SECTION 02740

FLEXIBLE PAVEMENT

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Hot Mix Asphalt (HMA) pavement.
   2. Hot Mix Asphalt (HMA) pavement overlay.
   3. Infrared patch repair.

B. Related Sections:
   1. Section 02315 – Excavation.
   2. Section 02721 – Aggregate Base Course.

1.2 REFERENCES

A. Colorado Department of Transportation:
   1. 2005 CDOT Standard Specifications for Road and Bridge Construction.

B. American Society for Testing and Materials:
   1. ASTM D276.
   2. ASTM D3776.
   3. ASTM D4632.

C. American Association of State Highway and Transportation Officials:
   1. AASHTO M140.
   2. AASHTO M208.

1.3 PERFORMANCE REQUIREMENTS

A. Paving: Designed for residential streets, 92-96 percent maximum density.

1.4 SUBMITTALS

A. Product Data: Submit product information and mix design.

B. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with 2005 CDOT Standard Specifications for Road and Bridge Construction and City of Cañon City Standards.

B. Mixing Plant: Conform to 2005 CDOT Standard Specifications for Road and Bridge Construction.

C. Obtain materials from same source throughout.

D. Maintain one copy of each document on site.

1.6 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with documented experience.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.1 MATERIALS

A. Hot Mix Asphalt Pavement (HMA): Asphaltic cement binder- PG 64-22, uniformly mixed, well-graded aggregate- Grading SX for collector or arterial streets as determined by Engineer, ½ Inch or Type II for local streets, 2005 CDOT Standard Specifications for Road and Bridge Construction, Section 401, 403, 702, and 703.

B. Aggregate for Wearing Course Mix: ½ inch maximum well-graded aggregate as determined by Engineer.

C. Tack Coat: Emulsified asphalt with the same asphaltic cement as pavement mix, SSI or equal. In accordance with requirements of AASHTO M140 or M208.

D. Paving Fabric: Nonwoven geotextile, grab strength of 100 lbs(450 N), 4.2 oz/yd2(140 g/m2), ultimate elongation of 50%, and melting point at 300 degrees F(149 degrees C). In accordance with requirements of ASTM D 4632, 3776, & 276.

2.2 SOURCE QUALITY CONTROL AND TESTS

A. Submit proposed mix design with aggregate gradation and mix proportioning for review prior to beginning of Work. Design shall not be dated prior than three years before work start date.

B. Thickness and density shall be determined by calculating the average of the results of core samples taken by an independent testing laboratory. At least one core sample shall be taken per 200 linear feet of street paved.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted aggregate base course is dry and ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Verify manhole frames and valve boxes are installed in correct position and elevation.

3.2 BASE COURSE

A. Fine grade and compact aggregate base course to maximum material density per Section 2721.

3.3 PREPARATION – EXISTING PAVEMENT

A. Remove additional pavement to a painted lane stripe, gutter pan, an existing pavement patch, or an edge of the pavement if such street feature is within the two feet of the second cut.

B. Existing adjacent pavement shall be cut square and vertical after placement of base course and prior to placement of new pavement. Milled edges are acceptable so long as the milled face is vertical and the edge is generally straight with a deviation of +/- 1 inch for every 10 feet.

C. Existing pavement shall be rotomilled where indicated and cleaned free of all dirt, water, oil, dust, vegetation, and debris prior to placement of overlay.

3.4 PREPARATION - TACK COAT

A. Apply tack coat in accordance with 2005 CDOT Standard Specifications for Road and Bridge Construction, Section 407.

B. Apply tack coat on all adjacent asphalt and concrete contact surfaces at uniform rate.

C. Apply tack coat to contact surfaces of curbs, gutters, and cross-pans.

D. Coat surfaces of manhole and valve box lids with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

E. Apply tack coat on all asphalt, gravel base course when curb and gutter is not present, and surfaces that are to be overlayed at uniform rate. Residual coverage shall be between 0.15 to 0.30 gallon/square yard. The spray width of the tack coat shall be 6 inches greater than the fabric width. Additional tack shall be applied at fabric joints.

