SECTION 07 92 00

JOINT SEALANTS

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

A. X

1.3 DESCRIPTION

A. This work shall consist of providing the necessary labor, materials, equipment, and supervision for the installation of elastomeric sealants for the following locations:
   1. Exterior joints in vertical surfaces as indicated below.
      a. Perimeter joints between exterior finish materials and steel door frames.
      b. Perimeter joints between exterior finish materials and aluminum entrances and storefronts.
      c. Control joints in masonry walls.
      d. Other joints as indicated on drawings and schedules.
   2. Interior joints in vertical surfaces as indicated below.
      a. Perimeter joints between interior finish materials and steel door frames.
      b. Perimeter joints between interior finish materials and aluminum entrances and storefronts.
      c. Control and expansion joints on exposed surfaces of interior unit masonry walls and partitions.
      d. Perimeter joints of toilet fixtures.
      e. Acoustical joints sealants.
      f. Other joints as indicated on drawings and schedules.

B. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

C. Sealants for joints related to flashing and sheet metal for roofing is specified in Division 07 Section “Flashing and Sheet Metal.”

D. Sealants for glazing purposes are specified in Division 08 Section “Glazing.”

E. Sealants for tile joints is specified in Division 09 Section “Tile.”

F. Painters caulking or sealant is provided by in Division 09 Section “Painting.”

G. Sealants for exterior payment joints are specified in Division 32 Section “Concrete Pavement Joint Sealants.”

1.4 STANDARDS

A. Reference Standards:
   1. ASTM C920, Standard Specification for Elastomeric Joint Sealants; current edition.
   2. ASTM C1193, Standard Guide for Use of Joint Sealants; current edition.
   3. ASTM C510, Standard Test Method for Staining and Color Change of Single – or Multi-Component Joint Sealants; current edition.
   4. ASTM C719, Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement; current edition.

1.5 SUBMITTALS

A. See Division 01 for submittal procedures.

B. Submit product literature for sealant specified for each joint condition, to include sealant manufacturer’s recommendations for joint preparation, backer rod type, joint dimensions, tooling, and compatibility with adjacent sealants and/or gasket material.

C. Submit the appropriate project specific field sealant tests from each sealant manufacturer and for each substrate relative to adhesion compatibility and staining characteristics. Field sealant tests shall be performed

by the manufacturer and shall include all necessary primers required for use.

D. Test data should include conformance with:
   1. ASTM C510, Standard Test Method for Staining and Color Change of Single- or Multi-Component Joint Sealants.
   2. ASTM C719, Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants under Cyclic Movement.
   3. Field adhesion pull tests per manufacturer's required test method.
   4. Samples for initial selection purposes in form of manufacturer's standard bead samples, consisting of strips of actual products showing full range of colors available, for each product exposed to view.
E. Submit manufacturer's warranty information for products specified.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for Project that have resulted in construction with a record of successful in-service performance.
B. Source limitation for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.
C. Field-Constructed Mock-Ups: Prior to installation of joint sealants, apply elastomeric sealants as follows to verify selections made under sample submittals and to demonstrate aesthetic effects as well as qualities of materials and execution:
   1. Joints in field-constructed mock-ups of assemblies specified in other Sections that are indicated to receive elastomeric joint sealants specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
B. Store and handle materials in compliance with manufacturer's recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.8 PROJECT CONDITIONS

A. Environmental Conditions: Do not proceed with installation of joint sealants under the following conditions:
   1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealant manufacturer.
   2. When joint substrates are wet.
B. Joint Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than allowed by joint sealant manufacturer for application indicated.
C. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Silicone, Urethanes and Butyl Sealants as applicable to project conditions – Color to be selected by Owner for each type of application. Supply and install compatible backer rod as recommended by the manufacturer.
   1. 795 Silicone Building Sealant: Dow-Corning.
   2. 895NST: Pecora Corporation.
   3. Spectrem 1: Tremco Sealant/Waterproofing Division.
   4. Primers – Supply and install sealant primers for each substrate material. Primers shall be supplied and used at all installations except as otherwise approved by the Architect/Engineer.
   5. General: Provide sealant backings of material that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
   6. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.
   7. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant

backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

B. Multicomponent, Non-sag, Traffic-Grade, Urethane Joint Sealant: ASTM C 920, Type M, Grade NS, Class 25, for Use T. BASF Building Systems; Sonolastic NP 2.
   1. Pecora Corporation; Dynatred.
   2. Sika Corporation, Construction Products Division; Sikaflex - 2c NS.
   3. Tremco Incorporated; Vulkem 227.

