SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes any work associated with asphalt work.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 QUALITY ASSURANCE

A. Temperature: Do not apply asphalt materials or place asphalt mixes when ground temperature is lower than 50 degrees F or air temperature is lower than 40 degrees F. Measure ground and air temperature in shaded areas away from heat sources or wet surfaces.

B. Moisture: Do not apply asphalt materials or place asphalt mixes when application surface is wet.

1.4 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each paving material. Include statement that mixes containing recycled materials will perform equal to mixes produced from all new materials.

1.5 QUALITY ASSURANCE

Manufacturer Qualifications: Provide an asphalt mix from a production plant that is approved by the local authorities or the state DOT.

A. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of the state DOT for asphalt paving work.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. Materials shall be in accordance to Section 321500.1.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: Use an Asphalt binder that would be specified for the project location by the state DOT (CDOT PG 64-22 or PG 58-28) and is designated according to AASHTO M 320.

B. Tack Coat: ASTM D 977 or AASHTO M 140 emulsified asphalt, or ASTM D 2397 or AASHTO M 208 cationic emulsified asphalt, slow setting, diluted in water, of suitable grade and consistency for application.

2.3 AUXILIARY MATERIALS

A. Recycled Materials for Hot-Mix Asphalt Mixes: Reclaimed asphalt pavement; reclaimed, unbound-aggregate base material; and recycled tires, asphalt shingles, or glass from sources and gradations that have performed satisfactorily in previous installations, equal to performance of required hot-mix asphalt paving produced from all new materials.

B. Herbicide is not allowed.

2.4 MIXES

A. Recycled Content of Hot-Mix Asphalt: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 10 percent or more than 25 percent by weight.

1. Surface Course Limit: Recycled content no more than 10 percent by weight.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by KSDOT, designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types", and complying with the following requirements:

1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.

2. Conform to current state department of transportation material specifications for asphalt concrete.

2.5 GEOTEXTILE

A. US 160NW, or approved equal

B. 6 oz

C. For Class 2 applications

D. Non-woven

2.6 CRACK SEALANT

A. Install in cracks or abnormalities that exceed 0.5 inches

B. Use product that is compatible with surface overlay and asphalt trail

2.7 SURFACE OVERLAY

A. Equivalent to SealBest 1000

B. Minimum of 10 year limited warranty

C. Durability to withstand light vehicle traffic

D. Mix thickness shall be based on construction techniques recommended by CDOT or other approved method

PART 3 - EXECUTION

3.1 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material, including organic material, from substrate surfaces. Ensure that prepared subgrade is ready to receive paving, if required.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

C. Tack Coat: Apply uniformly to contact surfaces of pavements, curbs, gutters, manholes, and other structures according to Section 321216.3.7

3.2 PLACING HOT-MIX ASPHALT

A. Weather Limitations: Place asphalt concrete mix on a dry, unfrozen surface when the air temperature in the shade is above 35 °F (1.7 °C) and rising.

B. Place Tack Coat layer than install asphalt surface layer.

C. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.

1. Spread mix at a minimum temperature of 250 deg F.
2. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

D. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.

E. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.3 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
3. Offset transverse joints, in successive courses, a minimum of 24 inches.
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."

3.4 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Thoroughly and uniformly compact the asphalt surface by rolling. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers. Do not cause cracking, shoving or undue displacement.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm. Continue compaction until surface marks are eliminated and cracks are sealed.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.

F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

G. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked. Notify local DOT of any barricades that are within the road right-of-way.

3.5 INSTALLATION TOLERANCES

A. Meet minimum thicknesses outlined in the drawings. Additional asphalt or base may need to be installed to meet finish surface grades and minimum thickness.

3.6 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Tack Coat: Before placing patch material, apply tack coat uniformly to vertical asphalt surfaces abutting the patch. Apply according to Section 321216.3.7.

C. Placing Patch Material: Fill excavated pavement areas with hot-mix asphalt base mix for full thickness of patch and, while still hot, compact flush with adjacent surface.

D. Install in accordance to the drawings.

3.7 TACK COAT

A. Surface Preparation: Clean the existing surface of loose material, dirt, or other deleterious material by approved methods. When the surface is concrete, remove excess joint and crack filler.

