

## **SECTION 07 05 53 - FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Identification markings for fire and smoke rated partitions, and fire rated walls.

#### **1.02 REFERENCE STANDARDS**

- A. ICC (IBC) - International Building Code.

#### **1.03 FIELD CONDITIONS**

- A. Do not install adhered markings when ambient temperature is lower than recommended by label or sign manufacturer.
- B. Do not install markings when ambient temperature is lower than recommended by manufacturer.

### **PART 2 PRODUCTS**

#### **2.01 SYSTEM SELECTION**

- A. At Contractor's option, select signs or painted system.

#### **2.02 MANUFACTURERS**

- A. Partition Identification Labels:
  - 1. Fire Wall Signs, Inc: [www.firewallsigns.com/#sle](http://www.firewallsigns.com/#sle).
  - 2. Safety Supply Warehouse, Inc: [www.safetysupplywarehouse.com/#sle](http://www.safetysupplywarehouse.com/#sle).
  - 3. Or approved equal.

#### **2.03 FIRE AND SMOKE ASSEMBLY IDENTIFICATION**

- A. Regulatory Requirements: Comply with "Marking and Identification" requirements of "Fire-Resistance Ratings and Fire Tests" chapter of ICC (IBC).
- B. Adhered Fire and Smoke Assembly Identification Signs: Printed vinyl sign with factory applied adhesive backing.
- C. Applied Fire and Smoke Assembly Identification: Identification markings applied to partition with spray paint and a code compliant stencil. Provide acrylic paint as manufactured by Krylon, Rustoleum, or approved equal.
- D. Languages: Provide sign markings in English.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify that substrate surfaces are ready to receive work.

#### **3.02 INSTALLATION**

- A. Locate markings as required by ICC (IBC).

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- B. Install adhered markings in accordance with manufacturer's instructions.
- C. Install neatly, with horizontal edges level.
- D. Protect from damage until Date of Substantial Completion; repair or replace damaged markings.

**END OF SECTION**

**SECTION 07 13 00 - SHEET WATERPROOFING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Self-adhered modified bituminous sheet membrane.

**1.02 REFERENCE STANDARDS**

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension.
- B. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting.
- C. ASTM D5295/D5295M - Standard Guide for Preparation of Concrete Surfaces for Adhered (Bonded) Membrane Waterproofing Systems.
- D. ASTM D5385/D5385M - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes.
- E. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
- F. NRCA (WM) - The NRCA Waterproofing Manual.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data for membrane, surface conditioner, flexible flashings, joint cover sheet, and joint and crack sealants.
- C. Manufacturer's Installation Instructions: Indicate special procedures.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

**1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of documented experience.

**1.05 FIELD CONDITIONS**

- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until liquid or mastic accessories have cured.

**1.06 WARRANTY**

- A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.
- B. Contractor to correct defective Work within period of five years after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.

- C. Provide five year manufacturer warranty for waterproofing failing to resist penetration of water, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.

## **PART 2 PRODUCTS**

### **2.01 SHEET WATERPROOFING APPLICATIONS**

- A. Self-Adhered Modified Bituminous Sheet Membrane:
  - 1. Location: Joints between new and existing concrete walls.
  - 2. Cover with drainage panel.

