SECTION 32 1413

RESETTING EXISTING CONCRETE UNIT PAVERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of Division 1, GENERAL REQUIREMENTS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install the existing precast concrete unit pavers, as indicated on the Contract Documents and as specified.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Section 32 1313 REINFORCED CONCRETE PAVEMENT

1.04 REFERENCES:

A. The following standards shall apply to the work of this Section.

1. American Association of State Highway and Transportation Officials (AASHTO):
   - M 43 Standard Size of Coarse Aggregate for Highway Construction
   - M 140 Emulsified Asphalt
   - M 208 Cationic Emulsified Asphalt
2. American Society for Testing and Materials (ASTM):
   - C 33 Specification for Concrete Aggregates
   - C 136 Test Method for Sieve Analysis of Fine and Coarse Aggregates
   - C 936 Specification for Solid Concrete Interlocking Paving Units
   - D 36 Test Method for Softening Point of Bitumen (Ring-and-Ball Apparatus)
   - D 113 Test Method for Ductility of Bituminous Materials

D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lbf/ft^3 (2,700 kN-m/m^3)]
D 3381 Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

1.05 SUBMITTALS

A. Design Mix Submittals: Submit design mix submittals including description of materials, proportions, and mechanical sieve sizes of aggregates for the following:

1. Bituminous concrete setting bed mix.
2. Asphalt tack coat.

B. Samples: Samples shall be submitted for the following items:

1. Samples of the pavers are not required. Contractor shall not

C. Manufacturer's Product Data: Manufacturer's product data shall be submitted for the following items:
1. Neoprene-modified asphalt adhesive

1.06 QUALITY ASSURANCE

A. Installer must review installation procedures of all precast concrete paving and sequence of work with General Contractor to insure proper coordination with other subcontractors and suppliers whose work is affected by the delivery schedule and installation of paving work.

1.07 SAMPLE PANEL

A. Construct a sample panel of concrete pavers on the specified base and setting bed before start of any precast concrete paving. Sample panel shall exhibit proposed color range, texture, bond, jointing, pattern, finish, paver size, and workmanship. Unless otherwise indicated, size of panel shall be 6 feet x 6 feet minimum.

1. One sample panel representing shall be constructed on specified base, setting bed, pavers, jointing and surface sealants as required for the finished work.
2. The sample panel may become part of the finished work if approved by the Landscape Architect.
3. The quality of workmanship, paver jointing and cleanliness of pavers after installation must be approved by the Landscape Architect before permanent paving is started.
4. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained.
5. The approved sample shall become the standard for unit paving for the entire job. Panel shall remain undisturbed until all paving is completed.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Concrete paver units shall be packaged by strapping to manufacturer's standard and delivered on pallets. Pavers damaged in any manner will be rejected and shall be replaced with new material at no additional cost to the Owner.

B. Store all paving units on raised platforms. Storage piles or stacks shall be located to avoid or be protected from heavy or unnecessary traffic. Store paving units on wood skids or pallets. Place and stack skids and units to distribute weight evenly and to prevent breakage or cracking of units. Materials shall be stored under an approved roof or covered with non-staining waterproof tarpaulins, at all times, except when materials are being installed. Protect paving units during storage and construction against moisture, soiling, staining and physical damage.

C. Handle paving units to prevent chipping, breakage, soiling or other damage. Do not use pinch or wrecking bars without protecting edges of units with wood or other rigid materials. Lift with wide-belt type slings or vacuum lifts wherever possible; do not use wire cable or ropes containing tar or other substances which might cause staining. If required, use wood rollers and provide cushion at end of wood slides. Any paving unit chipped during delivery, storage, or handling will be rejected and replaced by the Contractor at no additional cost to the Owner.

1.09 PROTECTION OF ADJACENT SURFACES

A. Finished surfaces adjacent to the concrete unit paving shall be adequately protected from soiling, staining, and other damage during construction.

PART 2 PRODUCTS

2.04 CONCRETE BASE

A. Concrete base shall be reinforced concrete slab specified and installed in accordance with the requirements of Section 32 1313 REINFORCED CONCRETE PAVEMENT, of this Specification.

