



STATE OF SOUTH DAKOTA DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION FOR FURNISHING AND DELIVERING BITUMINOUS MAINTENANCE MATERIAL

12/20/2023

SECTION 1: GENERAL

The Contractor will direct all documentation, including, but not limited to correspondence, invoices, and shipping data, to the respective Region or Area to which the correspondence pertains.

The Department of Transportation will be referred to in this Special Provision as the Department and the Division of Operations will be referred to as the Division.

The Contractor will provide services in compliance with the American with Disabilities Act of 1990, and any amendments.

SECTION 2: SPECIFICATIONS

Unless otherwise covered in this Special Provision, the governing Specifications are the *South Dakota Department of Transportation Standard Specifications for Roads and Bridges*, 2015 Edition, and Supplemental Specifications and Errata.

(<https://dot.sd.gov/doing-business/contractors/standard-specifications>)

Liquid asphalt materials, asphalt binders, asphalt emulsions, petroleum resin-oil base emulsion, asphalt repair mastics and rubber/asphalt crack sealant must conform to the following requirements:

1. **Crumb Rubber/Asphalt Crack Sealant** will be composed of a homogenous blend of ground vulcanized rubber and asphalt cement or a blend of approximately 60% vulcanized rubber and 40% devulcanized rubber and asphalt cement. Fillers, plasticizers, and thermoplastic rubber may be added as necessary to meet specifications.

a. The ground rubber must be free of fabric, wire, cord, and other foreign material. A maximum of 4% calcium carbonate may be included to prevent particles from sticking together. The asphalt cement prior to combining with the rubber must conform to AASHTO M226 Table 1 Type IV specifications.

b. The Rubber/Asphalt Crack sealant must meet the following physical property requirements:

- (1) Recycled rubber, mass, % of asphaltic components, minimum..... 18
- (2) Cone Penetration, 25°C (77°F), maximum..... 90
- (3) Bond Test, 50% extension, @-18°C (0°F) Pass 5 cycles
- (4) Flow, 60°C (140°F), mm, maximum..... 5
- (5) Resilience, 25°C (77°F), minimum..... 40
- (6) Softening Point, °C, minimum..... 82

Method of Test of Rubber Asphalt Joint Sealant with Asphalt Concrete for Compatibility (SD-302) can be found at:

[https://dot.sd.gov/media/documents/\(049\)sd302.pdf](https://dot.sd.gov/media/documents/(049)sd302.pdf)

In addition to meeting the compatibility requirements of SD-302, the material must

meet SD-302 compatibility requirements when tested by the following procedure:

- (1) The asphalt concrete test specimen will be cooled to a constant temperature of 0°F.
- (2) The specimen will be removed from the cooling unit and the test groove immediately filled with joint sealant at the manufacturer's recommended application temperature.
- (3) The specimen will be immediately returned to the cooling unit and re-cooled to a constant temperature of 0°F.
- (4) The block will be removed from the cooling unit and exposed to room temperature (72°F. ± 4°F) for a period of 4 hours ± 10 minutes. The specimen will be qualitatively examined for incompatibility at this time.

Low-Temperature Mandrel Bend Test: A sample (4" long x 1" wide x 1/8" thick) cooled to a constant temperature of 0°F must show no evidence of cracking when bent 90 degrees in 10 seconds over a 1" mandrel.

The sealant will not contain water or volatile solvents and will cure immediately on cooling to a viscosity sufficient to prevent tracking by traffic.

- 2. **Hot Poured Elastic Joint Sealer** must conform to the requirements of ASTM D6690 Type IV. Hot-Poured Elastic Joint Sealer must conform to the requirements of section 871 of the Standard Specifications for Roads and Bridges 2015 edition and Supplemental

Specifications and Errata. Only materials listed on the Department's Approved Products List are to be quoted and supplied for this contract.