### **2.02 SHEET WATERPROOFING MATERIALS**

- A. Self-Adhered Modified Bituminous Sheet Membrane:
  - 1. Thickness: 60 mil, 0.060 inch, minimum.
  - 2. Tensile Strength:
    - a. Film: 5,000 psi, minimum, measured in accordance with ASTM D882 and at grip-separation rate of 2 inches per minute.
    - b. Membrane: 325 psi, minimum, measured in accordance with ASTM D412 Method A, using die C and at spindle-separation rate of 2 inches per minute.
  - 3. Elongation at Break: 300 percent, minimum, measured in accordance with ASTM D412.
  - 4. Water Vapor Permeance: 0.05 perm, maximum, measured in accordance with ASTM E96/E96M.
  - 5. Hydrostatic Pressure Resistance: Membrane resists leakage for at least one hour from pressure equivalent to 200 feet head of water applied in accordance with test method ASTM D5385/D5385M.
  - 6. Adhesives, Sealants, Tapes, and Accessories: As recommended by membrane manufacturer.
  - 7. Manufacturers:
    - a. Carlisle Coatings & Waterproofing Inc: [www.carlisleccw.com/#sle](http://www.carlisleccw.com/#sle).
    - b. CETCO, a division of Minerals Technologies Inc: [www.mineralstech.com/#sle](http://www.mineralstech.com/#sle).
    - c. GCP Applied Technologies: [www.gcpat.com/#sle](http://www.gcpat.com/#sle).
    - d. Henry Company: [www.henry.com/#sle](http://www.henry.com/#sle).
    - e. Tremco Commercial Sealants & Waterproofing.
    - f. W.R. Meadows, Inc: [www.wrmeadows.com/#sle](http://www.wrmeadows.com/#sle).

### **2.03 ACCESSORIES**

- A. Priming and Seaming Materials: As recommended by membrane manufacturer.
- B. Membrane Sealant: As recommended by membrane manufacturer.
- C. Sealant for Cracks and Joints In Substrates: Resilient elastomeric joint sealant compatible with substrates and waterproofing materials.

- D. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
  - 1. Composition: Dimpled polystyrene, polyethylene, or polypropylene core; polypropylene filter fabric.
  - 2. Thickness: 3/8 inch.
- E. Flexible Flashings: Type recommended by membrane manufacturer.
- F. Termination Bars: Aluminum; compatible with membrane and adhesives.
- G. Adhesives: As recommended by membrane manufacturer.
- H. Thinner and Cleaner: As recommended by adhesive manufacturer, compatible with sheet membrane.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Verify existing conditions are acceptable prior to starting work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify that items penetrating surfaces to receive waterproofing are securely installed.

#### **3.02 PREPARATION**

- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Fill nonmoving joints and cracks with a filler compatible with waterproofing materials.
- E. Seal moving cracks with sealant and nonrigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- F. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- G. Concrete Surfaces for Adhesive Bonding: Prepare concrete substrate in accordance with ASTM D5295/D5295M.
  - 1. Remove substances that inhibit adhesion including form release agents, curing compounds admixtures, laitance, moisture, dust, dirt, grease and oil.
  - 2. Repair surface defects including honeycombs, fins, tie holes, bug holes, sharp offsets, rutted cracks, ragged corners, deviations in surface plane, spalling and delaminations, as described in reference standard.
  - 3. Remove and replace areas of defective concrete; see Section 03 30 00.
  - 4. Prepare concrete for adhesive bonded waterproofing using mechanical or chemical methods described in referenced standard.

5. Test concrete surfaces as described in referenced standards, and verify surfaces are ready to receive adhesive bonded waterproofing membrane system.

### **3.03 INSTALLATION - MEMBRANE**

- A. Install membrane waterproofing in accordance with manufacturer's instructions and NRCA (WM) applicable requirements.
- B. Roll out membrane, and minimize wrinkles and bubbles.
- C. Self-Adhering Membrane: Remove release paper layer, and roll out onto substrate with a mechanical roller to provide full contact bond.
- D. Overlap edges and ends, minimum 3 inches, seal permanently waterproof by method recommended by manufacturer, and apply uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage, and seal joints and seams.
- G. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- H. Seal membrane and flashings to adjoining surfaces.
  1. Install termination bar along top edges.

### **3.04 INSTALLATION - DRAINAGE PANEL**

- A. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward; scribe and cut boards around projections, penetrations, and interruptions.
- B. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.
- C. Adhere drainage panel to substrate with compatible adhesive.

### **3.05 PROTECTION**

- A. Do not permit traffic over unprotected or uncovered membrane.

