

GRAVEL CELL[®] Porous Paving System

DESCRIPTION:

The Gravel Cell[®] is reinforcement structure creates an attractive, durable hard surface suitable for light to medium parking areas, driveways and access roads. Stormwater is slowed in movement through and across Gravel Cell[®] surfaces, which deposits suspended sediment and increases time to discharge.

The cells can also be used for the construction of swales to collect rainwater and direct water to surface infiltration areas such as Atlantis[®] sub surface infiltration channels.

BENEFITS:

1. Pervious Load Bearing Surface
2. Stormwater Pollution Filtration and Treatment
3. Cost Efficient

APPLICATIONS INCLUDE:

- Infiltration Basins
- Fire Access
- Parking
- Driveways
- Event Parking
- Pedestrian Access
- Handicap Parking
- Emergency Access
- Boat Ramps.

SIZE:

Manufactured in 52mm x 260mm x 480mm Piece (Unique easy to use interlocking system, with a rigid clipping system)

ATLANTIS GRAVEL CELL INSTALLATION SPECIFICATION

PART ONE: DESIGN SPECIFICATIONS

1. TENDER PROCESS

- a. The tender should detail, in writing the, approximate time of installation, current specified product legal status, engineering specifications, product test reports by independent, certified institution, manufacturers quality assurance documents, relevant insurance requirements, manufacturers product specification and supervision advice.
- b. The tenderee cannot change the specifications before or after the tender has been awarded.
- c. The project designer is responsible for making change of specifications.
- d. If the tenderee omits any part of the tender, he will be automatically excluded from the tender process.
- e. If the product specified is patented within country, no alternative products will be accepted as the product is protected by the law of intellectual property right.
- f. Products which infringe patents are not eligible for this project.
- g. On case of litigation due to patent infringement, the sub contractor will immediately remove installed products and replace with the legally recognized product.

2. PATENTS

- a. Atlantis Matrix Tanks are protected by a patent under Commonwealth of Australia Patents Act 1990
Modular Drainage Channels
Astral Property Pty Limited
Patent Number 785 313
Term of Letters Patent - Twenty years from 18 October 2000

3. CHANGE OF THE SPECIFICATION

- a. The contractor is not a qualified designer and is not allowed to change or omit any part of the tender specification.
- b. After the tender has been awarded, the designer can propose changes to some products subject to design engineer, architect or landscape architect approval following investigation of the proposed change. The designer is responsible for proving that the proposed products do not infringe the law.

4. CHAIN OF RESPONSIBILITY

- a. There is a chain of responsibility in project design such as entrepreneurial ideas, concept design, construction design, installation requirements and products.
- b. If an installer makes changes across project boundaries, he will assume the legal responsibility for the changes.

PART TWO: TECHNICAL SPECIFICATIONS

1. Description of Work
 - a. Work Included:
 - i. Provide and install sandy gravel road base as per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide adequate support for project designs loads.
 - ii. Provide Gravel Cell[®] paving products including Gravel Cell[®] units, anchors and installation per the manufacturer's instructions furnished under this section.
 - iii. Provide and install fine decorative gravel to fill the Gravel Cell[®] units.
 - b. Related Work:
 - i. Sub grade preparation
 - ii. Subsurface drainage
2. Quality Assurance
 - a. Follow ISO 90002 requirements.
 - b. Installation: Performed only by skilled / semi skilled work people with satisfactory record of performance on landscaping or paving projects of comparable size and quality.
3. Submittals
 - a. Submit manufacturer's product data and installation instructions.
 - b. Submit material certificates for base course and sand fill materials.
4. Delivery, Storage, and Handling
 - a. When time from delivery to installation exceeds one week, protect Atlantis products from damage during delivery and store under canvas to shield from sunlight. The products should be stored on smooth, clean surface, free of dirt, mud and waste.
 - b. Handling is to be performed with the appropriate equipment depending on the size of the tanks and site conditions. Equipment may include hand, forklifts, extension lifts, small cranes, etc.
5. Project Conditions
 - a. Review installation procedures and coordinate Gravel Cell[®] work with other work affected.
 - b. All hard surface paving adjacent to Gravel Cell[®] areas, including concrete walks and asphalt paving, must be completed prior to installation of Gravel Cell[®].
 - c. Gradients for Gravel Cell[®] surfaces can vary from flat to 20%, depending upon vehicle types to use the surface. Please note that fire access, or other emergency vehicles, will generally require a gradient that is less than 6%. If there are any questions regarding existing gradients

on this project, please contact the Project Designer, or Atlantis Water Management or your Local Distributor

- d. Cold weather:
 - i. Do not use frozen materials or materials mixed or coated with ice or frost.
 - ii. Do not build on frozen work or wet, saturated or muddy sub grade.
 - iii. Care must be taken when handling Atlantis cells when air temperature is 40°F or 4°C or less.
- e. Protect partially completed paving against damage from other construction traffic when work is in progress. Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.
- f. Protect adjacent work from damage during Gravel Cell[®] installation.

