NOTE TO CONSULTANTS: Edit with Track Changes turned on, any text in this section that appears in bold and italics then turn off the bold and italics for the final approved version. (Remove this Note).

PART 1 - GENERAL

1.01 Description: Furnish all material, labor, services and related items required to complete masonry unit paving work indicated on drawings and/or specifications. The items of work to be performed shall include but are not necessarily limited to the following: sub-grade preparation, base material, masonry unit paving, and edging.

1.02 Related Sections:

Section 31 00 00 - Earthwork
Section 32 11 23 - Mineral Aggregates

1.03 References: This section references the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

A. CPI TEK, An Information Series from the Concrete Paver Institute, a division of the National Concrete Masonry Association, (most recent edition).

B. City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

1.04 Submittals: The Contractor shall submit to the Engineer materials containing the following information

A. Procedures to be used in the construction under this Section with regard to the division of labor and the responsibilities of the Contractor and all sub-contractors that are involved.

B. Furnish samples of unit pavers to be used, minimum one square foot sample. Submit catalog sheets and test data for approval.

C. Qualification data for firms and persons specified in “Quality Assurance” paragraph to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of designers and the owners.

1.05 Quality Assurance:

A. Installer Qualifications: An experienced installer who has successfully completed at least 3 unit paver installations similar in material, design, and intent to that indicated for the project described herein.

B. Single Source Responsibility: Obtain each color, type, and variety of unit pavers from a single source. Materials shall be available and be consistent in quality, appearance and physical properties without delaying progress of the work.

C. Prior to commencing the work of this Section, verify the accuracy of layout and grading. Verify that all sub-grade and base course aggregate conditions are as specified. Notify the Engineer of any discrepancies and coordinate the correction of those discrepancies with other trades as necessary.

D. Field Constructed Mock Up: Construct a mock up of paving pattern as indicated on the Drawings.

1.06 Delivery, Storage and Handling: Protect unit pavers and aggregate during storage and construction against wetting by rain, snow, or ground water and against soilage or contamination from earth and other materials.

1.07 Surplus Material Stock: Following the Engineer's approval of submittal, deliver one unbroken pallet consisting of 84sf of unit pavers to the Extra Materials: Deliver one unbroken and shrink-wrapped pallet of unit pavers (enough pavers to cover approximately 84 square feet) to the **SPR Warehouse facility located at 4209 West Marginal Way SW, Seattle WA, 98106. Notify the SPR warehouse at least five (5) working days prior to delivery at 206-684-7034.** Call during normal business hours (7:00am to 3:30pm). This delivery is in addition to those necessary to complete the work of the Contract Drawings to be delivered to the work site.

PART 2 - PRODUCTS

2.01 Unit Pavers: Concrete Masonry Unit Pavers: Solid concrete interlocking paving unit, ASTM C 936, made from normal weight aggregates. Abbottsford Standard Classic Series interlocking concrete pavers (or approved equal). Shape and style shall be:

2.02 Aggregate:

A. Sub-base Aggregate: Quality controlled, graded aggregate complying with ASTM D 2940 for sub-base material. Sub-base aggregate shall be graded as follows:

Sieve	Percent Passing
2 inch	100%
1 1/2 inch	90-100%
#4	30-60%
#200*	0-12%

* Indicates wet sieve test

B. Graded Aggregate for Base: Quality controlled, graded washed gravel complying with ASTM D 2940 for base material. Base aggregate shall be graded as follows:

Sieve	Percent Passing
2 inch	100%
1 1/2 inch	95-100%

3/4 inch	70-89%
3/8 inch	50-70%
#4	35-55%
#30	12-55%
#200*	0-8%

* Indicates wet sieve test

C. Sand for Leveling Course: Fine, sharp, washed concrete sand, free of foreign material, conforming to ASTM C 33. Under no circumstances should masonry mortar sand limestone screenings or stone dust be used as a leveling course.

D. Sand for Joints: ASTM C 144 except use aggregate graded with 100 percent passing the No. 8 sieve and 95 percent passing the No. 16 sieve.

