463.1 DESCRIPTION

This work consists of constructing growth joints between the bridge approach sleeper slab and the PCC pavement with a polymer modified asphalt binder joint system. When a Polymer Modified Asphalt Growth Joint is specified, the top three inches (75 mm) of the growth joint will be constructed with a polymer modified asphalt binder joint system unless the thickness is otherwise specified in the plans. When an Asphalt Bridge Joint is specified, this work consists of constructing bridge joints with two inches (50 mm) of the polymer modified asphalt binder system unless the thickness is otherwise specified in the plans.

463.2 MATERIALS

A. General: The Polymer Modified Asphalt Growth Joint and Asphalt Bridge Joint shall be one of the joint systems from the approved products list. All components of the joint system shall be from one joint system manufacturer. The joints shall be installed to the limits shown on the plans and in accordance with these specifications.

B. Binder: The joint binder used in the approved joint system shall be a thermoplastic polymeric modified asphalt meeting the following requirements:

	Test Method	Requirements
Softening Point	ASTM D-36	180° F (82° C) Min.
Tensile Adhesion	ASTM D-5329	700% Min.
Ductility @ 77° F (25° C)	ASTM D-113	40 cm Min.
Penetration	ASTM D-5329	
@ 77° F (25° C) 150 g, 5 sec		90 dmm Max.
@ 0° F (-18° C) 200 g, 60 Sec.		10 dmm Min.
Flow 5 h @ 140° F (60° C)	ASTM D-5329	3.0 mm Max.
Resiliency @ 77° F (25° C)	ASTM D-5329	60% Min.
Asphalt Compatibility	ASTM D-5329	Pass
Recommended Pouring Temp.		390° F (199° C)
Safe Heating Temp.		410° F (210° C)

C. Aggregate: The aggregate shall be crushed granite, washed twice, dried and bagged. The bags shall be clearly marked as to content and gradation. The gradation shall conform to that specified in the Approved Products List for the joint system being installed unless otherwise approved by the Engineer.

D. Backer Rod: The backer rod shall be a closed cell foam expansion joint filler capable of withstanding the elevated temperatures of the polymeric binder.

E. Bridging Plate: The 8" x ¼" (203 mm x 6.3 mm) bridging plates shall be steel conforming to ASTM A709, Gr. 36 unless otherwise approved by the Engineer.

F. Asphalt Concrete: The type of asphalt concrete placed below the polymer modified asphalt material shall be as specified in the plans and details.

463.3 CONSTRUCTION REQUIREMENTS

A. Surface Preparation: Immediately prior to installing the joint, the exposed concrete surface of the joint shall be thoroughly cleaned by abrasive blast cleaning and dried using a hot compressed air (HCA) lance. The HCA lance shall produce a flame retarded air stream at 3000° F (1650° C) and with a directional velocity of 3000 feet per second (915 meters per second). When there is an interruption due to weather or other causes, the operation shall be repeated with the HCA lance immediately before the tanking operation. The pavement on the sides of the joint shall be thoroughly dried for the depth of the joint system so that a surface for bitumen adhesion is obtained.

B. Backer Rod: After surface preparation, the backer rod shall be placed in the existing joint opening as shown on the plans. If the joint opening is too small to allow placement of the backer rod an alternative method of plugging the opening will be used as approved by the Engineer.

C. Tanking: All prepared exposed surfaces of the joint shall be sealed by pouring the hot binder over the floor area of the joint and spreading the binder to coat all exposed vertical and horizontal surfaces. The tanking shall be continuous and adhere to all surfaces. On the bottom cavity, the binder shall be 1/32 inch (1 mm) thick with pools of greater thickness where there are surface irregularities. The binder shall be applied at 390° F (200° C), within plus 5° F (3° C) or minus 10° F (5° C).

D. Bridging Plate: When a bridging plate is specified on the plans and after tanking, the bridging plate is to be placed the entire length of the joint and centered over the existing joint opening. The plate shall be attached by placing spikes through the predrilled holes into the expansion joint gap. The plates shall not overlap. After the bridging plate has been placed, the entire exposed surface of the bridging plate shall be coated with hot binder.

E. Aggregate Preparation: The aggregate shall be heated between 275° F (135° C) and 325° F (163° C) in a rotating drum blending unit with the heat source attached. The temperature shall be controlled by using a hand held, calibrated, digital temperature sensor. The rotating drum blending units shall be thoroughly cleaned prior to use such that no contamination of the binder from previously used materials will occur. The process shall remove all dust and moisture. Blend the aggregate and binder to the proportions specified by the joint manufacturer. The aggregate shall be totally precoated prior to installation.

F. Installation: The installation of the joint materials shall be installed in accordance with the manufacturer's recommendations and the following:

It is necessary to coat the stone and fill the voids while avoiding an excess of binder. The intent is for a maximum amount of aggregate with all aggregate being coated with binder and a maximum air voids of two percent. The aggregate and binder shall be raked to mix and level the layers. Each layer shall be allowed to cool a minimum of 10 minutes prior to placement of the next layer.

The top layer shall be overfilled and compacted to the level of the adjacent surfaces using a roller or vibratory plate compactor. Immediately after compaction, hot binder shall be spread over the joint to fill the surface voids and coat the surface stone. The finished joint shall be dusted with a fine dry aggregate to prevent tracking. The completed joint shall be allowed to cool to the surface temperature of the adjacent pavement before it is exposed to traffic.

The total thickness of the joint material shall not exceed 3 inches (75 mm), unless otherwise specified on the plans. When specified on the plans, the type and thickness of the asphalt concrete placed below the polymer modified asphalt material shall be as indicated in the plan notes and details.

463.4 METHOD OF MEASUREMENT

The Polymer Modified Asphalt Growth Joint and Asphalt Bridge Joint will be measured by the linear foot (0.1 meter) along the centerline of the completed and accepted joint.

463.5 BASIS OF PAYMENT

The Polymer Modified Asphalt Growth Joint and Asphalt Bridge Joint will be paid for at the contract unit price per linear foot (0.1 meter). Payment will be full compensation for all materials, labor, equipment, tools, and incidentals necessary to satisfactorily complete the work. The costs involved for weatherproofing, binder, aggregate, backer rod, bridging plate and asphalt concrete shall be included in the contract item, Polymer Modified Asphalt Growth Joint or Asphalt Bridge Joint.

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