2.07 BITUMINOUS SETTING BED

A. Asphalt cement to be used in the bituminous setting bed shall conform to ASTM D 3381. Viscosity grade shall be A.C. 10 or A.C. 20.

B. Fine aggregate to be used in the bituminous setting bed shall be clean, hard sand with durable particles and free from adherent coating, lumps of clay, alkali salts, and organic matter. Aggregate shall be uniformly graded from "coarse" to "fine"

with 100 percent by weight passing the No. 4 sieve and shall meet the gradation requirements when tested in accordance with ASTM C 136.

C. Fine aggregate shall be dried and shall be combined with hot asphalt cement, and the mix shall be heated to approximately 300 degrees Fahrenheit at an asphalt plant. The approximate proportion of materials shall be 7 percent cement asphalt and 93 percent fine aggregate. Each ton of material shall be apportioned 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 specified requirements.

2.08 ASPHALTIC PRIMER

A. Primer for base beneath bituminous setting bed and asphalt block pavers shall be an emulsified asphalt rapid setting type conforming to AASHTO M 140, Grade RS-1, or AASHTO M 208, Grade CRS-1.

2.09 NEOPRENE-MODIFIED ASPHALT ADHESIVE

A. Neoprene modified asphalt adhesive shall meet the following requirements:

1. Mastic (asphalt adhesive):
   a. Solids (base) content by volume = 75± 1 percent.
   b. Weight = 8.0 to 8.5 pounds/gallon
   c. Solvent vehicle = Varsol [over 100°F flash].
2. Base (2 percent neoprene, 10 percent fibers, 88 percent asphalt):
   a. Melting point (ASTM D 36) = 200°F minimum.
   b. Penetration at 77°F 100 gram load 5 second (0.1 mm) = 23 to 27.
   c. Ductility (ASTM D 113 at 77°F, 5 cm/minute) = 125 cm, minimum.

2.10 POLYMERIC SAND FOR PAVEMENT JOINTS

A. Joint filler between paver joints shall be: Polymeric Jointing Sand as manufactured by Techni-Seal, Inc., www.techniseal.com; DP SuperSand Bond by Alliance, at www.supersandbond.com, or approved equal.

1. Color of polymeric sand material shall be selected from a range of manufacturer's standard colors by the Landscape Architect.

PART 3 EXECUTION

3.01 ACCEPTABILITY OF CONCRETE BASE

A. Contractor shall examine the concrete base installed under the work of the Section 32 1313 REINFORCED CONCRETE PAVEMENT to determine its adequacy to receive concrete pavers and setting bed. Concrete shall have fully cured prior to the work of installing concrete pavers. Evidence of inadequate base shall be brought to the immediate attention of the Landscape Architect and shall be corrected by the Contractor as directed by the Landscape Architect at no additional cost to the Owner.

B. Start of work of this Section 32 1413 CONCRETE PAVERS shall constitute acceptance of concrete base.

3.05 BITUMINOUS SETTING BED

A. The surface of the concrete base shall receive an asphalt prime coat before laying bituminous setting bed. Prime coat shall be applied at rate that will leave bituminous residue of 5 to 7 gallons per 100 square yards after evaporation of vehicle. Base surface shall be dry and clean when prime coat is applied. Bituminous setting bed shall not be placed until vehicle has completely evaporated from prime coat.

A. Bituminous setting bed shall be installed over the concrete base. Control bars 3/4 inch deep shall be placed directly over the base. If grades must be adjusted, wood chocks under depth control bars shall be set to proper grade. Set two bars parallel to each other to serve as guides for the striking board. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.

B. While still hot (not less than 250 degrees Fahrenheit) some of the bituminous bed material shall be placed between the parallel depth control bars. This bed shall be pulled with the striking board over the control bars several times. After each passage, low porous spots shall be showered with fresh bituminous material to produce a smooth, firm, and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position in readiness for striking the next panel. After the depth control bars and wood chocks have been removed, carefully fill any depressions that remain.