3. **Crumb Rubber/Asphalt Crack Sealant and Hot-Poured Elastic Joint Sealer** will be provided in Polyskin or similar meltable packaging. The material will be boxless, consumable packaging of hot-applied pavement crack and joint sealing products. The package weight shall be in 30-pound blocks, more or less, each wrapped individually. No more than 75 packages shall be placed per pallet and then tightly banded to prevent movement during shipment. The pallet will be enclosed with plastic and banded with 4 bands tightened and crimped. Two of the bands will extend vertically around the pallet and boxes, one band will go horizontally around the center of the top layer and one band will go horizontally around center of the bottom layer. The following data will be clearly printed on each filled container: Manufacturer's name, material designation, safe heating and application temperature, and lot or batch number.
4. **Medium Curing Cut-back Asphalt** must conform to AASHTO M 82
5. **Emulsified Asphalt** must conform to AASHTO M 140 with the following exceptions. When SS-1h emulsified asphalt is specified for tack or flush seal cost, the cement mixing test requirement is waived. The sieve test requirement on representative samples will be waived unless requested by the Engineer.
6. **Cationic Emulsified Asphalt** must conform to AASHTO M 208 with the following exceptions. When CSS-1h is specified for tack or flush seal cost, the cement mixing test requirement is waived. The sieve test requirement on representative samples will be waived unless requested by the Engineer. The demulsibility test will be made by the Contractor and the results provided to the Department's agent within 30 calendar days from the date of shipment.
7. **Cationic Emulsified Asphalt diluted mix** must conform to AASHTO M 208 with the following exceptions. When CSS-1h is specified for tack or flush seal cost, the cement mixing test requirement is waived. The sieve test requirement on representative samples will be waived unless requested by the Engineer. The demulsibility test will be made by the Contractor and the results provided to the Department's agent within 30 calendar days from the date of shipment. The mix will be diluted with potable water in a ratio of approximately one part emulsion to one part water by volume.
8. **Asphalt Concrete Crack Leveling Material** will be supplied for the repairing of recessed joints and potholes in asphalt concrete pavement with the specified sealant material without milling or routing.

Material will be provided in Polyskin or similar meltable packaging. The material will be boxless, consumable packaging of hot-applied pavement crack and joint sealing products. The package weight shall be in 30-pound blocks, more or less, each wrapped

individually. No more than 70 packages shall be placed per pallet and then tightly banded to prevent movement during shipment.

Asphalt repair mastic will be composed of quality-selected asphalt and/or resins, select aggregates with structural integrity, synthetic rubber polymers, antioxidants, naturally occurring and man-made reinforcing material, and other modifiers.

Asphalt repair mastic will be Deery Level and Go Repair Mastic, CrafcO Mastic One, or Maxwell Gap MOD 201 meeting the appropriate specifications below or an approved equal.

A. Deery Level and Go Repair Mastic

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Penetration @ 77°F (25°C), 150 g, 5 sec	ASTM D 5329	100 dmm Max
Penetration @ 122°F (50°C), 150 g, 5 sec	ASTM D 5329	150 dmm Max
Ductility @ 77°F (25°C), 5 cm Min	ASTM D 113	20 cm Min
Softening Point (R&B)	ASTM D 36	190°F (88°C) Min.
Pliability @ 0°F (-18°C), 1" mandrel, 90° bend, 2 sec	ASTM D3111 Modified *	Bend with No Cracks
Resilience @ 77°F (25°C)	ASTM D5329	45% Min
Recommended Application Temp		350-400°F (176-204°C) ***
Safe Heating Temp		400°F (204°C) Max ****
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Low Temperature Flexibility @ 32°F (0°C) .25" mandrel, 90° bend, 10 sec	ASTM D3111 Modified **	Bend Without Cracking
Weight per Cubic Foot (Cubic Meter)		107 pounds per cubic foot (+/- 3%)