B. Weather Limitations: Apply asphalt tack only when the following apply:

1. Surface is dry and unfrozen;

2. Ambient air temperature is above 35 °F (2 °C) and rising; and

3. Weather is not foggy or rain is forecasted before the tack coat will be covered by the work.

C. Asphalt Application:

1. When using slow-setting emulsified asphalt, dilute by adding an equal quantity of water to the emulsified asphalt.

2. Apply the asphalt tack coat at a rate of 0.03 to 0.15 gallons per square yard (0.15 to 0.70 liters per square meter).

3. Avoid smearing or staining adjoining surfaces, appurtenances, and surroundings. Spread building paper on the pavement surface at the beginning and end of each asphalt application so distributor flow is started and stopped on the paper to avoid spraying on adjoining surfaces and appurtenances. Remove spillages and clean affected surfaces.

4. Apply asphalt uniformly at the specified application rate. Do not apply more asphalt than can immediately be covered by work. Correct skipped areas or deficiencies.

5. Apply the asphalt tack coat uniformly and completely by fogging with a hand spray attachment or by another approved method when application with a distributor spray bar is not practical.

6. Squeegee the excess asphalt from the surface. Allow the tacked surfaces to completely cure before placing the covering course. Place the covering course within 4 hours of placing the asphalt tack coat.

3.8 CRACK SEALANT

A. Install per the manufacturer's recommendations.

B. Cleaning: Prevent debris from entering waterways, areas open to public, or areas designated not to be disturbed. Remove dirt, dust, and other deleterious material from the crack walls and cavity using a stream of air or other approved methods. Blow or brush dry material off the pavement surface.

C. Sealing and Filling: Dry the crack surfaces with the hot air lance before sealing or filling. Do not seal or fill cracks when the pavement surface temperature is below 35 °F (2 °C) and weather conditions are rainy or foggy.

D. Submit a copy of and adhere to the manufacturer's recommendations for heating and applying the hot applied crack material. Heat the material to pouring temperature in a heating kettle and continuously agitate the material.

E. Warm and dry the crack surfaces using a hot-compressed air lance if the pavement temperature is lower than 50 °F (10 °C) or moisture is present. Keep the lance moving to prevent burning the pavement surface. Place and finish the material within 5 minutes after heating the pavement surface with the lance.

F. Use an application wand to place material in each crack from the bottom up. Use a squeegee or screed to strike off the material. Crack sealant shall be flush with existing surface.

G. Any installation of crack sealant shall be installed along the entire crack or abnormalities to create a smooth flush appearance

H. Reseal cracks exhibiting adhesion failure, damage, incomplete filling, foreign objects in the sealant, or otherwise rejected by the CO.

3.9 SURFACE OVERLAY

A. Install per the manufacturer's recommendations.

B. Install two coats, unless otherwise advised by manufacturer

C. Install over entire trail, including new section of trail. This excludes any concrete sections or roads, unless otherwise noted.

3.10 GEOTEXTILE

A. Identify, store, and handle geosynthetics according to ASTM D4873 and the manufacturer's recommendations. Elevate and protect geosynthetic rolls with a waterproof cover if stored outdoors. Limit geosynthetics exposure to less than 10 days of ultraviolet radiation.

B. Replace or repair geosynthetic that is torn or punctured. Remove the damaged area and place a patch of the same type of geosynthetic overlapping 36 inches (900 millimeters) beyond the damaged area.

C. Place level with no folds, wrinkles, or other imperfections. Ensure that gravel placement does not cause the geotextile to move, shift, or become damaged

D. Place between the compacted sub-base and aggregate

E. Install at the entire area of the asphalt

F. Geotextile fabric shall be tight prior to gravel placement

G. Fabric may be secured with staples or pins that are suitable for subgrade installation

H. Overlap at least 24 inches (600 millimeters) at the ends and sides of adjoining sheets according to the manufacturer's recommendations.

I. Place the cover material onto the geotextile from the edge of the geosynthetic or from previously placed cover material. Do not operate equipment directly on the geosynthetic.

3.11 WASTE HANDLING

A. General: Handle asphalt-paving waste according to Section 017419 "Construction Waste Management and Disposal."

B. Dispose of all excess or discarded asphalt concrete mix according to state and local regulations.

END OF SECTION 321216