

ITEM – RUBBERIZED ASPHALT CHIP SEAL COAT*Note to C&S:*

*Contracts and Specifications Stored Spec "404BITUM" shall **not** be used in conjunction with Rubberized Asphalt Chip Seal Coat.*

1.0 Description:

The work under this item shall consist of furnishing all materials and constructing a rubberized asphalt chip seal coat in accordance with the requirements of these specifications and in reasonably close conformity with the lines shown on the project plans or established by the Engineer.

The average elevation of the roadway for this project is X feet.

Rubberized asphalt chip seal coat shall be placed between the dates of * and *.

2.0 Materials:**2.01 Bituminous Material:**

Bituminous material shall be asphalt-rubber conforming to the requirements of Section 1009 of the specifications. The asphalt-rubber shall be CRA Type *. The crumb rubber gradation shall be Type B conforming to the requirements of Section 1009.

2.02 Aggregate Materials:**(A) General:**

No Department-Furnished Materials Source is set for this project. Materials sources shall be as specified in Section 1001 of the specifications.

Aggregate material will be sampled for gradation acceptance in the final stockpile before incorporation into the work.

The aggregate material will be deemed to be acceptable when the test values for each specified aggregate characteristic are within the specified limits.

(B) 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.

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

(C) Pre-Coated Cover Material:

Aggregate for cover material shall be of clean sand, gravel or crushed rock and shall be free from lumps or balls of clay and shall not contain calcareous or clay coatings, caliche, synthetic materials, organic matter or foreign substances. The aggregate for cover material shall meet the requirements given below for aggregate characteristics prior to pre-coating with bituminous material.

The contractor shall submit a minimum 75-pound sample of cover material, prior to pre-coating, to the Engineer at least 10 calendar days prior to beginning application of the cover material for testing.

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

Sieve Size	Percent Passing
1/2 inch	100
3/8 inch	70 - 90
1/4 inch	0 - 10
No. 8	0 - 5
No. 200	0 - 1.0

Cover materials shall meet the following requirements:

Aggregate Characteristics	Test Method	Requirement
Abrasion	AASHTO T 96	100 Rev., Max 9% 500 Rev., Max 40%

Carbonates	Arizona Test Method 238	Maximum 20%
Fractured Coarse Aggregate Particles	Arizona Test Method 212	Minimum 85% (at least two fractured faces) and minimum 92% (at least one fractured face) determined on plus No. 4 material
Flakiness Index	Arizona Test Method 233	Maximum 20%
Bulk Oven Dry Specific Gravity	Arizona Test Method 210	2.350 – 2.850
Water Absorption	Arizona Test Method 210	0 – 2.5%

Prior to placing, the cover material shall be precoated with any grade of PG asphalt cement which meets the requirements of Section 1005 of the specifications. The precoating shall be accomplished by mixing at a central plant until the aggregate is thoroughly coated. The cover material shall have a minimum temperature of 250°F at the time of precoating with asphalt cement. The cover material shall be precoated with approximately 0.40 percent to 0.60 percent asphalt cement, by weight of the aggregate. The final percentage of asphalt cement used for precoating will be as directed by the Engineer. The end result shall be a dust free material.

3.0 Construction Requirements:

3.01 Weather Limitations:

Bituminous material shall be applied to an existing bituminous surface only between the dates hereinbefore specified, when the existing bituminous surface is dry, the pavement surface temperature is at least 85 degrees F, and the ambient temperature at the beginning of the application of bituminous material is at least 65 degrees F and rising. The application of bituminous material shall be stopped when the ambient temperature is 70 degrees F or less and falling.

At any time, the Engineer may require that the work cease or that the work day be reduced in the event that weather conditions, either existing or expected, are anticipated to have an adverse effect upon the bituminous treatment.

3.02 Equipment:

(A) Distributor Truck:

Distributor trucks shall be so designed, equipped, maintained and operated that bituminous material at even heat may be applied uniformly on variable widths of surface at readily determined and controlled rates of from 0.03 to 1.00 gallons per square yard, with uniform pressure, and with an allowable transverse variation from any specified rate not to exceed 10

percent or 0.02 gallons per square yard, whichever is less. Distributor equipment shall include a tachometer, pressure gauges, accurate volume measuring devices or a calibrated tank, and a thermometer for measuring temperatures of the tank contents. Distributors shall be equipped with a power unit for the pump, and spray bar which is adjustable laterally and vertically. The distributor shall provide for continuous circulation of the bituminous material through the tank and spray bar.

