SECTION 334

SEAL COATS

334.1 GENERAL

334.1.1 Seal coat and chips on bituminous paved surfaces shall consist of the application of asphaltic material and aggregate.

334.1.2 Precoated chip seal coat surfacing shall consist of the application of a bitumen together with a bitumen covered material aggregate to an existing asphaltic concrete surface.

334.2 REFERENCES

334.2.1 ASTM:
C131
C136

334.2.2 AASHTO:
T96
T104

334.2.3 This Publication:
SECTION 113

334.3 MATERIALS

334.3.1 ASPHALTIC MATERIAL:

The asphaltic material shall be a rapid setting emulsified asphalt of the type, grade, and amount specified, or shown on the plans, and shall conform to the requirements of Section 113.

334.3.2 AGGREGATE

334.3.2.1 Mineral Aggregate: Mineral aggregate shall consist of crushed stone or crushed gravel, free from adherent fills of clay, and shall not be of such nature that a thorough coating of the bituminous material used in the work will not strip off upon contact with water.

334.3.2.2 Fractured Faces: Crushed gravel used as the seal coat aggregate shall have a minimum of 75 percent by weight of the plus No. 4 mesh aggregate with two or more crushed fractured faces.

334.3.2.3 Percent Wear: When tested in accordance with ASTM C 131 or AASHTO T 96, the percentage of wear shall not exceed 30.

334.3.2.4 Soundess: When tested in accordance with AASHTO T 104, the loss after 5 continuous cycles of the plus No. 4 mesh aggregate based on the gradation of aggregate as received shall be 15 or less.

334.3.2.5 Gradation of Aggregates: The gradation of the aggregates for seal coat and chips or precoated chip seal coat shall be determined by ASTM C 136. The following gradations will apply:

334.3.2.5.1 For Streets and Parking Lots:

Sieve Designation	Percent by Weight Passing Square Mesh Sieves
3/8"	100
No. 4	0-10
No. 10	0-2

334.3.2.5.2 For Median Surfaces:

Sieve Designation	Percent by Weight Passing Square Mesh Sieves
5/8"	100
No. 4	0-12
No. 10	0-2

334.3.3 PRECOATED CHIPS: The aggregate specified shall be coated with asphaltic material, using 1 1/4 percent plus or minus 1/2 percent by total weight, as approved by the ENGINEER. Precoating shall be done by running the aggregate through a suitable pub mill where the aggregate and asphaltic material will be mixed.

334.4 EQUIPMENT

334.4.1 BITUMINOUS DISTRIBUTOR: The distributor shall have pneumatic tires of such width and number that the load produced on the surface shall not exceed 650 pounds per inch of the tire width. It shall be so designed and equipped as to distribute the bituminous material uniformly at even heat on variable widths of surface at readily determined and controlled rates ranging from 0.05 to 2.0 gallons per square yard, with a pressure range of from 25 to 75 pounds per square inch with an allowable variation from any specified rate not exceeding 5%. The distributor equipment shall include an independently operated bitumen pump, tachometer, pressure gauges, volume measuring devices, a thermometer for reading the temperature of tank content, and a hose attachment suitable for applying bituminous material to spots missed by the distributor. The distributor shall be equipped for circulation and agitation of the bituminous material during the heating process.

334.4.2 STORAGE TANKS: In the event storage tanks are used, an armored thermometer with a

range from 100 degrees F to 400 degrees F shall be fixed to the tank so that the temperature of the bituminous material may be determined at all times.

334.4.3 MECHANICAL SPREADERS: Self-propelled mechanical spreaders shall be used. Mechanical spreaders shall be adjustable and capable of spreading aggregate at controlled amounts per square yard.

334.4.4 BROOM DRAGS: The broom drags shall consist of brooms of the street type, mounted in a frame in such a manner as to spread the aggregate uniformly over the surface of the area to be treated. The drags shall be equipped with the plates for towing. Towing equipment shall be pneumatic-tired.

334.4.5 POWER BROOMS AND POWER BLOWERS: Brooms and blowers of the power type shall be suitable for cleaning effectively the surfaces to be treated. For crack cleaning, a compressor of not less than 210 cfm shall be furnished complete with necessary tools.

334.4.6 RUBBER-TIRED ROLLERS: Rubber-tired rollers shall be of the self-propelled type weighing no less than 4 tons or more than 10 tons without ballast and consist of 2 axles on which are mounted not less than 9 pneumatic-tired wheels in such manner that the rear group of tires will not follow in the tracks of the forward group. The axles shall be mounted in a rigid frame provided with a loading platform or body suitable for ballast loading. The tires shall be uniformly inflated. The rollers shall be weighed as directed by the ENGINEER.

If required, one 10-12 ton tandem steel wheel roller shall be provided.

334.5 APPLICATION REQUIREMENTS

334.5.1 TIME OF APPLICATION AND WEATHER CONDITIONS:

Surface treatment materials shall be applied only when the surface is dry and when there is no rain or threat of rain. The ambient temperature at the time of application of surface treatment materials shall be at least 60 degrees F and rising, and the application of the bituminous seal coat shall cease when the temperature is 60 degrees F and falling. Application of the bituminous coat shall be controlled to the extent that any area to which it is applied can be completely covered by the required amount of aggregate while the seal coat is still hot.