* 1" (25mm) wide x 7" (175mm) long x 0.5" (12mm) thick sample

** 2" (50mm) wide x 6" (150mm) long x 0.25" (8mm) thick sample conditioned for 24 hours

*** Temperature of the product measured at the pavement surface. Use maximum application temperature in cool weather.

**** Prolonged heating at or above Maximum Safe Heating Temperature may severely damage the product.

B. CrafcO Mastic One

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Penetration @ 77°F (25°C)	ASTM D 5329	60 dmm Max.
Penetration @ 122°F (50°C)	ASTM D 5329	120 dmm Max.
Flexibility @ 32°F (0°C), 1"	ASTM D 3111	Pass at -15°F (-26°C)

mandrel, 90° bend, 2 sec	Modified	
Softening Point (R&B)	ASTM D 36	200°F (93°C) Min.
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Flexibility @ 32°F (0°C),	ASTM D5329	Pass
Adhesion @ 77°F (25°C)	ASTM D5329	25 PSI (172 KPA) ,Min
Specific Gravity		1.7 – 2.0
Recommended Application Temp		375°-400°F (190°-204°C)

Test Methods PTM 3 and PTM 4 are CrafcO, Inc. test procedures. Copies may be obtained from the Company. Contact information for CrafcO, Inc.: 1-800-528-8242.

C. Maxwell Gap MOD 201

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Cone Penetration @ 77°F (25°C), 150 g, 5 sec	ASTM D 5329	70 dmm Max
Softening Point (R&B)	ASTM D 36	200°F (93°C) Min.
Ductility @ 77°F (25°C), 5 cm Min	ASTM D 113	50 cm Min
Resilience @ 77°F (25°C)	ASTM D 5329	35% Min
Flow @ 140°F (60°C)	ASTM D 5329	3 mm Max
Recommended Application Temp		370°F (187°C)
Safe Heating Temp		400°F (204°C) Max
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Flexibility @ -5°F (-20.6°C) *1" mandrel, 90° bend, 2 sec	ASTM D3111 Modified *	Pass

D. Right Pointe Pave Patch Black

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Penetration @ 77°F (25°C)	ASTM D5329	100 dmm Max.
Penetration @ 122°F (50°C)	ASTM D5329	130 dmm Max.
Ductility @ 77°F (25°C)	ASTM D113	30 cm Min.
Ductility @ 122°F (50°C)	ASTM D113	30 cm Min.
Softening Point (R&B)	ASTM D36	200°F (93°C) Min.
Mandrel Bend	ASTM D3111	Pass
Resilience @ 77°F (25°C)	ASTM D5329	40% Min.
Flow @ 140°F (60°C)	ASTM D5329	3 mm Max.
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Flexibility @ -5°F (-20.6°C)	ASTM D3111	PASS
Adhesion @ 77°F (25°C)	ASTM D5329	550%
Specific Gravity		1.7
Recommended Application Temp		350-400°F (177-204°C)

Safe Heating Temp		400°F (204°C) Max.
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- E. Structural Aggregate Properties:** The aggregate portion of the mastic will include wear resistant granite, quartzite, or limestone meeting the following requirements:

PROPERTIES OF AGGREGATE		
	Test Method	Specification
Resistance to Abrasion and Impact	ASTM C 131 Grading "C"	20% Degradation Max

- F. Documentation:** The Supplier's documentation will include all of the following information:

1. Written certification from the manufacturer for each shipment, which will include a statement of the asphalt repair mastic material quantity and quality control data for each production run. A production run will be described as the quantity of material produced during one cycle from startup to shutdown of the manufacturer's equipment.
2. Manufacturer's certificate of compliance for surface conditioner or primer.

Warranty - Asphalt repair mastic will be warranted for certification and performance by the supplier and or the manufacturer for the duration of one year by the pound of mastic by date supplied or applied.

The manufacturer's weights of the mastic will be accepted as the basis for measurement.

9. **Concrete Mastic Repair Material** will be supplied for the repairing of spalls and potholes in concrete pavement with the specified sealant material without sawing, milling or routing. The material will be gray in color.

Material will be provided in the manufacturers' meltable packaging. The material will be boxless, consumable packaging of hot-applied concrete pavement crack and joint sealing products. The package weight shall be in 35-pound blocks, more or less, each wrapped individually. No more than 75 packages shall be placed per pallet and then tightly banded to prevent movement during shipment.