Prior to the spreading of bituminous material, all distributor trucks proposed for use shall have been tested for rate of transverse spread, in accordance with the requirements of Arizona Test Method 411, and certified within 12 months from the date of spreading. However, the Engineer may at any time require that each distributor truck be tested to determine the rate of the transverse spread.

(B) Power Brooms:

Power brooms shall be of the rotary type equipped, maintained and operated so that the bristles are of reasonably uniform length and capable of cleaning without gouging or tearing the surface.

(C) Rollers:

Rollers shall be of the oscillating type having a width of not less than four feet with pneumatic tires of equal size and diameter. Wobble-wheel rollers will not be permitted. The tires shall be spaced so that the gaps between adjacent tires will be covered by the following tires. The tires shall be inflated to 90 pounds per square inch, or such lower pressure as designated by the Engineer, and maintained so that the air pressure will not vary more than five pounds per square inch from the designated pressure. Pneumatic tired rollers shall be constructed so that the total weight of the compactor can be varied to produce an operating weight per tire of not less than 2,000 pounds. The total operating weight of the roller shall be varied as directed by the Engineer.

(D) Aggregate Spreaders:

The application of cover material shall be accomplished by means of a calibrated spreader. The spreader shall be a self-propelled, computerized rate-controlled unit capable of an application width of 14 feet or greater. The spreader shall be in good mechanical condition and capable of applying aggregate uniformly across the spread width.

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

3.03 Traffic and Traffic Control:

In the construction or application of the rubberized asphalt chip seal coat, the treated roadway surface shall not be used by the contractor, its agents, or others until it has been established to the satisfaction of the Engineer that the treated roadway surface will not be damaged or marred under the action of traffic. No traffic of any description shall be allowed on any bituminous application until approved by the Engineer. The contractor shall erect and maintain approved barricades, signs and other traffic control devices and shall use every possible means to protect the work and to exclude traffic from the roadway surface for as long a time as may be required. Traffic shall be handled in the manner most convenient to the traveling public. When traffic is handled on a one-way basis, the contractor shall provide such flaggers and pilot trucks as deemed necessary to ensure adequate protection for the roadway surface. Traffic may be detoured around the work, provided that detours are constructed and maintained in a satisfactory manner and properly signed. When it is necessary to provide for traffic across a bituminous treated surface, the crossing shall be blotted with material, as directed, before the crossing is opened to traffic.

The minimum traffic-free period for a newly applied rubberized asphalt chip seal coat shall be three hours; however, the contractor's hauling equipment may use the new seal coat during the traffic-free period at a speed not to exceed 15 miles per hour. After the traffic-free period, but prior to removing the loose cover material, all traffic allowed by the Engineer shall be limited to a speed not to exceed 25 miles per hour.

3.04 Preparation of the Surface:

The surface to be treated shall be thoroughly cleaned to the satisfaction of the Engineer prior to applying the bituminous material.

Self-propelled rotary power brooms along with hand brooms, if necessary, shall be used immediately in advance of applying the bituminous material.

3.05 Application of Bituminous Membrane:

The approximate rate of application of bituminous material will be 0.55 ± 0.05 gallons per square yard.

The Engineer will specify the exact rate based on the surface to be treated and the characteristics of the aggregate material. The rates to be applied may vary substantially because of different surface conditions within the project limits. The actual bituminous material application shall not vary more than 10 percent from the application rate specified by the Engineer.

The bituminous material shall be uniformly applied to the prepared surface at the rate specified by the Engineer and in one application.

In order to obtain uniform distribution, the distribution shall be promptly started or stopped at the junction of two applications in a manner that will not result in overlaps or gaps in the applications.

The distribution shall be promptly cut off prior to the decrease in uniform flow caused by the distributor tank becoming empty, when there is a decrease in uniform flow due to any reason whatever, or when the forward movement of the distributor slows down or stops.

In the event that any spots are missed in the application, or any areas develop that do not have a uniform spread or penetration, such areas shall be remedied without unnecessary delay as directed by the Engineer.

Care shall be taken to prevent the spraying or splattering of bituminous material on adjacent pavements, structures, curb, guardrail, trees and shrubbery or any other object outside of the area designated for spraying.

