

## SECTION 02510

### ASPHALT PAVING

#### PART 1 GENERAL

##### 1.01 SECTION INCLUDES

- A. This section covers the requirements for bituminous surface paving on roads and trails.

#### PART 2 SUBMITTALS

- A. Contractor shall establish a mix gradation and the amount of bituminous material shall be submitted fourteen (14) working days prior to surfacing for the approval by the City Engineer and shall meet the requirements of the gradation selected.
- B. Test Reports: Submit test reports as requested by City Engineer verifying compliance with specified standards.

#### PART 3 EXECUTION

##### 3.01 ALL STREETS AND TRAILS SHALL BE SURFACED IN ACCORDANCE WITH THE FOLLOWING:

- A. Streets:
1. 8-inch minimum untreated base course over prepared and approved subgrade.
  2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all local streets.
  3. 4-inch minimum compacted thickness plant mix asphalt surfacing on all collector and arterial streets.
  4. 2-lift minimum for plant mix asphalt surfacing when final compacted pavement thickness is greater than 3 inches.
- B. Trails:
1. 6-inch minimum untreated base course over prepared and approved subgrade and weed barrier geotextile.
  2. 3-inch minimum compacted thickness plant mix asphalt surfacing on all trails.
  3. Weed barrier geotextile according to the following:

Table 7 – Weed Barrier Geotextile		
Property	ASTM	MARV
		Standard
Grab tensile strength, lbs.	D 4632	315
Grab elongation, percent, minimum	D 4632	50
Puncture strength, lbs.	D 4833	900
Trapezoid tear, lbs.	D 4533	100
Apparent opening size (AOS), US sieve, minimum	D 4751	40
Ultraviolet degradation, percent	D 4355	70
NOTES		
(a) Percent of grab elongation retained determined after ultraviolet weathering, ASTM D 4355 for 500 hours.		

### 3.02 BASE COURSE

- A. Base for all streets shall consist of select material, as specified in Section 02206.
- B. Base shall be laid in accordance with Section 02225.
- C. Surfaces shall be true to the established grade with thickness being not less than 1/4 inch from the required layer thickness and with the surface elevation varying not more than 3/8 inch in ten feet from the true profile and cross section.

### 3.03 BITUMINOUS SURFACE COURSE

- A. Base course shall be free of any contamination prior to laying surface course.
- B. The surface course shall consist of a mixture of mineral aggregate and binder conforming to Section 02504.
- C. Gradation of aggregate shall conform to Section 02504.
- D. The Contractor shall apply a tack coat to all new or existing asphalt or concrete edges and surfaces that will be in contact with the new bituminous surface course. This includes all longitudinal and transverse joints regardless of the joint temperature.
  - 1. Tack coat shall be SS-1 or 1-H.
- E. The bituminous surface course shall be mixed at a mixing plant and spread and compacted on the prepared base in conformance with the lines and dimensions shown on the plans and in accordance with these Specifications.
- F. All existing asphalt shall be saw cut to remove fractures, cracked or damaged asphalt.
  - 1. Asphalt shall be saw cut in straight lines.

### 3.04 CONSTRUCTION METHODS AND EQUIPMENT

- A. All asphalt will be laid using a lay down machine unless written approval is granted by City Engineer.
- B. The methods employed in performing the work, all equipment, tools and machinery and other appliances used in handling the materials and executing the work shall be the responsibility of the Contractor.
- C. At no cost to the City, the Contractor shall make such changes in the methods employed and in the equipment used as are necessary whenever the bituminous being produced does not meet the specification herein established.
- D. Provide necessary survey stakes for horizontal control and vertical control on roads and trails. Furnish, place, and maintain supports, wire devices, and materials as required to provide continuous line and grade reference control for placing pavement and matching existing pavement surfaces on roads and trails.

### 3.05 SPREADING

- A. The bituminous mixtures shall be spread with self-propelled mechanical spreading and conditioning equipment capable of distributing at least a 12-foot width.

- B. The City Engineer shall determine whether or not the bituminous surface course shall be spread in one or more courses.
- C. No surface course shall be placed less than 1 inch in thickness.
- D. The mixture shall be spread and struck off in such a manner that the finished surface shall result in a uniform smooth surface.
- E. The longitudinal joints in any succeeding courses shall be offset at least 6 inches transversely to avoid a vertical joint through more than one course.
- F. The temperature of the bituminous mix shall be between 250° F and 325° F when placing.
- G. Asphalt joints and seams shall be placed at lane lines when possible, and shall not be placed in wheel lines without written approval from the City Engineer.

