

## **SECTION 321216 - ASPHALT PAVING**

### **PART 1 - GENERAL**

#### **1.1 DESCRIPTION**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Work Specified in this Section:
  - 1. Subgrade preparation..
  - 2. Soil sterilization.
  - 3. Aggregate base course.
  - 4. Tack coat.
  - 5. Asphaltic concrete paving.
  - 6. Asphalt emulsion seal coat.
  - 7. Redwood headers
  - 8. Patching and repair of existing pavement.
- C. Related Work Specified Elsewhere:
  - 1. Site preparation and earthwork, including rough grading.
  - 2. Portland cement concrete curbs, drives, and paving.
  - 3. Pavement marking and parking bumpers.

#### **1.2 QUALITY ASSURANCE**

- A. Proportioning of Plant Mix: Determine the exact proportions of bituminous binder and mineral aggregate required to produce a mixture equal to mix quality specified **Related Sections:**

#### **1.3 SUBMITTALS**

- A. Product Data: Submit technical product data and application directions for all manufactured products.
- B. Certificates and Statement: Submit certificates from all asphalt concrete products suppliers attesting that quality, gradation, proportions, and mixing of materials supplied conform to requirements specified. Materials not conforming to specified requirements are defective. Reject defective materials whether or not in place. Submit a certified statement supported by weight tickets showing the following information:
  - 1. Calculations showing minimum amount of asphaltic concrete materials required for total area to be paved.
  - 2. Amounts actually installed.

**1.4 JOB CONDITIONS**

- A. Provide protection and repair adjacent surfaces and areas which may be stained or damaged as a result of installation. Protect installed paving until final acceptance. Repair or replace damaged or defective paving to original specified condition.

**1.5 WARRANTY**

- A. In addition to warranty required in Division 1, provide 2 year warranty against weed or plant growth through paving for two years. Warranties shall cover all portions of asphaltic concrete in which creeping, shoving, cracking, raveling, or softening occurs or in which any weed growth occurs, and depressed areas which collect water due to improper grading, placing, or defective materials during the warranty period. Repairs include the restoration of adjoining or applied materials and finish items.

**PART 2 - PRODUCTS**

**2.1 MATERIALS**

- A. Soil Sterilizer: An approved standard product non-selective borate-chlorate type sterilizer having minimum 46% boron-trioxide equivalent. Tebuthiuron, marketed as "Spike 80W", manufactured by Elanco Products Company, Indianapolis, IN 46285, may be used as an alternate to boron trioxide products. In either case, the material shall be approved for use under asphalt paving by the State of California EPA.
- B. Aggregate Base Course: Caltrans Class II Base (Minimum R-Value=78), 3/4" size gradation maximum.
- C. Tack Coat: Asphalt emulsion, SS-1 H, State Standard Spec Section 94.
- D. Asphaltic Concrete Surface Course: 3/4" mix, asphalt type Caltrans Performance Grade PG 64-10.
- E. Asphalt Emulsion Seal Coat: "Guardtop", manufactured by Industrial Asphalt, 13130 East Los Angeles Street, P.O. Box 2263, Irwindale, CA 91706 (818) 814-1428, "Slurry-Mix" by Ted R. Jenkins Co., Inc., or "Plush Tex" by Koch Asphalt Company.
  - 1. The material shall conform to the following:

PHYSICAL PROPERTIES		
Physical Property, Units	Test Method	Acceptable Value
Cone penetration at 77° F, dmm	ASTM D 217	340 min., 430 max.
Nonvolatile components, percent	325°, 1.5 hours	60 min., 70 max.
Percent by weight nonvolatile soluble in trichloroethylene	ASSHTO T 45	20 min., 35 max.
Wet track abrasion test	ASTM 3910	30 Average

Accelerated weathering	Fed Spec TT C-555B	Passes
Resistance to wind driven rain at 98 mph	Fed Spec TT C-555B	Passes
Ultraviolet resistance, 12 years		No cracking, peeling, chipping, flaking
Density, pounds per gallon		10.9
Color		Black