### **END OF SECTION**

**SECTION 07 53 23 - ETHYLENE-PROPYLENE-DIENE-MONOMER ROOFING (EPDM) - ELEVATE**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. EPDM membrane roofing system modifications.

**1.02 REFERENCE STANDARDS**

- A. ASTM D4637/D4637M - Standard Specification for EPDM Sheet Used in Single-Ply Roof Membrane.
- B. ASTM D4811/D4811M - Standard Specification for Nonvulcanized (Uncured) Rubber Sheet Used as Roof Flashing.
- C. FM 4470 - Approval Standard for Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for use in Class 1 and Noncombustible Roof Deck Construction.
- D. NRCA (RM) - The NRCA Roofing Manual.

**1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data:
  - 1. Provide membrane manufacturer's printed data showing roofing system components comply with specified requirements and with membrane manufacturer's requirements and recommendations for system type specified; include data for each product used in conjunction with roofing membrane, including insulation and fasteners.
  - 2. Provide documentation showing roofing system is UL classified or FM approved where UL or FM requirements are specified; include data itemizing classified or approved system components.
- C. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- D. Manufacturer's Instructions: Indicate installation of components; where instructions allow installation options, clearly indicate which option to use.
- E. Installer's qualification statement.

**1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: Company specializing in performing work of this section with minimum five years of documented experience installing specified system and having the following:
  - 1. Qualifications to uphold existing Firestone Red Shield EPDM 15 year, 55 mph warranty.
    - a. Warranty No. 700371325
    - b. Project No. 3418513
    - c. Contractor: Long Life, Inc. 40000762.

- B. Documents at Project Site: Maintain at project site one copy of manufacturer's installation instructions.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver products in manufacturer's original containers, dry and undamaged, with seals and labels intact and legible.
- B. Store materials clear of ground and moisture with weather-protective covering.
- C. Keep combustible materials away from ignition sources.

#### **1.06 FIELD CONDITIONS**

- A. Do not apply roofing membrane during unsuitable weather or when ambient conditions conflict with manufacturer's installation instructions.
- B. Schedule applications so no partially completed sections of roof are left exposed at end of workday.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURER**

- A. Membrane Roofing System:
  - 1. Elevate (Formerly Firestone Building Products Company, LLC.) :  
[www.holcimelevate.com/#sle](http://www.holcimelevate.com/#sle).
- B. Insulation: Same manufacturer as roof membrane.
- C. Metal Roof Edging: Same manufacturer as roof membrane.
- D. Substitutions: Not permitted.
- E. Source Limitations: Furnish products produced by single manufacturer.

#### **2.02 EPDM MEMBRANE ROOFING SYSTEM**

- A. Description: EPDM single-ply membrane.
  - 1. Provide assembly having Underwriters Laboratories, Inc. (UL) Class B fire hazard classification.
- B. Components, from Top of Roof Down:
  - 1. Membrane: Thickness as specified below.

#### **2.03 MEMBRANE MATERIALS**

- A. Roofing and Flashing Membrane: Cured synthetic single-ply membrane composed of EPDM with the following properties:
  - 1. Reinforcement: Polyester weft-inserted scrim; membrane complying with ASTM D4637/D4637M, Type II.
  - 2. Membrane and Flashing Color: Black.
  - 3. Thickness: 60 mils, 0.06 inch
  - 4. Nominal Thickness Tolerance: Plus/minus 10 percent.

