

SECTION 02795

PERMEABLE INTERLOCKING CONCRETE PAVEMENT

PART 1 – GENERAL

Note: This guide specification is for the construction of permeable interlocking concrete pavers on a permeable bedding layer for the purposes of infiltrating, detaining, and releasing storm water from a permeable, open-graded base.

1.01 SUMMARY

- A. Section includes:
1. Permeable concrete pavers.
 2. Crushed aggregate bedding and open graded base materials.
 3. Geotextiles.
- B. Related Sections:
1. Section 02200: Earthwork
 2. Section 02221: Trenching, Backfilling and Compacting
 3. Section 02270: Erosion Control
 4. Section 02525: Exterior Concrete Work
 5. Section 02720: Storm Sewer Systems
 6. Section 02780: Unit Pavers

1.02 REFERENCES

- A. American Society of Testing Materials (ASTM)
1. C 33: Specification for Concrete Aggregates
 2. C 131: Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
 3. C 136: Method for Sieve Analysis for Fine and Course Aggregate
 4. C 936: Standard Specification for Solid Interlocking Concrete Paves
 5. C 979: Specification for Pigments for Integrally Colored Concrete
 6. D 698: Test Methods for Moisture Density Relations of Soil and Soil Aggregate Mixtures using a 5.5 lb. (2.49 kg) Rammer and 12" (305mm) drop
 7. D 1557: Test Methods for Moisture Density Relations for Soil and Soil Aggregate Mixtures using a 10 lb. (4.54 kg) Rammer and 18" (457 mm) drop
 8. D 1883: Test Method for California Bearing Ratio of Laboratory-Compacted Soils

1.03 SUBMITTALS

- A. Shop Drawings: Indicate perimeter conditions, junction with other materials, expansion and control joints, paver (layout pattern, color arrangement) installation details.
- B. Sieve analysis of aggregates for base and bedding materials per [ASTM C 136]
- C. Permeable Concrete Pavers:
1. Manufacturer's product catalog sheets with specifications
 2. Four (4) representative full-size samples of each paver type, thickness, color and finish. Submit samples indicating the extremes of color expected in the finished installation.
 3. Accepted samples become the standard of acceptance for the work of this Section.
 4. Laboratory test reports certifying compliance of the concrete pavers (slabs) with [ASTM C 936].
 5. Manufacture's material safety data sheets for the safe handling of the specified materials and products.

- D. Statements of Installer Qualifications: Submit list of comparable projects completed by installer. Include list of completed projects with project names, addresses, names of Architect/Engineer and Owners with contact information and dates of construction.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced installer who has successfully completed permeable pavement installations similar in design, material and extent indicated for this Project.
- B. Single-source Responsibility: Obtain each color, type and variety of permeable pavers, materials for the openings and bedding from single sources with resources to provide products and materials of consistent quality, appearance and physical properties without delaying progress of Work.
- C. Field-constructed Mock-up:
 - 1. Install 3x3 m (10 x 10 ft) area with base, bedding and pavers.
 - 2. Use area to determine surcharge of the bedding layer, joint sizes, lines, laying pattern(s), color(s) and textures of the job.
 - 3. Use the area as the standard to judge the remaining work.
 - 4. Subject to acceptance by the Owner, mock-up may be retained as part of the finished work.
 - 5. If mock-up is not retained, remove and dispose of mock-up.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver concrete pavers to the site palletized for transfer by forklift or clamp lift. Unload pavers at job site in such a manner that no damage occurs to the project or existing construction.
- B. Coordinate delivery and paving schedule to minimize interference with normal use of buildings adjacent to paving.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install in heavy rain or snow.
- B. Do not install frozen bedding or base materials.
- C. Do not install on frozen soil subgrade.

1.07 MAINTENANCE

- A. Extra materials: Provide 5 percent additional materials for use by Owner for maintenance and repair.

PART 2 – PRODUCTS

2.01 PAVING UNITS

- A. Manufactured by Anchor Block Company, 10200 73rd Ave N, Suite 116, Maple Grove, MN 55369
Phone: 1-800-440-8657
Fax: 952-351-9671

Holland Grand Permeable
5 1/2" x 11" x 3 1/8" thick
- B. Spacing between pavers to be a minimum of 3/8". Equal spacing to be completely surrounding each individual paver. Spacing provides full perimeter infiltration around each individual paver.

- C. Meet [ASTM C 936]. Freeze-thaw requirements may be waived in applications with no freeze-thaw conditions.
 1. When testing 3-1/8 in. (80 mm) thick unites for conformance to ASTM C936, compressive strength tests shall be corrected by multiplying the results by 1.18.
- D. Manufactured in a plant where paving products are certified by ICPI as having passed manufacturer designated [ASTM].
- E. Color(s): To be selected by Owner's representative.

2.02 CRUSHED STONE BEDDING, BASE AND JOINT MATERIALS

- A. Do not use rounded river gravel. Base, bedding and joint materials must be crushed aggregates.
- B. Gradation criteria
 Note: Dx is the particle diameter size at which x percent of the particles are finer. For example, D15 is the particle size of the aggregate for which 15% of the particles are smaller and 85% are larger.
 1. D15 base stone/D50 bedding stone <5
 2. D50 base stone/D50 bedding stone >2
- C. Crushed stone with 90% fractures faces, LA Abrasion <40, minimum CBR of 80%
 Note: The following gradations in Tables 1, 2 and 3 can be used for the crushed stone, open-graded bedding, base and joint materials. Check gradations against the above criteria.

Table 1
Grading Requirements for Jointing Material (ASTM No. 9)

<u>Sieve Size</u>	<u>Percent Passing</u>
9.5 mm (3/8")	100
4.75 mm (No. 4)	85-100
2.36 mm (No. 8)	10-40
1.18 mm (No. 16)	0-10
300 µm (No. 50)	0-5

Table 2
Grading Requirements for Bedding Course (ASTM No. 8)

<u>Sieve Size</u>	<u>Percent Passing</u>
12.5 mm (1/2 ")	100
9.5 mm (3/8 ")	85 to 100
4.75 mm (No. 4)	10 to 30
2.36 mm (No. 8)	0 to 10
1.16 mm (No. 16)	0 to 5

Table 3
Grading Requirements for Upper Sub-Base (ASTM No. 57)

<u>Sieve Size</u>	<u>Percent Passing</u>
37.5 mm (1 1/2 ")	100
25 mm	95 to 100
12.5 mm (1/2 ")	25 to 60
4.75 mm (No. 4)	0 to 10
2.36 mm (No. 8)	0 to 5

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify that base is free from standing water, uniform, even, free of any organic material or sediment, debris, ready to accept bedding materials, pavers and imposed loads.
- B. Verify correct gradients and elevations on open-graded base.
- C. Verify compaction of soil to specified density and moisture content.
- D. Verify location, type, installation and elevations of edge restraints around the perimeter to be paved. Ensure the side of the edge restraint adjacent to the paver is perpendicular to the bedding course. This will ensure a tight fit, eliminating a future trip hazard.
- E. Beginning of installation means acceptance of base, edge restraints, drainpipes and overflow devices.

END OF SECTION 02795