

## SECTION 3000 - PLANT MIX ASPHALT

### PART 1 - GENERAL

**1.01 SCOPE:** This Section covers materials for asphalt paving mixes and mixing plant requirements. Topics include plant calibration, aggregate and asphalt requirements, asphaltic cement design mix and job mix tolerances, prime and tack coat material, mixing plant requirements, batching requirements, and transportation requirements.

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

Placement of Asphalt Pavement	Section 3100-Asphalt Paving
Placement of Asphalt Patches	Section 3300-Asphalt Repairs
Utility Patches	Section 2250-Utility Patch Requirements

**1.03 SUBMITTALS:** If requested by Engineer, the Contractor shall submit the following for review:

- A. Aggregate gradation, abrasion test, and plasticity test results.
- B. Asphalt certifications from asphalt supplier.
- C. Job mix formula and Marshall test results based on the aggregate stockpiles to be used for the work.
- D. A plant calibration report prepared by an independent testing laboratory.
- E. Results of plant quality control tests.

**1.04 PLANT QUALITY CONTROL:** If requested by Engineer, submit one sample from each lot of 500 tons, or portion thereof, to be tested by an independent laboratory with respect to gradation, plasticity index, percent natural sand, and other tests. Engineer shall have access to the plant (including employee rest rooms and break rooms) to perform full time on-site inspection; Engineer's right to plant access shall be continuous for the duration of the Contract and shall not be limited to actual production runs of asphalt for Unified Government projects.

**1.05 TRUCK WEIGHT TICKETS:** Truck weight tickets shall be numbered sequentially and shall include job name, mix identification, time truck was loaded, and weight of load to the nearest one hundredth ton.

### PART 2 - PRODUCTS

**2.01 AGGREGATE:** Aggregates shall be free of shale, lumps of clay, coatings of clay or dust, organic material, and conglomerate particles. Aggregates from recycled pavements are not permitted. Aggregates shall be blended to give the gradations specified in the design mix for the required use.

- A. Coarse aggregate is defined as all material retained on a No. 8 sieve. Coarse aggregate shall be crushed limestone with at least 70 percent of the particles having at least 2 fracture faces. Sandstone shall not exceed 5 percent. Wear measured by the Los Angeles Abrasion Test (AASHTO Method T96) shall not exceed 40 percent.
- B. Fine aggregate is defined as all material passing a No. 8 sieve. Fine aggregate shall consist of sand, stone screenings, or a combination of the two together with that fraction of the coarse aggregate stock that passes a No. 8 sieve. Natural sand shall not exceed 25 percent of the total combined aggregate. The plasticity index of the fraction passing a No. 40 sieve shall not exceed 3 percent.
- C. If mineral filler in addition to that present in the aggregate is necessary, it shall consist of stone dust or portland cement.

**2.02 ASPHALTIC CEMENT:** Asphaltic cement shall meet the requirements for PG 58-22, 58-28, or 64-22, established in KDOT Standard Specifications Section 1200.

**2.03 ASPHALT PAVING MIXTURES:** Except as may be amended for high volume roads, proportioning of paving mixtures shall fall within the following limits for the type specified:

<u>Sieve Size</u>	<u>KCK Base Course Percent Retained</u>	<u>KCK Surface Course Percent Retained</u>
1-inch	0	0
3/4-inch	5 - 15	0
1/2-inch	25 - 47	0 - 10
3/8-inch	43 - 62	12 - 26
No. 4	60 - 75	42 - 56
No. 8	69 - 78	66 - 74
No. 16	74 - 92	--
No. 30	79 - 87	79 - 92
No. 50	87 - 96	--
No. 100	88 - 97	91 - 98
No. 200	92 - 97	92 - 98
AC	4.5 - 6.5	4.5 - 5.5

In addition to the above limits, the amount of material between any two successive sieves in the following series shall not be less than 3% or more than 23%: No. 4 and No. 8.

Within the limits of the of the design mix, the supplier shall prepare a job mix formula. When tested according to ASTM D1559, the job mix shall meet the following criteria:

Marshall Stability	1500 lbs. minimum
No. of blows	50
Flow	0.08 to 0.16 inches

Air Voids	Percent
Base	1 to 8
Surface	1 to 5
Voids in Aggregate	Percent Minimum
Base	13
Surface	14

**2.04 AMENDED MIXTURE FOR HIGH VOLUME ROADS:** For high volume roadways a substitution of asphalt surface course mixture may be required. When required by special conditions, a APWA Type 6-01 Asphaltic Concrete Surface Course shall be substituted for a KCK Surface Course. The master grading limits, job mix formula, tolerances, and Marshall characteristic specifications shall be in accordance with the Kansas City Metropolitan American Public Works Association Specification, 2001, or latest revision there too.

**2.05 MIX TOLERANCES:** Paving material delivered to the site shall not vary from the job mix formula by more than the following amounts:

<u>Sieve Size</u>	<u>Percent by Wt. of Total Mix</u>
No. 4	5
No. 8, 16, 30	4
No. 50, 100	3
No. 200	2
AC	0.5

**2.06 TACK COAT:** Tack coat shall meet the requirements for ST-1P established in KDOT Standard Specifications Section 1200.

**2.07 PLANT REQUIREMENTS:** Plants for producing asphaltic paving mixtures shall be designed and operated to produce a well-graded mixture within the job mix tolerances and shall meet the requirements of KDOT Standard Specifications Section 603. Plants shall have the output capacity to provide uniform delivery matched to the placing capacity of the paving equipment and site conditions. Plants shall have the following operation and control equipment:

- A. Truck scales shall be accurate to within 4 pounds per 1,000-pound live load. Scales shall have a rated capacity at least 5,000 pounds more than the heaviest total load to be weighed.
- B. Safe, adequate access for inspection shall be provided to areas of the plant from which samples or observation may be required. These areas include the dryer, screens, storage bins, asphalt control unit, aggregate stockpiles, and truck loading space.
- C. A temperature gauge reading from 200°F to 400°F shall be provided at the asphalt feed line. A recording temperature gauge, sensitive to  $\pm 5^\circ\text{F}$  and to a rate of change of  $\pm 10^\circ\text{F}$  per minute, shall be provided at the dryer discharge.

D. Positive control shall be provided for proportioning aggregate and asphalt and for setting of mixing time.

**2.08 HAUL TRUCKS:** Haul trucks shall have tight metal bottoms, clean of foreign material. Truck bed shall be lubricated with a volatile oil to prevent the mix from sticking. Trucks shall be provided with covers which completely cover the load to protect it from cooling. Tare weight of haul trucks shall be established twice a day.

**PART 3 - EXECUTION:**

**3.01 PLANT OPERATIONS:** The requirements in KDOT Standard Specifications Sections 602 and 603 for preparation and heating of asphalt, preparation and preheating of aggregates, temperature limits, mixing time, batching requirements, wasting of unsuitable material, and weighing operations shall be met.

**3.02 HAULING:** Delivery of material to the paver shall be at a uniform rate matched to the capacity of the paving equipment and site conditions. Delivery shall be scheduled so that material may be placed during daylight. Trucks shall be covered during transportation of the load and shall remain covered until the truck is next in line to be unloaded. If there is a delay in using a complete load, the remaining portion shall be recovered until it can be used.

END OF SECTION 3000