

SECTION 3300 - ASPHALT REPAIRS**PART 1 - GENERAL**

1.01 SCOPE: This Section covers miscellaneous repair methods for asphalt pavement. Topics include asphalt patch, sealcoat, haydite sealcoat, in-place cold recycling, and asphalt overlay fabrics.

1.02 RELATED WORK: Refer to the following sections for the indicated related work:

Approved Roto-Mills	Section 2200-Subgrade Preparation and Pavement Milling
Utility Patches	Section 2250-Utility Patch Requirements
Asphalt Mixtures	Section 3000-Plant Mix Asphalt
Machine Laid Asphalt Paving	Section 3100-Asphalt Paving
Concrete for Utility Patch	Section 4000-Concrete Materials and Methods

1.03 SUBMITTALS: Contractor shall submit the following for review:

- A. Fabric brand name and model, manufacturer's material certifications, installation instructions, and specifications for installation equipment.

PART 2 - PRODUCTS

2.01 EXCAVATING EQUIPMENT: Excavating equipment operating on pavement surfaces to remain shall be mounted on rubber tires.

2.02 ROLLERS: Rollers shall conform to the requirements for self-propelled steel-wheeled rollers, pneumatic-tired rollers, and vibratory rollers contained in KDOT Standard Specifications Section 150. Two-axle and three-wheel rollers shall weigh from 8 to 12 tons; three-axle rollers shall weigh at least 12 tons; pneumatic-tired rollers shall weigh at least 225 pounds per inch of width of tire tread. Small, 1.5-ton vibratory rollers shall be used when required or permitted by Engineer.

2.03 DISTRIBUTORS: Distributors shall conform to the requirements for bitumen distributors contained in KDOT Standard Specifications Section 150. Distributors shall be constructed and operated to insure distribution of emulsion within 0.01 gallon per square yard for any quantity from 0.05 to 0.50 gallon per square yard.

2.04 CHIP SPREADER: Chip spreader shall conform to the requirements of self-propelled aggregate spreader contained in KDOT Standard Specifications Section 150.

2.05 HAYDITE CHIPS: Dust free, 3/8-inch, thermo-expanded shale produced as a manufacturing by-product.

2.06 LIMESTONE CHIPS: KDOT Standard Specifications Subsection 1109, CM-C aggregates for cover material.

- A. Material shall be crushed limestone, washed to prevent dusting. CM-C grading requirements are as follows:

<u>Sieve Size</u>	<u>Percent Retained</u>
3/4-inch	0
1/2-inch	0-12
3/8-inch	40-100
No. 4	95-100

- B. When specified, chips shall be precoated with 1-1/4% of MC-250 grade of liquid asphalt by heating the aggregate in a standard hot-mix plant to a temperature within the range of 160° F to 185° F. The percent of asphalt as specified shall be determined based on the dry weight of aggregate.
- C. Contractor shall furnish to Unified Government test results for soundness, wear, deleterious substances, sieve analysis, and asphalt content, from a certified testing laboratory. Tests shall be performed from representative samples of the first 500 tons produced, second 1,000 tons produced, third 1,000 tons produced; all to be at the supplier's expense.

2.07 POLYMER MODIFIED ASPHALT: Shall conform to the following

Tests (Note 1)	Min.	Max.
Viscosity, SSF @ 122 F	50	400
Storage Stability Test (Note 2), 24 hour percent	--	1
Tensile Stress 800% Elongation 39 F 15mm/min. kg/cm ²	0.2	--
Elastic Recovery 50 F	58%	--
Sieve Test, 20 mesh, percent	--	0.1
<u>Distillation:</u>		
Oil distillate by volume of emulsion, percent	--	3
Residue from distillation, percent	65	--
<u>Tests on Residue from Distillation:</u>		
Penetration, 77F, 100g., 5 sec.	75	200
Ductility, 77F 5 cm/minute, cm	125	--
Solubility in Trichlorethylene, percent	97.2	--
Softening Pint, Ring & Ball, F		
AASHTO T53-81	100	--
Float Test 140F sec. ASTM-D-139	1200	--

Notes:

- All tests are performed in accordance with AASHTO T 59-82 except as noted.
- In addition to AASHTO T 59, upon examination of the test cylinder, after standing undisturbed for 24 hours, the surface shall show no white, milky colored substance and shall be a homogeneous brown color throughout.

2.08 EMULSIFIED ASPHALT: Emulsified asphalt for cold recycling shall conform to KDOT Standard Specifications Section 1200. Emulsified asphalt for Haydite and sealcoat shall be CRS-1H and shall

conform to KDOT Standard Specifications Section 1200. During hot weather, CRS-2 emulsified asphalt may be substituted.

- 2.09 ASPHALT OVERLAY FABRIC:** Fabric shall be paving grade non-woven fabric (Petromat or approved equal) and shall meet or exceed the following specifications:

<u>Material Specification</u>	<u>Typical</u>	<u>Minimum</u>
Weight, oz./sq. yd.	4.3	3.8
Tensile Strength, lbs. ¹	115	90
Elongation at Break, % ¹	65	55
Mullen Burst Strength, psi	235	200
Asphalt Retention, gal./sq. yd.	---	200

¹ ASTM D5034

Asphalt sealant for fabric shall be AC-10.

