**BITUMINOUS SURFACE TREATMENT**

Effective: 8-21-23

**Description**. This work shall consist of constructing a single or multiple course bituminous surface treatment as indicated below.

(a) A-1. A-1 shall consist of a bituminous seal coat material and a seal coat aggregate.

(b) A-2. A-2 shall consist of a prime coat, a bituminous cover coat material and a cover coat aggregate, and a bituminous seal coat material and seal coat aggregate. When placed on a hot-mix asphalt surface pavement, the prime coat shall be eliminated.

(c) A-3. A-3 shall consist of a prime coat, two separate applications of a bituminous cover coat material and cover coat aggregate, and a bituminous seal coat material and seal coat aggregate. When placed on a hot-mix asphalt surface pavement, the prime coat shall be eliminated.

**Materials**. Materials shall be according to the following.

Item Article/Section

(a) Cover Coat Aggregate 1004.03

(b) Seal Coat Aggregate (Note 1) 1004.03

(c) Bituminous Materials (Note 2) 1032

Note 1. For A-1 surface treatment, the contract will specify which of the two aggregate gradations itemized in Article 1004.03 shall be used.

Note 2. For A-1 surface treatment, the bituminous material shall be as shown on the plans. For A-2 and A-3 surface treatments, the Contractor shall use one of the bituminous materials according to the following table.

|  |  |  |
| --- | --- | --- |
| Type of Construction | Bituminous Materials Recommended for Weather Conditions Indicated | |
| Warm  [60 to 85 °F]\*  [(15 to 30 °C)]\* | Hot  [85 °F Plus]\*  [(30 °C Plus)]\* |
| Prime | MC-30, PEP | MC-30, PEP |
| Cover Coat  and  Seal Coat | RS-2, CRS-2, MC-800,  MC-3000, SC-3000,  HFE-90, HFE-150, HFE-300, CRS-2P, HFRS-2P | RS-2, CRS-2, MC-800,  MC-3000, SC-3000, PG 46-28, PG 52-28, HFE-90, HFE-150,  HFE-300, CRS-2P, HFRS-2P |

\*Temperature of the air in the shade at the time of application.

**Equipment**. Equipment shall be according to the following.

Item Article/Section

(a) Pneumatic-Tired Rollers 1101.01

(b) Mechanical Sweeper 1101.03

(c) Aggregate Spreaders 1102.04

(d) Heating Equipment 1102.07

(e) General Use Pressure Distributor 1102.05(a)

**CONSTRUCTION REQUIREMENTS**

**Weather Limitations**. This work shall be done between May 1 and October 1. Bituminous materials shall be applied only when the temperature of the air in the shade is above 60 °F (15 °C). No work shall be started if local conditions indicate that rain is imminent.

This work may be done between October 1 and October 30 providing the temperature of the air for three consecutive days immediately preceding the day of application has been: (1) above 60 °F (15 °C) in the shade each day, (2) a minimum of 40 °F (5 °C), and (3) the temperature of the air in the shade at time of application is above 60 °F (15 °C).

**Preparation of Bituminous Material**. The temperature of the bituminous material at the time of application shall be such that it will spray uniformly without clogging the spraying nozzles and shall be applied within the temperature ranges according to Article 1032.04. Bituminous material shall be stored according to Article 1102.01(a)(6).

**Preparation of Aggregate**. The aggregates used in the cover coat(s) and the seal coat shall contain no free moisture.

**Sequence of Work**. The sequence of construction operations shall be undertaken as follows.

(a) Repair and preparation of base or existing surface.

(b) Application of bituminous material for prime coat (A-2 and A-3 on aggregate roadways only).

(c) Alternate applications of bituminous material and aggregate.

**Repair and Preparation of Base or Existing Surface**. The base or existing surface shall be prepared according to Section 358.

**Prime Coat**. The bituminous material shall be applied uniformly with a general use pressure distributor on the prepared surface at the rate of 0.25 to 0.5 gal/sq yd (1 to 2 L/sq m), the exact rate to be specified by the Engineer. The bituminous priming material shall be applied to a width 1 ft (300 mm) greater on each side of the roadway than the specified width of the finished surface.

