

SECTION 321373 - CONCRETE PAVING JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Cold-applied, jet-fuel-resistant joint sealants.

1.2 PRECONSTRUCTION TESTING

A. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, Samples of materials that will contact or affect joint sealants.

1. Use ASTM C 1087 to determine whether priming and other specific joint-preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
2. Submit no fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.
3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint-preparation data that are based on previous testing, not older than 24 months, of sealant products for compatibility with and adhesion to joint substrates and other materials matching those submitted.

1.3 SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Pavement-Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

C. Qualification Data: For qualified Installer and or testing agency.

D. Product Certificates: For each type of joint sealant and accessory, from manufacturer.

E. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for joint sealants.

F. Preconstruction Compatibility and Adhesion Test Reports: From joint-sealant manufacturer, indicating the following:

1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility with and adhesion to joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.
- B. Source Limitations: Obtain each type of joint sealant from single source from single manufacturer.
- C. Product Testing: Test joint sealants using a qualified testing agency.
 1. Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.
- D. Preinstallation Conference: Conduct conference at Project site.

1.5 PROJECT CONDITIONS

- A. Do not proceed with installation of joint sealants under the following conditions:
 1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (5 deg C).
 2. When joint substrates are wet.
 3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
 4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: Match color of existing joint sealant to remain.

2.2 COLD-APPLIED, JET-FUEL-RESISTANT JOINT SEALANTS

- A. Self-Leveling Silicone Sealant for Concrete and Asphalt: ASTM D 5893, Type SL, single-component, low-modulus, neutral-curing, self-leveling silicone sealant. Sealant shall be resistant for jet fuel.
 1. Products: Subject to compliance with requirements, provide the following:

- a. Dow Corning 890-SL, or approved equivalent.

2.3 JOINT-SEALANT BACKER MATERIALS

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold-Applied Joint Sealants: ASTM D 5249, Type 3, of diameter and density required to control joint-sealant depth and prevent bottom-side adhesion of sealant.

2.4 PRIMERS

- A. Primers: Product 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.

PART 3 - EXECUTION

3.1 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.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. 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 written installation instructions for products and applications indicated unless more stringent requirements apply.
- B. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install joint-sealant backings of kind indicated to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint-sealant backings.
 2. Do not stretch, twist, puncture, or tear joint-sealant backings.
 3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install joint sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place joint sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:
1. Remove excess joint sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

3.4 CLEANING

- A. Clean off excess joint sealant or sealant smears adjacent to joints as the Work progresses, by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.5 PROTECTION

- A. Protect joint sealants, during and after curing period, from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations in repaired areas are indistinguishable from the original work.

3.6 WARRANTY

- A. The Contractor shall furnish a separate extended full warranty covering the liquid silicone and installation (labor) performance for a period of five (5) years becoming effective the date the certificate of substantial completion (for the entire project) is issued. The extended warranties shall be issued jointly by the subcontractor responsible for the joint sealant work (if different from the Prime Contractor on this project) and the particular sealant manufacturer. The Extended Warranty shall include the specific wording identified below. The cost of these extended warranties shall be considered incidental to the cost of the concrete pavement. The extended warranty shall be submitted to the Owner prior to the Owner submitting payment of the final (project closeout) pay request to the Contractor. Failure to obtain and furnish the

extended full warranty will result in the Owner withholding final payment until such warranties are submitted to the Owner.

1. The pavement joint sealants shall continuously provide a watertight, resilient, and durable (no cracking, blistering, bubbling, or loss of bond to pavement joint walls) seal capable of maintaining these properties under repeated traffic and various weather conditions. The following list of criteria shall constitute the definition of joint sealant material and installation defects and/or failures over the life of any warranty period.
2. Failure/Defect:
 - a. Failure to prevent water from infiltrating pavement joint.
 - b. Failure to prevent the intrusion of incompressibles into the joint.
 - c. Failure to maintain bond, or in the case of compressible sealants, suitable contact, with sidewalls of the pavement.
 - d. Material that cracks, splits, bubbles, or blisters.
 - e. Material that fails to remain resilient and capable of rejecting incompressibles at all pavement temperatures.
 - f. Material that is picked up by, or spread on adjacent horizontal pavement surfaces by, tires, rubber tired vehicular traffic, or the action of a power vacuum rotary brush pavement cleaning equipment, after the specified cure period.
 - g. Material that remains or otherwise becomes tacky and allows the adherence of dust, dirt, small stones, or other similar contaminants.
3. All pavement joint sealants exhibiting one or more of these characteristics shall be deemed unsatisfactory and therefore shall not be in conformance with any warranty performance requirements. Any pavement panel joint exhibiting any one or more of the failure/defect characteristics listed shall be replaced under warranty when the aggregate quantity of those defects occur over 8% or more of the panel joint length. The Owner will inspect the joints at least annually to record conditions. Should the aggregate length of defective joint reach 8% of its panel length warranty repairs/replacement will be required within 45 days or as soon thereafter as weather conditions permit. The Owner reserves the right to make temporary emergency repairs to prevent water intrusion and/or further significant deterioration without invalidating the warranty. Pavement joints exhibiting these characteristics shall be removed and replaced in a satisfactory manner at no additional cost to the Owner.

END OF SECTION 321373