SECTION 519 -- CRACK SEALING BITUMINOUS SURFACING

519.01 -- Description

This work shall consist of preparing and sealing the transverse and longitudinal cracks in bituminous surfacing at the various locations shown in the plans.

519.02 -- Material Requirements

1. The sealant shall be a mixture of paving grade asphalt, vulcanized recycled rubber, and polymer modifier(s) that conform to the following requirements and Specifications:

a. The sealant shall contain between 10% and 15% vulcanized recycled rubber by total weight of product. The sealant shall be pre-reacted blend of product. The material shall not require additional heating time after it has reached the manufacturer's recommended application temperature. New material may be added to the material that has already been heated to proper application temperature. When heated in accordance with ASTM D-5078 to the safe heating temperature, the sealant shall meet the following test parameters:

Test	Specification
Cone Penetration @ 77° F (25° C) (ASTM D-5329)	45-70
Cone Penetration @ 39.2° F (4°C) (ASTM D-5329)	30 minimum
Resilience (ASTM D-5329)	30% minimum
Softening Point (ASTM D-36)	195° F (91°C) min.
Ductility @ 77° F (25C) (ASTM D-113)	30 cm minimum
Asphalt Compatibility (ASTM D-5329)	Pass
Bitumen Content (ASTM D-4)	60% minimum
Tensile Adhesion (ASTM D-5329)	500% minimum

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

c. The vulcanized recycled ground rubber shall be free of wire, fabric, or other contaminating materials. The gradation shall be 100% passing the Number 8 sieve (2.36 mm) and a maximum of 5% passing the Number 200 (75 μm) sieve.

d. Acceptance of the manufactured material will be based on a certificate of compliance for each lot or batch furnished by the supplier. The certificate of compliance shall state the type of rubber used, the lot number, and a copy of the test result for the lot. The date of manufacture must also be shown on the certificate.

e. One sample per lot of material shall be sent to the Nebraska Department of Roads, Materials and Research Division for specification compliance testing with ASTM D-5078 or the sample may be tested by an approved independent testing laboratory. If the test results show the sealant sample conforms to Specifications, the NDOR will absorb the cost for testing.

If the sealant sample test results do not conform to Specifications, the Contractor shall be assessed the costs for testing and shall be required to provide acceptable sealant for the project including additional samples for retesting.

f. The rubber asphalt crack sealant shall be meltable at 300° F (150°C). The use of metal staples or fasteners of any kind is prohibited for closing the lids of the containers. Tape or other like materials will be accepted.

g. Each container shall include information regarding lot number, type of product, safe heating temperature and specific gravity of crack sealing material.

519.03 -- Construction Methods

1. Preparation of Transverse and Longitudinal Cracks

a. Cracks shall be formed and prepared as follows:

(1) Cracks 3/8" (10 mm) or less in width shall be widened using a router to form a reservoir which is 1/2" (12.5 mm) wide by 3/4" (20 mm) to 1" (25 mm) deep. The formed crack shall be thoroughly cleaned with compressed air to remove all dust, dirt, loose material, and moisture so that at the time the sealant is applied, the crack will be clean and dry.

(2) Cracks wider than 3/8" (10 mm) shall be cleaned for the entire crack depth using sandblasting, or brushing and air-blowing techniques as required to provide a crack free of all dust, dirt, loose material and moisture. It may be necessary to remove incompressible deep in the crack by gouging or plowing.

(3) A hot air heat lance shall be used to warm the sidewalls of the crack immediately prior to placing the sealant.

b. The surface of the bituminous pavement shall be dry at the time of crack preparation and sealing operations.

c. No more than 500 linear feet (150 m) of crack preparation shall be left unsealed after the end of each working day. The Engineer will inspect any prepared crack, left unsealed at the end of each working day to determine if they need to be recleaned prior to being sealed.

2. Sealing Transverse and Longitudinal Cracks

a. When the sealant is at the temperature for proper pouring consistency, the crack shall be filled using a pressure type applicator equipped with a nozzle that will fit into the crack. The design of the pressure applicator and nozzle shall be approved by the Engineer. The crack shall be filled with sealant from the bottom up. The crack shall be slightly overfilled with sealant and squeegeed to surface level leaving a 2 to 4 inch (50 to 100 mm) width of sealant over the crack.

519.04 -- Method of Measurement

1. The work of crack sealing bituminous surfacing will be measured for payment by the linear foot (meter) of cracks sealed.

2. Measurement shall be to the nearest foot (0.3 m), complete, in place and accepted by the Engineer.

519.05 -- Basis of Payment

1.

Pay Item	**Pay Unit**
Crack Sealing Bituminous Surfacing	Linear Feet (LF) [Meter (m)]

2. a. When sealant materials comply with the Specification requirements, crack sealing shall be paid for at the contract unit price per linear foot (meter). When sealant materials are outside of the specified property ranges, crack sealing shall be paid for at the contract unit price multiplied by the product of the pay factors determined by the following pay factor table. Pay factors shall be determined for the properties shown below.

Pay Factor	**Specified Property**	
	Upper Limit	**Lower Limit**
1.00	+1% to +10%	-1% to -10%
0.95	+11% to 15%	-11% to -15%
0.90	+16% to +20%	-16% to -20%
0.80	+21% to +25%	-21% to -25%
0.70	+26% to +30%	-26% to -30%
0.40 or Reject	+31% and Higher	-31% and Lower

b. If the resultant pay factor for the material is less than 0.70 and the material has not been used, the material shall be rejected. If incorporated in work which is judged to be unsatisfactory, the material shall also be rejected.

c. If the pay factor is less than 0.70 and the material has been incorporated in work which is allowed to remain in place, the pay factor for the material shall be 0.40.

3. Payment is full compensation for all work prescribed in this Section and all sealant manufacturer's requirements.