PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SECTION INCLUDES

A. Asphalt concrete pavement.

B. Aggregate base course.

C. Paving accessories as specified.

1.3 REFERENCES

A. Standard Specifications for Public Works Construction (SSPWC - "Green Book") 2012 Edition,State of California, Department of Transportation (CalTrans), Standard Specifications, including amendments.

B. ASTM D 1188 - Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures

C. ASTM D1557 - Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).

D. ASTM D 2170 - Test Method for Kinematic Viscosity of Asphalts (Bituminous)

E. ASTM D 2172 - Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures

1.4 SUBMITTALS

A. Mix Design: Submit asphalt mix design prepared by a certified laboratory, selected by Owner and acceptable to Owner, for review and approval.

B. Accompanying mix design, submit materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

PART 2 - PRODUCTS

2.1 AGGREGATE BASE COURSE MATERIAL

A. Provide "Crushed Aggregate Base" per SSPWC Section 200-2.2,

2.2 ASPHALTIC CONCRETE PAVEMENT MATERIALS

A. Asphaltic Concrete Pavement Mixture:

1. Mix Characteristics:

a. Vehicular Paving: Type III, Class C2 per SSPWC Section 400-4

b. Pedestrian and playground surfaces: Type D1 per SSPWC Section 203-6

2. Asphalt type: Provide PG 64-10 per SSPWC

3. Asphaltic concrete pavement shall be produced at a commercial central mixing plant.

4. Asphalt concrete should conform to Section 400-4 of the SSPWC and should be compacted to at least 95 percent relative compaction based on the Hveem unit weight.

B. Tack Coat: Slow setting asphalt emulsion SS1h per SSPWC

C. Tack Coat at pavement fabric: Provide PG 64-10 paving asphalt in compliance with SSPWC

D. Herbicide: Provide approved herbicide, tinted for visual identification, non-flammable formulation, and complying with all current California and EPA environmental regulations.

E. Surface Sealer: Asphalt Emulsion, www.aema.org., SS1-h, per SSPWC Section 203-9

F. Surface Sealer: Satin Seal by Blue Diamond or equal.

G. Crack filler:

1. Cracks less than 1/2 inch in width: GuardTop Crackfiller or equal.

2. Cracks 1/2 inch or greater in width: #4 Sheet mix asphalt.

2.3 REDWOOD HEADERS

A. Provide Redwood stakes and headers, construction heart per CRIS grading rules, sized in accordance with SSPWC Section 302-5.5

2.4 PAVEMENT REINFORCING FABRIC

A. Provide GlasGrid or equal pavement fabric, complying with SSPWC Section 213

2.5 LIME TREATMENT

A. Provide quicklime conforming to Green Book Section 301-5.2(A*)*

2.6 OTHER MATERIALS

A. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

2.7 DESIGN CRITERIA

A. General:

1. All improvements shall be constructed per the referenced standards, the contract documents, and as specified in this section.

2. Where criteria shown on drawings or specified in this specification exceed that of the referenced standards, the more stringent criteria shall apply.

PART 3 - EXECUTION

3.1 SURFACE CONDITIONS AND PREPARATION

A. Inspection:

1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

a. Verify subgrade is compacted as specified in Section 310000 and 312333.

3. In the event of discrepancy, immediately notify the Architect.

4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

5. For preliminary pavement design purposes, an R-Value of 5 was used. R-Value tests should be conducted on the actual pavement subgrade materials once the site is fine graded.

B. Preparation:

1. Provide all staking and field engineering required to implement the work as shown on the drawings by a Land Surveyor licensed in the State of California.

2. Protect all stakes and benchmarks. Replace all stakes and benchmarks damaged during the course of construction at no cost to Owner.

3. Set grade stakes using instrument technology, at 50 foot grid interval at areas with gradients greater than 2 percent.

