SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:
   1. Sealants and joint backing.

B. Related Sections:
   1. Section 07 84 00 - Firestopping: Firestopping sealants.
   2. Section 07 51 00-Built-up Bituminous Roofing: Sealants required in conjunction with roofing.
   3. Section 08 80 00 - Glazing: Glazing sealants and accessories.
   4. Section 09 29 00 - Gypsum Board: Acoustical sealant.
   5. Section 09 30 00 - Tiling: Sealants used as tile grout.

1.02 REFERENCE STANDARDS

A. ASTM International:
   1. ASTM C834 - Standard Specification for Latex Sealants.
   2. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
   3. ASTM C920 - Elastomeric Joint Sealants.
   4. ASTM C1193 - Standard Guide for Use of Joint Sealants.
   5. ASTM C1330 - Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid Applied Sealants
   6. ASTM D1667 - Flexible Cellular Materials--Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).

B. Bay Area Air Quality Management District:
   1. BAAQMD Reg. 8 Rule 51 - Adhesive and Sealant Products.

C. South Coast Air Quality Management District:
   1. SCAQMD Rule #1168 - Adhesive and Sealant Applications.

D. CFR 177.2600 - Code of Federal Regulations

1.03 SYSTEM DESCRIPTION

A. Contractor is responsible for the design, selection, and installation of the sealants, as well as the performance of the sealant system.

B. Except as otherwise indicated, joint sealants are required to establish and maintain airtight and waterproof continuous seals on a permanent basis, with recognized limitations of wear and aging as indicated for each application. Failures of installed sealants to comply with this requirement will be recognized as failures of materials and workmanship.

1.04 ADMINISTRATIVE REQUIREMENTS

A. [Coordination:]

B. Preinstallation Meeting:

1. Contractor shall arrange meeting to review joint sealant work prior to actual installation.
2. Meeting to be attended by University's Representative, University's Inspector of Record, Contractor, and Contractor's installer, agents of accepted manufacturers, and other installers whose work may be affected quality of joint sealant work.
3. Participants shall have had at least one week's advance notice of meeting date and time.
4. Hold conference at the job site.
5. The following major considerations shall be reviewed at the meeting:
   a. Review in detail the Contract specifications, protection of adjacent surfaces, installation procedures, field quality control, and other related items.
   b. Review in detail job conditions, schedule, construction sequence, application requirements, and quality of completed installation.
   c. Review methods for storing and handling materials.
   d. Review in detail the means of protecting completed work during remainder of construction period.
   e. Record discussions of meeting and any conflict, incompatibility, or inadequacy, and furnish a copy of record to each participant.
6. Contractor shall produce meeting notes that will record discussions of meeting and any conflict, incompatibility, or inadequacy and they will indicate that the applicator of joint sealant work has reviewed and accepted the substrates for joint sealant work. Distribute meeting notes to all attendees prior to joint sealant work.

C. [Sequencing:]

D. Scheduling:
   1. Schedule application only after concrete has cured and joints are most likely to be normal size.

1.05 [SUSTAINABLE CHARACTERISTICS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design compliance.

B. Materials and Resources Characteristics:
   1. [Recycled Content Materials: Furnish materials with maximum available recycled content including:

SPEC NOTE ***List materials specified in this section required to have recycled content.***

      a. [_____.]
   2. [Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project site.]

SPEC NOTE ***List materials specified in this section required to be regional materials.***

      a. [_____.]

C. Indoor Environmental Quality Characteristics:
   1. [Interior] Sealants and Sealant Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

1.06 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures, for submittal procedures.

B. Product Data: Provide data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Samples: Submit two samples, 6 by 6 inch in size illustrating sealant colors for selection.

D. Manufacturer's Installation Instructions: Indicate special procedures, surface preparation, and perimeter conditions requiring special attention.

1.07 [SUSTAINABLE DESIGN SUBMITTALS]

A. Section 01 35 63 - Sustainability Project Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.
   1. Materials Resources Certificates:
      a. Certify source for regional materials and distance from Project site.
   2. Indoor Air Quality Certificates:
      a. Certify volatile organic compound content for each interior [adhesive][and][sealant] and related primer.
         1) Provide product data for adhesives, sealants, sealants primer and aerosol adhesives used in the interior of the building highlighting VOC content of each product used. Adhesives and sealants must meet or exceed the VOC limits of SCAQMD Rule #1168. Refer to the LEED 2009 for New Construction and Major Renovations for acceptable VOC limits
         2) Provide a listing of each indoor adhesive, sealant, sealant primer and aerosol adhesive product used in the interior of the project. Include manufacture’s name, product name, specific VOC data (g/L less water) for each product, and the corresponding allowable VOC from the referenced standard.

