SECTION 32 14 23
ASPHALT UNIT PAVING

PART 1 GENERAL

1.1 DESCRIPTION

Work Included: All labor, materials, appliances, tools, equipment, facilities, transportation, and services for and incidental to performing all operations of the work of this Section, complete, as shown on the Drawings or specified herein.

1.2 RELATED WORK
A. Section 31 00 00 – Earthwork
B. Section 31 23 00 – Excavation and Fill
C. Section 32 12 00 – Flexible Paving
D. Section 32 84 00 – Irrigation

1.3 APPLICABLE STANDARDS:
A. ASTM C-33 Standard Specification for Concrete Aggregates.
C. American Disabilities Act, Part 36, Appendix A – Standards for accessible design.
D. California Disabled Accessibility Guidebook 1998, by National Access Consultants

1.4 QUALITY ASSURANCE
A. Regulatory Requirements: Comply with applicable codes and regulations of governmental agencies having jurisdiction. Where those requirements conflict with this specification, comply with the more stringent provisions.
B. Certificates: Provide certificates as required by law for transportation and inspections of materials. Inspection and/or approval by governmental agencies does not preclude rejection of materials at project site.
C. Installer Qualifications (Submit proof of the following):
1. Installer shall have a minimum of 5 years successful experience in the installation of unit pavers, similar to the pavers required for the project. The installer shall ensure that the supervisor is on site for the entire duration of the project.

2. Installer shall have experienced personnel and a management capability sufficient to execute the work shown on the drawings and specified herein.

D. Workmanship: Use adequate numbers of skilled workmen who are trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and methods needed for proper performance of the work for this Section.

E. Lines and Levels: A licensed Surveyor or registered Civil Engineer shall lay out and establish all lines, levels, grades, and positions of all parts of the work.

F. Asphalt Block Paver Producer: Use only materials which conform to Type 3 asphalt ASTM Designation D-312 with a penetration at 77 Degrees F, 100G, 5 sec of minimum 15 mm and maximum of 35 mm.

G. Bituminous Material Producer: Use only materials which conform to ASTM Designation D-3381, viscosity grade A.C. 10 or A.C. 20.

1.5 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and material specifications, as applicable, for all products specified herein for review by Project Manager prior to starting the work of this Section.

B. Samples: Submit samples of the following products for review by the Project Manager prior to starting work:

1. Asphalt Block Pavers: Three samples of each type.

2. Sand Stabilizer: 1 pint.


4. Asphalt Block Paving: For each type of asphalt block paving provide one eight-foot square sample panel. Sample panels shall include base course and/or bituminous binder course, bituminous setting bed, asphalt block pavers, and granite and/or steel edging, as directed by the Project Manager.

5. Installer’s Qualifications: Three copies.

1.6 ANALYSES OF SAMPLES AND TESTS
A. Testing: The Project Manager shall select a qualified Testing Laboratory to take samples for testing during the course of the work as considered necessary.

B. Costs: Tests will be paid for by Stanford. Contractor shall cooperate in making tests and will be responsible for notifying the designated laboratory in sufficient time to allow taking of samples at time of installation.

C. Rejected Materials: Remove rejected materials immediately from the site at Contractor's expense. Pay cost of testing of materials not meeting the specifications, and pay the cost of replacement with materials meeting the specifications.

1.7 DELIVERY, STORAGE, AND HANDLING

Protect all materials on site from weather or other conditions that may damage or impair the effectiveness or appearance of the finished concrete. Store bituminous setting bed material in sealed containers.

1.8 SITE CONDITIONS

A. Inspection: Examine subgrades and all related work and surfaces before starting work. Report to the Project Manager in writing any site conditions which prevent the proper provision of the work of this Section.

B. Acceptance: Starting the work of this section without reporting unsuitable site conditions to the Project Manager shall constitute acceptance of site conditions by the Contractor.

C. Repair: Any repair or replacement of work required as a result of unsuitable site conditions shall be performed by the Contractor at no additional cost to Stanford.

D. Weather Limitations: Do not execute the work when the base surface is wet or when it contains an excess of moisture.

1.9 TOLERANCES FOR ASPHALT BLOCK PAVING

The following variations are the maximum permissible deviations from established lines, grades and dimensions for all asphalt block paving.

A. Variation from the level or from grades shown on the Drawings: in any 10 feet, 1/8 inch.

B. Variation in Cross-Sectional Thickness of Bituminous Setting Bed: minus 1/8 inch

1.10 FINAL ACCEPTANCE
A. Review Date: Submit a written request for review for Final Acceptance at least five (5) working days in advance.

B. Completion: Work will be accepted upon satisfactory completion of all asphalt block paving work. There will be no partial acceptance of work.

1.11 TRAFFIC

During the work the Contractor shall maintain the safe flow of vehicular and pedestrian traffic as required for other construction activities and provide barricades, signs, warning lights, and flagmen as required to ensure personal safety and cause the least interruption of the flow of work.

PART 2 PRODUCTS

2.1 GENERAL:

All materials shall be new, unused and free from defects and imperfections.

2.2 SAND STABILIZER

A. Product: “Sandlock”, or approved equal.

B. Manufacturer: Pavertech, (952) 226-6400.

2.3 BASE COURSE

Class 2 aggregate base shall be 3/4 inch maximum aggregate size.

2.4 ASPHALT BLOCK PAVERS:

The asphalt block pavers shall contain clean, hard, unweathered stone, which shall be crushed in such a manner that the particles shall be as nearly cubical as possible and vary in size up to 3/8". The inorganic dust or filler contained in the block shall be produced from sound limestone or other approved material. The blocks shall have a permissible plus or minus tolerance of 1/8" in any direction. The average absorption of a set of four blocks shall not be more than 0.25%.

