

**ITEM - SEAL CRACKS IN ASPHALTIC CONCRETE PAVEMENT  
(POLYMER MODIFIED ASPHALT-RUBBER CRACK SEALANT)**

**1.0 Description:**

The work under this item shall consist of furnishing all materials, personnel, and equipment to rout and clean cracks in existing asphaltic concrete pavement and seal the cracks with polymer modified asphalt-rubber sealant in accordance with the details shown on the project plans and the requirements of the Specifications.

No routing, cleaning, or sealing of cracks shall be performed during rain or snow or when the pavement surface and cracks are wet.

**2.0 Material Requirements:**

**2.01 Polymer Modified Asphalt-Rubber Crack Sealant:**

The crack sealant shall be Type    \*.

The crack sealant shall be a mixture of asphalt cement, ground tire rubber, and polymer. It shall conform to the following requirements for the type specified.

TEST	TEST METHOD	TYPE 1	TYPE 2	TYPE 3
Cone Penetration @ 77°F, range	ASTM D 5329	50 - 80	30 - 60	15 - 45
Resilience @ 77°F, minimum	ASTM D 5329	30%	30%	30%
Softening Point, minimum	ASTM D 36	160°F	180°F	190°F
Ductility @ 77°F, minimum	ASTM D 113	30 cm	30 cm	30 cm
Asphalt Compatibility	ASTM D 5329	Pass	Pass	Pass
Bitumen Content, minimum	ASTM D 4	60%	60%	60%
Tensile Adhesion, minimum	ASTM D 5329	500%	500%	400%

Sampling and heating shall be in accordance with ASTM D 5078.

The ground tire rubber shall be free of fabric, wire, or other contaminating materials. The gradation shall be 100% passing the No. 8 sieve, and a maximum of 5% passing the No. 200 sieve.

The sealant shall be capable of being melted and applied to cracks at temperatures below 400 degrees F. The sealant, when properly heated, shall readily penetrate cracks 1/4 inch or wider. The equipment used shall be designed to provide a continuous supply so that operations may proceed without delays.

A Certificate of Analysis, conforming to the requirements of Subsection 106.05 of the specifications, shall be submitted for each lot of sealant. The certificate shall list all test results, and certify that the sealant meets all requirements listed herein. A copy of the certificate shall be supplied with each shipment.

## **2.02 Blotter Material:**

Blotter material shall be natural sand, crushed sand, volcanic cinders, or other approved material, and shall be free of deleterious amounts of foreign substances.

The grading shall meet the following requirements when tested in accordance with the requirements of Arizona Test Method 201.

<b>Sieve Size</b>	<b>Percent Passing</b>
3/8 inch	100
No. 4	80 - 100
No. 16	45 - 80
No. 200	0 - 5.0

## **3.0 Construction Requirements:**

### **3.01 Preparation of Cracks:**

Immediately prior to application of crack sealant, the contractor shall ensure that the cracks are thoroughly cleaned of loose particles, grass, grass roots, weeds, dust, and other deleterious substances by means of high velocity compressed air, or by other methods approved by the Engineer.

All cracks to be sealed shall be cleaned to the bottom of the crack, or to a depth of 1-1/2 inches, whichever is less.

Fuel, asphalt, and any other spills and debris shall be cleaned up and disposed of by the contractor to the satisfaction of the Engineer at no additional cost to the Department.

All cracks within the entire width of pavement surface, which are 1/4 inch and greater in width, shall be cleaned and sealed.

Unless otherwise directed by the Engineer, cracks with an average clear opening of less than 1/4 inch shall not be cleaned and sealed.

For all cracks which have an average clear opening of 1/4 to 1/2 inch, the top of the crack shall be routed, with a routing machine approved by the Engineer, to a depth of at least 3/4 inch and to a width not less than 3/8 inch or more than 5/8 inch. The routing machine shall closely follow the path of the crack and rout the top of the crack to the required width and depth without damaging the asphaltic concrete pavement. Loose and fractured asphaltic concrete shall be removed and the routed crack shall be thoroughly cleaned prior to sealing.

All cracks which are larger than 1/2 inch shall be cleaned and sealed.

Regardless of their clear opening size, all cracks between the asphaltic concrete pavement and a curb or gutter shall be cleaned and sealed, unless otherwise directed by the Engineer.

The Engineer shall be the sole judge in determining which cracks shall be sealed.

The crack cleaning equipment shall be capable of cleaning cracks to a depth of at least two inches. Dust generated during cleaning of the cracks shall be filtered so that particulate matter 10 micrometers or less in diameter is collected. There shall not be any dust clouds visible to the naked eye during crack cleaning operations. The crack cleaning equipment shall be approved by the Engineer prior to the beginning of crack cleaning operations.

Crack cleaning shall be inspected and approved by the Engineer prior to the beginning of crack sealant application.

### **3.02 Application of Sealant:**

The sealant shall not be applied during wet weather or under conditions which will adversely affect the operation. The sealant shall not be placed in cracks that are wet. If weather conditions are such as to adversely affect the crack sealing, according to the crack sealant manufacturer's recommendations and/or the Engineer's observations, the Engineer may stop the work until conditions improve. Shut downs due to weather conditions shall be at no additional cost to the Department.

The contractor shall place sealant so as to completely fill the crack and form a lap no greater than one inch on each side of the crack. The thickness of the lap shall not exceed 1/16 inch. Immediately after the application, a rubber squeegee or other acceptable means shall be

used to level the sealant flush with the existing pavement surface. After cooling, the sealant shall not shrink more than 1/4 inch below the pavement surface.

Sealant shall be heated to between 325°F and 400°F for at least 1/2 hour prior to application. The temperature of the sealant shall be verified by the Engineer. The contractor shall provide certificates on all temperature gauges. The dates of the certificates shall be within the previous three month period.

Traffic shall be kept off the sealed cracks until the crack sealant will not track under the action of traffic. At locations where this is not practical, the contractor shall prevent tracking by applying blotter material to the crack sealant.

### **3.03 Application of Blotter Material:**

If the application of blotter material is necessary, the blotter material shall be damp but free of running water at the time of spreading.

The application of blotter material shall be accomplished by means of a sand slinger or other equipment approved by the Engineer.

If necessary, supplemental spreading or smoothing of the blotter material shall be done by hand.

Blotter material shall not be applied beyond the amount required to prevent tracking of the sealant.

Prior to final acceptance, the contractor shall remove and dispose of any excess blotter material. The method of removal and the disposal of any excess material shall be the contractor's responsibility.

### **4.0 Method of Measurement:**

Polymer modified asphalt-rubber crack sealant will be measured by the pound.

### **5.0 Basis of Payment:**

The accepted quantity of polymer modified asphalt-rubber crack sealant, measured as provided above, will be paid for at the contract unit price per pound, which shall be full compensation for the work complete in place, including routing and cleaning of cracks, and the application of any necessary blotter material, as described and specified herein and as shown on the project plans.

DESIGNER:

\* To be supplied by the Bituminous Engineer.