- 2.10 SOIL STABILIZATION MATERIALS:** Stabilization materials shall meet the following requirements, and application shall be as specified in Part 3, this Section:

- A. AB-3 shall be Aggregate for Aggregate Base Construction, gradation AB-3, KDOT Standard Specifications Subsection 1105.
- B. Surge rock shall be Stone for Aggregate Ditch Lining, D₅₀ = 5 inches, KDOT Standard Specifications Subsection 1116.

PART 3 - EXECUTION:

- 3.01 PATCHING ASPHALT PAVEMENT:** Repairs to base course on rehabilitation and overlay projects shall be made as follows:

- A. Street Rehabilitation Projects: Remove pavement and subsoil to the depth directed by Engineer. Place AB-3 or surge rock as directed by Engineer to stabilize unsuitable subgrade and to fill overexcavated areas. AB-3 shall be compacted to 95 percent standard density. Place two 3-inch lifts of asphalt base and one 2-inch lift of asphalt surface material, unless thicker section is specified in Special Conditions or drawings. If patch area is too restricted to permit roller compaction, compact with hand-operated power equipment only if approved by Engineer. Patch shall be completed to top of base course on the same day the pavement is removed.
- B. Overlay Projects: In advance of overlay operations, Engineer will inspect existing pavement and determine locations of distress requiring additional repair and rehabilitation. Where thickness of distressed pavement is less than 8 inches, pavement shall be removed to the

limits directed by Engineer filled with full depth asphalt overlay material to the elevation of the adjacent pavement, and wheel compacted prior to final overlay.

Where thickness of distressed pavement is greater than 8 inches, pavement and subgrade shall be removed to the limits directed by Engineer, and filled with compacted AB-3 to within 1 to 2 inches below the adjacent surface to be overlaid. Patched area shall be leveled with asphalt overlay material and compacted to match the adjacent pavement surface elevation prior to final overlay.

C. Other methods as directed by Engineer.

- 3.02 SEALCOAT:** Pavement shall be swept clean with a power broom immediately prior to placing sealcoat. Emulsified asphalt shall be placed at a rate determined by Engineer at the time of application, but within the range of 0.25 to 0.35 gallons per square yard. Plain or precoated limestone chips shall be placed uniformly at a rate of 25 to 30 pounds per square yard and rolled with 3 passes of a pneumatic-tired roller. Limestone chips shall be placed with an approved spreader. Surplus material shall be swept up by a power broom immediately after rolling. Surface shall be swept again the following morning. Contractor shall remove surplus material for a two-week period as directed by Engineer.
- 3.03 HAYDITE SEALCOAT:** Pavement shall be swept clean with a power broom immediately prior to placing Haydite sealcoat. Emulsified asphalt shall be placed at a rate determined by Engineer at the time of application, but within the range of 0.25 to 0.35 gallon per square yard. Haydite chips shall be placed uniformly at a rate of 12 to 13 pounds per square yard and rolled with 3 passes of a pneumatic-tired roller. Haydite chips shall be placed with an approved spreader. Surplus material shall be swept up by a power broom immediately after rolling. Surface shall be swept again the following morning. Contractor shall remove surplus material for a two-week period as directed by Engineer.
- 3.04 ENVIRONMENTAL LIMITS:** Haydite and chip sealcoat operations shall take place only when the pavement surface is dry, the air and pavement temperatures are above 60°F, the humidity is below 60 percent, and rain and fog are absent.
- 3.05 IN-PLACE COLD RECYCLING:** Existing pavement and aggregate base shall be milled to an average depth of 6 inches and a minimum depth of 4 inches. Milling depth shall be adjusted to avoid incorporating subgrade soil. Milling shall produce a uniform edge line. Unbroken pieces with maximum dimension greater than 5 inches shall be removed. Emulsified asphalt shall be distributed at a rate of 0.75 gallon per square yard, and uniformly mixed into the recycled material. Engineer may vary the rate to obtain optimum asphalt for recycled aggregate conditions. Distribution and mixing may take place within the drum cage of the milling machine or as separate operations. Mixture shall be graded to establish a uniform crown section, or superelevated section where appropriate. Surface of the compacted mixture shall be planar to within 1/2-inch in ten feet each way.

Contractor shall prepare compaction test strips with differing sequences of steel-wheel and pneumatic-tired rollers. Test strips shall be compacted until four consecutive passes fail to increase

the density one pound per cubic foot. Target density shall be the maximum test strip density. Compaction shall be to 97 percent of the target density.

Unless otherwise specified in the Special Conditions or drawings, the subsequent surface treatment shall be a two-inch asphalt overlay.

- 3.06 FABRIC PLACEMENT:** Manufacturer's installation instructions shall be followed. A manufacturer's representative shall be present during installation. Weather limitations for application of fabric shall be the same as for asphalt paving. Depressions in the subgrade of such extent and alignment to affect final paving shall be filled prior to placing fabric. Pavement shall be swept clean with a power broom immediately prior to placing fabric. Asphalt sealant shall be applied uniformly from a pressure distributor at a rate of 0.25 gallon per square yard. Engineer may vary the application rate to obtain optimum asphalt for pavement conditions and fabric weight. Fabric shall be overlaid the same day it is placed.

END OF SECTION 3300