

SECTION 206 - FLEXIBLE PAVEMENT

1. GENERAL

This work shall conform to the latest version of Section 611 of the Kansas Department of Transportation (KDOT) Standard Specifications, or as otherwise noted.

2. PREPARATION OF SUBGRADE AND BASE

Earth subgrade shall be prepared per specifications Section 102, "Excavation and Embankment" or Section 201, "Subgrade Modification." New bituminous base shall be prepared by the removal of all loose particles, mud, dirt, and other foreign material to as clean a condition as is practicable; cleaning shall be done by power brooms or other equivalent and approved methods; flushing with water shall be done as directed.

3. TACK COAT

Each lift of bituminous mat base course, which will be covered by another lift of bituminous mat, shall receive a bituminous tack coat. When placing a bituminous mat on Portland Cement pavement the tack coat material shall be Type SS-1H anionic emulsified asphalt as specified in Section 1203 of the Standard Specifications. When placing a bituminous mat on asphaltic concrete pavement the tack coat material shall be Type SS-1H anionic emulsified asphalt or CSS-1H cationic emulsified asphalt as specified in Section 1203 of the Standard Specifications. Material shall be sampled and tested by an approved testing laboratory at no direct pay and acceptance will be based on certified test results as specified for bituminous material in mat. Equipment and construction requirements shall conform to Section 155 of the Standard Specifications. Rate of application shall be between 0.08 and 0.12 gallons per square yard.

4. BITUMINOUS MATERIALS

The bituminous material in mat shall be Grade PG 58-28 asphalt cement as specified in the latest version of Section 1202 of the Standard Specifications. Material shall be sampled and sealed at the refinery or other point of loading, and an approved testing laboratory shall test samples. All sampling and testing shall be conducted in accordance with the applicable AASHTO or ASTM test method. Acceptance will be based on certified test reports, and copies of such reports shall be furnished for each shipment. Contractor shall arrange and pay for all testing, and shipment of materials shall be scheduled to permit sampling and testing in advance of time materials will be required on the work.

5. HEATING BITUMINOUS MATERIAL

Asphalt cement shall be preheated and applied to the aggregate within the temperature range shown in the latest bill of lading for the asphalt cement, and in no case shall temperatures exceed 340 degrees Fahrenheit. Any over-heated material shall be set aside and not used until it has been resampled and retested; conditions of acceptance shall be the same as under original tests.

6. MINERAL AGGREGATES

Aggregates for use in base course shall conform to the requirements of Section 1103 of the Standard Specifications; the combined aggregate gradation shall meet the requirements for Type SM-9.5A (Class A) or SR-9.5A (Class A) as listed in Section 611 of the Standard Specifications;

and shall consist of crushed stone, crushed gravel, sand and/or chat, and a mineral filler. For design of mixes to be used on streets with low to moderate traffic volumes, use the compaction revolutions listed in Table 611-1. For arterial streets use the higher compaction revolutions listed in the footnotes for Table 611-1. Materials shall be sampled and tested by an approved testing laboratory at the expense of the Contractor and acceptance will be based on certified test results, as specified above for bituminous material.

7. WARM MIX ASPHALT (WMA)

At the contractor's option, a WMA version of Hot Mix Asphalt (HMA)-Commercial Grade (Class A) may be supplied to the project. Provide Warm Mix Asphalt (WMA) additives or processes as specified in the latest version of Section 1207 of the Standard Specifications. The Contractor is permitted to use WMA unless otherwise shown on the plans. For mixes containing Warm Mix Asphalt (WMA) additives, the contractor shall submit for the Engineer's review and approval the additive or process used, the recommended rate of application, and the temperature ranges for mixing and compaction. Mixing temperature range shall be provided by the Asphalt Binder Supplier. When using WMA, the mixing temperature may be reduced no more than 30°F for WMA water foaming processes, and no more than 70°F for WMA chemical and organic additives. The minimum mixing temperature for WMA shall be 220°F.

If WMA additives are added at the Contractor's plant, a "totalizer" shall be installed to monitor the quantity of WMA additive being added, and a method shall be provided for the Engineer to monitor the percent of additive being added. At the end of each day of production the Plant Foreman or Project Manager shall provide the Engineer with a document signed by the Plant Foreman or the Project Manager listing the dry weight of each aggregate, mineral filler, RAP, and WMA chemical or organic additive; the tons of asphalt binder, the tons of anti-strip agent used for the project during the day, and the tons of water used in the WMA foaming process. The dry weight shall be the tons of material less the water content.

8. TRANSPORTATION AND DELIVERY OF BITUMINOUS MIXTURE

Equipment and construction requirements shall conform to Section 155 of the Standard Specifications. The inside surface of each vehicle receiving bituminous mix may be lubricated lightly with thin oil or soap solution prior to loading, but excessive use of lubricant or use of gasoline, kerosene, or similar products will not be permitted. Material shall be weighed, then delivered and dumped into hopper of a self-propelled power machine for placing and spreading material as hereinafter specified. During transportation of hot bituminous mixtures from remote central mixing plant to point of usage and placement on the prepared subgrade or base course, trucks shall be provided with tarpaulin covers or other adequate protection to prevent undue loss of heat. In any case, temperature of mixture at time of placement shall be within the range of 275 to 325 degrees Fahrenheit except when using WMA.