Repair mastic will be composed of quality-selected asphalt and/or resins, select aggregates with structural integrity, synthetic rubber polymers, antioxidants naturally occurring and man-made reinforcing material, and other modifiers.

Concrete repair mastic will be Crafcro Techcrete, FPT Infrastructure Fibrecrete G, or Right Pointe Pave Patch-Gray meeting the appropriate specifications from the manufacturer or an approved equal.

A. Crafcro Techcrete

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Specific Gravity	ASTM D 2726	2.08
Binder Content	ASTM D 6307 Method A	15 – 25%
Aggregate Passing the 5/8" Retained on the No. 16 Passing the No. 4 Sieve	ASTM D 5444	---- ---- 100 minimum
Flow, 5 h 140°F (60°C)	ASTM D 5329	5 maximum
Tensile Test (Briquette) at 20°F (-7°C), 3 specimens	AASHTO T140 Modified TTM5	50 – 200 lbs.(222 - 890N)
Tensile Adhesion	ASTM D5329 Modified	12 psi(83kPa) minimum, 0.5 inches (12 mm) minimum elongation
Impact Testing, 2 inch (50 mm) diameter, 1 inch (25 mm) thick specimen, 5/8" (16 mm) impact dart	ASTM D2794	No cracking, chipping or separation at 6 ft·lb (8.1 N·m) at 20°F (-7°C)
Minimum Application Temperature		375°F (190°C)
Maximum Heating Temperature		400°F (204°C) Max
Shelf Life		2 years
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Flexibility, Lab Standard Conditions	ASTM D3111	No Cracking or Loss of Aggregate Adhesion

B. FPT Infrastructure Fibrecrete G

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Tensile Strain	FTL Test Method*	35% minimum @ 2"/minute
Cone Flow	FTL Test Method*	7% maximum
Aggregate Settlement	FTL Test Method*	3% maximum
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Flexibility / Mandrel	FTL Test Method*	Good or Better (no tearing at bend point)
Resilience	FTL Test Method*	50% Recovery

Specific Gravity		1.8 – 2.0
Recommended Application Temp		300°-350°F (149°-177°C)

*FTL Test Methods are available upon request from manufacturer

C. Right Pointe Pave Patch Gray

PROPERTIES OF MASTIC BINDER		
	Test Method	Specification
Softening Point	ASTM D 36	210°F (99°C) Min.
Binder Extension Test, 5 cycles @ 77°F(25°C)	ASTM D 5329	300% Extension
Flow @ 140°F (60°C)	ASTM D 5329	3 mm Max
PROPERTIES OF BLENDED MASTIC PRODUCT		
	Test Method	Specification
Compression Resistance, 10.2 mm/min. @ 77°F	ASTM D 5329	1,125 pounds-force min. Load @ 25% Compression
Extension, 1.02 mm/min. @ 77°F	ASTM D 5329	50% Min. Extension
Wheel Tracking @ 122°F, Maximum Rut Depth	BS 598-110:98	3 mm/hr. max. 5.1 mm max. rut
Application Temperature Range		350°F to 400°F

- D. Structural Aggregate Properties:** The aggregate portion of the mastic will include: wear resistant granite, quartzite, or limestone meeting the following requirements:

PROPERTIES OF AGGREGATE		
	Test Method	Specification
Resistance to Abrasion and Impact	ASTM C 131 Grading "C"	20% Degradation Max

- E. Documentation:** The Supplier's documentation will include all of the following information:

1. Written certification from the manufacturer for each shipment, which will include a statement of the asphalt repair mastic material quantity and quality control data for each production run. A production run will be described as the quantity of material produced during one cycle from startup to shutdown of the manufacturer's equipment.
2. Manufacturer's certificate of compliance for surface conditioner or primer.

Warranty - Concrete repair mastic will be warranted for certification and performance by the supplier and or the manufacturer for the duration of 1 year by the pound (kilogram) of mastic by date supplied or applied.

The manufacturer's weights of the mastic will be accepted as the basis for measurement.

