SECTION 02747

ROAD MIX ASPHALT SURFACE COURSE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures for constructing, spreading, and compacting a surface of mineral aggregate and asphalt cement.

1.2 RELATED SECTIONS

A. Section 02721: Untreated Base Course.

B. Section 02742 S: Project Specific Surfacing Requirements. (Special Provision)

C. Section 02745: Asphalt Materials.

D. Section 02746: Hydrated Lime.

E. Section 02748: Prime Coat/Tack Coat.

1.3 REFERENCES

A. AASHTO T 19: Unit Weight and Voids in Aggregate

B. AASHTO T 90: Determining the Plastic Limit and Plasticity Index of Soils.

C. AASHTO T 96: Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.

D. AASHTO T 110: Moisture or Volatile Distillates in Bituminous Paving Mixtures.

E. AASHTO T 201: Kinematic Viscosity of Asphalts.

F. AASHTO T 265: Laboratory Determination of Moisture Content of Soils.

1.4 ACCEPTANCE

A. For aggregate gradation acceptance: Refer to Section 02721, Part 1.

B. Test lots:
   1. A test lot equals the number of tons of surface course placed to the required lines and grade and compacted during each production day.
   2. Divide lots into sublots of approximately 1600 yds^2.
   3. Engineer takes one randomly selected thickness test within each sublot.

C. Engineer accepts a lot when:
   1. The average thickness of all sublots is within 1/2 inch of the total designated surface course thickness.
   2. Each individual sublot is within 3/4 inch.

D. These thickness tolerances do not apply to areas where additional thickness is required for leveling existing surfaces.

1.5 LIMITATIONS

A. Apply only between May 1 and September 30, and when the air temperature in the shade and the roadbed temperature is above 60 degrees F.

B. Do not apply during rain, fog, or other adverse weather conditions.

PART 2 PRODUCTS

2.1 AGGREGATE

A. Crushed gravel, rock or slag. For combined aggregate, meet the 3/4 inch gradation specified in Section 02721, Part 2, Table 4 ("Gradation Limits - Single Value Job-Mix Formula").

B. Determine the suitability of the aggregate source.
   1. Aggregate passing the No. 40 sieve: Non-plastic. AASHTO T 90.
   2. Dry-rodded unit weight: at least 75 lb/ft^3. AASHTO T 19.
   3. Wear: Not to exceed 40 percent. AASHTO T 96.

2.2 ASPHALT MATERIAL

A. Refer to Special Provision 02742S.

B. The Engineer may change the specified asphalt one grade with no change in the unit bid price.

2.3 HYDRATED LIME

A. Refer to Section 02746.

2.4 REVISED JOB MIX GRADATION

A. May submit a revised job-mix gradation for approval within 24 hours following the first day's placement.
   1. This option retroactively applies only to the first day's operation.
   2. Conform to Section 02721, Table 4 ("Gradation Limits - Single Value Job-Mix Formula"), for all changes.
   3. Make changes before beginning a day's production and submit changes in writing to the Engineer.
   4. Obtain approval for the revised job-mix gradation before starting the second day's operation.

B. Submit a written job-mix gradation for approval including single values for each sieve size based on the dry weight of the aggregate.
   1. Conform to Section 02721, Table 4 ("Gradation Limits - Single Value Job-Mix Formula"), for all dry weight values.
   2. Make changes before beginning a day's production and submit changes in writing to the Engineer.
   3. For each construction season changes are allowed for the first day's production on a retroactive basis.

2.5 JOB MIX

A. Submit a written job mix gradation for approval including single values for each sieve size based on the dry weight of the aggregate.
   1. Conform to Section 02721, Table 4 ("Gradation Limits - Single Value Job-Mix Formula") for dry weight values.
   2. Make changes before beginning a day's production and submit changes in writing to the Department.
   3. For each construction season, changes are allowed only for the first day's production on a retroactive basis.

PART 3 EXECUTION

3.1 PREPARATION

A. Aggregate:
   1. Place on the base in a uniform windrow(s).

2. Limit moisture content to 2 percent. AASHTO T 265.
3. Engineer may increase maximum allowable moisture content for porous material when laboratory tests indicate that exceeding 2 percent moisture content produces a stable mix.
4. Allow at last 24 hours to verify volume, moisture content, unit weight, and asphalt quantity before applying asphalt material.

B. Choose from the three mixing options listed in this Section in articless entitled "Traveling Mixer," "Blade Mixing," or "Stationary Mixer."

3.2 TRAVELING MIXER

A. Use a mixer that thoroughly blends the aggregate and asphalt, and introduces a pre-measured flow of asphalt cement during the mixing process.

B. Produce a mixture uniform in appearance, texture, asphalt content, and free from pockets of segregated aggregates.

C. Obtain the desired degree of aeration, using supplemental blade mixing if necessary.

D. Continue mixing until not more than 50 percent of the original volatiles remain in the mix. AASHTO T 110.

3.3 BLADE MIXING

A. Spread the windrowed aggregate on the prepared base.

B. Uniformly apply the asphalt material over the aggregate with a pressure distributor.
1. Apply the asphalt material in two or more applications over a section with preset limits.
2. Do not spread more than 0.5 gal/ft^2 of asphalt cement in any one application.
3. Do not overlap spreads onto adjoining sections.

C. Partially mix the asphalt material with the aggregate immediately after each application.

D. Windrow and mix the entire surface course after the last application of asphalt cement.
1. Mix by blading the material from side to side of the roadway.

2. Produce a mixture uniform in appearance, texture, asphalt content, and free from pockets of segregated aggregates.
3. Continue mixing until not more than 50 percent of the original volatiles remain in the mix. AASHTO T 110.
4. Do not cut into the underlying base course or contaminate the mixture with earth or other foreign matter while mixing.

3.4 STATIONARY MIXER

A. Mix and apply asphalt material in compliance with the mixer manufacturer's requirements.
   1. After mixing, haul and place the material on the roadway surface in a uniform windrow.
   2. Conform to the requirements in this Section, article, "Traveling Mixer" for uniformity, percent of volatiles, and texture.

B. Supplemental blade mixing may be required.

3.5 TEMPERATURE CONTROL

A. Asphalt viscosity range: maintain at 50 centistokes to 200 centistokes at application. AASHTO T 201.

B. Engineer designates the exact temperature range.

3.6 SPREADING AND COMPACTING

A. Form the completed mixture in a windrow of approved cross section and spread in a single course to the plan elevations, grades, and cross sections.

B. Rolling:
   1. Use a pneumatic roller for initial rolling.
   2. Use a steel-wheel roller for final rolling.
   3. Roll without shoving and causing distortion to the surface.

C. At the end of each day's work or when the work is interrupted by inclement weather, blade all non-compacted spread material into a windrow whether mixing is completed or not. Do not leave non-compacted spread material on the roadbed overnight.

3.7 FINISHING

A. Finish to a smooth, uniform line and grade with surface deviations not exceeding 3/8 in, ± in 10 ft.

B. Determine smoothness compliance using a straightedge or string line.

3.8 PROTECTION

A. Protect all structures including curb, gutter, sidewalk, precast concrete barrier, and guardrail when applying the material and manipulating the mixture.

END OF SECTION