### 3.06 COMPACTION

- A. After the mixture has been spread, the surface shall be rolled in longitudinal direction commencing at the outside edge or lower side and preceding to the higher side.
- B. Each pass of the roller shall overlap the preceding pass at least one-half the width of the roller.
- C. In place density shall target 94% of the Theoretical Maximum Specific Gravity (rice) per ASTM D 2041. Allowed tolerance shall be plus or minus 2%.
- D. Rolling operations shall be conducted in such a manner that shoving or distortion will not develop beneath the roller.
- E. Do not over compact the asphalt pavement nor under compact. Complete compaction before the following temperatures are reached: 180 degrees F for hot mixes, and 140 degrees F for warm mixes.
- F. Quality Control
  - 1. The surface of the pavement, after compaction, shall be uniform and true to the established crown and grade.
  - 2. The Developer/Contractor shall be responsible to test bituminous mixtures for compaction in accordance with Section 01450, TESTING AND PROCESS CONTROL.
  - 3. Traffic shall not be allowed to travel on new asphalt surface until pavement temperature has reached 120° F or lower.

### 3.07 WEATHER LIMITATIONS

- A. No bituminous surface shall be placed when the temperature of the air or road bed is 50° F or below, during rainy weather, when the base is wet or during other unfavorable weather conditions as determined by the City Engineer.
- B. The air temperature shall be measured in the shade.

### 3.08 FLAGGING

- A. Flaggers shall be required as directed to facilitate the safe control of traffic over highways and streets under construction at such locations as required and directed by the City Engineer.

- B. Flagging shall be performed by certified, trained, and properly equipped flaggers.
- C. All flagging shall be done as described in the Safety Orders covering flaggers of the Industrial Commission of Utah and in accordance with the MUTCD manual.

3.09 ROUGHNESS TOLERANCE

- A. When tested with a ten (10) foot straight edge placed parallel to the center line of the pavement, the surface of the pavement at any point shall not deviate from the lower edge of the straight edge by more than one-quarter of an inch. If any part of the pavement fails the 10 foot straight edge test, roughness shall be determined using a certified profilograph or profiler.
- B. The following table shall be used to verify roughness tolerances.

ROUGHNESS TOLERANCE						
Speed MPH	Traffic Class	Profile Roughness Index (PRI), Inches / Mile				Profile Deviation Inches/25 feet Maximum
		IRI		PI		
		Min	Max	Min	Max	
25 to 30	II	--	--	--	110	0.4
	III or IV	129	177	46	66	0.4
31 to 45	I or II	90	155	35	50	0.4
	III or IV	70	90	21	35	0.4
45 +	All Classes	--	70	--	21	0.4
Notes:						
<ul style="list-style-type: none"> <li>a) IRI (International Roughness Index), ASTM E 950. Use a ¼ car.</li> <li>b) PI (Profile Index), ASTM E 1274. Use a zero blanking band.</li> <li>c) Profile deviation applies to bump and depression measurements.</li> <li>d) As a minimum, trace right wheel path in direction of travel.</li> </ul>						

- C. Profile Roughness Index (PRI): Verify bumps and depressions are removed so profile index in each lot meets tolerance: Lot is 0.1 lane mile (528 feet long one lane wide). Add segments shorter than 250 feet to preceding lot. Treat partial segments longer than 250 feet as a lot. Excluded from the lot are turn lanes, parking lanes, medians, street fixtures, crowns of intersecting streets, bridge decks, grades greater than eight (8) percent, and vertical curves less than 1,000 feet radius.
- D. Profile Deviation: Verify “must grind” bumps and depressions are removed from the lot surface where lot is the total pavement area placed, no area excluded. Begin traces 50 feet before edge of new pavement and end traces 50 feet after edge of new pavement. Areas (including the 50 feet end of traces) exceeding the profile deviation tolerance are “must grind” areas.
- E. Mark all “must grind” areas on pavement to identify locations to be corrected.
- F. Repair: Grinding is an acceptable method for correcting “must grind” areas. Skin patching with feather edge for depressions is NOT acceptable. Raise depressions by milling and inlay or remove and replace repair. Re-profile corrected segments to verify index meets tolerance. Apply GSB-88 or other approved emulsion to grind areas at a rate of  $0.11 \pm 0.01$  gal/yd<sup>2</sup>, using approximately 40% residual asphalt.
- G. Notify the Engineer in writing when corrective work will be performed and at least two working days before re-profile will be completed.
- H. When thickness is deficient, place additional material over deficient areas. Do not skin patch. Mill for inlay as necessary.

END OF SECTION