

SECTION 3100 - ASPHALT PAVING

PART 1 - GENERAL

1.01 SCOPE: This Section covers placing asphalt base and surface courses, including overlays. Topics include weather limits, equipment requirements, repair of subgrade, tack coat, leveling courses, delivery temperatures, spreading, finishing, compacting, and field testing.

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

Asphalt Mixtures	Section 3000-Plant Mix Asphalt
Profilograph Requirements	Section 3200-Pavement Trueness
Subgrade Preparation	Section 2200-Subgrade Preparation and Pavement Milling

1.03 REFERENCE STANDARDS: In this Section, the "Standard Specifications for State Road and Bridge Construction", Kansas Department of Transportation, shall be referred to as "KDOT Standard Specifications".

1.04 DEFINITIONS: In this Section, the following words shall have the meanings specified:

- A. Base: The substrata upon which an asphalt lift is placed. It includes compacted and undisturbed earth subgrades; aggregate base course; brick, concrete, or asphalt pavements being overlaid; and previous asphalt lifts installed as part of the work.
- B. Asphalt: Bituminous paving material containing asphaltic cement and aggregate.

1.05 ENVIRONMENTAL LIMITS: Except when directed by Engineer, asphalt shall not be placed unless all the following environmental conditions are met:

- A. Air temperature shall be 40°F minimum and rising.
- B. Fog and rain are absent.
- C. Surface to be paved shall be free of moisture and frost.
- D. Work is completed during daylight or under artificial lights approved by Engineer.

PART 2 - PRODUCTS

2.01 PAVERS: Pavers shall conform to the requirements for bituminous pavers contained in KDOT Standard Specifications Division 150 and shall be capable of spreading and finishing asphalt in the lane widths specified. Paver shall be a self-contained, self-propelled unit with an approved automatic screed control system capable of controlling the elevation and transverse slope of the screed. Where a traveling string line is used, the length of beam shall be at least 20 feet.

- 2.02 ROLLERS:** Rollers used for compaction of asphalt shall conform to the requirements for self-propelled steel-wheeled rollers, light pneumatic-tired rollers, and vibratory rollers contained in KDOT Standard Specifications Division 150. Two-axle and three-wheel rollers shall weigh between 8 and 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. Vibratory rollers shall be used only with permission of Engineer. Rollers shall be equipped with means of wetting the contact surfaces to prevent sticking of the hot asphalt.
- 2.03 DISTRIBUTORS:** Distributors shall conform to the requirements for bitumen distributors contained in KDOT Standard Specifications Division 150. Distributors shall be constructed and operated to insure distribution of tack coat within 0.01 gallon per square yard for any quantity from 0.05 to 0.50 gallon per square yard.
- 2.04 STABILIZATION MATERIALS:** Stabilization materials shall meet the following requirements, and application shall be as specified in Part 3:
- A. AB-3 shall be Aggregates for Aggregate Base Construction, gradation AB-3, KDOT Standard Specifications Subsection 1105.
 - B. Surge rock shall be Stone for Aggregate Ditch Lining, $D_{50} = 5$ inches, KDOT Standard Specifications Subsection 1116.
 - C. Asphalt millings from Unified Government stockpile or produced as part of the current work.

PART 3 - EXECUTION:

- 3.01 VERIFICATION:** Verify environmental limits are met and are not forecast to change before the day's paving can be completed. Verify utility work is complete and that valve and manhole covers are at the proper elevation.
- 3.02 BASE REPAIR:** Remove soft and weak spots in base to the extent and depth determined by Engineer and refill with asphalt or stabilization material as directed by Engineer. Asphalt shall be roller-compacted with a steel-wheeled roller to the required density of the overlaying course. Except if depth of repair is less than 6 inches and asphalt course will be placed before repair has cooled, wheel compaction will be permitted. AB-3 aggregate and millings shall be compacted to 95 percent maximum density as determined by ASTM D698; surge rock shall be dumped and leveled.
- 3.03 BASE PREPARATION:** Base shall be cleaned of all foreign material and treated as follows:
- A. All bases shall have joints and cracks larger than 3/8-inch cleaned and filled with sand emulsion mixture. Holes, spalls, and low spots shall be filled with an asphalt leveling course. The surface shall be given a tack coat at the rate specified.
 - B. Leveling course shall be the same mix design as the overlaying course. The leveling course shall be placed with a paver or a long wheel base motor grader. Leveling course shall be compacted to the required density of the overlaying course.

