D-1037; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 3. Top of Wall Joints at Concrete/Concrete Masonry Wall to Concrete Floor:
 - a. 3 Hour Construction: UL System HW-D-1058; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System HW-D-0268; Hilti CP 606 Flexible Firestop Sealant.
 4. Concrete/Concrete Masonry Wall to Wall Joints:
 - a. 2 Hour Construction: UL System WW-D-0017; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System WW-D-0032; Hilti CP 606 Flexible Firestop Sealant.
- B. Gypsum Board Walls:
1. Wall to Wall Joints:
 - a. 2 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
 - b. 1 Hour Construction: UL System WW-D-0067; Hilti CP 606 Flexible Firestop Sealant.
 2. Top of Wall Joints at Underside of Steel Beam and Concrete Over Metal Deck Floor with Sprayed On Fireproofing:
 - a. 2 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 1 Hour Construction: UL System HW-D-0259; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 3. Top of Wall Joints at Underside of Flat Concrete:
 - a. 2 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
 - c. 1 Hour Construction: UL System HW-D-1068; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - d. 1 Hour Construction: UL System HW-D-0757; Hilti CFS-TTS Top Track Seal.
 4. Top of Wall Joints at Concrete Over Metal Deck, Wall Parallel to Ribs:
 - a. 2 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
 - c. 1 Hour Construction: UL System HW-D-0049; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - d. 1 Hour Construction: UL System HW-D-0184; Hilti CP 606 Flexible Firestop Sealant.
 5. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Cut to Fit Ribs:
 - a. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
 - b. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
 6. Top of Wall Joints at Concrete Over Metal Deck, Wall Perpendicular to Ribs, Not Cut to Fit:
 - a. 2 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - b. 2 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.
 - c. 1 Hour Construction: UL System HW-D-0042; Hilti CFS-SP WB Firestop Joint Spray and CP 672.
 - d. 1 Hour Construction: UL System HW-D-0045; Hilti CP 606 Flexible Firestop Sealant.

2.04 FIRESTOPPING PENETRATIONS THROUGH CONCRETE AND CONCRETE MASONRY CONSTRUCTION

- A. Blank Openings:
1. In Floors or Walls:

- a. 2 Hour Construction: UL System C-AJ-0090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- B. Penetrations Through Floors or Walls By:
 - 1. Multiple Penetrations in Large Openings:
 - a. 3 Hour Construction: UL System C-AJ-8099; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 3 Hour Construction: UL System C-AJ-8110; Hilti CFS-BL Firestop Block.
 - c. 2 Hour Construction: UL System C-AJ-8143; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 2. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 3 Hour Construction: UL System C-AJ-1184; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 3 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 3 Hour Construction: UL System C-AJ-1421; Hilti FS-ONE MAX Intumescent Firestop Sealant or CP 604 Self-Leveling Firestop Sealant.
 - d. 3 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
 - e. 2 Hour Construction: UL System C-AJ-1226; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - f. 2 Hour Construction: UL System C-AJ-1425; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
 - 3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 3 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
 - b. 3 Hour Construction: UL System C-AJ-2220; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 3 Hour Construction: UL System C-AJ-2342; Hilti CP-E/S Firestop Wrap Strip.
 - d. 2 Hour Construction: UL System System C-AJ-2167; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - e. 2 Hour Construction: UL System C-AJ-2109; Hilti CP 643N/644 Firestop Collar.
 - f. 2 Hour Construction: UL System C-BJ-2021; Hilti CP 643N Firestop Collar.
 - 4. Cable Trays with Electrical Cables:
 - a. 3 Hour Construction: UL System C-AJ-4093; Hilti CFS-BL Firestop Block.
 - b. 2 Hour Construction: UL System C-AJ-4094; Hilti CFS-BL Firestop Block.
 - 5. Electrical Busways:
 - a. 3 Hour Construction: UL System C-AJ-6017; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 6. Insulated Pipes:
 - a. 3 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE IMAX intumescent Firestop Sealant.
 - c. 2 Hour Construction: UL System C-AJ-5048; Hilti FS-ONE MAX Intumescent Firestop Sealant, CP 606 Flexible Firestop Sealant, CP 601S Elastomeric Firestop Sealant, CP 604 Self-Leveling Firestop Sealant or CFS-S SIL GG Firestop Silicone Sealant Gun-Grade.
 - 7. HVAC Ducts, Uninsulated:
 - a. 2 Hour Construction: UL System C-AJ-7111; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 3 Hour Construction: UL System C-AJ-7051; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- C. Penetrations Through Floors By:
 - 1. Multiple Penetrations in Large Openings:
 - a. 3 Hour Construction: UL System F-A-1023; Hilti CP 680-P/M Cast-In Device.