4. Set grade stakes, using instrument technology, at 25 foot grid interval at areas with gradients less than 2 percent.

5. Provide all equipment of such type, function and design as required to achieve specified values.

3.2 APPLICATION OF SOIL TREATMENTS

A. Herbicide Treatment:

1. Apply in strict accordance with Manufacturer's recommendations.

2. Conform to all applicable and current regulations, including CAL-OSHA, air quality and environmental requirements.

3. Do not apply herbicide within a minimum distance of two feet from planted areas.

4. If requested by Architect, provide written certification of purchase and application of herbicide.

B. Lime Treated Subgrade:

1. Apply in accordance with Greenbook Section 301-5 and as directed by the Geotechnical Engineer.

2. Conform to all applicable and current regulations, including CAL-OSHA, air quality and environmental requirements.

3. Apply treatment to a depth of 12 inches. Application rates shall be dependent on soil test results.

3.3 PLACEMENT OF AGGREGATE BASE COURSE

A. Deliver base course to site as uniform mixtures.

B. Spread each layer in one operation, free from pockets of coarse or fine material , and in compliance with SSPWC 302-2

1. Where asphalt paving is installed to replace existing on-site locations, match existing base thickness.

2. Where asphalt paving is installed at public improvements, comply with base thickness required by referenced City standards.

3. Where asphalt paving is installed at areas without prior paving, provide minimum 6 inch compacted base thickness.

4. Do not use lime treatment in areas where landscaping and/or trees will be placed.

C. Application:

1. Where the required thickness is 0.5 foot or less, spread and compact base in one layer.

2. Where the required thickness is more than 0.5 foot, spread and compact base material in two or more layers of approximately equal thickness. The maximum compacted thickness of any one layer shall not exceed 0.5 foot, or less if compaction cannot be obtained with 0.5 lift.

D. Each layer shall be spread and compacted in a similar manner. When vibrating or other acceptable types of special compacting equipment are used, the entire course may be placed in one layer, provided the ability of such equipment to achieve acceptable compaction to the full layer depth is demonstrated.

E. No thin layers of fine materials shall be added to the top layer of the subbase or base course in order to meet the grade.

3.4 BASE COURSE COMPACTION AND PROTECTION

A. Compact base course material to not less than 95 of the maximum laboratory density as determined by ASTM D-1557.

B. Remove damaged base course to subgrade and place, grade and compact new base course in settled, eroded, and wetted areas to specified tolerances.

C. Where completed base course areas are disturbed by subsequent construction operations or adverse weather, remove base course in damaged areas to subgrade, and place and compact new base course to required density prior to further construction.

3.5 PREPARATION FOR PAVING

A. Apply tack coat to vertical faces of existing or previously constructed bituminous pavement, curbs, gutters, slab edges, and all structures to be in actual contact with the bituminous pavement.

B. Coat surfaces of catch basin frames with oil to prevent bond with asphalt pavement. Do not tack coat these surfaces.

C. Prior to applying the tack coat, sweep or otherwise clean surface free of dust or other foreign material.

D. Protect all surfaces not required to receive tack coat from any inadvertent application.

E. Do not place tack coat when air temperature in the shade or the roadbed temperature is below 50 degrees F, or during rain, fog, or other adverse weather conditions.

F. After application of tack coat, allow sufficient time for complete separation of asphalt and water before paving operations begin. Do not leave tack coat exposed overnight. Apply tack coat to only those surfaces as will be paved in the same day.

G. Apply primer coat to base course surfaces in conformance with Section 302-5.3, SSPWC, at rate of 0.10 to 0.25 gallons per square yard. Allow to cure prior to application of asphalt course.

H. Asphalt Pavement Crack Preparation:

1. All asphalt cracks shall be cleaned, prepared and filled prior to application of tack coat.

2. All vegetation shall be removed from cracks and blown clean with compressed air.

3. Cracks shall be treated with specified soil sterilizer prior to placement of filler material.

4. Cracks shall be completely free of any moisture before application of filler. Sufficient amount of crack filler shall be used to ensure a level surface after filler is cured.

5. Multiple coats may be required, within Manufacturer's recommendations.

6. Asphalt pavement cracks less than 1/2 inch wide shall be filled with rubberized crack filler as specified.

7. Asphalt pavement cracks 1/2 inch wide or larger shall be filled with #4 sheet mix asphalt.

I. Pavement Fabric Applications:

1. Prepare paving as recommended by fabric manufacturer and as specified.

2. Fill all joints, cracks, alligatoring and other surface defects with approved asphaltic crack filler or sealant.

3. Install minimum 1/2 inch asphalt concrete leveling coat, mix as approved by Architect.

4. Apply tack coat per SSPWC Section 302-7.2.2 and as recommended by manufacturer.

5. Install fabric per SSPWC Section 302-7.2.3 and as recommended by manufacturer.

3.6 PLACEMENT OF ASPHALTIC CONCRETE PAVEMENT

A. Conform to SSPWC Section 302-5

B. Do not place asphaltic concrete paving when the air temperature in the shade or the roadbed temperature is below 50 degrees F, or during rain, when the base course surface is wet, or during other adverse weather conditions.