5. Products: Match existing.
- B. Flashing Membrane: Self-curing, nonreinforced membrane composed of nonvulcanized EPDM rubber, complying with ASTM D4811/D4811M, Type II, with the following properties:
  1. Thickness: 55 mils, 0.055 inch.
  2. Product: Elevate; RubberGard EPDM FormFlash.
- C. Self-Adhesive Flashing Membrane: Semi-cured 45-mil, 0.045-inch EPDM membrane laminated to 35-mil, 0.035-inch EPDM tape adhesive.
  1. Product: Elevate; QuickSeam Flashing.
- D. Self-Adhesive Lap Splice Tape: 35 mil EPDM based, formulated for compatibility with EPDM membrane and high-solids primer.
  1. Product: Elevate; QuickSeam Splice Tape.
- E. Splice Adhesive: Manufacturer's recommended synthetic polymer-based, formulated for compatibility with EPDM membrane and metal surfaces.
- F. Bonding Adhesive: Manufacturer's recommended bonding adhesive, formulated for compatibility with EPDM membrane and other substrate materials, including masonry, wood, and insulation facings.
- G. Lap Sealant: Manufacturer's recommended lap sealant formulated for compatibility with primers and flashings.
- H. AP Sealant: Manufacturer's recommended single-component, polyurethane, nonsag, moisture-curing sealant.
- I. Seam Edge Treatment: Manufacturer's recommended EPDM rubber-based sealant, formulated for sealing exposed membrane edges at seams.
- J. Pourable Sealer: Manufacturer's recommended two-part polyurethane, two-color for reliable mixing.
- K. Water Block Seal: Manufacturer's recommended butyl rubber sealant for use between two surfaces, not exposed.
- L. Metal Plates and Strips Used for Fastening Membrane and Insulation: Steel with galvalume coating; comply with FM 4470 criteria for corrosion resistance.
- M. Termination Bars: Aluminum bars with integral caulk ledge; 1.3 inches wide by 0.1 inch thick.
  1. Product: Elevate; Termination Bar.

### **PART 3 EXECUTION**

#### **3.01 EXAMINATION**

- A. Examine roof deck to determine deck is sufficiently rigid to support installers and mechanical equipment so deflection will not strain or rupture roof components or deform deck.
- B. Verify surfaces and site conditions are ready to receive work. Correct defects in substrate before commencing with roofing work.

- C. Examine roof substrate to verify adequate slope to drains.
- D. Verify specifications and drawing details are workable and not in conflict with roofing manufacturer's recommendations and instructions; start of work constitutes acceptable project conditions and requirements.

### **3.02 INSTALLATION - GENERAL**

- A. Install roofing, insulation, flashings, and accessories in accordance with roofing manufacturer's published instructions and recommendations for specified roofing system. Where manufacturer provides no instructions or recommendations, follow NRCA (RM) written requirements and industry standards. Comply with federal, state, and local regulations.
- B. Obtain relevant instructions and maintain copies at project site for duration of installation period.
- C. Provide temporary closures to ensure moisture does not damage completed roofing. Use flashings, terminations, and temporary closures to provide watertight installation.

### **3.03 INSTALLATION - SINGLE-PLY MEMBRANE**

- A. Lay out membrane pieces so field and flashing splices are installed to shed water.
- B. Install membrane without wrinkles and without gaps or fishmouths in seams; bond and test seams and laps in accordance with membrane manufacturer's instructions and details.

### **3.04 FIELD QUALITY CONTROL**

- A. See Section 01 40 00 - Quality Requirements for additional requirements.
- B. Inspection by Manufacturer: Provide final inspection of roofing system by technical representative employed by roofing system manufacturer to inspect installation for warranty purposes, not a sales person.
- C. Perform corrections necessary for issuance of warranty.

### **3.05 CLEANING**

- A. Clean contaminants generated by roofing work from building and surrounding areas, including bitumen, adhesives, sealants, and coatings.
- B. Remove leftover materials, trash, debris, and equipment from project site and surrounding areas.

### **3.06 PROTECTION**

- A. Where construction traffic continues over finished roof panels, provide durable protection and replace or repair damaged roofing to original condition.

### **END OF SECTION**

**SECTION 07 84 00 - FIRESTOPPING**

**PART 1 GENERAL**

**1.01 SECTION INCLUDES**

- A. Firestopping systems.
- B. Firestopping of joints and penetrations in fire-resistance-rated and smoke-resistant assemblies, whether indicated on drawings or not.

