

SECTION 02720 ASPHALT PAVING

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes specifications for hot-mix asphalt concrete (HMAC) track underlayment and asphalt concrete (AC) paving. Track underlayment includes all areas under the track, and the HMAC becomes part of the track structure.

1.02 REFERENCE STANDARDS

- A. State of California, Department of Transportation, Standard Specifications (Caltrans):
 - 1. Section 39 Asphalt Concrete
 - 2. Section 88 Engineering Fabrics
 - 3. Section 93 Liquid Asphalts
 - 4. Section 94 Asphaltic Emulsions

1.03 SUBMITTALS

- A. Submit Certificate of Compliance confirming that the asphalt concrete mix is in accordance with the requirements of this Section.
- B. List of equipment to be used for the placing, spreading, and compaction of asphalt paving on structures. Only equipment approved by the Engineer shall be used.

1.04 DELIVERABLES

- A. Submit records of delivery of asphalt materials, identifying shipment numbers, dates and quantities, material designations and temperature at the time of placement.
- B. Submit copies of aggregate tests, penetration of the asphalt cement, and percentages by weight and number of pounds of each of the materials making up the batch.

PART 1 – PRODUCTS

2.01 MATERIALS

- A. The material for HMAC and AC pavements shall conform to the provisions of Caltrans Standard Specifications, Section 39-2, "Materials".
- B. HMAC pavement for track underlay: Type A with 3/4-inch maximum, coarse aggregate gradation. Asphalt binder shall be steam refined AR-8000 grade in accordance with Section 92 of the Caltrans Standard Specifications.

- C. AC pavement: Type A with 1/2-inch maximum, coarse aggregate gradation. Asphalt binder shall be steam refined AR-4000 or AR-8000 grade in accordance with Section 92 of the Caltrans Standard Specifications.
- D. Prime coat: Emulsified asphalt Type RS-2 conforming to Caltrans Standard Specifications, Section 94, Asphaltic Emulsions.
- E. Binder coat (tack coat) shall be Type SS-1 conforming to the provisions of the American Asphalt Institute Specifications and Caltrans Standard Specifications, Section 94, Asphaltic Emulsions. Binder coat for use with pavement reinforcing fabric shall also comply with requirements specified in Caltrans Standard Specifications, Section 39-2.
- F. Pavement Reinforcing Fabric: Caltrans Standard Specifications, Section 88, Engineering Fabrics.

PART 3 – EXECUTION

3.01 PREPARATION

- A. HMAC pavement for track underlay: Subgrade shall be prepared and compacted to the requirements of Section 02300, Earthwork. Confirm that immediately prior to spreading HMAC, the subgrade to receive HMAC conforms to the compaction and elevation tolerances indicated and is free of standing water and loose or extraneous material. Request Engineer's inspection of and obtain Engineer's written acceptance of the prepared subgrade before proceeding with the spreading of HMAC
- B. Obtain written approval of aggregate base course from the Engineer prior to proceeding with paving. Refer to Section 02310, Aggregate Base Courses.
- C. Refer to Section 02510, Utility Grade Adjustments, for related work.

3.02 SPREADING

- A. Spread HMAC underlay by either a mechanical spreader or a grader. Maximum length of asphalt mixture placed by an approved mechanical spreader in a continuous strip shall not exceed 800 feet, unless otherwise permitted by the Engineer. Lay adjacent strips subject to the above limitations immediately after the previous strip is placed until the full pavement width has been achieved. Track underlay may be placed in one lift.
- B. Place pavement to the depth shown on the Contract Drawings. Lift thickness shall conform to the following:
 - 1. Final Surface Course or Lift: In areas subject to vehicular traffic, the maximum thickness shall be 2 inches. In all other areas, the maximum thickness shall be 3 inches.
 - 2. Lifts Other Than Final: The maximum thickness shall be 3 inches.

- C. Use a paver or approved mechanical spreader. Obtain Engineer's approval for use of other means of spreading and compaction.
- D. Prime pavement or concrete contact surfaces before placing asphalt concrete pavement.
- E. Apply prime coat and tack coat prior to placing asphalt concrete in accordance to Caltrans Standard Specifications, Section 39-4, Subgrade, Prime Coat, Paint Binder (Tack Coat), and Section 39-5, Pavement Reinforcing Fabric.
- F. Hand Laying Surface Mixture: Dump on approved dumping boards or steel plates and distribute immediately by means of hot shovels. Uniformly spread by means of hot iron rakes with tines not less than 1/2 inch longer than the loose depth of mixture to a depth which, after final compaction, shall be of the thickness required. Permit no walking on the surface mixture during the laying operations. If laid by hand, carefully lute surface mixture, after spreading and raking, from the sides before compaction.