SECTION 3: MATERIAL ORDERING, DELIVERY, AND ACCEPTANCE

The Contractor will ship contract materials only when and as authorized by email, facsimile, telephone, or by letter from the Department. The Department will authorize agents from its Region and Area Offices to place material orders with the Contractor.

The Department's agent will provide the Contractor's agent with the following information when placing an order:

- (1) Agent's name and identification with the Department.
- (2) Material type and quantity.
- (3) Time, date, and location of delivery.
- (4) Truck transport pump requirements.
- (5) Name and telephone number of an individual to contact in case of a delivery problem.
- (6) Billing address for invoice and other support documentation.

The time and date of delivery become binding for the assessment of liquidated damages when the Contractor accepts the order.

The Department may order different viscosity and penetration grades under the same specification description or grade, without incurring liability for increased cost (for example MC-250, in place of MC-70).

If the Contractor is unable to furnish the material within a reasonable time, and in the quantity and quality stipulated in the contract, the Contractor will obtain the material from another supplier at no additional cost to the Department. If the Contractor does not furnish the material as stated above, the Department may then, at its option, cancel the unexpired portion of that contract or purchase from such other company or companies such amounts of material as the Contractor did not furnish, in which case all costs and expenses in excess of the amount which would be due the Contractor for furnishing these materials will be charged to and paid for by the Contractor. Any such costs may at the option of the Department be paid by the Department and deducted from the amount then due the Contractor. The Contractor or the Contractor's surety will promptly pay any remaining costs and expenses. The parties agree that reasonable delivery time is within 24 hours from receipt of order on truck shipments of liquid asphalt, and 14 calendar days from date of order on delivery of crack sealant and joint sealers. The Department will assess liquidated damages in the amount of \$250/day for each calendar day delivery time is exceeded.

The Contractor will deliver liquid asphalt, asphalt binders, asphalt emulsions, and petroleum resin-oil base emulsions in truck transport loads not to exceed 55,000 pounds net weight unless larger loads are specified. The Contractor must advise the Department at the time an order is

placed if the Department's order does not meet the Contractor's shipping minimum. The Contractor must further advise the Department what the Contractor's minimum order is, what additional charges will be invoked, and receive confirmation from the Department that the charges are acceptable, before accepting the order. The Contractor will provide a truck transport with a pump to unload the material when requested by the Department, at an additional charge of \$120. Liquidated damages may be assessed against the Contractor where the late delivery of a material results in a project delay or project rescheduling. For a late delivery resulting in a project delay, the Contractor may be assessed for the Department's cost of lost personnel productivity time, including wage additives. For a late delivery resulting in project rescheduling, the Contractor may be assessed for the Department's cost of lost personnel productivity time, including wage additives, and the equipment costs incurred by the Department due to the rescheduling.

Liquid asphalt and asphalt binder delivered by truck transport will be delivered hot. Asphalt binder will have a minimum delivery temperature 10°F higher than the minimum mix temperature as determined from the Contractor supplied viscosity chart or the graphing application of the Contractor supplied temperatures at which the material has a kinematic viscosity of 150 and 300 centistokes. The minimum delivery temperature for the various grades of liquid asphalt will meet the following requirements:

Grade	Temperature - °F.
70	120
250	140
800	180
3000	210

The Contractor will provide the following documentation to the Department at the time of delivery:

- (1) Stamped Weight Slips from which the weight of the delivered material is determined.
- (2) Certificate of Compliance: The certificate may be furnished separately or included in the Bill of Lading.
- (3) Bill of Lading.
- (4) For a liquid asphalt or asphalt binder:
 - a. A viscosity chart or the temperatures at which the material has a kinematic viscosity of 50, 150, 200, and 300 centistokes to enable the determination of the material's mixing or spraying temperature.
 - b. Specific Gravity.

The Department will accept delivery of the material if all of the following conditions are met:

- (1) The material was ordered by the Department.