334.5.2 PREPARATION OF SURFACES:

Immediately before applying the bituminous surface treatment, cracks shall be treated as shown on the plans and specifications. In all cases, care shall be taken to remove all dirt, clay, and other loose or foreign matter. After the cleaning operation has been completed and prior to the application of any bituminous material, the area to be treated shall be inspected by the ENGINEER to determine its fitness for receiving the treatment and seal.

334.5.3 APPLICATION OF BITUMINOUS COAT:

The asphalt shall be applied as soon as possible after preparation of surfaces. At the time of application, temperatures of the asphalt shall be as directed by the ENGINEER. The asphalt shall be applied by means of a pressure distributor and shall be so applied that uniform distribution is obtained at all points of the surface to be sealed. Unless the distributor is equipped so as to obtain satisfactory results at the junction of previous and subsequent applications, building paper shall be spread on the surface for a sufficient distance back from the ends of each application so that flow through the sprays may be started and stopped on the paper and so that all sprays will be operating at full force on the surface to be treated. Immediately after the application, the building paper shall be removed. Any spots missed by the distributor shall be properly treated with a hand spray. Bitumen shall be applied as soon as possible after preparation of surfaces and at a rate of 0.30 to 0.45 gallon per square yard. The bituminous material shall be applied by means of a bituminous distributor. The bituminous material shall be applied at the pressure and in the amounts, within the limits specified, as determined by the ENGINEER. The bituminous material shall be so applied that uniform distribution is obtained over all points of the surface to be treated. Longitudinal laps may be made from 6 to 12 inches in width. The lapping or feathering of transverse joints will not be permitted. Metal sheets, building paper, or other approved methods shall be used in making transverse joints to provide a smooth uniform surface. Any method of applying bituminous materials or aggregate which produces ridges, grooves, or other uneven surfaces will not be permitted. All spots missed by the distributor shall be properly treated with bituminous material as directed by the ENGINEER. The length of application of bituminous material shall be that which can be completely covered by the required amount of aggregate before the asphalt emulsion has set.

334.5.4 APPLICATION OF AGGREGATE:

The aggregate shall be uniformly spread over the asphalt as soon as possible after application of the asphalt and before the temperature of the asphaltic material drops below the recommended spraying

temperature. The aggregate shall be uniformly placed in quantities shown on the plans or as directed by the ENGINEER. Areas having insufficient cover shall be back-spotted or sprinkled with additional aggregate by hand during the operations whenever necessary. Aggregate shall be applied at a rate of 15 to 25 pounds per square yard.

334.5.5 BROOMING: After the finish rolling, excess aggregate shall be broomed to a smooth and uniform surface by the use of drag brooms. The loosening of embedded material by the operation of drag brooms will not be permitted.

334.5.6 PNEUMATIC-TIRED ROLLERS: Rolling with pneumatic-tired rollers shall begin immediately after application of the aggregate. The entire surface of the aggregate shall be rolled not less than 4 times. The pneumatic rollers shall operate at a speed not to exceed 8 miles per hour and shall be as specified in Subsection 335.7.1.

334.5.7 OTHER COMPACTION: In all places not accessible to the roller, the aggregate shall be adequately compacted with hand tampers. Hand tampers shall weigh not less than 25 pounds and shall have a tamping face area of not more than 50 square inches.

334.5.8 WORK COORDINATION: The rate of placement of materials and rolling operations shall be coordinated to produce a satisfactory surface treatment. The ENGINEER may suspend the work when any phase of the operation is being jeopardized. The work shall not be resumed until the CONTRACTOR has complied with the requirements provided and as authorized by the ENGINEER.

334.5.9 CLEANING, PROTECTING, AND SWEEPING: Any aggregate that becomes coated or mixed with dirt or any other foreign material shall be removed, replaced with clean aggregate, and rerolled, as directed by the ENGINEER. All surplus aggregate shall be swept off the surface and gutters and removed. The final cleanup shall include the cleaning out of all storm water catch basins and inlets adjacent to any seal coating operations. Such basins and inlets shall be covered during spraying and chip spreading operations. The CONTRACTOR will be required to maintain brooming and rolling operations throughout the job to insure coverage, prevent or correct bleeding, as may be required for a complete job. The CONTRACTOR shall clean splattered or splashed asphalt from all curb and gutter and other improvements and shall protect or coat traffic plates, manholes, valve boxes, and other surfaces not to receive seal coat.

334.6 PROTECTION TO ADJACENT PROPERTY

Care shall be taken to prevent the spraying of asphalt upon adjacent pavements and that portion of the street being used for traffic or structures, guard rails, guide posts, markers, trees, shrubs and adjacent property, improvements, and facilities of all kinds. All structures, such as detector boxes, manhole covers, etc., within the paved area shall be protected by the application of paper or oil treatment.

334.7 MEASUREMENT AND PAYMENT

334.7.1 SEAL COAT AND CHIPS: Seal coat and chips shall be measured by the square yard as applied and accepted. Unit of payment will be as specified in the Bid Proposal.

334.7.2 PRECOATED CHIP SEAL COAT:

334.7.2.1 Precoated chips shall be measured by the ton. No separate measurement or payment will be made for bituminous materials used for precoating chips.

334.7.2.2 Asphalt material for seal coat shall be measured by the ton as applied and accepted.

334.7.2.3 Unit of payment will be as specified in the Bid Proposal.