3.5 PREPARATION – OVERLAY PAVING FABRIC

A. Paving fabric shall be laid with automated lay-down equipment where physically possible.

B. The paving fabric shall be free of wrinkles and air pockets.

C. Paving fabric shall be installed after the tack coat “breaks” but while it is still soft.

D. Transverse and longitudinal joints should be overlapped at least 4 inches with the top flap in the direction of the paving

3.6 PLACING ASPHALT PAVEMENT

A. Paving shall begin immediately after fabric lay down.

B. Install Work in accordance with 2005 CDOT Standard Specifications for Road and Bridge Construction, Section 401 & 403.

C. The pavement shall be installed in lifts not exceeding 3 inches in compacted depth.

D. Place asphalt within 24 hours of applying primer or tack coat.

E. Place asphalt with a self contained, self-propelled paving machine of sufficient width. Hand placement, without separation, is permissible for small patches.

F. Large surface aggregate shall be raked and struck off to leave a smooth, finely graded surface.

G. The asphalt material shall be placed to the grade and thickness required for compaction after rolling such that the final grade is ¼ inch above all adjacent asphalt and concrete edges.

H. Compact pavement by rolling to 92 percent or greater density using the number, weight, and type of rollers required providing the maximum density. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.

I. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

3.7 INFRARED PATCH REPAIR

A. Equipment:
   1. Pavement Restoration Vehicle (PRV) shall be a truck mounted, self contained pavement maintenance heating system equipped with a fuel system and a heated chamber capable of maintaining the fresh asphalt at a temperature of 275 degrees or higher.
   2. The adjustable height infrared heating unit may be truck or trailer mounted to the PRV. The unit shall be equipped with a chamber or chambers capable of heating the existing bituminous pavement to a workable condition without oxidation or burning. There shall be no flame in direct contact with the existing bituminous surface.
   3. Compaction shall be achieved with a self-propelled vibratory roller of sufficient size to provide complete compaction to the full heated depth of the patched area.

B. Materials:
   1. New bituminous material for patching shall conform to the specifications.
   2. A minimum of 20 percent of new material shall be added to all patched areas.

C. Construction:
   1. Area shall be swept clean prior to setting infrared heating unit.
   2. The infrared heating unit shall be lowered to within 6 inches to 9 inches of the existing pavement. The heated area must extend at least 6 inches outside the area of repair. Apply heat to the area continuously until the surface is heated to a depth of approximately 2 inches. When the blacktop can be worked with a rake, proper heat penetration has been achieved.
   3. If it is windy, metal shields will be placed against three sides. (This is not to trap heat but to block the wind and provide for an even surface).
   4. Etch an outline of the perimeter of the repair area with the back of a rake at least 3 inches beyond the edges of the repair area. Scarify the existing bituminous surface within the repair area to the full heated depth.
   5. Remove enough existing bituminous material (as required by adjacent grades) to allow for the addition of 20 percent (approx. 1 inch of depth) new bituminous mix to achieve a blend of 20 percent new/80 percent existing heated material within the area of the patch. Reclamite rejuvenating agent will be sprayed evenly onto existing surface material.
   6. Reshape patched area by hand with rake and lute to match grade of existing adjacent pavement.

7. Outside perimeter will be compacted as soon as possible to ensure thermal bonding. Compact new paving with the specified roller to the full depth of the heated patch. Compacted surface shall be smooth, in texture and shall have positive drainage matching the slope of the existing adjacent pavement.

3.8 TOLERANCES

A. Flatness: Maximum variation of 3/16 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/2 inch.

C. Variation from Indicated Elevation: Within 1/4 inch.

3.9 PROTECTION OF FINISHED WORK

A. Immediately after placement, protect pavement from mechanical injury.

3.10 SCHEDULES

A. HMA patch: Single course of 4 inch minimum compacted thickness.

B. HMA pavement: Single course of 3 inch minimum compacted thickness. Design engineer shall verify minimum requirements are adequate based on site conditions and propose necessary changes to Engineer accordingly for approval.

C. HMA pavement overlay: Single course of 2 inch minimum compacted thickness.

D. Street widths shall be as indicated in the Major Thoroughfare Plan or as otherwise indicated by Engineer.

E. Streets having no outlet shall be no longer than 500 feet and shall end in a cul-de-sac with a minimum radius of 45 feet center to curb flow-line.

END OF SECTION