2.5 BITUMINOUS SETTING BED

A. Asphalt: The asphalt to be used in the bituminous setting bed shall conform to ASTM Designation D-946-69A with a penetration at 77 degrees F. 100G., 5 sec of minimum 85 millimeters and a maximum of 100 millimeters.
B. Fine Aggregate: The fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coatings, lumps of clay, alkali salts, and organic matter. It shall be uniformly graded from "coarse" to "fine" and all passing the No. 4 sieve and meet with gradation requirements when tested in accordance with the standard method of test for sieve or screen analysis for fine and coarse aggregates ASTM Designation C-136-67. The dried fine aggregates shall be combined with hot asphalt and the mix shall be heated to approximately 300 degrees F. at the asphalt plant. The appropriate proportion of materials shall be seven (7) percent asphalt and ninety-three (93) percent sand by weight in the approximate ratio of 145 pounds asphalt to 1,855 pounds sand. The Contractor shall determine the exact proportions to produce the best possible mixture for construction of the bituminous setting bed to meet construction requirements.

2.6 STEEL HEADERS

See Section 32 94 13 01 – Steel Headers

2.7 CONCRETE HEADER

See Section 32 16 13 01 – Colored Concrete Headers.

2.8 JOINT FILLING SAND

Properties: Joint filling sand shall conform to the requirements of Article 2.02 of this section except that the sand shall be dry and shall conform to the following grading requirements:

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<th>(mm)</th>
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</tr>
<tr>
<td>No. 100</td>
<td>0.150</td>
<td>0-0.5</td>
</tr>
</tbody>
</table>

2.9 WATER

Water shall be clean, potable, and free of salts, oils, acids, alkalis, organic material or other deleterious matter.

PART 3 EXECUTION

3.1 Subgrade Preparation: See Section 31 00 00: Earthwork.

3.2 Install Steel Headers and Concrete Headers per details shown on the Drawings.

3.3 Install joint sand filler with sand stabilizer per manufacturer’s directions.
3.4 BASE COURSE:

A. Install untreated base course as shown on the Drawings.

B. Slope all areas uniformly between indicated spot elevations.

C. Compact base course by rolling or other approved method to 95% of the laboratory maximum dry density per ASTM D1557. Maintain proper slope during compaction.

3.5 WEED CONTROL:

Apply herbicide over base course of entire area to be paved in accordance with the manufacturer's instructions.

3.6 BITUMINOUS SETTING BED:

A. Installation:

1. Place two 3/8 inch by one inch control bars directly over the sub-base. Adjust the bars with wood chucks under the control bars to bring 3/4 inch setting bed, or proper grade.

2. Set the bars parallel to each other approximately eleven feet apart to serve as guides for striking board (12 feet long x 2 inch x 6 inch board).

3. The depth control bars must be carefully set to bring the pavers, when laid, to proper grade.

4. Place some bituminous bed between the parallel depth control bars. Pull this bed with the striking board over these bars several times.

5. After each passage, low porous spots must be showered with fresh bituminous material to produce a smooth, firm and even setting bed.

6. As soon as this initial panel is completed, advance the first bar to the next position in readiness for staking the next panel.

7. Carefully fill any depressions that remain after removing the depth control bars and wood chucks.

8. The elevation shall be adjusted so when pavers are placed, the top surface of the pavers will be at the required finished grade.
9. The setting bed shall be rolled with a power roller to a nominal depth of 3/4 inch while still hot. The thickness of the bed shall be adjusted so when pavers are placed, the top surface of the paver will be at the required finished grade.

10. After final rolling, do not permit vehicular or pedestrian traffic on bituminous setting bed until it has cooled and hardened, and in no case sooner than 24 hrs.

11. Any discrepancies or omissions on drawings and conditions on the site which would prevent proper installation of bituminous setting bed or improperly affect placement of asphalt block pavers shall be brought to the attention of the Project Manager in writing.

B. Finished Surface: Do not vary by more than 1/8 in. in 10 feet from required line, grade and cross-section as shown in the Drawings when measured in any direction.

C. After bituminous setting bed is fully cured and prior to placing asphalt block pavers, water-flood entire area. Level all areas holding water deep enough to cover a nickel with bituminous setting bed mix to achieve specified tolerance.

D. Embedded Items: Accurately secure items embedded in base course sub base so that they will not be displaced during placing of bituminous setting bed.

E. Finished Grade:

1. Finished surfaces of bituminous setting bed shall not vary more than 1/8 in. measured with a 10 ft. metal straightedge, except at grade changes.

2. No "birdbaths" or other surface irregularities will be permitted.

3. Correct irregularities to the satisfaction of Project Manager.

3.7 INSTALLATION OF ASPHALT BLOCK PAVERS

A. Asphalt Block Pavers: After the bituminous setting bed has cured and set, carefully place the pavers by hand in straight courses with hand tight joints and a uniform top surface. The alignment of pavers must conform to the pattern shown on the drawings.

B. Stabilized Joint Filling Sand for Asphalt Block: Sweep clean joint filling sand thoroughly mixed with sand stabilizer into the joints until they are full. Use a vibrating plate compactor over the entire surface making several passes. Refill the joints and sweep off excess sand.

3.8 CLEANING AND PROTECTION
A. Cleaning: After completion of paving operations, clean all surfaces of dirt, stains, blemishes or excess or spilled bituminous setting bed mix to the satisfaction of Project Manager.

B. Protection:

1. Provide barricades and warning devices as required to protect pavement and the general public.

2. Cover openings of structures in the area of paving until permanent coverings are placed.

3.9 CLEAN UP

A. Keep all areas of work clean, neat and orderly at all times.

B. Clean up and remove all debris prior to Final Acceptance.

END OF SECTION