NORTH MARIN WATER DISTRICT

STANDARD SPECIFICATIONS

SECTION 02700 HOT MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Standard Specification applies to District Capital Improvement Projects, repairs to District facilities located within public right-of-way, and maintenance of District-owned facilities.

B. Work included: Work covered in this section consists of performing all work and operations necessary for producing and placing hot mix asphalt (HMA) by mixing aggregate and asphalt binder at a mixing plant and spreading and compacting the HMA mixture for new roadways as well as patching of existing. The section also includes requirements for pavement striping, markings and markers.

C. General intent: All roadway surfaces shall be replaced in a manner which will result in a surface equal to or better than that existing prior to the trenching operations.

D. Section Includes:

1. Quality Control Testing.
2. Acceptance Testing.
3. Asphalt Binder and Tack Coat.
4. Aggregate Materials.
5. Hot Mix Asphalt.
6. Traffic Paint and Thermoplastic Materials
7. Pavement Markers and Adhesives

E. HMA shall be provided in accordance with the Standard HMA construction process and conform to Section 39 of the 2018 Caltrans' Standard Specifications and as detailed in this specification unless modified by a Local Agency Having Jurisdiction under requirements of an Encroachment Permit.

F. Related Work described elsewhere:

1. Section 02200 - Earthwork
2. Section 02223 - Trench Excavation and Backfill

G. References

1. CALIFORNIA TEST METHODS (CT)

    a. CT 125 (2010) Sampling Highway Materials and Products Used in the Roadway Structural Sections.

b. CT 202 (2010) Method of Test for Sieve Analysis of Fine and Coarse Aggregates.
c. CT 205 (2010) Method of Test for Percentage of Crushed Particles.
d. CT 211 (2010) Method of Test for Abrasion of Coarse Aggregate by use of the Los Angeles Abrasion Testing Machine.
e. CT 217 (2008) Method of Test for Sand Equivalent.
f. CT 226 (2010) Method of Test for Moisture Content of Soils and Aggregates by Oven Drying.
g. CT 308 (2010) Determining Bulk Specific Gravity and Density of Compacted Hot Mix Asphalt.
h. CT 309 (2010) Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures.
i. CT 366 (2000) Stabilometer Value.
j. CT 367 (1999) Recommending Optimum Bitumen Content (OBC).
k. CT 370 (2002) Determining Moisture Content of Asphalt Mixtures or Mineral Aggregate Using Microwave Ovens.
l. CT 371 (2003) Resistance of Compacted Bituminous Mixture to Moisture Induced Damage.
m. CT 375 (2004) Determining the In-Place Density and Relative Compaction of AC Pavement.
n. CT 379 (2000) Determining Asphalt Content of Bituminous Mixtures (Troxler Nuclear Gauge Model 3241).

2. State of California, Business and Transportation Agency, Department of Transportation (Caltrans), Standard Specifications, latest edition excluding measurement and payment items.

3. Uniform Construction Standards, All Cities and County of Marin, 2018

4. City of Novato Design and Construction Standards (Interim), 2014

1.2 SUBMITTALS

A. Submit all product data, laboratory test results, material source information, and certificates of compliance listed in this Section under a single submittal cover for review. Incomplete submittals will not be reviewed.

B. The Contractor shall provide the Engineer with the following information a minimum of 10 days prior to commencing the Work:

1. Hot mix asphalt job mix formula (JMF) in accordance with Caltrans' Standard Specifications.
   Proposed JMF, include percentage of reclaimed asphalt pavement (RAP)
   a. Mix design documentation, data and aggregate quality within 12 months of submittal.

2. Written confirmation from the supplier that the JMF to be supplied meets all specified requirements.

C. Tack Coat

1. Submit asphalt binder tack coat and asphaltic emulsion tack coat.

1.3 TESTING DURING PLACEMENT

A. In place density tests per CT 379 Nuclear Gage field test shall be performed during HMA operations by Independent Assurance Tester to meet compaction requirements per Standard Specifications. The frequency of testing shall be in accordance with CT 379.