- (2) The material is the type and quantity ordered.
- (3) The material meets the required delivery temperature.
- (4) All of the above-listed delivery documentation is supplied.
- (5) The delivery time does not require rescheduling of the project.

Material is considered delivered and a delivery time is established when the Department accepts delivery of the material. A delivery is considered late if the delivery time is later than the delivery time established when the material was ordered. Failure of the Contractor to get delivery acceptance may result in liquidated damages being assessed against the Contractor due to late delivery as previously defined in this section.

In every case, the Department will be allowed a minimum of 2 hours after the established delivery time in which to unload the delivered material without incurring any additional fees, charges, or demurrage. Any unloading time in excess of two hours will be measured and paid in half hour increments at a rate of \$180/hr.

Although the Department may accept the material on the basis of a Certificate of Compliance (as defined in RSTC Section 6.3 of the Department's Materials Manual), the Department reserves the right to sample, test, and make final acceptance of material after delivery to the project. The material represented by the sample may be rejected for use if the laboratory tests on the sample do not satisfactorily meet the requirements of the applicable specifications. If material found to be out-of-specification has been used, the Department will determine a price adjustment according to the degree and nature of non-conformance.

Sampling of liquid asphalt, asphalt binder, emulsified and petroleum-oil base emulsion will be in accordance with South Dakota Test 301, Method of Sampling Asphalt Materials. Trucks transporting liquid asphalt, asphalt binder, asphalt emulsion, or petroleum resin-oil base emulsion will be equipped with a bulkhead-sampling valve or provide a means to obtain an in-line sample.

SECTION 4: METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Liquid asphalt, asphalt binder, emulsified asphalt, and petroleum-oil base emulsion will be measured by the ton (consisting of 2000 pounds avoirdupois) to the nearest one-hundredth (0.01) ton, furnished and accepted. Crumb Rubber/Asphalt Crack Sealant and Hot-Poured Elastic Joint Sealer will be measured by the pound to the nearest one-tenth (0.1) pound, furnished and accepted. Asphalt and concrete repair mastic will be paid to the supplier by unit price per pound and shall be full compensation for all labor, equipment, materials, surface conditioner, or primer, and incidentals required to receive the repair mastic FOB at SDDOT provided in Table 3.

As soon as possible after shipment, the Contractor will send 2 copies of the invoice along with a copy of the Certificate of Compliance to the address given by the Department's ordering agent or to the address of the Department's Region or Area to which the material was shipped. The invoice must show all data concerning the shipment (date shipped, material, destination, weight, unit cost, item number, and reference number). Table 3 provides various Region and Area addresses.

TABLE 3		
REGION	AREA	SEND INVOICES TO:
Aberdeen	Aberdeen Watertown Huron	Department of Transportation PO Box 1767 Aberdeen, SD 57402-1767
Mitchell	Mitchell	Department of Transportation PO Box 1206 Mitchell, SD 57301-7206
Mitchell	Sioux Falls	Department of Transportation 5316 W. 60th St. N. Sioux Falls, SD 57107
Mitchell	Yankton	Department of Transportation 1306 W 31st St. Yankton, SD 57078-9662
Pierre	Pierre	Department of Transportation 104 South Garfield Pierre, SD 57501
Pierre	Mobridge	Department of Transportation PO Box 488 Mobridge, SD 57601-0488
Pierre	Winner	Department of Transportation PO Box 771 Winner, SD 57580-0771
Rapid City	Rapid City Belle Fourche Custer	Department of Transportation PO Box 1970 Rapid City, SD 57709-1970

The Department will not allow additional compensation for freight rate increases that become effective during the first 180 calendar days of the contract. The Department will allow additional compensation for verified freight rate increases that become effective after the first 180 calendar days of the contract only if the Contractor submits a request to the Department for an increase in freight rate, together with sufficient documentation to verify the increase is in

effect, and the Department approves the additional compensation. If approved, the Department will allow additional compensation for freight rate increases for shipments made after the date the request for increase was received by the Department. The Contractor must enter any freight cost increase as a separate item on the invoice. No change will be permitted in the unit price of the base item.