



Fill Turf Cell with unstabilised granular soils eg. crushed stones, crushed concrete, sandy gravels, gravelly sands, pure sands with little to no fines. Pieces to be no larger than 30mm

GRAVEL CELL

Provide concrete kerb edging 100mm depth

Turf Cell Specifications		
Test	Value	Unit
Dimensions	52 x 260 x 480	Height x Width x Length
Part Weight	750	grams
Flow Rate	2,6500	L/sec/m ²
Void Ratio	90	%
Material	Recycled (PP)	Dr. HDPE
Unconfined Crush Strength	120 (174) for PP 100 (145) for HDPE	tonnes/m ² (psi)
Service Temperature	-10 to 70 (for PP) -80 to 70 (for HDPE)	Celsius

BASE COURSE		
Traffic Type	Description	Thickness (mm)
Pedestrian	Coarse washed river sand	50
Light to Medium cars, 1-6 ton	Crushed stone, sand-gravel, with 45% fines, GV, GP, SW, SP	100
Heavy vehicles I.e. trucks 6 tons and over	Crushed concrete - well graded with little to no fines. Sub-base may be required, contact pavement engineer	200+
		98

* Other factors such as existing soil bearing capacity, frost effects, ground water table etc may influence the

** For heavy vehicles a sub-base layer may be required

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Address:
3/19-21 Gibbs St
CHATSWOOD NSW 2067,
AUSTRALIA

Drawing Title:
**Atlantis Turf cell
and Gravel cell**

Date: AUG 2018
Dwg by: R A

Materials

- a. Base Course: Sandy gravel material from local sources commonly used for road base construction, passing the following sieve analysis.
- I) Crushed stone, sand-gravels, sands, and a variety of waste and byproducts. In general, the materials for unstabilized base should meet the following criteria:
 - Less than 10 percent passing No. 200 sieve.
 - Plastically Index of 6 or less and liquid limit of 25 or less.
 - Maximum particle size not exceeding one third of layer thickness.
- II) Selected materials should be nearly neutral in pH (range from 6.5 to 7.2) to provide adequate root zone development for turf.
- III) Alternative materials such as crushed shell, lime rock, and/or crushed lava may be considered for base course use, provided they are mixed with sharp sand (33%), and brought to proper compaction. (Crushed shell and lime rock alone can set up like concrete without sand added.

b. Grass:

- I) Use species resistant to wear by traffic generally a Blue/Poa/Fescue mix used for athletic fields in northern climates, and Zoysia, Fescue, or Bermuda types in southern climates (or as specified by Designer).
- II) Check with local sod and seed suppliers for preferred mixtures.
- III) De-water the grass can use same grass species used on surrounding turf.
- IV) Paving applications require greatest wear-resistant species possible, generally available only by seed or sprigging. (Choose one of the following paragraphs to suit project requirements).
 - 1. Sod: Use 13 mm (0.5") thick (sod thickness) rolled sod from a reputable local grower. Species should be wear resistant, free from disease, and in excellent condition. Sod shall be grown in sand or sandy loam soils only. Sod grown in soils of clay, silt, or high organic materials such as peat, will not be accepted.
 - 2. Seed: Use seed materials, of the preferred species for local environmental and projected traffic conditions, from certified sources. Seed shall be protected in containers clearly labelled to show seed name, lot number, net weight, % weed seed content, and guaranteed % of purity and germination. Pure Live Seed types and amount shall be as shown on plans.

c. Mulch: (Needed only for seeding). Shall be of wood or paper cellulose types of commercial materials often used in conjunction with hydro seeding operations. Mulches of straw, pine needles, etc., will not be acceptable because of their low moisture holding capacity.

d. Fertilizer: A commercial "starter" fertilizer, with Guaranteed Analysis or as recommended by local grass supplier, for rapid germination and root development.
 e. Atlantis Turf Cell® sign to identify the presence of Turf Cell® paving, shall be provided and made of durable materials for outdoor exposure shall be provided and installed.
 f. Fire Access Signage & Delineation: Fire access must be identified regarding their entrance and physical location with the placement of signs, gates, bollards, etc. Specific signage wording and other details must be coordinated with and approved by local authorities.

