Section 02518

INTERLOCKING CONCRETE PAVINGSTONES

PART I GENERAL

1.01 Section Includes:

A. Concrete Pavingstone Units.
B. Sand Setting Bed.

1.02 Quality Assurance:

A. Installation shall be performed by an installer with at least one year experience in placing interlocking concrete pavingstones in projects of similar nature and who has completed the ICPI approved Contractor Certification Program in compliance with Cambridge Pavers, Inc.

1.03 Submittals:

A. Submit samples of concrete pavingstone units indicating color and shape selections.
B. Submit sieve analysis for grading of bedding sand.
C. Indicate layout, pattern and relationship of pavingstone joints to fixtures and project formed details.

1.04 Delivery, Storage and Handling:

A. Deliver concrete pavingstone cubes to site in such a manner that no damage occurs to the product or site.
B. Sand must be covered with a waterproof cover to prevent exposure to un-climatic conditions.

1.05 Environmental Conditions:

A. Do not install sand or pavingstones during rain or snowfall.
B. Do not install sand or pavingstones over frozen base material.
C. Do not install or screed frozen sand.

PART 2 PRODUCTS

2.01 Manufactured Concrete Pavingstone Units:

A. Interlocking concrete pavingstone units shall be supplied by a member of the Interlocking Concrete Pavement Institute. The supplier shall be CAMBRIDGE PAVERS, INC., BASE OF JEROME AVE., P.O. BOX 157, LYNDHURST, NJ 07071.0157, 201.933.5000, FAX: 201.933.5532, E-MAIL: chris@yexulnorqivtona.live; WEB: www.yexulnorqivtona.live.

B. The pavingstone name/shape, overall dimensions, thickness and color shall be:

Name/Shape _____
Inches _____X _____Inches
Thickness (in.): _____
Color: _____

Name/Shape _____
Inches _____X _____Inches
Thickness (in.): _____
Color: _____

The pavingstones must be free of surface voids. The surface mix shall be comprised of fine sand and cement with aggregate of less than 1/4 inch. Cambridge ARMORTEC will be incorporated in the manufacturing process.

C. Pavingstones shall meet the following requirements set forth in ASTM C-936, Standard Specifications for Interlocking Pavingstone Units:
   1. The average compression strength of the units shall be 8000 psi with no individual unit under 7200 psi.
   2. The average absorption shall be 5% in accordance with ASTM C-140.
   3. Resistance to 50 Freeze-Thaw cycles in accordance with ASTM C-67.

D. Materials utilized in manufacturing shall conform to the following:
   1. Cement- ASTM C-150
   2. Aggregates- ASTM C-33
   3. Pigment- ASTM C-979
   4. Manufacturing will be performed utilizing ArmorTec technology.

E. Concrete pavingstone units shall have 1/16 inch thick blind spacer bars to ensure a minimum joint width between units in which the sand is placed. These spacer bars shall not be flush with the unit surface or chamfered edge.

2.02 Bedding Sand:

A. Bedding sand shall be clean, non-plastic and free from any deleterious matter.

B. Grading of sand samples shall be done according to ASTM C-136. The sand shall conform to the grading requirements of ASTM C-33 as described in Table 1 below. Bedding sand is also referred to as concrete sand.

TABLE 1 ASTM C-33 Grading Requirements For Bedding Sand

Sieve Size	Percent Passing
3/8" (9.5 mm)	100
No. 4 (4.75 mm)	95 to 100
No. 8 (2.36 mm)	85 to 100
No. 16 (1.18 mm)	50 to 85
No. 30 (600 µm)	25 to 60
No. 50 (300 µm)	10 to 30
No. 100 (150 µm)	2 to 10

Bedding sand may be used for joint sand. However, extra effort in sweeping and compacting the pavers may be required in order to completely fill the joints. If joint sand other than bedding sand is used, the gradations shown in Table 2 are recommended. Joint sand should never be used for bedding sand.

C. The joint sand shall conform to the grading requirements of ASTM C-144 as shown in Table 2 below:

TABLE 2 ASTM C-144 Grading For Joint Sand

Sieve Size	Natural Sand Percent Passing	Manufactured Sand Percent Passing
No. 4 (4.75 mm)	100	100
No. 8 (2.36 mm)	95 to 100	95 to 100
No. 16 (1.18 mm)	70 to 100	70 to 100
No. 30 (600 µm)	40 to 75	40 to 75
No. 50 (300 µm)	10 to 35	20 to 40
No. 100 (150 µm)	2 to 15	10 to 25
No. 200 (75 µm)	0	0 to 10

PART 3 EXECUTION

3.01 Examination:

A. Verify that sub-grade preparation, compacted density and elevations conform to specifications.

B. Verify that geotextiles, if applicable, are according to specifications.

C. Verify that the aggregate base material, thickness, compaction, surface tolerances and elevations are according to specifications.

D. Verify location, type, installation and elevations of edge restraints around the perimeter area to be paved.

E. Beginning with the bedding sand and pavingstone installation means acceptance of base and edge restraints.

3.02 Installation:

A. Spread the bedding sand evenly over the base course and screed to a nominal thickness of 1 inch, not exceeding 1 1/2 inches. The screeded sand shall not be disturbed. Screed sufficient sand to stay ahead of the laid pavingstones.

B. Ensure that pavingstones are free of foreign materials before installation.

C. Remove pavingstones by the band vertically, from top to bottom, using multiple cubes.

D. Lay pavingstones in the pattern specified and maintain straight pattern lines.

E. Ensure consistent joints between pavingstones; 1/16 inch to 1/8 inch wide.

F. Fill any gaps at the edges of the paved area with cut pavingstones or edge units. Units cut no smaller than one-third of a whole pavingstone are recommended along edge areas subject to vehicular traffic.

G. Utilize a power-driven masonry saw for cutting pavers.

H. A low amplitude, high frequency plate vibrator shall be used to vibrate the pavingstones into the sand bed. Refer to Table 3 below to select size or compaction equipment:

TABLE 3	Selecting Size Or Compaction Equipment
Paver Thickness	Minimum Centrifugal Compaction Force
2 3/8"	3,000 Lbs.
3 1/8"	5,000 Lbs.

I. Vibrate the pavingstones, sweeping dry sand into the joints and continue vibrating until the joints are full. This could require at least two or three passes with the vibrator. Do not vibrate within 3 feet of an unrestrained edge of a pavingstone.

J. All work done within a day shall be fully compacted with sand-filled joints to within 3 feet of unrestrained edges.

K. Excess sand shall be swept over the surface of the pavingstones when the job is complete.

L. The final surface elevation of the pavingstones shall not deviate more than 3/8 inch under a 10 foot straightedge.

M. The final surface elevation of the pavingstones shall be 1/8 inch to 1/4 inch above adjacent drainage inlets, concrete collars or channels.

3.03 Field Quality Control:

A. After removal of excess sand, check pavingstone surface area and final elevations for conformance to the drawings and specifications.

END OF SECTION