2. Provide crack fillers and related materials of same manufacturer.

### **PART 3 - EXECUTION**

#### **3.1 PREPARATORY WORK**

- A. Subgrade Preparation: Conform to GreenBook Subsection 301-1. Proof roll the subgrade and perform all necessary rolling and compacting to obtain firm, even subgrade surface. Fill and consolidate depressed areas. Remove unsuitable materials and replace with clean fill. Compact top 12" to minimum 90% relative compaction, determined as specified in Section 31200, at any location. Maintain the subgrade slightly above optimum moisture content until covered with subsequent materials.
- B. Manhole and Catch Basin Frame Adjustments:
  1. Verify frames for manholes, catch basins and other such units, within areas to be paved, are at their proper elevation.
  2. Adjust frames as required to match paving. Provide temporary closures over openings until completion of rolling operations. Remove closures at completion of the work. Set covers to grade, flush with the surface of adjoining pavement surface.
- C. Soil Sterilizing: Apply sterilizer according to manufacturer's directions using dry or aqueous spray process, minimum quantity of dry undiluted material per 100 SF of paving conforming to the manufacturer's directions for control of medium and heavier weed growth and to meet warranty requirements. If necessary, apply supplemental watering to fully dissolve all sterilizer and obtain 2" to 3" penetration into the subgrade. Reroll treated subgrade to specified compaction. Do not apply sterilizer during rain or windy weather and prevent contamination of landscaping areas:

#### **3.2 ASPHALT CONCRETE PAVING**

- A. Aggregate Base Course: Conform to GreenBook Subsection 301-2, place in one or two layers as required to obtain 95% relative compaction. Deliver to site as a uniform mixture. Construct to indicated compacted thickness.
- B. Asphalt Concrete: Conform to GreenBook Subsection 302-5 including the requirements for smoothness and density. Construct paving to minimum compacted thickness indicated.

1. Where thickness of more than 2-inches is shown, install asphalt surface materials in two courses, leveling course and surface course, total compacted depth as scheduled.
  2. Place the asphalt concrete mixture on the prepared surface, spread and strike-off. Spread mixture at minimum temperature of 225 degrees F. Inaccessible and small areas may be placed by hand. Place each course to the required grade, cross section and scheduled compacted thickness.
  3. Place materials in strips not less than 10'-6" wide, unless otherwise directed. After the first strip has been placed and rolled, place all succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course materials.
  4. Carefully make joints between old and new pavements, and between successive day's work, to ensure a continuous bond between adjoining work. Construct joints to have the same texture, density and smoothness as other sections of the asphalt concrete course.
  5. Apply tack coat to contact surfaces of existing pavement, curbs and structures abutting pavement.
  6. Begin rolling operations when the mixture will bear the weight of the roller without excessive displacement. Compact areas inaccessible to rollers with hot hand tampers or vibrating plate compactors.
  7. Perform breakdown rolling immediately following the rolling of transverse and longitudinal joints and the outside edge. Check grade and smoothness after the breakdown rolling. Repair displaced areas by loosening and filling with hot loose material before continuing rolling.
  8. Perform second rolling as soon as possible after the breakdown rolling, while the mixture is hot and in condition for proper compaction. Continue the second rolling until the mixture has been thoroughly compacted.
  9. Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until all roller marks are eliminated and the course has attained maximum density. Provide a smooth unyielding surface, true to thickness and elevation required.
  10. Remove and replace mixtures that become mixed with foreign materials and all defective areas. Cut out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to the required surface density and smoothness.
  11. Remove deficient areas for the full depth of the course. Cut sides perpendicular and parallel to the direction of traffic with edges vertical. Apply a tack coat before placing asphalt concrete mixture.
  12. After final rolling, do not permit vehicular traffic on the pavement until it has cooled and hardened and in no case sooner than 12 hours.
- C. Seal Coat: Clean and treat with weed killer all cracks 1/8" and larger, then fill with crack filler. Remove all oil and grease deposits, loose dirt, and raveled particles. Immediately prior to application of seal coat, spray with mist of water to damp surface free from puddles.

