PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Sand-Set and Mortar-Set Stone Paving, both with sand filled joints.

B. Related Work Specified Elsewhere:

1. Section 32 94 53, Modular Suspended Paving System
2. Section 32 11 23, Landscape Aggregate Base Course

1.2 REFERENCES

A. ASTM — ASTM International:

1. C 33 — Specification for Concrete Aggregates.
2. C 902 — Specification for Pedestrian and Light Traffic Paving Brick.
3. C 936 — Specification for Solid Concrete Interlocking Paving Units.
4. D 448 — Classification for Sizes of Aggregate for Road and Bridge Construction.
5. D 1557 — Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort

1.3 ACTION SUBMITTALS

A. LEED Submittals:

1. Within 30 days of Contract award, assemble and submit all LEED material information on the "LEED Material Tracking Spreadsheets" and forms provided in the Project Manual, together with all supplemental documentation as required by LEED.

B. Environmental Submittals:

1. Credit MR 2.1 and 2.2: Waste management plan and reporting complying with Section 01 74 00, Construction and Demolition Debris Recovery Plan.
2. Credit MR 5.1 and 5.2: Product data indicating location of extraction and processing and location of manufacture. Include a statement indicating projected costs for each product being extracted, processed, and manufactured within 500 air miles of the Project Site.

C. Product Data:

1. Stone Pavers.
2. Joint Sand.
3. Sand-Stop Fabric.
4. Adhesive for sand stop fabric
5. Grout
6. Mortar

D. Samples:

1. Paving Units — Three full size pavers representing size, color, and finish of each type.
2. Joint Sand — 1 pint.
3. Sand-Stop Fabric — Three 6-inch squares.
4. Grout Color to match Pavers — including Data Sheet

1.4 INFORMATIONAL SUBMITTALS

A. Test Reports: Bedding Sand Sieve Analysis with Test Date less than 4 Weeks Old.

1.5 QUALITY ASSURANCE

A. Installer Qualifications:

1. Successfully installed sand-set stone paving and mortar set stone paving similar to the quality specified and in the quantity shown for a period of not less than 10 years.
2. Use adequate numbers of skilled workers who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the Work of this Section.

B. Regulatory Requirements: Meet requirements of applicable laws, codes, and regulations required by authorities having jurisdiction over such Work.

C. Stone Paving Mock-up:

1. Construct an 8-foot wide by 10-feet long area of sand-set stone paving.
2. Construct an 8-foot wide by 4-feet long area of mortar set stone paving.
3. Demonstrate paving pattern and edge conditions.
4. Fill joints with joint sand, and wet.
5. Construct as many mock-ups as necessary to achieve an accepted mock-up.
6. Mock-ups which are partially constructed or finished incorrectly will be rejected.
7. Remove rejected mock-ups immediately from the site.
8. Place accepted mock-ups in a location where samples can be referenced.
9. Mock-up panels may be installed and remain as part of the permanent installation if acceptable to the Owner's Representative.
10. Accepted mock-up panels shall become the Project standard for tolerances and appearance.

D. Pre-installation Meeting: Prior to commencement of stone installation, schedule and conduct anon-site meeting with the Owner's Representative and the Owner's Representative paving engineer to review the critical aspects of consolidating the sand-cement bedding, hydrating the sand-cement bedding, installing and wetting the joint sand, layout starting points, and other requirements of this Section.

1.6 DELIVERY, STORAGE AND HANDLING

A. Loading and Shipment:

1. Carefully pack the stone pavers for shipment free from stains, saw mud, and other deleterious material.
2. Exercise precautions against damage in transit.

B. Storage:

1. Store stone pavers on non-staining wood skids or pallets at least 4 inches above grade.
2. Place and stack skids and stone pavers to distribute weight evenly and to prevent breakage or cracking of pavers.
3. Store and protect stone pavers from weather and soiling with waterproof non-staining covers or enclosure, but allow air to circulate around unit pavers.

C. Handling:

1. Handle stone pavers to prevent chipping, breakage, soiling or other damage.
2. Do not use pinch or wrecking bars without protecting edges of stone pavers with wood or other rigid materials.
3. Lift with wide-belt type slings wherever possible.
4. Do not use wire rope or ropes containing tar or other substances which might cause staining.

1.7 SITE CONDITIONS

A. Environmental Requirements: Meet requirements of joint sand manufacturer's current printed instructions.

1.8 MAINTENANCE

A. Extra Stones for the Owner's Attic Stock:

1. Furnish to Owner 5 percent of each type of the total quantity of stones.
2. Deliver stones to location designated by the Owner.

PART 2 PRODUCTS

2.1 MATERIALS

A. Stone Pavers: See Drawings.

B. Sand for Sand Setting Bed: naturally occurring sharp and angular per ASTM C2488 and shall conform to ASTM C33 as follows:

Sieve Size	3/8 in.	No. 4	No. 8	No. 16	No. 30	No. 50	No. 100	No. 200
% passing	100	95-100	80-100	1-12	25-60	10-30	2-10	0-1

C. Joint Sand:

1. Techni-Seal HP2 Polymeric Jointing Sand, color to match pavers, or equal. Submit sample for approval.

D. Mortar: Mortar setting bed, Type “N”, 1 part cement, 1 part lime and 3 parts sand meeting the requirements of ASTM C270 Standard specification for Unit Masonry.