For grade control during paving operations an approved system capable of automatically controlling the elevation and transverse slope of the paver screed shall be used unless otherwise directed by the Engineer. An erected stringline, traveling stringline, or other approved device operating on the roadbed being paved or the surface of the previously placed lane shall be used to establish the grade reference. The grade reference device shall operate on either or both sides of the paver as required and shall be capable of maintaining the desired transverse slope

regardless of changes in the screed elevation.

The traveling string line shall be constructed in such a manner that it does not vibrate or cause the paver sensor to make erroneous readings during the laydown operation. The length of the beam to be used shall be approved by the Engineer and shall be between 20 feet and 40 feet.

The use of the automatic screed control devices on asphalt pavers will not be required for paving small irregular areas such as entrances, approaches, or side street connections. Automatic screed control devices will be required for matching the joint with all previously laid strips, except for those areas noted above.

For all lots, the maximum density shall be achieved before the temperature of the HMA falls below 175°F. When using WMA, the maximum density shall be achieved before the temperature of the WMA falls below 165°F. Do not crush the aggregate. When the mat temperature falls below 175°F or 165°F for WMA, roller marks may be removed from the mat with a self-propelled static steel roller.

For specified lift thicknesses greater than 1.5 inches compact the bituminous mixture to a density equal to or greater than 93% of the maximum theoretical density for that day's production. When the specified lift thickness is 1.5 inches or less, compact the bituminous mixture using the approved rolling procedure.

9. JOINTS

All joints shall present the same texture, density and smoothness as other sections of the course. The longitudinal joint shall be offset in successive courses a minimum of 6 inches and a maximum of 12 inches from the preceding joint location. Placing of any course shall be as nearly continuous as possible. Rollers shall pass over unprotected ends of freshly laid mixture only when laying of the course is to be discontinued. In such cases, provisions shall be made for proper bond by cutting back the joint to expose an even, vertical surface for full thickness of the course. Exposed edges shall be given a light paint coat of emulsified asphalt. Fresh mixture shall be raked against joints, thoroughly tamped and rolled.

10. SMOOTHNESS TESTS

Finished surface of bituminous pavement shall not vary more than 1/4-inch when measured by a 10-foot straight-edge applied parallel to the centerline. Tests for conformity with specified crown and grade shall be made immediately after initial compression and any variation shall be corrected by removing or adding materials and continuing rolling. After completion of final rolling, smoothness shall again be checked, and irregularities that exceed specified tolerances or that retain water on the surface shall be corrected by removing defective work and replacing with new material or by adding additional material.

11. REPAIR OF PAVEMENT DEFECTS

Defects shall be repaired in the finished and compacted mat by milling and repaving the defective area. At the Contractor's option, segregated areas may be repaired by milling and repaving or by filling the open surface textured areas with a mixture of manufactured sand and

emulsified asphalt in accordance with the Engineer's instructions.

12. RECYCLED MATERIAL

Up to 25 percent RAP or up to 35% FRAP may be substituted, if approved by the Engineer. The type and source of the RAP shall be identified by the Contractor and approved by the Engineer. The material shall be free of contamination and uniform in composition. Laboratory testing to determine the type or quality of RAP aggregates and asphalt cement; and mix designs shall be submitted to the Engineer for approval. The Contractor shall arrange for and pay the extra costs incurred for all testing of RAP material.

13. TESTING

After completion of final rolling, smoothness shall be checked, and irregularities that exceed specified tolerances or that retain water on the surface shall be corrected by removing defective work and replacing with new material or by adding additional material. The Contractor shall provide a mix design meeting the requirements for HMA-Commercial Grade Class A as listed in Section 611 of the Standard Specifications, a QC plan that must be approved by the Engineer prior to construction, and providing qualified personnel and equipment to conduct QC testing at no direct pay. At a minimum, daily Contractor quality control test information for asphalt content, voids, VMA, dry gradation, and in-place density must be provided to the Engineer following the frequency chart provided below.

14. TESTING FREQUENCY

Test Sampling	Location	QC Testing by Contractor	Acceptance Testing
Asphalt content	Behind paver	One per 750 tons	One per 1500 tons
Voids and VMA	Behind Paver	One per 750 tons	One per 1500 tons
Dry gradation	Cold feed	One per 750 tons	One per 1500 tons
Nuclear Density	Roadway*	Two per 750 Tons	Two per 1500 tons

* Nuclear density testing is required where lift thickness is greater than 1.5"; Where lift thickness is 1.5" or less an approved rolling procedure shall be utilized to control densities.