3.03 COMPACTION

- A. Rollers:
 - 1. Steel-wheeled, tandem type power driven rollers shall provide a pressure of not less than 225 pounds per inch width of main roll. Rolls shall be smooth and without flat spots or other imperfections.
 - 2. Pneumatic rubber-tired rollers shall be self-propelled with wheels mounted, grouped and spaced to provide uniform coverage with each pass. Rear group wheels shall not follow in the tracks of forward group wheel. Maximum wheel load shall be 5,600 pounds. Tire compression on pavement, where the area of contact is measured on a hard, unyielding surface, shall be 80 psi plus five (5) psi for each wheel. The total maximum load per axle, whether single axle or a group of axles in the same alignment, shall be 22,400 pounds. Wheel loads and tire pressures shall be controlled to produce the required degree of compaction without rutting of the surface to be rolled.
- B. Rolling:
 - 1. Proceed continuously at the following rates:
 - a. For track underlay mixture, when spread by hand, not in excess of 400 square yards per hour, per roller.
 - b. For track underlay, when spread by machine, not in excess of 600 square yards per hour, per roller.
 - c. For asphalt concrete surface mixtures, when spread by hand, not in excess of 300 square yards per hour, per roller.
 - d. For asphalt concrete surface mixtures, when spread by machine, not in excess of 400 square yards per hour, per roller.

2. Immediately after spreading, thoroughly compact by approved tamping irons adjacent to curbs, manholes and rails, by rolling with approved rollers continuously from commencement to final completion at a speed not exceeding three (3) miles per hour.
3. Make initial rolling, using tandem type rollers, parallel to the center line of the paved surface beginning at the curbs or edges of the paved surface and working toward the center, overlapping on successive trips by one-half the rear wheel of the roller. Immediately following the initial rolling, further compact by pneumatic rubber-tired rollers or steel wheel vibratory tandem type rollers a minimum of eight (8) passes, except HMAC track underlay which shall receive 4 passes. Smooth shallow ruts and ridges with tandem rollers immediately following the rubber-tired rolling.
4. First make final roll longitudinally with the paved surface and then diagonally or at right angles. Continue until no further compression results; the mixture has cooled; no marks show under the roller; and the surface is smooth and free from depressions, waves, bunches, and unevenness.
5. Test after the mixture has been rolled with an approved straight edge and surface testing machine laid parallel to the centerline of the paved surface.

3.04 JOINTS

- A. Lay surface mixture in a continuous operation and pass the roller over the unprotected end of the freshly laid mixture only when laying of the course is to be discontinued for such length of time as to permit the mixture to become chilled. Provide for proper bond with new mixture by cutting or trimming back the joint to expose an unsealed or granular surface for the full specified depth of the course.
- B. At the end of each day's work, form joints by laying and rolling against boards of the thickness of the compacted mixture, placed across the entire width of the pavement.
- C. When the laying of the mixture is resumed, remove the boards, paint the exposed edge of the joint with a thin coat of approved hot asphalt cement or liquid asphalt, rake a fresh mixture against the joint, thoroughly tamp and roll. Hot smoothing irons may be used for sealing joints.

3.05 LAYING IN DAYLIGHT, WET WEATHER, COLD WEATHER

- A. Schedule placement of asphalt paving material when the precipitation probability within 3 hours prior to the start of such operations is less than 50 percent.
- B. Laying of mixtures will not be permitted in wet weather.
- C. Except where otherwise permitted by the Engineer, spread no asphaltic mixtures when the asphalt mixture temperature is below 250 degrees F.
- D. The Engineer will take surface temperatures at three (3) locations in the area being paved. The controlling temperature shall be the average of the three (3) readings.

3.06 OPENING TO TRAFFIC

- A. Repair damage to new pavement caused by construction equipment or by public traffic due to premature opening of the traffic lanes to the satisfaction of the Engineer.

3.07 SURFACE PREPARATION

- A. When pavement overlay or new pavement is to be constructed on an existing asphalt concrete, concrete, or brick surface, broom the existing surface clean prior to the application of prime coat. Repair holes and depressions in existing surfaces by removal to sound material and replacing with an asphalt-aggregate patching material. Compact patch to produce a tight surface conforming to the adjacent pavement area. Stabilize rocking Portland cement concrete slabs by undersealing or cracking and seating. Make the necessary repairs before brooming and prime coating. Fill wide joints and cracks with asphaltic concrete/sand mix material and compact as required by the Engineer.

3.08 DEFECTIVE WEARING COURSE

- A. Remove portions of the completed wearing course that are defective in finish, compression, composition, or density and replace with suitable material properly laid in accordance with these Specifications.

END OF SECTION