724-B-145 EXPANSION JOINT SEALING SYSTEM

(Revised 07-14-06)

Description

This work shall consist of furnishing and placing the joint sealant, and the nosing, if required, in accordance with the plans and these requirements.

Materials

The materials for this work shall be supplied by:

Silicone Specialties, Inc.
P.O. Box 50009
Tulsa, OK 74150
Telephone (918) 587-5567
www.ssicm.com

Dow Corning Corporation
P.O. Box 994
Midland, MI 48688-0994
Telephone (517) 496-6000

Watson Bowman Acme
95 Pineview Drive
Amherst, NY 14228
Telephone (716) 691-7566
www.watsonbowman.com

Or Approved Equal

The joint sealant shall be a rapid cure 100% silicone, self-leveling, two-part formulation, and cold applied. Silicone sealant shall be compatible with the surface to which it is applied.

Sealant shall be delivered to the project site in the manufacturer's original container. Each container shall be marked with the manufacturer's name and lot number. Each lot number shall be accompanied by a Type A Certification in accordance with 916. The materials shall meet the following:

TEST	LIMITS	TEST METHOD
Extrusion Rate	200-550 G/minute	MILS S 8802
Specific Gravity	1.23-1.35	ASTM D 1475
Nonvolative Content	93% minimum	

and as installed at 77ºF (25ºC) and 50% relative humidity, after 48 h cure:

TEST	LIMITS	TEST METHOD
Skin-over time	20 minutes, max.	
Joint Elongation	600% minimum	ASTM D 3583[1,2]
Joint Modulus	3-12 psi (20.7-82.7 kPa)	ASTM D 3583[1,2]

[1] Section 114, modified with pull rate of 2 in./minimum (50 mm/minimum)

[2] Joint size 1/2 in. by 1/2 in. by 2 in. (13 mm by 13 mm by 50 mm)

The binder shall be Silspec 900 PNSS polymer nosing system or approved equal. The binder shall be a two component, rapid curing, liquid polymer that cures to a dense semi-flexible polymer that is resistant to chemicals, weather, abrasion, and impact. The material shall be capable, when blended with Silspec blended aggregate of forming a polymer-based mortar for nosing and joint repair, or when cured in neat form of acting as a combination primer and protective coating for steel. A Type A Certification in accordance with 916 shall be required for polymer nosing system binder. The combined liquid base and reactor component materials shall meet the following as supplied:

TEST	LIMITS	TEST METHOD
Mixing Ratio	1:1 by volume of weight	ASTM D 2393
Viscosity	9-20 poises, Brookfield Model LVT Spindle #2, 30 rpm, 75°F, +/- 2°F (24°C, +/- 1°C)	
Color	Black	
Gel Time	25-50 minutes	AASHTO M-200

and as cured:

TEST	LIMITS	TEST METHOD
Elongation	40-55%	ASTM D 638[1]
Tensile Strength	900 psi min. (6205 kPa min.)	ASTM D 638[1]
Shore Hardness at 25°C (77°F)	45	ASTM D 2240

[1] Test method Type 1, molded specimens, 0.25 in. (6.4 mm) thick

A Type A Certification in accordance with 916 shall be required for polymer nosing system mortar. The materials shall meet the following:

TEST	LIMITS	TEST METHOD
Compressive Strength	2200 psi min. (15170 kPa min.)	ASTM C 579[1]
Bond Shear Strength	900 psi min.x (4825 kPa min)	ASTM C 882
Abrasion Resistance, Wear Index Table H-22	1.0 maximum	ASTM C 502
Compressive Stress	350 psi min. (2415 kPa min.)	
Resilience	70% minimum	

[1] at 24 hours, Method B

Aggregate for the nosing material shall be Silspec blended aggregate or aggregate as approved by the manufacturer.

A bond breaker material shall be installed prior to installation of the sealant to maintain minimum or maximum depth of sealant. The bond breaker shall serve to ensure that the bottom of the sealant is bond free, thereby allowing the sealant to adhere only to the sides of the joint. No bond or adverse reaction shall occur between the bond breaker and the sealant.

Acceptable types of bond breakers shall include:

(a) Closed cell expanded polyethylene foam backer rod. Primary use shall be with new joint construction and remedial joint construction.

(b) Bond breaker tape. Application of bond breaker tape shall be subject to written approval by the sealant manufacturer. Primary use is with wide shallow joints.

(c) Open cell backing material with an impervious skin. Application shall be subject to written approval by the sealant manufacturer. Primary use is with irregular remedial joint construction.

Primer shall be applied as shown on the plans prior to installation of the nosing and sealant, or as specified by the sealant manufacturer.

Construction Requirements

The location and general appearance of the installed joint shall be as shown on the plans. Additional details shall be in accordance with the manufacturer’s drawings. Drawings, specifications, and other details shall be provided to the Engineer prior to commencing joint installation. A qualified representative of the sealant and polymer mortar manufacturer shall be present at the beginning of the work to ensure adequate workmanship and inspection of the sealing operation.

Rapid cure joint sealant shall be installed when the temperature is above 60°F (16°C) or as directed. The sealant shall be installed in the expansion joints when the openings are at or near a minimum width.

Joints shall be inspected for proper depth, width, alignment and preparation as shown on the plans. Joints shall be cleaned of all old joint seals, old expansion materials or devices, bituminous material, dirt, grease, and all other deleterious material. The joints shall be cleaned over the total area of the block out or openings to receive the nosing or sealant material. Preparation shall be as recommended by the nosing or sealant manufacturer. If an armored joint is present, a near white blast cleaning shall be provided for the steel in accordance with 619.03. All joints to receive nosing or sealant shall be sound, clean, dry, and frost free.

The nosing material shall be mixed and placed in accordance with the manufacturer’s printed instructions and as provided herein. As a witness point, the Design/Builder shall provide one set of the manufacturer’s instructions to the Engineer not less than one week prior to the beginning of joint placement.

The nosing material shall be installed when the temperature is 45°F (7°C) and rising. Cure time of the nosing material may be

accelerated by the use of methods or techniques as approved by the manufacturer. Prior to placing the nosing material, the surface of the substrate against which the polymer based mortar is to be placed shall be primed with neat binder. The polymer based mortar shall be applied within 15 minutes of the mixing and must be thoroughly consolidated and finished within 30 minutes of mixing or before the primer has set. The polymer-based mortar shall be trowelled even with and parallel to the roadway surface and finished to provide a smooth surface free of voids or tears.

The rapid cure, silicone joint sealant shall be installed on accordance with the manufacturer's recommendations. If the joint opening at the time of installation is less than 1 in. (25 mm) or greater than 3 in. (75 mm), the work shall be stopped and the joint manufacturer contacted. Joints outside this range shall not be sealed without the approval of the joint manufacturer.

Method of Measurement

The expansion joint sealing system will be measured by the linear foot (meter) along and parallel to the plane of the finished joint surface. Concrete removal for the joint, sealant material, nosing materials if required, backer rods, and all other materials used in the construction of the joint will not be measured for payment.

Basis of Payment

The expansion joint sealing system will be paid for at the contract unit price per linear foot (meter) for expansion joint sealing system, complete in place.

The cost of concrete removal, sealant material, nosing materials if required, backer rods, and all other materials shall be included in the pay item expansion joint sealing system.