- b. 2 Hour Construction: UL System F-A-8012; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
 - 2. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 3 Hour Construction: UL System F-A-1017; Hilti CP 680-P/M Cast-In Device.
 - b. 2 Hour Construction: UL System F-A-1016; Hilti CP 680-P/M Cast-In Device.
 - 3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 3 Hour Construction: UL System F-A-2054; Hilti CP 680-P Cast-In Device.
 - b. 3 Hour Construction: UL System F-A-2066; Hilti CP 680-P Cast-In Device.
 - c. 3 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop-In Device.
 - d. 2 Hour Construction: UL System F-A-2065; Hilti CP 680-P Cast-In Device.
 - e. 2 Hour Construction: UL System F-A-2213; Hilti CFS-DID Drop-In Device.
 - f. 2 Hour Construction: UL System F-A-2053; Hilti CP 680-P Cast-In Device.
 - 4. Electrical Busways:
 - a. 3 Hour Construction: UL System C-AJ-6017; Hilti CFS-S SIL GG Firestop Silicone Sealant Gun-Grade or CFS-S SIL SL Firestop Silicone Sealant Self-Leveling.
 - b. 2 Hour Construction: UL System F-A-6002; Hilti CP 604 Self-Leveling Firestop Sealant.
 - 5. Insulated Pipes:
 - a. 3 Hour Construction: UL System F-A-5016; Hilti CP 680-P Cast-In Device.
 - b. 3 Hour Construction: UL System F-A-5018; Hilti CP 680-P Cast-In Device.
 - c. 2 Hour Construction: UL System F-A-5015; Hilti CP 680-P/M Cast-In Device.
 - d. 2 Hour Construction: UL System F-A-5017; Hilti CP 680-P/M Cast-In Device.
- D. Penetrations Through Walls By:
 - 1. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-J-1067; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 2. Insulated Pipes:
 - a. 2 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 1 Hour Construction: UL System C-AJ-5090; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - d. 1 Hour Construction: UL System C-AJ-5091; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - 3. HVAC Ducts, Uninsulated:
 - a. 2 Hour Construction: UL System W-J-7109; Hilti FS-ONE MAX Intumescent Firestop Sealant or CP 606 Flexible Firestop Sealant.
 - 4. HVAC Ducts, Insulated:
 - a. 2 Hour Construction: UL System W-J-7112; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.05 FIRESTOPPING PENETRATIONS THROUGH GYPSUM BOARD WALLS

- A. Penetrations By:
 - 1. Multiple Penetrations in Large Openings:
 - a. 2 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 2 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - d. 2 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.

- e. 1 Hour Construction: UL System W-L-1408; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- f. 1 Hour Construction: UL System W-L-8071; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- g. 1 Hour Construction: UL System W-L-8079; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- h. 1 Hour Construction: UL System W-L-8013; Hilti CFS-BL Firestop Block.
- 2. Uninsulated Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 2 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
 - d. 1 Hour Construction: UL System W-L-1054; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - e. 1 Hour Construction: UL System W-L-1164; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - f. 1 Hour Construction: UL System W-L-1506; Hilti CFS-D Firestop Cable Disc.
- 3. Uninsulated Non-Metallic Pipe, Conduit, and Tubing:
 - a. 2 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
 - b. 2 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 1 Hour Construction: UL System W-L-2078; Hilti CP 643N/644 Firestop Collar.
 - d. 1 Hour Construction: UL System W-L-2128; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- 4. Cable Trays with Electrical Cables:
 - a. 2 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
 - b. 2 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - c. 1 Hour Construction: UL System W-L-4011; Hilti CFS-BL Firestop Block.
 - d. 1 Hour Construction: UL System W-L-4060; Hilti FS-ONE MAX Intumescent Firestop Sealant.
- 5. Insulated Pipes:
 - a. 2 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 2 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
 - c. 1 Hour Construction: UL System W-L-5028; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - d. 1 Hour Construction: UL System W-L-5029; Hilti FS-ONE Intumescent Firestop Sealant.
- 6. HVAC Ducts, Insulated:
 - a. 2 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.
 - b. 1 Hour Construction: UL System W-L-7156; Hilti FS-ONE MAX Intumescent Firestop Sealant.

2.06 FIRESTOPPING SYSTEMS

- A. Firestopping: Any material meeting requirements.
 - 1. Fire Ratings: Use any system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814 or ASTM E119 with F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating and in compliance with other specified requirements.

PART 3 EXECUTION

3.01 EXAMINATION

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

3.02 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.

3.03 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 or by owner.

3.04 FIELD QUALITY CONTROL

- A. Repair or replace penetration firestopping and joints at locations where inspection results indicate firestopping or joints do not meet specified requirements.

3.05 CLEANING

- A. Clean adjacent surfaces of firestopping materials.

3.06 PROTECTION

- A. Protect adjacent surfaces from damage by material installation.

END OF SECTION 07 8400

