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 granite dimension stone paving (granite 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, granite 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. City of Seattle Standard Specifications for Road, Bridge and Municipal Construction (most recent edition).

B. National Building Granite Quarries Association, Inc. (NBGQA)

C. American Society for Testing and Materials (ASTM C-615)

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

A. Submit complete data on quarry facilities for each stone type and on fabrication facilities for stonework. Include information of location, production capabilities, and the nature and character of each stone selected.

B. Stone Material Properties Data: Material properties data for each stone material type shall be submitted by the stone suppliers and certified as representative of the properties of stone material to be supplied for the Project. Include references to appropriate ASTM tests as conducted by a certified testing laboratory.

C. 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 involved.

D. Submit samples of granite pavers to be used

E. Submit information data and manufacturer’s installation specification for edge restraint.

F. Qualification data for firms and persons specified in 1.05 "Quality Assurance" paragraph to demonstrate their capabilities and experience. Include list of completed projects with project names, addresses, names of landscape architects and Owners.

G. Shop Drawings:

1. Submit complete Cutting and Setting Drawings showing sizes, shapes, thickness, jointing, connection with other work, and dimensions.
2. Setting Drawings shall show relationship to adjoining construction and shall indicate the location of each stone unit. Show location layouts and patterns coordinated with design drawing and related survey control points and dimensions. Establish and verify dimensions with concrete work of curb, concrete walk and entry gate.
3. The Field Samples/Mock-ups must be approved by Engineer before actual stone work may proceed. If necessary, remove and reconstruct Field Sample/Mock-ups until approved. Approved sample mockups shall serve as standard of acceptance for stonework.

1.05 Quality Assurance:

A. Installer Qualifications: An experienced installer who has successfully completed granite paver installation similar in material, design, and intent to that indicated for Project.

B. Single Source Responsibility: Obtain each color, type, and variety of granite pavers from a single source. Materials shall be available and be consistent in quality, appearance and physical properties without delaying progress of 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. The stone work requirements shown by design details are intended to establish basic dimensions of units or modules, minimum stone thickness, and profiles. Within these limitations, the Contractor is responsible for the modifications of and additions to, the details as may be required to fulfill the performance requirements. Maintain the visual design concept as shown, including sizes, profiles and paving pattern.

1.06 Delivery, Storage and Handling:

A. Protect, store, and handle stone materials as recommended by stonework fabricator in addition to requirements specified herein.

B. Properly crate and band stone units for shipment and receiving at job site. Crating of stone and packaging of accessory item shall be respective and related to the job conditions for installation.

C. Handle each stone material on wood skids or pallets, covered with non-staining, waterproof membrane. Place and stack skids and stone to distribute weight evenly and to prevent breakage or cracking of stone. Protect stored stone from detrimental weather conditions with circulate around stone during extended periods of storage.

D. Protect stone and aggregate during storage and construction from weather, moisture, and contamination with earth and other foreign materials.

PART 2 - PRODUCTS

2.01 Granite Dimension Stone Pavers:

A. Stone shall be cut to sizes, shapes, dimensions, and details shown on the drawings. Granite 2" split edge pavers by Marenakos Rock Center or approved equal. Address: 30250 S.E. High Point Way, Preston, WA 98050. Phone (425)-392-3313, or approved equal. ***Shape and style shall be: 2" thermal top, split edge, sawn bottom.***

17-1/2"x11-1/2"
17-1/2"x17-1/2"
17-1/2"x23-1/2"
17-1/2"x35-1/2"
35-1/2"x35-1/2"

B. Exposed surfaces and edges of stone units shall be free from cracks, broken corners, chipped edges, scratches, or other defects affecting appearance. No patching or hiding of defects will be permitted.

C. Thickness: Provide stone of the thickness specified or otherwise shown as a minimum. Maximum variations in thickness from that shown not to exceed 1/8".

2.02 Aggregates:

A. Base Aggregate: Type 1 Mineral Aggregate (5/8" minus crushed rock).per Section 32 11 23 - Mineral Aggregates or per City of Seattle Standard Specifications (most recent edition).

B. 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 Material:

Plastic Edge Restraint with metal pin by Laurel Block Corporation or approved equal. Address: 5800 Sandy Spring Road, Laurel, MD 20707. Phone: 301-725-3131, or approved equal.

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 stone pavers. Do not proceed with installation until unsatisfactory conditions have been corrected. Prior to excavation, the area to receive stone 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 stone pavers. Compact the sub-grade to at least 95 percent density per ASTM D 1557.

3.03 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.

3.04 Edge Restraint Installation: Install edge restraint edging material per manufacturer's recommendations and per the plans and details.

3.05 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.

3.06 Granite Dimension Stone Paver Installation:

A. Place pavers in pattern as shown on the plans. Place pavers hand tight, being careful not to disturb the leveling course. The joints between pavers should be approximately 1/2 inch. Stagger joints as shown on drawings.

B. Once an area is installed, vibrate the pavers into the sand with a Vibratory Plate Compactor 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 granite 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 granite 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.

E. The Contractor shall 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. Unfilled or defective joints shall be properly repaired.

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. After completion of any repair work, clean exposed surfaces of all stone units installed with clean water and stiff fiber brushes until all dirt, stains, efflorescence, mortar, and other defacements are removed. Use cleaner and procedures recommended by stone quarry and stone fabricator. Do not use wire brushes, metal scrapers or acids. Protect adjacent surfaces from damage during cleaning operations.

END OF SECTION