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1. **Design Criteria:**

- a. Specifications and drawings shall collectively indicate where joint sealants are to be applied, whether graphically or narratively.
- b. Review sealant manufacturer's recommendations for joint sealant width and depth when specifying joint sealants.
- c. A proper sealant joint design can save considerable amounts of time and money in repairs. It is worth the time designing proper sealant joints to avoid premature degradation of sealant joints.
- d. VOC levels shall be specified to meet the project's sustainable design requirements and with respect to interior occupancies. Use of low and no VOC products is always preferred to maintain indoor air quality.
- e. Joint sealant locations to be considered by design team include the following:
 - i. At all joints, seams, and intersections between dissimilar materials.
 - ii. At all gaps and voids within or between similar materials.
 - iii. At interior control joints.
 - iv. At vertical concave [inside corner] masonry to masonry joints and tile to tile joints.
 - v. At visible perimeters of door frames, other frames, and trims [in addition to Section 07 9220 Acoustical Joint Sealants.
 - vi. At top of wall base along irregular walls.
 - vii. At joint between acoustical ceiling edge trim and irregular walls.
 - viii. At counter tops and splashes to make counter tops watertight.
 - ix. Completely around all plumbing fixtures, fittings, and trim at counter tops, walls, and floors.
 - x. At perimeters of all exterior penetrations.
 - xi. At exterior control joints.

2. **References**

- a. ASTM C719 Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement
 - i. Where possible, select sealants that comply with ASTM C719 for their increased durability over sealants that comply with ASTM C920 (Standard Specification of Elastomeric Joint Sealants).
- b. ASTM C1193 – Standard Guide for Use of Joint Sealants

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- c. ASTM C1589, Standard Practice for Outdoor Weathering of Construction Seals and Sealants
 - i. Where possible, select sealants that comply with ASTM C1589 for better ability to withstand weathering than those that comply with ASTM C793 (Standard Test Method for Effects of Laboratory-accelerated Weathering on Elastomeric Joint Sealants) alone.
 - d. ASTM C661 – Standard Test Method for Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
 - e. ASTM C834 – Standard Specification for Latex Sealants
 - f. ASTM C919 – Standard Practice for Use of Sealants in Acoustical Applications
 - g. ASTM C1248 – Standard Test Method for Staining of Porous Substrate by Joint Sealants
 - h. ASTM C1311 – Standard Specification for Solvent Release Sealants
 - i. ASTM C1330 – Standard Specification for Cylindrical Sealant Backing for Use with Cold Liquid-Applied Sealants
 - j. ASTM C1521 – Standard Practice for Evaluating Adhesion of Installed Weatherproofing Sealant Joints
 - k. ASTM E119 – Standard Test Methods for Fire Tests of Building Construction and Materials; 2015.
 - l. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
 - m. SCAQMD 1168 – Adhesive and Sealant Applications
 - n. UL 263 – Standard for Fire Tests of Building Construction and Materials; Current Edition, Including Revisions.
 - o. 40 CFR Subpart D - National Volatile Organic Compound Emission Standards for Architectural Coatings
3. **Required Submittals:**
- a. Product Data: Manufacturer’s data including instructions, recommendations, and restrictions.
 - b. Primers: Submit information on primer to be used for each sealant and substrate. Initial Selection Samples: Minimum 2 inches long.
 - c. Field Test and Inspection Reports: Submit written reports for tests and inspections. Field sealant tests and inspections shall be provided by the Owner.

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- d. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.
 - e. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
 - f. Joint-Sealant Schedule: Include the following information:
 - i. Joint-sealant application, joint location, and designation.
 - ii. Joint-sealant manufacturer and product name.
 - iii. Joint-sealant formulation.
 - iv. Joint-sealant color.
 - g. Preconstruction Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
 - i. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
 - ii. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.
 - h. Warranties: Sample of special warranties.
4. **Products, Materials & Equipment:**
- a. Design Consultant shall specify sealant manufacturers and sealant types based on application. Selection shall be based on movement requirements, compatibility with substrates, joint location and other criteria included in this design standard guideline.
5. **Installation, Fabrication, and Construction:**
- a. Joint Sealant Installation:
 - i. Sealant should be installed at the median of the design range, meaning the sealant has room to elongate or compress to accommodate fluctuations in temperatures.
 - ii. Provide uniform, continuous sealant without air gaps and voids.
 - iii. Forcing or dragging sealant into joints shall be avoided.
 - iv. Tooled, smooth, uniform, continuous, and slightly concave sealant surfaces should be specified.

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- v. Avoid tooling with water, soap solutions, alcohol, or solvents.
 - vi. Masking and temporary protection shall be removed when sealant has cured.
 - vii. Spilled and excess sealant shall be removed.
 - viii. Sealant joints generally have a 2:1 width to depth ratio to accommodate movement. Review manufacturer's recommendations for joint types and location and indicate acceptable width to depth ratios for selected products.
 - ix. All sealant substrates need to be properly prepared to achieve long-term performance. Cleaning and priming shall be specified and confirmed in the field as required by joint location, type, and purpose.
 - x. Joints shall be designed to avoid three-sided adhesion.
- b. Weep Holes:
- i. Do not seal over weep holes. Do not seal over, then reopen weep holes.
- c. Detail changes of plane and changes of direction as directed by Manufacturer.
- d. Include joint sealants in mock-up construction when mock-ups are being used. Determine whether pre-construction field-adhesion testing will be required, arrange for tests to take place with joint-sealant manufacturer's technical representative to be present.
- e. Joint sealant testing will be conducted by the Owner.
- f. For joints with dissimilar substrates, verify adhesion to each substrate separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
- g. If a sealant joint fails, report whether sealant failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. For sealants that fail adhesively, retest until satisfactory adhesion is obtained.
6. **Warranties:**
- a. Design Consultant is responsible for describing standard and special warranty terms and inclusions with the UVM project manager on a case-by-case basis. See specifications.