

**SECTION 02518 / 321444
PERVIOUS PAVING PAVERS (hydroPAVERS®)**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Base Preparation over Sub-base
- B. Pervious Paving System
- C. Aggregate for Pervious Paving Systems

1.2 RELATED SECTIONS

- A. Section 310000 – Earthwork – Subgrade preparation.
- B. Section 334600 – Subsurface Drainage.
- C. Section 321000 – Bases, Ballasts and Paving.

1.3 SUBMITTALS

- A. Submit under Section 013300 requirements.
- B. Product Data: Submit manufacturer's product data. Include the following:
 - 1. Preparation instructions
 - 2. Installation method
 - 3. Aggregate installation
- C. LEED Submittals: Provide documentation of how the requirements for Credit with be met:
 - 1. List the proposed materials with recycled content for each product having recycled content.
 - 2. Product data and certification letter indicating post-consumer or post-industrial content.

1.4 QUALITY ASSURANCE

- A. Manufacturer's / Representative's Qualifications: Company specializing in products for pervious paving parking systems and storm-water management solutions and capable of provided experienced field representative during installation.
- B. Installer Qualifications: A firm experienced in and capable of providing skilled workman with satisfactory record of performance of pervious paving projects comparable to the scope and size required for this project.
- C. Pre-Installation Meeting: Prior to the installation of any materials, conduct a pre-installation meeting to verify project requirements, scope of work and review of the

installation method. This meeting should be attended by all parties involved in the preparation and installation of the porous paving system.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Keep the pervious paving pavers in manufactures original unopened packaging with labels identifying product name until ready for installation.
- B. Store the pervious paving pavers in an area away from and not near moving job-site equipment to prevent accidental damage.
- C. Protect the pervious paving pavers during handling and installation to prevent chipping, breakage or other damage.

1.6 SITE CONDITIONS

- A. Do not install pervious paving pavers under extreme environmental conditions.
- B. Do not install pervious paving pavers system until all hard surfaces adjacent to the pervious paving area have been completed, including concrete and asphalt work.
- C. Inspect surface of area prior to the installation of the pervious paving pavers system for low or uneven spots. Correct as required.
- D. Do not install pervious paving pavers system in standing water.
- E. In extreme cold weather, do not install pervious paving pavers system when frozen, mixed or coated with ice or frost, and do not install on frozen base, or wet, saturated or muddy sub-base.
- F. Do not install pervious paving pavers system when the ambient temperature is below 40° F, or 4.4° C.
- G. Protect pervious paving area during installation against damage from other construction traffic when work is in progress.
- H. Protect pervious paving area from traffic until project is completed including all edging and curbing to restrain and prevent any movement of the pervious paving pavers, other than in emergency situations such as fire.

1.7 LIMITED WARRANTY

- A. Green Innovations Ltd warrants each hydroPAVERS® Pervious Paving Paver which it ships to be free from defects in materials and workmanship at time of manufacture. Green Innovations Ltd exclusive liability under this warranty or otherwise will be to furnish without charge to Green Innovations Ltd customer at the original f.o.b. point, a replacement for any hydroPAVERS® Pervious Paving Paver which proves to be defective under normal use and service for a period of one year from the date of shipment.

- B. Green Innovations Ltd reserves the right to inspect any allegedly defective hydroPAVERS® Pervious Paving Paver in order to verify the defect and ascertain its cause.
- C. This warranty does not cover defects attributed to causes or occurrences beyond Green Innovations Ltd control and unrelated to the manufacturing process, including, but not limited to, abuse, misuse, mishandling, neglect, improper storage, improper installation or improper application.
- D. Green Innovations Ltd makes no other warranties, express or implied, written or oral, including, but not limited to, any warranties or merchantability or fitness for any particular purpose, in connection with the hydroPAVERS® Pervious Paving Paver System. In no event shall Green Innovations Ltd be liable for any special, indirect, incidental or consequential damages for the breach or any express or implied warranty or for any other reason, including negligence, in connection the hydroPAVERS® Pervious Paving Paver System.