PART 3 – EXECUTION

3.1 WORK TO BE PERFORMED

A. Install sealants at locations indicated and required by referenced standards.
B. Install sealants at the perimeters of precast panels and where sealant joints are shown and exposed to the elements.
C. Install samples of sealant material colors for review and approval by the Owner. Do not purchase materials until approval of sealant type and color is received in writing from the Architect/Engineer.

3.2 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint sealant performance. Do not proceed with installation of joint sealants until unsatisfactory conditions have been corrected.

3.3 FIELD ADHESION TESTING

A. The Contractor shall provide access to sealant joints to be tested by the Architect/Engineer or Owner's Representative.
   1. Field-Adhesion Testing: Field test joint-sealant adhesion to joint substrates as follows:
      a. Extent of Testing: Test completed and cured sealant joints as follows:
         1). Perform 10 tests for the first 1000' (300 m) of joint length for each kind of sealant and joint substrate.
         2). Perform 1 test for each 1000' (300 m) of joint length thereafter or 1 test per each floor per elevation.
      b. Test Method: Test joint sealants according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1 in ASTM C 1193 or Method A, Tail Procedure, in ASTM C 1521.
         1). Verify adhesion to each substrate type separately; extend cut along one side, verifying adhesion to opposite side. Repeat procedure for opposite side.
      c. Inspect tested joints to verify the following: 1). Sealant joint cavities are free of voids.
         1). Sealant dimensions and configurations comply with specified requirements.
         2). Sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.
      d. Report test results. Include dates when sealants were installed, test dates, test locations, whether joints were primed, adhesion results and percent elongations, sealant fill, sealant configuration, and sealant dimensions.
      e. Repair sealants pulled from test area by applying new sealants. Ensure that original sealant surfaces are clean and that new sealant contacts original sealant.
   2. Evaluation of Field-Adhesion Test Results: Remove sealants that fail to adhere to joint substrates during testing or to comply with other requirements. Retest failed applications until test results prove sealants comply with indicated requirements.
B. A razor knife cut shall be made extending across the width of the sealant joint. 2 vertical cuts approximately 2" in length shall be made along the sides of the joint. The sealant thickness and bond thickness shall be measured and recorded.
C. The 2" sealant tail shall be pulled at an angle of 90° or more from the wall face until the uncut portion of the sealant joint tears.
D. The location of the tear lines shall be recorded as:
   1. Cohesive Tear: Tearing occurs primarily within the body of the sealant leaving sealant material fully

adhered to the sides of the joints.
2. Adhesive Tear: Tearing occurs primarily at the bond line between the sides of the joint and the body of the sealant.

E. Acceptable results shall be:
1. Sealant thickness and bond line thickness meeting the manufacturer's specifications.
2. The locations of the tear lines indicate a cohesive tear.
3. If the sealant installation fails to meet the acceptance criteria, the Contractor shall revise joint preparation techniques and sealant installation techniques as required to produce acceptable results. Additional samples shall be installed and tested per Section 3.02 prior to continuation of the work.

3.4 SEALANT APPLICATION

A. Remove existing sealant to base substrate by grinding. Only existing sealants shall be installed on the same day as existing sealants are removed.
B. Remove all dirt and debris and foreign material from the joint.
C. Follow the sealant manufacturer's recommendations for joint preparation and priming.
D. Install a backer rod system (or bond break tape as applicable) compatible with the sealant as recommended by the sealant manufacturer.
E. Install the sealant in strict accordance with the manufacturer's recommendations and ASTM C1193. Where conflicts occur, contact the Architect of Record and/or the UTD Project Manager for direction prior to proceeding.
F. If a primer is required, sealant shall not be installed until the primer has fully cured per the sealant manufacturer's recommendations.
G. The joints shall be dry when the sealant is installed.
H. The sealant shall be applied into the joint mechanically, with pressure to expel all air and provide complete filling of the joint to the backer rod. Surface pointing of flaws in the joint with a skin bead shall not be accepted. The joint surface shall be uniform and free of wrinkles, blisters and similar deficiencies.
I. All joints shall be neatly tooled with light pressure before a skin forms to provide a concave surface profile. Do not use liquid tooling aids such as water, soap or alcohol.
J. No sealant shall be applied during adverse weather conditions or when temperatures are outside the range of those recommended by the manufacturer.

3.5 CLEANING & PROTECTION

A. Surfaces or components adjacent to the sealed joints shall be cleaned free of smears or other soiling due to sealing as the work progresses.
B. Protect joint sealants during and after curing period until substantial completion. If, despite such protection, damage or deterioration occurs, remove and repair sealants immediately so that repaired areas are indistinguishable from original work.

END OF SECTION