1. Portland Cement: ASTM C150, Type II
2. Lime ASTM C207, Type “S” hydrated lime.
3. Sand: ASTM C144, clean, non-staining sand, white or light grey.
4. Water: Fresh, clean, non-alkaline water, potable.
5. Acrylic Latex Admixture: Sika latex as manufactured by Sika Corp. (415) 487-2294 or Anchor-it by Anti-Hydro Co. (202) 242-8000, or equal.
6. Epoxy Tack Coat: Sikadur 32, Hi-Mod, Moisture insensitive epoxy adhesive as manufactured by Sika Corporation, Concresive 1001 LPL epoxy adhesive as manufactured by Adhesive Engineering Company or equal.
7. Evaporation Control Liquid” That does not discolor the stone or harm the grout when worked into grout surface.
8. Sealer for granite paver shall be as recommended by manufacturer. If manufacturer does not have a recommendation, submit stone sealer data sheets to Owner’s Representative for approval.

E. Water: Clean, potable.

F. Joint Spacers : Paverhelp Mortarless Spacers, size as recommended by spacer manufacturer for specified joint width size and paver size,www.paverhelp.com.

G. Sand-Stop Fabric:

1. Carthage 30 Percent; SI Geosolutions Geotex 117F; or accepted substitute.

H. Adhesive for Sand-Stop Fabric: Exterior grade mastic suitable for bonding polypropylene to concrete, metal, and fiberglass.

I. Water Repellent for Pavers: Refer to Site Repellents, Section 07 19 23.

2.2 STONE PAVING FABRICATION TOLERANCES

A. Maximum Variation from Thickness: 1/16-inch.

B. Maximum Variation from Face Size: 3/32-inch.

C. Maximum Variation from Flat: 1/16-inch.

PART 3 EXECUTION

3.1 EXAMINATION

A. General: Examine site and verify that conditions are suitable to receive Work and that no defects or errors are present which would cause defective installation of products or cause latent defects in workmanship and function.

B. Notification of Unsuitable Conditions: Before proceeding with Work, notify the Owner's Representative in writing of unsuitable conditions.

3.2 PREPARATION

1. Use every possible precaution to prevent damage to existing conditions to remain such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.
2. Provide barricades, fences or other barriers as necessary to protect existing conditions to remain from damage during construction.
3. Use every possible precaution to prevent excessive compaction of planting area soil or soil mixes within or adjacent to the areas of Work.
4. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of plants to remain.
5. Submit written notification of damaged plants and structures to the Owner's Representative immediately.

B. Surface Preparation: Remove from concrete base surface plaster, cement, gravel and other materials which would conflict with the sand or mortar bed thickness and compaction.

3.3 STONE PAVER INSTALLATION

A. Sand-Stop Fabric:

1. Prior to spreading sand setting bed mix, install sand-stop fabric as indicated on the Drawings.
2. Lap end edges of strip pieces 4 inches minimum.
3. Adhere fabric edges to adjacent surfaces using continuous beads of adhesive.

B. Spreading Sand Setting Bed Mix

1. Making allowances for compaction, screed un-compacted bedding sand to a consistent thickness which will bring the finish surface of the pavers to the elevations indicated on the Drawings.
2. Check and verify effect of bed compaction in a sample panel to determine the screeded bed thickness.
3. Do not use bedding sand for leveling.
4. Maintain bedding sand in a loose condition and protected against pre-compaction both prior to and following screeding.
5. Screed bedding sand, slightly ahead of the laying the unit pavers.
6. Under no circumstances shall the bedding sand be screeded in advance of the laying face to an extent to which paving will not be completed that day.
7. Protect screeded bedding sand fully against accidental pre-compaction including compaction by rain or dew.

C. Laying Paver Units:

1. Place stone pavers on the un-compacted screeded sand bedding where sand bedding is required; or grout in areas requiring grout, in the specified laying pattern.
2. Place stone pavers so that joints are aligned and installed in the pattern as shown on the Drawings.
3. Install joint spacers at each stone paver corner to help maintain joint widths and paver alignments.
4. Use string lines to hold pattern lines and elevations true.
5. Lay rows of full stone pavers first.
6. Cut off and fit closure units subsequently.
7. Cut stone pavers with power diamond blade masonry saw where partial pavers abut straight surfaces.
8. Cut radial paver edges with a diamond-blade masonry saw by kerfing and grinding, or other accepted method, where pavers abut round elements such as manholes, bollards and columns
9. to achieve smoothly curved edges parallel with the abutting surfaces with maximum 1/4-inch wide joints.
10. Do not allow other construction traffic on pavement during the paver installation until pavers have been compacted.

D. Filling Sand Joints:

1. Install joint sand in accordance with the joint sand manufacturer's current printed application instructions.
2. Wet joint sand in accordance with the joint sand manufacturer's current printed wetting instructions.
3. Cover installed pavers to protect from staining, dirt and dislocation of sand until sealed.

3.4 TOLERANCES

A. Paver Finished Surface: Do not permit finished paving surfaces to vary more than 1/8-inch measured with a 10-foot long metal straightedge, except at grade changes.

B. Lippage Between Adjacent Pavers: 1/16-inch maximum.

C. Sand Joints Indicated on Drawings

3.5 CLEANING

A. Paving Units:

1. Clean stained or dirty stone paving with clean water and stiff bristle brush.
2. Remove and replace permanently stained stone pavers.
3. Add additional specified sand to repair joints where cleaning has dislodged sand and re-wet joints.

3.6 PROTECTION

A. Damage and Defacement: Protect stone paving against damage and defacement during subsequent construction operations until date of Final Completion by covering paving with 3/4-inch thick exterior grade plywood where subject to traffic damage, and other methods as required.

END OF SECTION