**1.02 REFERENCE STANDARDS**

- A. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- B. ASTM E814 - Standard Test Method for Fire Tests of Penetration Firestop Systems.
- C. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- D. 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.
- E. FM (AG) - FM Approval Guide.
- F. ITS (DIR) - Directory of Listed Products.
- G. SCAQMD 1168 - Adhesive and Sealant Applications.
- H. UL (DIR) - Online Certifications Directory.
- I. UL (FRD) - Fire Resistance Directory.
- J. UL 1479 - Standard for Fire Tests of Penetration Firestops.
- K. UL 2079 - Standard for Tests for Fire Resistance of Building Joint Systems.

**1.03 COORDINATION**

- A. Coordinate construction of openings and penetrating items to ensure that through-penetration firestop systems are installed according to specified requirements.
- B. Coordinate sizing of sleeves, openings, core-drilled holes or cut openings to accommodate through-penetration firestop systems.
- C. Schedule installation of firestopping after completion of penetrating item installation but prior to covering or concealing of openings.
- D. Coordinate gypsum barrier construction prior to installing penetrating items and firestop to ensuring barrier integrity and continuity.

**1.04 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
- C. System Drawings: Submit documentation from a qualified third-party testing agency that is applicable to each firestopping system configuration for construction, joint opening width and/or penetrating items.

### **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.
  - 2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at [www.icc-es.org](http://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. Trained by manufacturer.

### **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 three days after installation of materials.
- B. Provide ventilation in areas where solvent-cured materials are being installed.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Firestopping Manufacturers:
  - 1. 3M Fire Protection Products: [www.3m.com/firestop/#sle](http://www.3m.com/firestop/#sle).
  - 2. A/D Fire Protection Systems Inc: [www.adfire.com/#sle](http://www.adfire.com/#sle).
  - 3. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 4. RectorSeal, a CSW Industries Company: [www.rectorseal.com/firestop-solutions/#sle](http://www.rectorseal.com/firestop-solutions/#sle).
  - 5. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  - 6. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).

### **2.02 MATERIALS**

- A. Firestopping Materials: Any materials meeting requirements.
- B. Obtain firestopping systems for each type of penetration or joint opening and construction condition indicated from a single manufacturer.
- C. Volatile Organic Compound (VOC) Content: Provide products having VOC content lower than that required by SCAQMD 1168.
- D. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.

## **2.03 FIRESTOPPING ASSEMBLY REQUIREMENTS**

- A. Head-of-Wall (HW) Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of wall assembly.
  - 1. Movement: Provide systems that have been tested to show movement capability as indicated.
- B. Floor-to-Floor (FF), Floor-to-Wall (FW), Head-of-Wall (HW), and Wall-to-Wall (WW) Joints, Except Perimeter, Where Both Are Fire-Rated: Use 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: Provide systems that have been tested to show movement capability as indicated.
  - 2. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.
- C. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
  - 1. Listing by FM (AG), ITS (DIR), UL (DIR), or UL (FRD) in their certification directories will be considered evidence of successful testing.

## **2.04 FIRESTOPPING SYSTEMS**

- A. Firestopping: Any material meeting requirements.
  - 1. Fire Ratings: Use system that is listed by FM (AG), ITS (DIR), or UL (FRD) and tested in accordance with ASTM E814, ASTM E119, or UL 1479 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 materials that could adversely affect bond of firestopping material.
- B. Remove incompatible materials that could adversely affect bond.
- C. Install backing materials to prevent liquid material from leakage.

### **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.

**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**

## **SECTION 07 92 00 - JOINT SEALANTS**

### **PART 1 GENERAL**

#### **1.01 SECTION INCLUDES**

- A. Nonsag gunnable joint sealants.
- B. Self-leveling pourable joint sealants.
- C. Joint backings and accessories.