C. Place asphalt pavement as required to provide compacted depth as indicated on the plans, in a continuous operation. Place inaccessible and small areas by hand.

1. Provide minimum 3 inch compacted thickness or as required to match existing, whichever is greater.

2. Where asphalt paving is installed to replace existing on-site locations, install in compacted thickness to match existing paving.

3. Where asphalt paving is installed over pavement fabric, provide minimum 1-1/2 inch compacted thickness.

4. Where asphalt paving is installed at public improvements, comply with compacted paving thickness required by referenced City standards.

5. Where asphalt paving is installed at areas without prior paving, provide minimum 3 inch compacted thickness.

D. Place asphalt in single or multiple lifts per SSPWC Section 302-5.5

E. Ensure joints made during paving operations are straight, clean, vertical and free of broken or loose material. Carefully make joints to insure a continuous bond between old and new pavement, or between successive day's work. Provide a continuous bond between adjoining work.

F. At all unrestrained paving edges, provide redwood headers flush with asphalt concrete surface, with stakes placed at 3 feet on center maximum, located 1/2 inch below top of header.

3.7 ROLLING

A. Monitor temperatures of the asphalt concrete mixture as delivered to the site and during laydown to insure conformance with SSPWC Section 302-5.5

B. Roll and compact to specified density in accordance with SSPWC Section 302-5.6.

C. Compact asphalt paving course to 95 percent of the maximum laboratory density, as obtained with the California Kneading Compactor, per California Test 304.

D. Perform hand tamping in areas not accessible to rolling equipment.

3.8 FIELD QUALITY CONTROL

A. Testing and inspection of asphaltic concrete mix and asphalt pavement will be performed at Contractors cost by a testing laboratory retained by the Contractor and acceptable to the Owner. The testing laboratory, except for the contract relationship required for this project, shall have no financial or fiduciary relationship with Contractor or paving installer.

B. Thickness Cores:

1. Provide 1 core test per each 5,000 square feet [or each repair area] to verify compacted thickness.

C. Density Tests:

1. Provide field density tests indicating compliance with SSPWC Section 302-5.6.2 based on use of properly calibrated nuclear asphalt testing device.

2. Provide density tests based on ASTM D 1188 for laboratory analysis of asphalt cores.

3. In the event of disputes over in-place density, conduct tests based on ASTM D 1188 with test samples taken at such frequency as directed by Architect.

D. Surface smoothness, thickness and level.

1. Maintain surface free of gouges, ridges and ruts, with a uniform and consistent finish.

2. Maintain line and profile shown to tolerance of 1/4 inch plus/minus, in any 10 feet, non-cumulative.

3. Maintain asphalt pavement free from depressions exceeding 1/8 inch when measured with a 10 foot straight-edge.

E. Flood Test:

1. Flood test paving prior to application of seal coat.

2. Where water ponds in excess of 1/8 inch in an area greater than 2 feet in any direction, repair or replace as directed by Architect to provide proper drainage.

3.9 SEAL COAT

A. Allow completed paving to cure for minimum of 1 month prior to application of specified seal coat.

B. Conform to the manufacturers recommendations for two coat application.

C. Conform to SSPWC Section 302-8.2 for application.

D. Provide surface finish free of ridges, lap marks, coarse textured areas, or other appearance and performance defects.

3.10 PAINT STRIPING AND MARKING

A. Install per Caltrans Specifications.

3.11 PROTECTION

A. After final rolling, do not permit vehicular traffic on pavement until it has cooled to atmospheric temperature and hardened, but in no case less than 8 hours.

B. Erect barricades in accordance with requirements of Division 1 to protect paving from traffic until mixture has cooled in accordance with the specifications.

C. Do not use completed paving surface for storage of construction vehicles or construction materials.

END OF SECTION 321216

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