PART 2 - PRODUCTS

2.1 MANUFACTURER/SUPPLIER

- A. Acceptable Manufacturer/Supplier: Green Innovations Ltd., 3700 Salem Rd., Pickering, Ontario, Canada, L1Y 1E8. Toll Free: 888-599-6444 Fax: 888-599-6444
Website: www.hydroPAVERS.ca

2.2 MATERIALS

- A. Base Course: Aggregate material conforming to the following sieve analysis:

- 1. Sieve Size ¾ inch clean Sharp Aggregate
 - i. Round or smooth aggregate is no acceptable

- B. Pervious Paving System:

- 1. Paver Sizes as Per Design:
 - i. 3.94" (100mm) x 7.78" (200mm) x 2.17" (55mm) high
 - ii. 7.78" (200mm) x 7.78" (200mm) x 2.17" (55mm) high
 - iii. 5.91" (150mm) x 11.81" (300mm) x 2.17" (55mm) high
 - iv. 11.81" (300mm) x 11.81" (300mm) x 2.17" (55mm) high
 - v. 11.81" (300mm) x 23.62" (600mm) x 2.17" (55mm) high
- 2. Nominal Paver Weight: 4.2, 8.38, 10.05, 19.62, 39.68 respectively
- 3. Pervious Paving System Material: Recycled Ceramics Tiles with a Bentonite Clay Binder Kiln Baked At 1,200° C
- 4. Minimum Compressive Strength: 9,690 psi // 66.8 MPa and exceeding requirements for H20 Standards for heavy vehicles
- 5. Compliance with ADA Standards for ground surfaces
- 6. Pervious Pavers meets or exceeds Freeze/Thaw and Deicing Durability
- 7. Pervious Pavers Minimum Water Retention: 0.15 US Gallons per square foot / 6L/m²
- 8. Pervious Pavers Minimum Infiltration Rate: 1.0 inches/minute

- C. Leveling Layer Over the Base Course: 3/8" sharp angular limestone washed chips
 1. Also Known As: High Performance Bedding
 2. Do not use pea gravel or round 3/8" aggregate
 3. Do not use screening
 4. Do not use filter fabric

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Ensure sub-base is excavated to depth to allow for the height of the base course, leveling layer and pervious paving pavers.

3.2 PREPARATION

- A. Ensure sub-base is adequate to receive the base course and pervious paving system and will meet the required design load criteria. Also ensure sub-base will provide adequate subsurface drainage.

3.3 INSTALLATION

- A. Prepare base material to Engineers/ Building Code specifications. Note: Typical base material is ¾" in size. 12" is the minimum depth for a clay or solid sub-base, 18" or more as a minimum for sandy sub-base, with 98% porosity, to allow water to seep through. Install the base in 3" to 4" "lifts", and compact with minimum 5,000 lb. compaction equipment. Wetting the aggregate will help compaction.
- B. Over this layer, add a 1" layer of the leveling aggregate. Wetting is recommended. Screed and roll smooth with a light vibratory roller. Inspect for any low spots adding material and rerolling/vibrating as necessary prior to installing pervious pavers. The compacted screed bedding layer should have a surface tolerance of plus or minus 3/16", giving a compacted thickness of 1". Do not exceed 1.5" for this layer.
- C. hydroPAVERS® shall be installed to fit together accurately with hand tightened joint fit to the adjacent pavers. Follow the layout design, size, color and pattern as per architectural drawings.
- D. Cut as required with Diamond blade only, commonly used for pavers. Either stationery cut-off saws (prior to installing) or hand-held equipment (when already laid) will work. Do not use mechanical Block, Sone or Paver Splitters
- E. After a substantial area has been installed, a plate vibrator with a soft protective pad shall be used to compact and seat the hydroPAVERS®.
- F. Spread fine sand over the surface and sweep the fine dry sand into the joints until they are full. This will require at least two or three passes with the vibrator to consolidate the fine sand into the joints. When all the joints of the hydroPAVERS® are completely filled flush to the top, sweep off the excess sand, leaving a clean, dry surface.
- G. Prepare perimeter concrete forms, edge reinforcement or curbing as per drawings and per Engineer/Code to secure the hydroPAVERS® and prevent movement.