2.03 Edge Restraint Materials:

A. Plastic Edging:

B. Steel Edging:

PART 3 - EXECUTION

3.01 Examination: The Contractor shall examine surfaces indicated to receive paving for compliance with requirements for tolerances and other conditions affecting performance of unit pavers. Do not proceed with installation until unsatisfactory conditions have been corrected. Prior to excavation, the area to receive unit pavers shall be staked and grade elevation established to ensure proper grades.

3.02 Preparation of Sub-grade:

A. The area should be inspected immediately following excavation, to be sure that no unacceptable sub-base materials are present. Remove all organic materials, roots, oversize rocks or debris that remains in the soil. Wet areas must be drained or stabilized with crushed rock.

B. Proof roll prepared sub-grade surface to check for unstable areas and areas requiring additional compaction. Do not proceed with installation until deficient sub-grades have been corrected and are ready to receive sub-base for unit pavers. Compact the sub-grade to at least 95 percent density per ASTM D 1557.

3.03 Sub-base Aggregate Placement: Place graded aggregate for sub-base over compacted sub-grade. Provide compacted thickness of sub-base material as indicated on the Drawings. Compact the sub-base to at least 100 percent density per ASTM D 1557.

3.04 Base Aggregate Placement: Place graded aggregate for base over compacted sub-grade. Provide compacted thickness of base material as indicated on the Drawings. Compact the base to at least 100 percent density per ASTM D 1557.

3.05 Edge Restraint Installation: Install edge restraint edging material per manufacturer's specifications and per the Drawings and Details.

3.06 Sand Leveling Course Placement: Place sand for leveling course over compacted base material to a depth of 1 inch to 1-1/4 inch, taking care that the moisture content remains constant and the density is loose and constant until concrete pavers are set and compacted. Do not use frozen or saturated sand for leveling. Do not use sand to fill in irregularities in the base material; base material must be added and compacted. Screed the sand with a straight, true strike board. Once sand has been screed, it should not be disturbed.

3.07 Unit Paver Installation:

A. Place pavers in pattern as shown on the Drawings, keeping lines straight with the use of string lines. Place pavers hand tight, being careful not to disturb the leveling course. The joints between pavers should be approximately 1/16 inch. Gaps more than 3/16 inch shall be filled with pieces cut from full size unit pavers.

B. Once an area is installed, vibrate the pavers into the sand with a plate vibrator capable of a 3,500 to 5,000 pound compaction force. Perform at least 3 passes across paving with the vibrator. Vibrate under the following conditions:

1. After edge pavers are installed and there is a completed surface or before surface is exposed to rain.
2. Before ending each day's work, fully compact installed concrete pavers within 3 feet of the laying face. Cover the open layers with nonstaining plastic sheets overlapped 4 feet on each side of laying face to protect it from rain.

C. Spread dry sand over unit pavers and fill joints immediately after vibration. Brush or sweep sand over the pavers repeatedly until all joints are full. Vibrate sand into joints and then remove excess sand. Do not vibrate within 3 feet of an unrestrained edge. All work within 3 feet of the laying face must be sand filled and vibrated at the end of each day of work.

D. Final Surfacing: The final surface elevations shall not deviate more than 3/8 inch under a 10 feet long straight edge. The top surface of the pavers shall be 1/8 to 1/4 inch above the final elevations to compensate for possible minor settling. Repeat joint filling process 30 days after completion of paving.

3.08 Clean-up and Repair:

A. Repair and replace defective unit pavers which are loose, chipped, broken, stained, or otherwise damaged, or as directed by Engineer. Provide new units to match adjoining units and install in the same manner as original units, with same joint treatment to eliminate evidence of replacement.

B. Protect paving from damage until Physical Completion. Exclude traffic from pavement for at least fourteen (14) days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

C. Sweep concrete pavement and wash free of stains, discoloration, dirt and other foreign material just prior to Physical Completion.

END OF SECTION