B. Should any test specified in this Section fail to meet density requirements, Independent Assurance Tester shall take density core samples every 500 feet of paved roadway per Section 39 of Standard Specifications to verify density results.

1.4 PRODUCT HANDLING

A. All products described herein shall be handled in conformance to the applicable provisions of the Standard Specifications.

1.5 PROJECT CONDITIONS

A. Weather Limitations:
1. No HMA shall be placed when weather conditions prevent the proper handling, finishing, or compaction of the mixtures.
2. Do not apply when underlying surface is muddy, frozen or wet.
3. Do not place tack coat when temperature is below 45º F.
4. Do not place hot mix asphalt when air temperature is below 45º F and surface temperature is below 50º F.

PART 2 - PRODUCTS

2.1 TACK COAT

A. Tack Coat, Grade PG 64-16, conforming to the provisions of Sections 39 and 92 of the Standard Specifications shall be used between layers of each lift of HMA, and on curbs, gutters and construction joints.

2.2 ASPHALT BINDER

A. Asphalt binder, Grade PG 64-16, conforming to the provisions of Sections 39 and 92 of the Standard Specifications.

2.3 AGGREGATE

A. Aggregate shall be clean and free from deleterious substances and shall meet the gradation and quality for 1/2-inch HMA Type A in the Caltrans' Standard Specifications.

2.4 HOT MIX ASPHALT

A. Hot Mix Asphalt shall be 1/2-inch HMA Type A and conform to the provisions of Section 39 of the Standard Specifications.

B. HMA batch plant shall be Department-qualified under the Department's Materials Plant Quality Program of the Standard Specifications.

C. Reclaimed asphalt pavement shall be acceptable in accordance with the Standard Specifications not exceeding 15.0 percent of the aggregate blend.

2.5 PAVEMENT MARKINGS AND TRAFFIC STRIPES

A. All markings and striping shall be thermoplastic in accordance with Caltrans Section 84-2.

PART 3 - EXECUTION

3.1 PROTECTION OF EXISTING STREET SURFACE

A. During the entire construction period, the Contractor shall take care to protect existing pavement or sealed surfaces. Backhoes and trenchers must have street pads. Grossers or metal tipped pads will not be allowed. Surfaces scarred by cleanup or excavation equipment shall be repaired in a manner satisfactory to the Engineer. Any and all damage caused by the Contractor's operations to existing roads and streets shall be repaired by the Contractor to at least the original condition and to the satisfaction of the Engineer, at no additional cost to the Owner.

B. If pavement is damaged (excessive loading, grouser marking, scarring/scraping of pavement, etc.) in adjacent lanes, a full lane width grinding and overlay will be required as directed by the Owner. If pavement is damaged due to excessive loading near the trench wall causing openings in the pavement, full depth structural section replacement will be required as directed by the Owner. If pavement restoration comes to within 4 feet from the edge of the pavement or lip of gutter/curb, pavement shall be replaced to the lip of gutter/curb.

3.2 PAVING REMOVAL

A. Saw-cutting shall be required for all roads. See Section 02223 "Trench Excavation and Backfill" for paving removal requirements.

B. Subgrade shall be compacted to a firm and unyielding condition prior to placement of HMA.

C. Clean and dry subgrade area prior to commencing with placement of HMA.

3.3 AGGREGATE BASE

A. Aggregate base shall be spread and compacted according to Specification Section 02300 and Section 26 of the Standard Specifications. Compact to 95 percent relative compaction.

3.4 TACK COAT

A. Ensure the area is clean and dry. All material accumulations which would interfere with the adhesion of the tack coat or with the placing and performance of the HMA shall be removed, including dust, loose aggregate, soil, leaves, and pieces or lumps of other foreign material deposited on the surface.

B. A tack coat shall be applied to existing pavement including planed surfaces, between HMA layers, and to vertical surfaces of curbs, gutters and construction joints at the minimum residual rates specified in Section 39-1.09 C "Tack Coat" of the Standard Specifications.

C. Before placing HMA, a tack coat shall be furnished and applied uniformly to contact surfaces of all cold pavement joints, curbs, gutters, pavement reinforcing fabric and all existing pavement to be surfaced in conformance with Section 39 of the Standard Specifications.