Unused bituminous material shall not be disposed of within the right-of-way lines.

3.06 Application of Cover Material:

Cover material shall be applied at the rate of approximately 0.012 cubic yards per square yard; however, the Engineer will specify the exact rate to be applied based on the characteristics of the aggregate material and the surface to be treated.

Cover material shall be immediately and uniformly spread over the freshly applied bituminous material. Any oversize aggregate or foreign material picked up during stockpiling or loading operations shall be eliminated before entering the aggregate spreader hopper. Supplemental spreading and smoothing shall be done by hand methods where necessary.

3.07 Rolling Cover Material:

Following the spreading of cover material, the surface shall be promptly rolled with self-propelled pneumatic-tired compactors. A sufficient number of compactors shall be provided to cover the width of the material spread in one pass of the compactors and this rolling shall continue until a minimum of three passes has been completed.

3.08 Removing of Loose Cover Material:

All loose cover material shall be removed from the paved surface by brooming in not less than 12 hours nor more than 36 hours after application; however, if because of weather conditions, temperature or other reasons, the Engineer determines that conditions are not conducive to obtaining the best results, brooming shall be discontinued until the Engineer has considered all conditions and has determined the best time for the removal of the cover material. The cover material shall be removed by means of a power broom which shall be in good condition and of

a design suitable for the work. The action of the broom shall be such that particles which are stuck to the bituminous material will not be dislodged.

3.09 Application of Blotter Material:

An application of blotter material may be required following the placement of the rubberized asphalt chip seal coat and prior to opening the roadway to traffic. The blotter material shall be applied in one or more applications for a total application of two pounds per square yard. The Engineer may reduce or eliminate blotter material if deemed to be unnecessary.

Blotter material, at the time of spreading, shall be wet but free of running water.

Blotter material shall be uniformly spread. Any oversize aggregate or foreign material picked up during stockpiling or loading operations shall be eliminated before entering the spreader. Supplemental spreading or smoothing shall be done by hand methods where necessary. Prior to final acceptance and when ordered by the Engineer, the contractor shall remove and dispose of any excess blotter material. The method of removal and the disposal of any excess blotter material shall be the contractor's responsibility.

3.10 Joints:

Unless otherwise directed by the Engineer, transverse joints with the preceding work shall be made by placing building paper over the end of the previous application, and the joining application shall start on the building paper. Once the application process has progressed beyond the paper, the paper shall be disposed of as directed by the Engineer. Transverse joints at other locations shall be made by a method approved by the Engineer prior to the start of the work.

Longitudinal joints shall be butt joints.

Joints shall be cleaned as deemed necessary by the Engineer prior to the application of bituminous material in the adjacent strip.

Regardless of the width of the roadway to be sealed, the number of longitudinal joints shall be kept to a minimum and shall be located to the greatest degree possible so that they will coincide with painted lines between traffic lanes.

4.0 Method of Measurement:

Bituminous material will be measured by the ton.

Cover material will be measured by the cubic yard. Cover material will be weighed, before pre-coating, and the amount in tons of dry material will be converted to cubic yards. The weight of all moisture contained in the cover material will be deducted prior to the conversion of the

weight in tons to the volume in cubic yards. The dry weight per cubic foot will be determined in accordance with the requirements of AASHTO T19 (Shoveling Procedure).

The contractor shall be responsible to determine the amount of cover material that will be required to complete the work from the source or sources from which the cover material is obtained.

Blotter material, when required, will be measured by the ton.

Measurement for payment will be made only for the quantity of bituminous material and for the quantity of cover material and blotter material used in accordance with the requirements of these specifications.

5.0 Basis of Payment:

The accepted quantities of rubberized asphalt chip seal coat, complete in place, measured as provided above, will be paid for at the contract unit price, except the contract unit price for asphalt rubber material will be adjusted for quantities of material represented by the corresponding test results. Adjustments will be made in accordance with Section 1009.

Payment for all measures necessary to direct and escort traffic through the area on which the rubberized asphalt chip seal coat is being placed will be made as specified under Section 701.

No measurement or direct payment will be made for precoating the cover material, material for precoating, and rolling and removal of loose cover material.

The estimated haul distance for the cover material and blotter material is ** miles.

DESIGNER:

* To be supplied by the Bituminous Engineer.

** To be supplied by Geotechnical Services.