PRODUCTS

1. Availability

- a. The permeable paving system must:
 - i. Be modular in nature
 - ii. Fit into the footprint of the specified system
 - iii. Have a minimum of 3 years of use in the country of installation
 - iv. Be manufactured in a factory with ISO9001:2000 certification
 - v. Be manufactured from a minimum 85% post-consumer recycled polypropylene
 - vi. Meet the following requirements:

Test	Value	Unit
Net Void Area	80	%
Service Temperature	-4 to 65	Degrees Celsius
Unit Weight	> 5.5	Kilograms per square metre
Size per opening	< 35	square centimetres
Rib Orientation	Linear & Parallel	Vertical & horizontal
Unconfined Crush Strength (0.8m x 0.8m plate)	130	Tonnes per square metre

- b. Approved Products include Atlantis Gravel Cell Pavers
Atlantis Corporation Pty Ltd
Unit 3, 19-21 Gibbes Street
Chatswood, NSW –2067 Australia

2. Materials

- a. Base Course: Sandy Gravel material from local sources commonly used for road base construction, passing the following sieve analysis.

Percent passing through	US Sieve Designation	Nominal Sieve Opening mm	Nominal Sieve Opening inches
100	3/4"	19.0000	0.7500
85	3/8"	9.5100	0.3750
60	#4	4.7600	0.1870
30	#40	0.4200	0.0165
<3	#200	0.0740	0.0029

- i. Sources of the material can include either "pit run" or "crusher run". Crusher run material will generally require sharp sand to be added to mixture (25 to 35% by volume) to ensure long-term porosity.
 - ii. Alternative materials such as crushed shell, limestone, and/or crushed lava may be considered for base course use, provided they are mixed with sharp sand (25 - 35%) to ensure long-term porosity, and are brought to proper compaction. Crushed shell and limestone alone can set up like concrete unless sand is added.
- b. Atlantis Gravel Cell[®] Units:
- i. Interlockable, Lightweight injection moulded plastic unit's 0.480x0.260x0.052 m (18.9"x10.24"x2.05" high) with hollow rings and square pattern, rising from a strong open grid,
 - ii. Standard colour is black, Unit weight = 5.21 Kgs /Sqm (11.49 lb), volume = 5% solid.
- c. Gravel Fill:
- i. Obtain clean, washed, fine decorative gravel, must be sharp and angular (no-rounded) stone, granite hardness, to fill the 52 mm high rings and square spaces between the rings, with the following sieve analysis:

Percent passing through	US Sieve Designation	Nominal Sieve Opening mm	Nominal Sieve Opening inches
100	3/4"	19.0000	0.7500
85	3/8"	9.5100	0.3750
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- d. "Atlantis Gravel Cell[®]" sign to identify the presence of Gravel Cell[®] paving, stating that special maintenance is required, with the Manufacturer's phone number, and made of durable materials for outdoor exposure shall be provided and installed.
- e. Fire Access Signage & Delineation: Fire access must be identified regarding their entrance and physical location with the placement of signs, gates, curbs, bollards, etc. Specific signage wording and other details must be coordinated with and approved by local fire authorities.

structural integrity. The plastic shall be 85% post-consumer recycled plastic resins, predominately polypropylene, with minimum 3% carbon black concentrate added for UV protection.

h. Installation of Gravel

- i. Install gravel into rings and the square patterns after the units are laid and clipped, by "back dumping" directly from a dump truck, or from buckets mounted on tractors, with a minimum depth of 6", and then exit the site by driving forward over rings already filled. Sharp turning of vehicles on bare rings must be avoided. The gravel is then spread laterally from the pile using power brooms, blades, flat bottomed shovels and/or wide "asphalt rakes" to fill the rings. A stiff bristled broom should be used for final "finishing". The gravel should be "compacted", if necessary, by using a vibrating plate or small roller, with the finish grade no less than the top of rings and no more than 6 mm (0.25") above top of rings.
- ii. If a binder for fill stone is desired (due to traffic speed, concentrated water flow, or other reason), use Portland cement, mixed dry at 10% by weight with fill stone, Place into rings after thoroughly wetting the base, then lightly mist the surface after fill and compaction. Cover with a water resistant tarp, or plastic sheeting material for a minimum period of 3 days, or until the mixture has bonded.

7. Cleaning

- i. Perform cleaning during the installation of work and upon completion of the work. Remove all excess materials, debris, and equipment from site. Repair any damage to adjacent materials and surfaces resulting from installation of this work.

END OF SECTION

If you have any questions regarding this specification, please contact:

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