The prime coat shall be permitted to cure until the penetration has been approved by the Engineer, but not less than 24 hours for MC-30 or 4 hours for PEP. Pools of prime occurring in the depressions shall be removed by brooming or squeegeeing the excess material over the surrounding surface the same day the prime coat is applied. Traffic shall not be allowed upon the primed surface during the curing period. At locations where the prime coat has failed or is damaged, it shall be repaired in a manner satisfactory to the Engineer. The prime coat shall be maintained at all times until the cover coat is constructed. When required by the Engineer, the primed surface shall be swept prior to constructing the cover coat.

**Application of Bituminous Material**. The bituminous material shall be applied with a general use pressure distributor. A hand spray wand shall be used at places not covered by the distributor. The entire length of the spray bar shall be set at the height above the surface recommended by the manufacturer for even distribution of the bituminous material.

To prevent missing or overlapping at transverse joints, heavy paper shall be spread over the previously applied bituminous material and aggregate. In order to obtain a uniform application of the bituminous material, the distributor shall be traveling at the speed required for the specified rate of application when the spray bar crosses the paper. Adjacent construction, such as concrete pavement, curb and gutter, and raised reflective pavement markers shall be protected by shields, covers, or other means.

**Application of Aggregates**. The cover coat and seal coat aggregates shall be spread evenly with an aggregate spreader over the entire surface being treated. In all cases, the aggregate shall be applied ahead of the truck or spreader wheels. Hand spreading will be permitted only when approved by the Engineer and, when so permitted, the aggregate shall be spread uniformly and at the approximate rate specified. Any ridges of aggregate left by the aggregate spreader shall be smoothed out with hand brooms immediately behind the aggregate spreader.

**Cover Coat**. Bituminous material for the cover coat shall not be applied until the previous application is acceptable to the Engineer.

At the beginning of each day's work, no bituminous material shall be applied until there is sufficient cover coat aggregate in trucks at the work site to completely cover the first application of bituminous material. The amount of surface area covered by each successive application of bituminous material shall be determined by the Engineer. In no case shall this area be greater than can be covered with cover coat aggregate and given the initial rolling while the bituminous material is still in condition to hold the aggregate.

The bituminous material, as specified for cover coat, shall be applied uniformly over the surface at the rate of 0.20 to 0.50 gal/sq yd (1 to 2 L/sq m), the exact rate to be specified by the Engineer. Immediately following the application of the bituminous material, the cover coat aggregate shall be spread over the treated surface at the rate of 15 to 25 lb/sq yd (8 to 14 kg/sq m), the rate to be as specified by the Engineer.

The entire surface shall be rolled immediately with a pneumatic-tired roller. Rolling shall proceed in a longitudinal direction beginning at the edges and progressing toward the center, overlapping on successive trips by at least 1/2 the width of the roller. The roller shall be operated at a speed which will not cause the aggregate to be displaced. The aggregate shall then be rolled with a separate pneumatic-tired roller until the aggregate is properly seated in the bituminous material.

**Seal Coat**. When constructing A-2 or A-3, the seal coat shall not be started until the cover coat immediately preceding the seal coat is completed.

Application of the bituminous material and aggregate and rolling of the seal coat aggregate shall be the same as specified above for the cover coat.

During the construction period, the Contractor shall maintain the completed work. If necessary, the Contractor shall apply additional seal coat aggregate to absorb excess bitumen appearing on the surface and shall repair any areas where pickup has occurred.

Upon completion of the work and after the final set of the asphalt, excess loose aggregate shall be removed.

**Opening to Traffic**. The road shall be opened to traffic according to Article 701.17(c)(4).

**Method of Measurement**. Bituminous materials will be measured for payment as specified in Section 1032.

Cover coat aggregate and seal coat aggregate will be measured in tons (metric tons) according to the requirements of Article 311.08(b), except that measurement for payment will not be made for aggregate in excess of 110 percent of the amount specified by the Engineer.

**Basis of Payment**. This work will be paid for at the contract unit price per ton (metric ton) for BITUMINOUS MATERIALS (PRIME COAT), BITUMINOUS MATERIALS (COVER AND SEAL COATS), POLYMERIZED BITUMINOUS MATERIALS (COVER AND SEAL COATS), COVER COAT AGGREGATE, and SEAL COAT AGGREGATE.

When provided as a payment item, the preparation of the base or existing surface will be measured and paid for as specified in Section 358. If not provided as a payment item, preparation of base or existing surface shall be considered as included in the contract unit price(s) for the bituminous surface treatment.