#### **1.02 REFERENCE STANDARDS**

- A. ASTM C661 - Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer.
- B. ASTM C834 - Standard Specification for Latex Sealants.
- C. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
- D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
- E. ASTM C1193 - Standard Guide for Use of Joint Sealants.
- F. ASTM C1248 - Standard Test Method for Staining of Porous Substrate by Joint Sealants.
- G. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants.
- H. ASTM D2240 - Standard Test Method for Rubber Property--Durometer Hardness.
- I. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
- J. SCAQMD 1168 - Adhesive and Sealant Applications.
- K. UL 263 - Standard for Fire Tests of Building Construction and Materials.

#### **1.03 SUBMITTALS**

- A. See Section 01 30 00 - Administrative Requirements for submittal procedures.
- B. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
  - 1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
  - 2. List of backing materials approved for use with the specific product.
  - 3. Backing material recommended by sealant manufacturer.
  - 4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
  - 5. Substrates the product should not be used on.
- C. Product Data for Accessory Products: Submit manufacturer's technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.
- D. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.

- E. Samples for Verification: Where custom sealant color is specified, obtain directions from Architect and submit at least two physical samples for verification of color of each required sealant.

#### **1.04 QUALITY ASSURANCE**

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.
- B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of documented experience and approved by manufacturer.

### **PART 2 PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Sealants:
  - 1. Bostik Inc: [www.bostik-us.com/#sle](http://www.bostik-us.com/#sle).
  - 2. Dow Chemical Company: [consumer.dow.com/en-us/industry/ind-building-construction.html/#sle](http://consumer.dow.com/en-us/industry/ind-building-construction.html/#sle).
  - 3. Hilti, Inc: [www.us.hilti.com/#sle](http://www.us.hilti.com/#sle).
  - 4. Master Builders Solutions by BASF: [www.master-builders-solutions.basf.us/en-us/#sle](http://www.master-builders-solutions.basf.us/en-us/#sle).
  - 5. Momentive Performance Materials, Inc (formerly GE Silicones): [www.momentive.com/#sle](http://www.momentive.com/#sle).
  - 6. Pecora Corporation: [www.pecora.com/#sle](http://www.pecora.com/#sle).
  - 7. Sika Corporation: [www.usa-sika.com/#sle](http://www.usa-sika.com/#sle).
  - 8. Specified Technologies Inc: [www.stifirestop.com/#sle](http://www.stifirestop.com/#sle).
  - 9. Tremco Commercial Sealants & Waterproofing: [www.tremcosealants.com/#sle](http://www.tremcosealants.com/#sle).

#### **2.02 JOINT SEALANT APPLICATIONS**

- A. Scope:
  - 1. Exterior Joints:
    - a. Seal the following joints:
      - 1) Joints between doors, windows, and other frames or adjacent construction.
      - 2) Joints between different exposed materials.
  - 2. Interior Joints:
    - a. Seal the following joints:
      - 1) Joints between door frames, window frames, and other frames and adjacent construction.
      - 2) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations.

- 3) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
3. Do Not Seal:
    - a. Intentional weep holes in masonry.
    - b. Joints indicated to be covered with expansion joint cover assemblies.
    - c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
    - d. Joints where sealant installation is specified in other sections.
  - B. Exterior Joints: Use non-sag non-staining silicone sealant, unless otherwise indicated.
  - C. Interior Joints: Use non-sag polyurethane sealant, unless otherwise indicated.
    1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
    2. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
    3. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
    4. Narrow Control Joints in Interior Concrete Slabs: Self-leveling polyurethane sealant.
    5. Other Floor Joints: Self-leveling polyurethane traffic-grade sealant.
  - D. Interior Wet Areas: Bathrooms, restrooms, and kitchens; fixtures in wet areas include plumbing fixtures, countertops, cabinets, and other similar items.
  - E. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.

## **2.03 JOINT SEALANTS - GENERAL**

- A. Sealants and Primers: Provide products having lower volatile organic compound (VOC) content than indicated in SCAQMD 1168.