D. Tack coat shall be applied to any course in advance of spreading the next course unless the surface temperature is at least 140 °F.

E. Hot mix asphalt shall not be placed until tack coat has cured.

F. Immediately in advance of placing HMA, apply additional tack coat to damaged areas or where loose or extraneous material is removed.

G. Close areas receiving tack coat to traffic. Do not track tack coat onto pavement surfaces beyond the job site.

H. The cost of applying tack coat will be considered included in the Contract Price and no additional compensation will be allowed therefore.

3.5 TRANSPORTING HOT MIX ASPHALT

A. From mixing site in trucks having tight, clean compartments.

B. Coat hauling compartments with lime-water mixture to prevent sticking.

C. Elevate and drain compartment of excess solution before loading mix.

D. Provide covers over asphalt concrete mixture to protect from weather and to prevent loss of heat.

E. During periods of cold weather or for long distance deliveries, pre-insulation around entire truck bed surfaces.

F. Do not use petroleum products such as kerosene or diesel fuel to release HMA from trucks, spreaders, or compactors.

3.6 HOT MIX ASPHALT

A. HMA surfacing shall conform to the provisions of Section 39 of the Standard Specifications. Placing HMA shall be done under suitable weather conditions for such operations. Rain, snow or other inclement weather will be cause for discontinuing paving Work. The Engineer shall have the authority for determining whether weather conditions are sufficient cause to postpone work.

3.7 SPREADING AND COMPACTING

A. Spreading and compacting shall be performed in accordance with Section 39-1.10 and Section 2.01C of the Standard Specifications.

B. HMA shall be transferred from the trucks into the hopper of the paving machine. Any equipment used to transfer asphalt concrete to the paving machine shall not exceed the load capacity of any surface it is driven over and, therefore, shall not produce rutting or pumping of the existing roadway surface or newly placed HMA at any time. No trucks or other rubber-tired construction equipment are allowed on the subgrade at any time except when proofrolling in the presence of the Engineer or during the placement of HMA. No trucks or other rubber-tired construction equipment are allowed on newly placed HMA until the day after the HMA is placed.

C. Longitudinal joints in the top layer must match specified lane edges shown on the striping plans. Longitudinal joints in lower HMA layers shall be offset at least 0.5 feet from each side of the specified lane edges.

D. Finish rolling shall be completed before pavement surface temperature is below 150 degrees F.

E. Traffic shall not be allowed on HMA until mid-depth temperature is below 160 degrees F and the pavement surface temperature is below 140 degrees F.

3.8 SMOOTHNESS AND DRAINAGE

A. Verify smoothness and drainage using a 10-foot straight edge. Any low spots deeper than 1/4 inch shall be corrected by sawcutting, removing and replacing HMA a sufficient distance from puddles and birdbaths to correct them, or by grinding. All smoothness and drainage corrections to HMA shall be at the Contractor's expense and to the satisfaction of the Engineer.

3.9 PAVEMENT MARKING AND TRAFFIC STRIPES

A. Prepare pavement area to be marked or striped including layout with stenciling or preformed markings.

B. Apply thermoplastic per Caltrans Section 84-2.03.

3.10 STREET MAINTENANCE

A. Until the permanent pavement is placed, the base rock or temporary asphaltic mix at the surface of the trench shall be maintained at all times at a grade level with the adjacent street. Continuous inspection and maintenance of the trench area will be required. Lights and barriers shall be maintained on all Work that is not safe for travel until such time as is made safe.

3.11 CONTRACTOR'S RESPONSIBILITY

A. Settlement of replaced pavement over trenches within the warranty period shall be considered the result of improper or inadequate compaction of the subbase or base materials. The Contractor shall promptly repair all pavement deficiencies noted during the warranty period.

B. For DISTRICT On-call Work Only: HMA work shall be completed within 30 days of a District-issued Task Order, Work Order or Purchase Order unless weather conditions require a longer period or otherwise approved by the District.

END OF SECTION 02700