3.4 ROOFTOP APPLICATIONS MATERIALS

1. GRB10 – Green Innovations Ltd
 - a. The root block and membrane protection layer consisting of two sheets of high-strength polypropylene and a heavy-duty diamond pattern reinforced scrim, laminated together with a molten polyethylene bonding layer. This increases product life and enhances tear-resistance.
2. GR52 Water Retention Panel – Green Innovations Ltd
 - a. A high strength 100% recycled polypropylene panel 24" x 24" x 2 1/8" high, fully inter-locking system
 - b. Water retention: 0.352 US Gallons per square foot / 14.35 L/m²
 - c. Compression Strength: 7,984 psf. (55 psi)
3. GR-EDGE – Green Innovations Ltd
 - a. Marine grade aluminum edging and mitered corners.
 - b. Alloy 5052 H 32; 0.063" thick
 - c. Perimeter Edging 10' lengths; Mitered Corners 12" x 12"
 - d. Height Inside Standard Dimension for GR52 and hydroPAVERS® 111mm
 - e. Height for GR52, Pedestals and hydroPAVERS® - varies / to suit design
4. Pedestals – Green Innovations Ltd
 - a. Load bearing
 - b. Adjustable to fine tune height
 - c. Designed for pavers
5. hydroPAVERS® - Green Innovations Ltd
 - a. 11.81" (300mm) x 23.62" (600mm) x 2.17" (55mm) high
 - b. 39.68 pounds per paver
 - c. Pervious Paving System Material: Recycled Ceramics Tiles with a Bentonite Clay Binder Kiln Baked At 1,200° C
 - d. Minimum Compressive Strength: 9,690 psi // 66.8 MPa and exceeding requirements for H20 Standards for heavy vehicles
 - e. Compliance with ADA Standards for ground surfaces
 - f. Pervious Pavers meets or exceeds Freeze/Thaw and Deicing Durability
 - g. Pervious Pavers Minimum Water Retention: 0.15 US Gallons per square foot / 6L/m²
 - h. Pervious Pavers Minimum Infiltration Rate: 1.0 inches/minute

3.5 ROOFTOP APPLICATIONS INSTALLATIONS

1. Required: roll out the GRB-10 Root Barrier material covering the area as per design, with overlapping seams of a minimum of 15"
 - a. hydroPAVERS® Plus GR52
 - i. Install the GRB-10 as detailed.
 - ii. Install the GR52 by joining then snapping each panel together horizontally, thereby securely locking them together over the entire layout of the designed area.
 - iii. GR52 can be cut with a table saw or other methods to conform to size and shape of the designed area.
 - iv. Install the hydroPAVERS® by laying them directly on the GR52 installed to fit together accurately with hand tightened joint fit to the adjacent pavers.
 - v. Use shims during installation procedure to level out and flush adjacent pavers.

- vi. Cut hydroPAVERS® with Diamond Blade equipment as required to finish even with GR52 footprint.

b. Perimeter Finishing

- i. Ideally the area may be abutting the parapet walls, which will allow the installation to be “parapet to parapet” then skip the next two points, 1, 2 and 3, however, if this is not the case and there are areas of the perimeter that do not have horizontal “curbs” or parapet to but to, then do not skip the next points;
 - 1. Install the aluminum edging and corners around the perimeter of the area. Cut to accurate lengths accordingly.
 - 2. The edging is like a “C” with top and bottom lips. The bottom lip will slide under the GR52 by 3 5/8” and the top lip will slip over the hydroPAVERS® by ½”
 - 3. Splices are used to join the edging together with the provided self- tapping screws.

c. hydroPAVERS® Plus GR52 plus Adjustable Pedestals

- i. Install the GRB-10 as detailed.
- ii. Install the GR52 by joining then snapping each panel together horizontally, thereby securely locking them together over the entire layout of the designed area.
- iii. GR52 can be cut with a table saw or other methods to conform to size and shape of the designed area.
- iv. Install the adjustable pedestals directly on the GR52 in the approximate area to receive the hydroPAVERS®
- v. Install the hydroPAVERS® by laying them directly on the adjustable pedestals fitting them together accurately and straight with hand pressure snug to the spacer tabs.
- vi. Use shims during installation procedure to level out and flush adjacent pavers.
- vii. Cut hydroPAVERS® with Diamond Blade equipment as required to finish even with GR52 footprint.

1. Perimeter Finishing

- a. Refer to Section “b”

d. hydroPAVERS® plus Adjustable Pedestals

- i. Install the GRB-10 as detailed.
- ii. Install the adjustable pedestals directly on the Root Barrier in the approximate area to receive the hydroPAVERS®
- iii. Install the hydroPAVERS® by laying them directly on the adjustable pedestals fitting them together accurately and straight with hand pressure snug to the spacer tabs.
- iv. Use shims during installation procedure to level out and flush adjacent pavers.
- v. Cut hydroPAVERS® with Diamond Blade equipment as required to finish even with the designed footprint.

a. Perimeter Finishing

b. Refer to Section "b"

2. NOTE: In any of the optional combinations, for hydroPAVERS® on rooftop / amenity area, there is nothing installed between the joints of the pavers

3.6 CLEANING

- A. Keep the work area and adjacent areas clean during the project installation.
- B. Repair any damage to adjacent materials and surfaces resulting from installation of this project.
- C. Upon completion, remove all excess material, any debris and equipment from project site.

END OF SECTION