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

D. A coating of neoprene-modified asphalt adhesive shall be applied by squeegeeing or troweling over the top surface of the bituminous setting bed so as to provide continuous bond under the pavers. If adhesive is trowel-applied, trowel shall be serrated type with serrations not to exceed 1/16 inch. Do not over apply neoprene mastic.

3.07 SETTING CONCRETE PAVERS

A. Concrete pavers shall be set on a bituminous setting bed over a prepared concrete base. Setting bed shall be protected from damage prior to setting pavers.

B. Concrete pavers with chips, cracks, stains, or other structural or aesthetic defects shall not be used.

C. Only competent workmen under adequate supervision shall perform the work of setting concrete pavers. Set pavers in accordance with manufacturer's recommendations. Concrete pavers shall be set true to the required lines and grades in the pattern detailed on the Contract Documents.

D. After the modified neoprene mastic is applied, pavers shall be carefully placed by hand, set true to the required lines and grades in the pattern shown on the Contract Documents. Accurate alignment shall be maintained. The Landscape Architect will approve the start of paving layouts. Paving layouts shall always begin at building entries.

E. Pavers shall be neatly cut and fitted at all perimeters and closures to fit neatly and closely. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/8 inch in width. Joints greater than 1/8 inch in width will not be accepted. Surface edge of one paver shall be level with the next adjacent pavers so that no voids, rocking motions, or tripping hazards are encountered. There shall be no deviation from a true grade greater than 1/4 inch in 10 feet. All finish paved areas shall slope to drain at a minimum of 1/8 inch in 1 foot.

F All cutting and patching required to complete the work shall be done (including the filling and closing of all openings) with water-cooled radial cut-off type masonry saws with diamond-tipped blade for a sharp, straight edge. Cut edges shall be plumb and straight. Scoring and breaking will not be acceptable.

1. After cutting of pavers, grind all cut edges of top surfaces of pavers to create a beveled, 45 degree angle equal to the manufacturer’s bevel. Ground bevels shall be straight and true and shall be accomplished using a sufficiently fine grinding wheel or blade to prevent apparent grind marks on the bevels.

G. After a sufficient area of pavers has been installed, joints of pavers shall be filled by sweeping polymeric sand into the joints.

1. Temperatures shall be 40 degrees Fahrenheit and rising.
2. Surface shall be completely dry.
3. Spread the polymeric sand uniformly over the surfaced of the concrete unit pavers.
4. Using a push broom, sweep the polymeric sand to fill joints completely, down to full depth.
5. Do not sweep polymeric sand over distances greater than 3 feet.

6. Completed surface shall be compacted by running a medium plate vibrator across the top of the pavers. Additional polymeric sand shall be swept in the joints during vibration to completely fill joint space.
7. Sweep the surface with a fine bristle brush and remove all residues with a leaf blower.
8. Do not allow polymeric sand residue to become activated with water and stick to the surface of the pavers or the underlying slab.
9. Wet finished paver surfaces in a systematic manner, ensuring that the wetting of one section is finished before another section is started.
10. Wetting of the entire project should proceed without interruptions.
11. Allow polymeric sand to dry completely after initial wetting.

H. Completed surface shall be compacted by running a medium plate vibrator across the top of the pavers. Additional joint filler material shall be swept in the joints during vibration to completely fill joint space.

I. Newly laid pavers shall be protected at all times by panels of plywood. These panels may be advanced as work progresses; however, the plywood protection shall be kept in areas which will be subjected to continued movement of materials and equipment. All necessary precautions shall be taken in order to avoid depressions and protect paver alignment.

J. Prior to acceptance, the paved area shall be flooded with water to assure that there are no depressions. Pavers with top surfaces greater than 1/16 inch above or below adjacent pavers shall be removed and reset. Remove and reset pavers as required until surface is true to line and grade. Refill sand joints as necessary until all joints are filled to finish grade.

3.09 CLEANING OF CONCRETE PAVER SURFACES

A. After completion of concrete paving, surfaces shall be carefully cleaned, removing all dirt, excess filler, and stains.

B. Clean pavers using an approved masonry cleaner and soft bristle brush.

END OF SECTION