

## SECTION 32 12 16

### ASPHALT PAVING

#### PART 1 – GENERAL

##### 1.01 SECTION INCLUDES

- A. Placing of base course.
- B. Placing of asphalt concrete.
- C. Sealant.
- D. Field quality control.
- E. Maintenance of pavement.
- F. Repair of asphalt pavement.

##### 1.02 RELATED SECTIONS

- A. Preparation of sub grade to proper grade for base course, including compaction, is specified in Contract Specifications Section 31 00 00, Earthwork.
- B. Preparation of subbase and base, where required, is specified in Contract Specifications Section 32 11 17, Aggregate Subbase Courses, and Contract Specifications Section 32 11 23, Aggregate Base Courses, respectively.
- C. Portland cement concrete paving is specified in Contract Specifications Section 32 13 13, Concrete Paving.
- D. Painting of stripes and other markings on pavement is specified in Contract Specifications Section 32 17 23, Pavement Marking.
- E. Portland cement concrete curbs and gutters are specified in Contract Specifications Section 32 16 21, Concrete Curbs, Gutters, and Walks.

##### 1.03 MEASUREMENT AND PAYMENT

- A. General: Measurement and payment for asphaltic concrete paving will be by the lump-sum method or by the unit-price method as determined by the listing of the bid item for asphaltic concrete paving indicated in the Bid Schedule of the Bid Form.
- B. Lump sum: If the Bid Schedule indicates a lump sum for asphaltic concrete paving, the lump-sum method of measurement and payment will be in accordance with Contract Specifications Section 01 20 00, Price and Payment Procedures.

C. Unit Price:

1. If the Bid Schedule indicates a unit price for asphaltic concrete paving, the unit price method measurement and payment will be as follows:
  - a. Measurement:
    - 1) Asphaltic concrete pavement will be measured for payment by the square yard for each different thickness of pavement placed in the work. The quantity for pavement will be the square area placed at the indicated thickness, based on the dimensions, neat lines or pay lines, and sections indicated on the Contract Drawings.
    - 2) Asphaltic prime and tack coats, pavement reinforcing fabric, and seal coat will not be measured separately for payment, but will be considered included in the square yard measurement for the asphaltic concrete pavement.
    - 3) Measurement of the aggregate base course is specified in Contract Specifications Section 32 11 23, Aggregate Base Courses. Measurement of the aggregate subbase course is specified in Contract Specifications Section 32 11 17, Aggregate Subbase Courses.
  - b. Payment: Asphaltic concrete paving will be paid for at the indicated Contract unit prices for the computed quantities as determined by the measurement method specified in Article 1.03C., herein.

**1.04 REFERENCES**

- A. State of California, Department of Transportation (Caltrans), Standard Specifications, latest edition:
  1. Section 37 Bituminous Seals
  2. Section 39 Asphalt Concrete
  3. Section 92 Asphalt Binders
  4. Section 94 Asphaltic Emulsions
  5. Section 96 Geosynthetics
- B. State of California, Department of Transportation (Caltrans), Standard Test Methods:
  1. Calif. Test 202 Method of Tests for Sieve Analysis of Fine and Coarse Aggregates
  2. Calif. Test 375 Determining the in Place Density and Relative Compaction of Hot Mix Asphalt Pavement Using Nuclear Gages
  3. Calif. Test 379 Method of Determining Asphalt Content of Bituminous Mixtures by Use of the Nuclear Gage

4. Calif. Test 382 Method of Test for Determination of Binder Content of Hot Mix Asphalt by the Ignition Method

**1.05 REGULATORY REQUIREMENTS**

- A. Asphaltic products and solvents shall be compliant with the latest regulations of the Bay Area Air Quality Management District regarding regulations governing permissible content of volatile organic compounds (VOC).

**1.06 SUBMITTALS**

- A. General: Refer to Contract Specifications Section 01 33 00, Submittal Procedures, for submittal requirements and procedures.
- B. Mix Design: Submit proposed mix design for each asphaltic concrete mixture and seal coat to be used in the work, covering the specific materials to be used in the mixes. Include test data in support of each proposed mix design.
- C. Test Reports: Submit test results of sampling and testing, and inspection records within 24 hours of asphaltic concrete placement.

