

**SECTION 463 POLYMER MODIFIED ASPHALT GROWTH JOINT  
AND ASPHALT BRIDGE JOINT (New Section)**

**463.1 DESCRIPTION**

This work consists of constructing growth joints between the bridge approach sleeper slab and the new PCC pavement with a polymer modified asphalt binder joint system. The top three inches of the growth joint will be constructed with a polymer modified asphalt binder joint system unless the thickness is otherwise specified in the plans. Work also includes constructing bridge joints with two inches (50 mm) of the polymer modified asphalt binder system.

**463.2 MATERIALS**

**A. General:** The information regarding qualified Contractors to perform the work may be obtained from the local Area Office.

**B. Binder:** The joint binder shall be a thermoplastic polymeric modified asphalt meeting the following requirements:

	<u>Test Method</u>	<u>Typical Values</u>
Softening Point	ASTM D-36	180EF (82EC) Min.
Tensile Adhesion	ASTM D-3583	800% Min.
Ductility @ 77EF (25EC)	ASTM D-113	40 cm Min.
Penetration	ASTM D-3407	
@ 77EF (25EC) 150 g, 5 sec.		90 dmm Max.
@ 0EF (-18EC) 200 g, 60 Sec.		10 dmm Max.
Flow 5 h @ 140EF (60EC)	ASTM D-3407	3.0 mm Max.
Resiliency @ 77EF (25EC)	ASTM D-3407	60% Min.
Asphalt Compatibility	ASTM D-3407	Pass
Recommended Pouring Temp.		390EF (199EC)
Safe heating temperature		410EF (210EC)

**C. Aggregate:** The aggregate shall be crushed granite, washed twice, and dried. The aggregate shall be supplied in both 3/4 inch (20 mm) minus and 1/2 inch (13 mm) minus sizes meeting the following gradation requirements:

Initial Layers:

Passing a 7/8" (22.4 mm) Sieve	95-100%
Passing a 5/8" (16.0 mm) Sieve	30-50%
Passing a 1/2" (12.5 mm) Sieve	10-25%
Passing a 3/8" (9.50 mm) Sieve	0-10%

Top Layer:

Passing a 5/8" (16.0 mm) Sieve	93-100%
Passing a 1/2" (12.5 mm) Sieve	90-100%
Passing a 3/8" (9.50 mm) Sieve	40-70%
Passing a No.4 (4.75 mm) Sieve	10-20%
Passing a No.8 (2.36 mm) Sieve	0-10%

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- 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:** Steel for the 8" x 1/4" (203 mm x 6.3 mm) bridging plates shall conform to ASTM A709.

### 463.3 CONSTRUCTION REQUIREMENTS

- A. **Surface Preparation:** The exposed concrete surface of the joint shall be thoroughly cleaned and dried using a hot compressed air (HCA) lance. The HCA lance shall produce a flame retarded air stream at 3000EF (1650EC) and with a directional velocity of 3000 feet per second (915 m/s). 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 dried for the depth of the joint system so that a surface for bitumen adhesion is obtained.
- B. **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 390EF (200EC), within plus 5EF (3EC) or minus 10EF (5EC).
- C. **Build-Up Of Joint Layers**
  - 1. **Aggregate Preparation:** The aggregate shall be heated between 275EF (135EC) and 325EF (163EC) in a rotating drum blending unit with the heat source attached. The process shall remove all dust and moisture. The aggregate shall be totally precoated prior to installation.
  - 2. **Aggregate Proportion and Layer Thickness:** The minimum aggregate content by weight shall be 72 percent. The heated aggregate and binder shall be combined in layers not less than 3/4 inch (20 mm) thick and not exceeding 1-1/2 inch (40 mm) thick. The thickness of each layer may be varied to achieve the joint thickness specified by the manufacturer. 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 before placement of the next layer.
  - 3. **Top Layer:** The top layer shall not be less than 1/2 inch (13 mm) thick and shall not exceed one inch (25 mm) thick. The top layer shall be overfilled by approximately 1/2 inch (13 mm) and compacted to the level of the adjacent surfaces using a roller or vibratory plate compactor. Immediately after compaction, the binder shall be spread over the joint to fill the surface voids and

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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 poly modified growth joint shall not exceed three inches (75 mm). 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.

- D. Backer Rod:** The backer rod will 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.
- E. Bridging Plate:** The bridging plate is to be placed the entire length of the joint and centered over the existing joints. The plates shall not overlap.

### **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. The weatherproofing, binder, backer rod and bridging plate will not be measured for payment but shall be incidental to the item, polymer modified asphalt growth joint or asphalt bridge 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.