C. Product Cost Data: Submit cost of products to verify compliance with Project sustainable design requirements. Exclude cost of labor and equipment to install products.
   1. Provide cost data for the following products:
      a. Regional products.

1.08 QUALITY ASSURANCE

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Applicator’s Qualifications: Applicator of exterior, elastomeric sealants shall be experienced in applying sealants similar to those specified.

C. Manufacturer Review: Review shop drawings of materials to receive sealant and verify the joint configuration and bonding depth is appropriate to receive sealant.

D. Demonstration:
   1. After University’s Representative review of sealant materials and application procedures, and prior to sealant installation, arrange for applicator to demonstrate application procedure under observation of sealant manufacturer’s representative, Contractor, and University’s Representative
   2. Demonstration shall consist of completely sealing joint at location determined by University’s Representative and shall include all phases of application including preparing joint, priming where required, installing back-up material, applying sealant, and tooling.

1.09 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver sealants and related accessories in factory-sealed, unopened containers bearing manufacturer’s name, batch number, product designation, color, expiration period, curing time, and mixing instructions for multi-component materials.

B. Storage: Store in original, unopened containers or packages. Follow manufacturer's recommendations for storage temperature and shelf life.

C. Handling: Follow manufacturer's recommendations for handling products containing toxic materials. Keep flammable material away from heat, sparks, and open flame. Use recommended solvents and cleaning agents for cleaning tools, equipment, and skin.

1.10 SITE CONDITIONS

A. Environmental Requirements: Apply materials only when surface and ambient temperatures fall within manufacturer-recommended ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

1.11 WARRANTY

A. See Section 01 78 00 - Closeout Submittals.

B. Correct defective work within a 2 year period after Date of Substantial Completion.

C. Warranty: Include coverage for installed sealants and accessories which fail to achieve watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 JOINT SEALANTS

A. General Requirements:
1. Sealant systems shall be compatible with contacting membranes, premolded joint filler, and fluid applied waterproofing systems.
2. Sealant systems shall not stain adjacent exposed surfaces.
3. Manufacturer's standard color range shall permit matching sealants to color of contacting surfaces.
4. [All sealants shall have VOC content of less than or equal to 100 g/L.]
5. [Sealants shall meet or exceed requirements of BAAQMD, Reg. 8, Rule 51 for Volatile Organic Compound (VOC) emissions.]
6. [Sealants shall meet or exceed requirements of SCAQMD Rule #1168 for Volatile Organic Compound (VOC) emissions.]

B. Sealant [Type 1]:
1. Location: Typical sealant unless otherwise noted.
2. Description: One component low modulus silicone sealant.
3. Product: General Electric Co.'s "Silpruf SCS2000"; Dow Corning Corp.'s "Dow Corning 795 Building Sealant"; or equal.

C. Sealant [Type 2]:
1. Location: Ceramic tile and plumbing fixtures.
2. Description: One component silicone sealant.
3. Product: General Electric Co.'s "SCS1700"; Dow Corning Corp.'s "Dow Corning 786 Mildew-Resistant Silicone Sealant"; or equal.

D. Sealant [Type 3]:
1. Location: Horizontal joints subject to traffic abrasion.
2. Description: Multi-part polyurethane, minimum Shore A hardness of 40.
3. Product: Tremco's "THC/900"; Pecora Corp.'s "Dynatred"; or equal.

2.02 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Typical Back-Up Material, Fillers, and Joint Packing.: Round flexible, polyolefin foam rod made of non-absorbing outer skin and resilient interior network of both open and closed cells that do not out-gas when ruptured and meeting requirements of ASTM C1330 Type B. Incompressible materials or acrylic-, asphalt-, oil-, or solvent-containing materials will not be permitted.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Cleaning Materials: Nonstaining and not otherwise injurious to exposed surfaces; for metal and glass, use xylol, tolerol, or methyl ethyl ketone.