**1.07 PROTECTION**

- A. Protect concrete pavements and walks, curbs and bases, and other improvements adjacent to the operations with suitable materials. The Contractor shall be responsible for any damage caused by the Contractor's employees or equipment and shall make necessary repairs. Buildings and other surfaces shall be covered with paper or other protection, where required. All damage caused by the Contractor's operations shall be repaired or replaced as required.

**1.08 PROJECT ENVIRONMENT REQUIREMENTS**

- A. Work shall comply with construction requirements listed in Caltrans Standard Specifications Section 39-2.01C and not be performed under the following conditions:
  1. Ambient, base or pavement temperature below 50 degrees Fahrenheit
  2. Over-saturated base and subbase material. Base and subbase to be wheel-rolled by loaded water truck to determine any yielding. If deflection is observed, do not perform paving until grade is stable and unyielding and conforming to compaction requirements.

**PART 2 – PRODUCTS**

**2.01 BASE COURSE MATERIAL**

- A. Class 3 Aggregate Base mineral aggregate as specified in Contract Specifications Section 32 11 23, Aggregate Base Courses.

**2.02 TACK COAT**

- A. Tack Coat: Diluted SS-1 or SS-1h emulsion in conformance with Section 94 of the Caltrans Standard Specifications.

**2.03 PAVEMENT REINFORCING FABRIC**

- A. Pavement reinforcing fabric in conformance with Section 96 of the Caltrans Standard Specifications.

**2.04 ASPHALT PAVING MATERIALS**

- A. Hot Mix Asphalt: Type A, with the gradation of the combined aggregate conforming to one-half inch maximum size, or three-fourth inch maximum size, as indicated, and as specified in Section 39 of the Caltrans Standard Specifications. Unless shown otherwise, top two-inch lift shall be one-half inch maximum size.
- B. Asphalt Binder: Performance Grade asphalt binder, in accordance with Section 92 of the Caltrans Standard Specifications.
- C. Mixing Facilities: Asphalt concrete surfacing material shall be furnished from an approved commercial asphalt central mixing plant.

**2.05 BITUMINOUS SEAL**

- A. Bituminous seal, as indicated, in conformance with Section 37 of the Caltrans Standard Specifications.

**2.06 MIX DESIGN**

- A. Design of asphaltic concrete mixes shall be provided by the Contractor, and shall be obtained from a qualified independent testing laboratory or agency, properly equipped to design asphaltic concrete mixes. Costs of obtaining mix designs shall be at the Contractor's expense.
- B. Design of asphaltic concrete mixes, including aggregate quality and gradation, shall conform with the quality requirements of Section 39 of the Caltrans Standard Specifications.

**2.07 SOURCE QUALITY CONTROL**

- A. The Contractor shall perform sampling and tests of materials in accordance with the following requirements:
  - 1. Aggregate Grading: The combined aggregate, prior to addition of asphalt binder (paving asphalt), shall conform with the “Operating Range” requirements specified in Section 39 of the Caltrans Standard Specifications for the type of aggregate specified herein. Conformance with grading requirements shall be determined by California Test Method (CTM) 202.
  - 2. Frequency of Tests: Minimum testing frequency shall be one test for every 500 tons, or fraction thereof, for each graded aggregate placed each day.
  - 3. Asphalt Content: Asphalt content shall be within plus or minus 0.50 percent of the mix design content. Conformance with asphalt content requirements shall be determined by CTM 382 or 379 from samples taken from the mat behind the paving machine. Minimum testing frequency shall be one test for every 500 tons, or fraction thereof, for each asphaltic paving mix placed each day.

**PART 3 – EXECUTION**

**3.01 PLACING OF BASE COURSE**

- A. The Contractor shall call for an inspection by the Engineer and obtain written approval of the sub grade before proceeding with the base course.
- B. Base course shall be placed over finished sub grade with compacted thickness in accordance with Contract Specifications Section 32 11 23, Aggregate Base Courses.
- C. After base course has been completed, the Contractor shall call for an inspection by the Engineer and obtain written approval before proceeding with application of the asphalt-wearing surface.