## **2.04 NONSAG JOINT SEALANTS**

- A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
  1. Movement Capability: Plus and minus 50 percent, minimum.
  2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
  3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
  4. Hardness Range: 15 to 35, Shore A, when tested in accordance with ASTM C661.
  5. Color: To be selected by Architect from manufacturer's full range.
- B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
  1. Color: White.

- C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multi-component; not expected to withstand continuous water immersion or traffic.
  - 1. Movement Capability: Plus and minus 35 percent, minimum.
  - 2. Hardness Range: 20 to 35, Shore A, when tested in accordance with ASTM C661.
  - 3. Color: To be selected by Architect from manufacturer's full range.
- D. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
  - 1. Color: Standard colors matching finished surfaces, Type OP (opaque).
  - 2. Grade: ASTM C834; Grade 32 Degrees F (0 Degrees C).
- E. Acrylic Latex Sealant: ASTM C834; for use as acoustical sealant and in firestopping systems for expansion joints and through penetrations.
  - 1. Color: Standard colors matching finished surfaces.
  - 2. Fire Rated System: Complies with UL 263 and ASTM E119 with UL fire resistance classifications.

## **2.05 SELF-LEVELING JOINT SEALANTS**

- A. Self-Leveling Polyurethane Sealant for Horizontal Expansion Joints: ASTM C920, Grade P, Uses T, M, and O; multicomponent; explicitly approved by manufacturer for horizontal expansion joints.
  - 1. Movement Capability: Plus and minus 25 percent, minimum.
  - 2. Hardness Range: 30 to 35, Shore A, when tested in accordance with ASTM C661.
  - 3. Color: To be selected by Architect from manufacturer's full range.
- B. Rigid Self-Leveling Polyurethane Joint Filler: Two part, low viscosity, fast setting; intended for cracks and control joints not subject to significant movement.
  - 1. Hardness Range: Greater than 100, Shore A, and 50 to 80, Shore D, when tested in accordance with ASTM C661.
- C. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
  - 1. Composition: Multicomponent, 100 percent solids by weight.
  - 2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
  - 3. Color: To be selected by Architect from manufacturer's standard colors.
  - 4. Joint Width, Minimum: 1/8 inch.

## **2.06 ACCESSORIES**

- A. Sealant Backing Materials, General: Materials placed in joint before applying sealants; assists sealant performance and service life by developing optimum sealant profile and preventing three-sided adhesion; type and size recommended by sealant manufacturer for compatibility with sealant, substrate, and application.
- B. Sealant Backing Rod, Closed-Cell Type:
  - 1. Cylindrical flexible sealant backings complying with ASTM C1330 Type C.
  - 2. Size: 25 to 50 percent larger in diameter than joint width.
- C. Sealant Backing Rod, Bi-Cellular Type:
  - 1. Cylindrical flexible sealant backings complying with ASTM C1330 Type B.
  - 2. Size: 25 to 50 percent larger in diameter than joint width.
- D. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
- E. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
- F. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
- G. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

## **PART 3 EXECUTION**

### **3.01 EXAMINATION**

- A. Verify that joints are ready to receive work.
- B. Verify that backing materials are compatible with sealants.
- C. Verify that backer rods are of the correct size.

### **3.02 PREPARATION**

- A. Remove loose materials and foreign matter that could impair adhesion of sealant.
- B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
- C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
- D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
- E. Concrete Floor Joints That Will Be Exposed in Completed Work: Test joint filler in an inconspicuous area to verify that it does not stain or discolor slab.

### **3.03 INSTALLATION**

- A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
- B. Provide joint sealant installations complying with ASTM C1193.

- C. Install acoustical sealant application work in accordance with ASTM C919.
- D. Measure joint dimensions and size joint backers to achieve the following:
  - 1. Width/depth ratio of 2:1.
  - 2. Neck dimension no greater than 1/3 of the joint width.
  - 3. Surface bond area on each side not less than 75 percent of joint width.
- E. Install bond breaker backing tape where backer rod cannot be used.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
- G. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
- H. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
- I. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.

**END OF SECTION**