2.03 MIXING

A. Multi-Component Sealants:
   1. Mix at job site with suitable power-operated equipment.
   2. Ensure components are mixed with identical batch control numbers.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine joints and spaces to receive sealant and verify that:
   1. Substrate surfaces are ready to receive work.
   2. Surfaces are free from bituminous materials, form release agents, bond breakers, deleterious curing compounds, water repellants, or other special surface treatments.
   3. Joints to be sealed are free of incompatible and loose materials.
   4. Metallic surfaces are free from rust, mill-scale, coatings, oil, and grease.
   5. There is absence or removal of protective materials from aluminum surfaces.
   6. [Concrete,] [plaster,] [and] [masonry] surfaces have properly cured.
   7. Joints and spaces requiring sealing are at correct or normal width.

B. Do not start application until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. The following requirements are in additional to requirements of ASTM C1193.

B. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.
   1. Thoroughly clean receiving surfaces, joints, and spaces of foreign material which could interfere with adhesion of joint sealants, including dirt, paints, mill-scale, rust, oil, grease, waterproofing, water repellents, water, and surface dirt.
   2. Clean porous surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or acid washing to produce clean sound substrate.
   3. Remove loose particles remaining from cleaning operation vacuuming or blowing out joints.
   4. Remove laitance and form release agents from concrete.
   5. Use only cleaning materials recommended by sealant manufacturer; do not use soap, detergents, or water-based cleaners on [masonry,][metal,][or][glass.]

6. Do not permit solvents to air dry; wipe surfaces free of solvent using clean, dry white cloth or white lintless paper.

C. Remove moisture and frost.

D. Protection:
1. Protect elements surrounding the work of this section from damage or disfigurement.
2. Use masking tape where required to control lap of materials on adjacent surfaces and remove upon completion.
3. Be responsible for damage to adjacent surfaces caused by sealant operations.

E. Protect elements surrounding the work of this section from damage or disfigurement.

F. Joint Width Conditions: Do not proceed with installation of joint sealants when joint widths are less, or more, than allowed by joint sealant manufacturer for specific applications.

G. Verify proper surface and ambient temperatures.

H. Joint Priming:
1. Make preliminary tests to insure primers will not stain exposed materials or deteriorate back-up material.
2. Prime surfaces as recommended by sealant manufacturer immediately prior to sealing.
3. Confine primers to areas of joint sealant bond, do not allow spillage or migration onto adjoining surfaces.

I. In all other respects, prepare surfaces in accordance with manufacturer’s recommendations.

3.03 INSTALLATION

A. Perform work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Perform installation in accordance with ASTM C1193.

C. Measure joint dimensions and size joint backers to achieve the following, unless otherwise indicated:
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.

D. Bonding Surface Depths: Control depths with back-up material; in placing preformed bead or rope types, do not twist or bend.
1. Typical Joints: 1/4 inch.
2. Concrete Joints Where Movement is Expected: 1/2 to 3/4 inch.
3. Joints Less than 1/2 Inch Wide: From 1/2 width to full width of joint.
4. Joints Greater than 1/2 Inch Wide, but No Greater than Two Inches: 1/2 width of joint.

E. Release Materials:
1. Use release material between back-up material and sealant where required to confine adhesion of sealant to surfaces of materials joined.
2. Conditions requiring release materials include, but are not necessarily limited to, joints subject to movement where sealant would otherwise contact back of joint or adhere to back-up materials and over support backing at traffic-bearing joints.
3. Release material will not be required where back-up material is polyethylene.

F. Accurately position filler material within joint to establish and control the uniform designated thickness of sealant. Exercise care in the installation of joint backing to see that the backing is not set too far below surface, thereby increasing the depth of sealant.

G. Apply material with sufficient pressure to completely fill the void space and to assure complete wetting of the contact area to obtain uniform adhesion.
   1. During application keep tip of nozzle at bottom of joint, forcing sealant to fill from the bottom to top.
   2. Move tip along joint to completely fill the joint. Finish joints smooth and flush with adjacent surface unless detailed otherwise.

H. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

I. Tooling:
   1. Using tooling agent recommended by sealant manufacturer, neatly tool joints to compress material, improve adhesion to surfaces joined, and achieve slightly concave surface.
   2. Repair air pockets exposed by tooling.
   3. Use masking tape where required to facilitate tooling and remove upon completion.

3.04 FIELD QUALITY CONTROL

A. Conduct periodic inspections to ensure adherence to previously approved procedures.

3.05 PATCHING

A. Patch or replace defective and damaged joint sealants as directed by University's Representative.

3.06 CLEANING

A. Clean adjacent surfaces soiled in applying sealants in accordance with sealant manufacturer's recommendations.

B. Remove wet material from adjacent surfaces before it has set.

C. Do not use cleaning agents.

3.07 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances or from damage.

END OF SECTION