**3.02 PLACING ASPHALT CONCRETE**

- A. Areas to be paved shall be covered with a layer of hot asphalt concrete surfacing not less than the thickness indicated after compaction. Where not indicated, compacted thickness shall be a minimum of four inches.
- B. Paving asphaltic concrete shall be delivered, laid, rolled, and finished in accordance with Section 39 of the Caltrans Standard Specifications.
- C. Before placing asphalt concrete on untreated base, a liquid asphalt prime coat shall be applied to the base course in the areas to be surfaced in accordance with Section 39-4 of the Caltrans Standard Specifications. Prime coat shall be applied at the rate of 0.25 gallons per square yard.

- D. Pavement reinforcing fabric shall be embedded in the liquid prime coat in accordance with Section 39 of the Caltrans Standard Specifications.
- E. Before placing asphalt concrete, a tack coat (paint binder) shall be applied to all vertical surfaces against which asphalt concrete surfacing will be placed. Tack coat (paint binder) shall be applied in accordance with Section 39-4 of the Caltrans Standard Specifications at the rate of from 0.02 to 0.10 gallons per square yard.
- F. Where cold joints are indicated or necessary, cut back the placed and compacted cold asphalt a minimum of three inches with a concrete or masonry power saw, so that a vertical face of compacted full thickness material is exposed. Treat this surface with a tack coat before proceeding with the placement of new asphaltic concrete surfacing.
- G. Finish paving shall conform to finish elevations within plus or minus 0.01 of a foot and shall be level to within plus or minus one-fourth inch in ten feet when measured with a 10-foot straightedge in any direction.
- H. Joints shall be heated if laid more than 3 hours previously.
- I. Initial compaction rolling shall occur when mix cools below 250 degrees Fahrenheit.
- J. Provide and roll 1/4" lip above adjoining Portland cement concrete surfaces.

**3.03 BITUMINOUS SEAL**

- A. Apply bituminous seal over finished paving surface in conformance with Section 37 of the Caltrans Standard Specifications.

**3.04 FIELD QUALITY CONTROL**

- A. The Contractor shall control the quality of the Work and shall provide adequate testing to assure compliance with these Specifications herein.
- B. After completion of paving work, all paving shall be flooded with water, and any resulting "ponds" shall be ringed with chalk. Such hollows shall be corrected with addition of asphalt paving materials and re-rolling until all paving is completely level and free from hollows and high spots.
- C. The Contractor shall perform in-place density and compaction tests of the completed pavement in accordance with CTM No. 375 to determine compliance with specified requirements. Relative compaction shall be between 92-96 percent. Test density core for each 250 tons of HMA. Maximum area size shall be 500 tons with a minimum of 3 tests per location, and 1 test for each 50 tons after. Each pavement area shall be an independent lot. Compaction shall be taken as the average for a pavement area. If compaction does not comply, Engineer may accept HMA and take payment deduction as shown in table for reduced payment factors for Caltrans Standard Specifications Section 39-2.01A.

- D. Hot mix asphalt arriving at project site below 260 degrees Fahrenheit shall be rejected.

**3.05 MAINTENANCE OF PAVEMENT**

- A. Upon completion of final rolling, traffic shall not be permitted on the finished pavement for at least six hours, and until the asphalt concrete has cooled sufficiently to withstand traffic without being deformed.
- B. Finished pavement shall be maintained in finished clean condition until the Work is accepted by the Engineer.

**3.06 REPAIR OF ASPHALT PAVEMENT**

- A. Repair shall be as follows:
  - 1. Sawcut vertical edges of pavement in rectangular shape 1 foot minimum beyond damaged material.
  - 2. Provide base material per Contract Drawings and Contract Specifications Section 32 12 16, Asphalt Paving, herein.
  - 3. Apply tack coat to vertical faces of adjoining asphalt and concrete.
  - 4. Paving lifts shall be a single lift if less than 4 inches depth. If more than four inches, place in 2 lifts. Top lift shall be minimum 2 inches. Paving and compaction shall comply with requirements as described previously. Heat cold joints of adjacent existing pavement if placed over 3 hours prior to place on new asphalt.

**END OF SECTION 32 12 16**