1. For existing or weathered surfaces, prime surface using specified tack coat emulsion, diluted one part to 5 parts water, as recommended by seal coat manufacturer. Apply at rate of one gallon per 100 square feet. Allow to dry.
2. Apply seal coat in 2 applications. The first coat shall be spread and allowed to dry. Then apply second coat. The application rate for the 2 coats shall be between 20 and 45 gallons per 1,000 square feet, depending on porosity of the surface.
3. Omit screenings unless specifically directed otherwise.

### **3.3 PATCHING EXISTING PAVEMENT**

- A. Where new paving joins existing, and where trenches are cut in existing paving, patch with asphalt concrete. Prior to patching, sawcut edges at least 6" back from all ragged edges and compact subgrade to a firm, unyielding subgrade.
- B. Field verify extent and location of paving scheduled for replacement, repair, and resurfacing. The work includes filling trenches in existing paving, where indicated or required because of utility construction.
- C. Coordinate junction of new and existing pavement. Saw cut existing pavement to provide a uniform straight line transition. Meet existing surface levels and maintain drainage slopes. Feathering of transitions is not acceptable.
- D. Crushed rock base of existing pavement may be reused, following approval by Soils Engineer, provided its integrity is maintained. Provide new base material as specified, if existing is insufficient or unsuitable. Compact crushed rock base of same thickness as existing to 1" below existing asphalt concrete pavement.
- E. Apply emulsion or hot liquid asphalt tack coat to sawcut edges prior to patching. Apply and compact asphalt concrete pavement making neat edges where new and existing join.

### **3.4 PROTECT AND CLEANING**

- A. Protect newly placed material from traffic by barricades or other suitable methods acceptable to the Architect. Protect asphalt paving from construction and vehicular damage until project acceptance.
- B. Sweep asphalt paving and wash free of stains, discolorations, dirt and other foreign material immediately before project acceptance. If stains remain after cleaning, apply a coat of sealer.

### **3.5 FIELD QUALITY CONTROL**

- A. Provide field quality control testing and inspection during asphaltic concrete paving operations. Cooperate with, provide access to the work, obtain samples and assist testing agency and their representatives in execution of their functions.
- B. Before constructing base course, field verify subgrade surfaces are adequate and meet or exceed design bearing values. Provide a minimum of one test for each type of paving required.

- C. When requested, perform laboratory tests on asphalt pavement mixes to determine conformity with specified requirements.
- D. Test in-place asphalt base course and surface courses for compliance with density, thickness and surface smoothness. Take not less than 4" diameter pavement specimens of each completed course. Repair test specimen holes to match adjacent work.
  - 1. Average density of in-place material: Equal to or greater than 97%, with no individual determination less than 95% of average density of laboratory specimens.
  - 2. Perform one test for density for each course for each day's work.
  - 3. Thickness: Make one test for each 5,000 square feet of each type of paving. In-place compacted thickness tested in accordance with ASTM D 3549 will not be acceptable if exceeding following allowable variations:
    - a. Base Course: Plus or minus 1/2 inch.
    - b. Surface Course: Plus or minus 1/4 inch.
- E. Surface Smoothness: Test finished surface of each hot-mixed asphalt course for smoothness, using 10-foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
  - 1. Base Course Surface: 1/4 inch.
  - 2. Wearing Course Surface: 3/16 inch.
  - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch
- F. Drainage Test: Flood all paving with water when rolling is completed and paving is cool. Remove paving in improperly draining areas and install properly draining paving as directed, at no extra cost to District. Correction of low areas by skin patching is not acceptable.

**END OF SECTION 321216**