C. Tack coat shall be distributed at the following rates:

<u>Base Material</u>	<u>Application rate</u>
Concrete or Brick	0.05 to 0.10 Gal/SY
Asphalt	0.05 to 0.12 Gal/SY
Aggregate or Earth	0.10 to 0.20 Gal/SY

Tack coat shall not be applied more than 2,000 feet ahead of paver. Contractor shall provide signs and flaggers necessary to keep traffic from driving on the tack coat. Tack coat shall be applied to vertical contact surfaces of curb, gutters, manholes, headers cut into existing pavement, and similar structures.

3.04 SPREADING AND FINISHING: Compacted thickness shall not be greater than 4 inches for base course, and not greater than 2 inches for surface course. Depth shall be adjusted so that compacted grade is 1/4-inch above approved curb, gutter, correctly adjusted manholes, and similar structures. Material shall be placed within the temperature limits established in the job mix formula. Asphalt paving materials shall be placed with approved paver wherever practical. Paver shall be controlled by string line, traveling string line, or a reference shoe riding on previously placed pass of the same lift or approved curb. String line shall be required on the first pass of either the first or second lifts of the base course. Surface shall be smooth, true to grade and section, and free from surface irregularities. Minor defects shall be immediately repaired by raking fine material into place. Outside edges shall be formed by an edge plate or smooth roller.

Areas inaccessible to pavers may be placed and finished by hand or with appropriately sized equipment. When hand spreading and finishing are permitted, material shall be placed so as to avoid incorporation of foreign material and produce uniform density. Raking shall produce a smooth surface free from excessive coarse aggregate and honeycomb.

3.05 JOINTS: Joints shall provide a thorough, continuous bond and acceptable texture. Longitudinal joints shall be made by overlapping the previous lift and raking the course aggregate out of the overlapped section before compaction. Edges rounded by traffic shall be cut back to a vertical face before placing the adjacent pass. If rounded edges are probable in the final lift, the lift shall overlap the intended joint location and shall be saw cut at the joint location to produce a vertical face.

Joints in sequential layers shall be offset by at least 6 inches. Joints in the final surface layer shall fall on the center line and, if more than two passes are necessary, on intermediate lane lines. Longitudinal edges longer than the distance produced by one truckload of material shall not be left overnight.

Header joints matching existing pavement shall be vertical saw cut; header joints for overlays shall be milled to produce a vertical face. Base course ramps shall be removed to the depth of surface course before placement of the surface course.

3.06 COMPACTION: Rolling effort shall produce the required densities and, for the final lift, a smooth, uniform driving surface. Rolling shall follow the paver as closely as practical, and compaction shall be completed before pavement reaches 175°F. Standard compaction procedure is a breakdown rolling with a steel wheeled roller, verification and correction of grade and cross section, an

intermediate rolling with a pneumatic-tired roller, and a final rolling with a steel wheel roller. Each rolling operation shall consist of successive passes overlapping approximately one-half of the roller width. Passes shall be arranged to prevent water from roller wheels from collecting on the pavement. Inaccessible areas shall be compacted with power driven hand operated tampers. If the standard compaction procedure does not give satisfactory results or results in tearing or pumping of the pavement, Contractor shall vary the timing or make up of the compaction train subject to Engineer's approval.

- 3.07 PROTECTION FROM CONSTRUCTION TRAFFIC:** Freshly laid pavement shall be protected from concentrated wheel loads.
- 3.08 DENSITY TESTING AND DENSITY REQUIREMENTS:** Engineer will take road density tests at frequencies to be determined in the field, but not more often than one test of three cores for every 200 tons placed. Unified Government will core specimens, and Contractor shall fill core holes with asphalt mix. Field density shall be equal to or greater than 96 percent of the reference density, as determined by Kansas Test Method KT 14.
- 3.09 SURFACE TOLERANCE:** Final grade relative to survey datum shall be true within 0.1 foot. Asphalt grade shall be within 0 to 1/2-inch above elevation of approved adjacent structures. Tolerances apply equally to joints, machine placed, and hand placed surfaces. In areas not subject to profilograph testing, finished surface shall be true to plane in every direction to within 0.2 inch measured with a 10-foot straight edge and to within 0.4 inch measured from a 25-foot string line.
- 3.10 SURFACE STANDARD:** Final surface quality shall be smooth, free of segregation, true to cross section, uniform in density, texture, and appearance, and free from surface irregularities; and shall provide a final pavement ride quality acceptable to Engineer. Corrective actions deemed necessary by Engineer to improve final ride quality shall be made promptly by Contractor, at no additional cost to Unified Government.

END OF SECTION 3100