

## SECTION 07 92 00 - JOINT SEALANTS

### PART I - GENERAL

#### 1.1 WORK INCLUDES

- A. Preparing sealant substrate surfaces
- B. Sealant and backing.
- C. Exterior joints in vertical surfaces and non-traffic horizontal surfaces as indicated below:
  - 1. Control and expansion joints in unit masonry.
  - 2. Perimeter joints between materials listed above and frames of doors, windows and louvers.

#### 1.2 REFERENCES

- A. ANSI/ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.
- B. ASTM C804 – Use of Solvent-Release Type Sealants
- C. FS TT-S-00230 – Sealing Compound: Elastomeric Type, Single Component.
- D. SWI (Sealing and Waterproofers Institute) – *Sealant and Caulking Guide Specification*.
- E. The acceptable manufacturer's catalogs, current at the date of bidding documents, are incorporated by reference to the same force and effect as if repeated herein.

#### 1.3 SYSTEM PERFORMANCE REQUIREMENTS

- A. Airtight Seals: Provide elastomeric joint sealants that have been produced and installed to establish and to maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

#### 1.4 SUBMITTALS

- A. Submit provisions of *Section 01 33 23 – Shop Drawings, Product Data, and Samples*.
- B. Product Data: Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.
- C. Product Data: Product data from manufacturers for each joint sealant product required.
  - 1. Certification by joint sealant manufacturer that sealants plus the primers and cleaners required for sealant installation comply with local regulations controlling use of volatile organic compounds.
- D. Instructions: Submit manufacturer's installation instructions.
- E. Certificates: Certificates from manufacturers of joint sealants attesting that their products comply with specification requirements and are suitable for the use indicated.

#### 1.5 QUALITY ASSURANCE

- A. SWI Requirements: Conform to Sealant and Waterproofers Institute requirements for materials and installation.

- B. Installer Qualifications: Engage an experienced Installer who has completed joint sealant applications similar in material, design, and extent to that indicated for the Project that have resulted in construction with a record of successful in-service performance.
- C. Single Source Responsibility for Joint Sealant Materials: Obtain joint sealant materials from a single manufacturer for each different product required.

#### 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: 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. Storage: 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. Store all products in a manner to prevent damage; in a secure place, out of the way of construction operations. Provide protection until ready for use.
- C. Handling: Handle in accordance with manufacturer's recommendations.

#### 1.7 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.
  - 3. Do not install solvent curing sealants in enclosed building spaces.
  - 4. Weather: Do not install products during adverse weather conditions.
- B. Joint Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with their adhesion are removed from joint substrates.

#### 1.8 SEQUENCING AND SCHEDULING

- A. Sequencing Work: Sequence installation of joint sealants to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.
- B. Warranty Coverage: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

#### 1.9 WARRANTY

- A. One-Year: Provide 1-year warranty.
- B. Warranty Coverage: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, joint filters, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealants to comply with the following:

1. Provide selections made by AE from manufacturer's full range of standard colors for products of type indicated.

## 2.2 ELASTOMERIC JOINT SEALANTS

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing elastomeric sealants that comply with ASTM C 920 and other requirements indicated for each Elastomeric Joint Sealant, including those requirements referencing ASTM C 920 classifications for Type, Grade, Class, and Uses.
1. Additional Movement Capability: Where additional movement capability is specified for Elastomeric Joint Sealants, provide products with the capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the specified percentage change in the joint width existing at time of installation and remain in compliance with other requirements or ASTM C 920 for Uses indicated.
- B. Available Products: Subject to compliance with requirements, elastomeric sealants that may be incorporated in the Work include, but are not limited to, the products specified for each Elastomeric Sealant.

## 2.3 SOLVENT-RELEASE-CURING JOINT SEALANTS

- A. Pigmented Narrow Joint Sealant: Manufacturer's standard, solvent-release-curing, pigmented synthetic rubber sealant complying with AAMA 803.3 and formulated for sealing joints 3/16-inch or smaller in width.

## 2.4 CHEMICAL-CURING JOINT SEALANTS

- A. Polyurethane Sealant: Manufacturer's standard, single component, chemical curing; FS TT-S-00230, Type II – non-sag, Class A; color as selected; Use in all joints 1/2-inch wide or less.
- B. Polyurethane Sealant: Manufacturer's standard, multi-component, chemical curing; FS TT-S-00230, Type II – non-sag, Class A; color as selected; use in joints whose width exceeds 1/2-inch.

## 2.5 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type 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.
- B. Joint Backing: ANSI/ASTM D1056; round, closed cell polyethylene foam rod; oversized 30 percent to 50 percent larger than joint width.

## 2.6 ACCESSORIES AND MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests; non-staining type, to suit application.
- B. Cleaners for Nonporous Surfaces: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials. Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming in any way joint substrates and adjacent nonporous surfaces, and formulated to promote optimum adhesion of sealants with joint substrates.

- C. Masking Tape: Non-staining, non-absorbent material compatible with joint sealants and surfaces adjacent to joints.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

## PART 3 - EXECUTION

### 3.1 INSPECTION

- A. Inspect: Thoroughly inspect all existing construction and the conditions under which the work will be performed. Report to the AE in writing all conditions that would adversely affect installation of the work.
- B. Verify Dimensions: Verify that all joint dimensions are in accordance with the manufacturer's recommendations.
- C. Acceptance: Start of work constitutes acceptance of construction conditions.

### 3.2 PREPARATION

- A. Cleaning of Joints: Clean out joints before installing joint sealants. Comply with recommendations of sealant manufacturer and the following requirements:
  - 1. Remove all existing caulking from designated area. At locations where removal of all existing caulking is not possible, follow sealant manufacturer's instructions for minimum depth of joint.
  - 2. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
  - 3. Clean concrete, masonry, unglazed surfaces of ceramic tile, and similar porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
  - 4. Remove laitance and form release agents from concrete.
  - 5. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile, and other nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Sealant Compatible: Verify that joint backing and release tapes are compatible with sealant.
- C. Joint Priming: Prime joint substrates where recommended by joint sealant manufacturer based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's recommendations. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.

### 3.3 INSTALLATION OF JOINT SEALANTS

- A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

- B. Measurement: Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Sealant Installation Standard: Comply with recommendations of ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
  - 1. Install sealant backer rod for elastomeric sealants.
  - 2. Install bond breaker tape wherever required by manufacturer, to ensure that elastomeric sealants will perform properly.
- E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.
  - 1. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
  - 2. Install sealant in uniform, continuous ribbons free of air packets, gaps, foreign embedded matter, ridges, and sags.
  - 3. Ensure complete “wetting” of the joints. Bond surfaces equally on opposite sides. Fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces.
- F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
  - 1. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Sealant Depth: Install sealants to depths as shown; when not shown, within the following limitations:
  - 1. For sidewalks, pavements, and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75 percent of joint width, but not more than 3/4-inch deep or less than 3/8-inch deep.
  - 2. For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50 percent joint width, but no more than 1/2-inch deep or less than 1/4-inch deep.
  - 3. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in the range of 65 percent to 125 percent of joint width.
- H. Spillage: Do not allow sealants or compounds to overflow or spill onto adjoining surfaces.
  - 1. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces.

### 3.4 CURING

- A. High Early Bond Strength: Cure sealants and caulking compounds in compliance with manufacturer's instructions to obtain high early bond strength and surface durability.

### 3.5 CLEANING AND REPAIRING

- A. As Work Progresses: Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.
- B. Examination: Upon completion, carefully examine all sealant and caulking work. Remove all damaged and defective work and replace with new materials.
- C. Dispose Rubbish Off-Site: Remove all surplus products, containers, and rubbish and dispose of off site.
- D. Remove All Stains: Remove all spilled or spattered materials from all surfaces. When adjacent surface or other work has been damaged or stained as a result of sealing and caulking work, repair all damage and remove all stains to the satisfaction of the AE.

### 3.6 PROTECTION

- A. Protect finished installation under provisions of *Section 01 76 00 – Protecting Installed Construction*.
- B. Protect Installed Sealants: Protect joint sealants during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. Protect installed work during remainder of construction period. Ensure that they will be without damage or deterioration (other than normal wear or weathering) at substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately so that installations with repaired areas are indistinguishable from original work.

### 3.7 SCHEDULE

- A. Joint Sealer Schedule

Location	Description	Color
Window Perimeter	Polyurethane, Single Component	White
Brick or Stone Construction Joints	Polyurethane, Multi-component	To Match Adjacent Materials

END OF SECTION 07 92 00

This section of the *U of I Facilities Standards* establishes minimum requirements only. It should not be used as a complete specification.