BASE COURSE		
Traffic Type	Description	Thickness (mm)
Pedestrian	Coarse washed river sand	50
Light to Medium cars, 1-6 ton	Crushed stone, sand-gravel, with 5% fines, GW, GP, SW, SP	100
Heavy vehicles like trucks 6 tons and over	Crushed stone, well graded concrete - little to no fines. Sub-base may be required, contact pavement engineer	200+
		98

* Other factors such as existing soil bearing capacity, frost effects, ground water table etc may influence the above recommendations

** For heavy vehicles a sub-base layer may be required

Erection

- 1. Inspector: It is recommended that Fire Department inspectors be scheduled to inspect installation of Turf Cell® during preparation of the sub base. Installation of the base course, and installation of Turf Cell® units in Fire Access applications only. Verify with Fire Department if certificates of inspection if required.
- a. Examine subgrade and base course installed conditions. Do not start Turf Cell® installation until unsatisfactory conditions are corrected. Check for improperly compacted benches.
- b. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Project Manager for resolution.
- 2. Preparation: Ensure that sub base materials are structurally adequate to receive designed base course, wearing course, and designed loads. Generally excavation in undisturbed normal strength soils will require no additional modification. Fill soils and otherwise structurally weak soils may require modifications, such as geotextiles, geogrids, and/or compaction (not to exceed 90%). Ensure that grading and soil porosity of the subbase will provide adequate subsurface drainage.

- a. Lay specified Geo-Textile on the flat sub-base and lay Atlantis 30mm Drainage Cell (if required for additional drainage under Turf Cell) over the Geotextile without affecting the created fields. Lay specified Geotextile blanket on the top of Atlantis 30mm Drainage Cell (if used) and place base course material over prepared sub base to grades shown on plans. In fills not to exceed 150 mm, compacting each lift separately to 95% Modified Proctor (or 98% per recommendations). Leave minimum 10mm to 15 mm for Turf Cell® unit and sand/sod fill to Final Grade.
- b. Lay geotextile on top of compacted base course. Spread all soils as specified and as supplied from local Soil Supplier, evenly over the surface of the base course with a hand-hold, or wheeled, rotary spreader. The soils should be placed immediately before installing the Turf Cell® units to assure that the polymer does not become wet and expanded when installing the units.

Installation of Turf Cell® Units

- a. Install the Turf Cell® units by placing units in a way in which they clip up as a continuous blanket. Units can be easily cut with an Electric Saw to the corners and edges. Units placed on curves and slopes shall be clipped thoroughly. Tors of units shall be between 5 mm to 10 mm, below the surface of adjacent hard surface pavements.
- b. Fill up the Turf Cell® with sand and potting mix in the ratio of (40%-60%) as they are laid in sections by "back dumping" directly from a dump truck, or from buckets mounted on tractors, which then exit the site by driving over the Turf Cells which are already filled. The fill is then spread laterally from the pile using flat bottomed shovels and/or wide "asphalt rakes" to fill the Turf Cells. A stiff bristled broom should be used for final "finishing" of the fill. The fill must be compacted by using water from hose, irrigation heads, or rainfall with the finish grade no less than the top of Turf Cell® and no more than 6 mm above top of the Turf Cell®.

Installation of Grass

- (Choose one paragraph below to meet grass installation method desired.)
- a. Install grass seed and mulch over sand-filled frigs with commercial hydro seeding equipment, at rates shown on plans and per manufacturer's recommendations. Coverage must be uniform and complete. Following germination of the seed, areas lacking germination larger than 20 cm x 20 cm must be re-seeded immediately. Seeded areas must be fertilized and kept moist during development of the turf plants.
- b. Install thin sod directly over sand filled frigs, filled no higher than the top of the frigs. Sod frigs should be placed with very light joints. Following initial watering, roll the sod to push turf into Turf Cell® eliminating any air pockets and ensuring good soil contact. Sodded areas must be fertilized and kept moist during root establishment (minimum of 3 weeks).

Description of Work

- a. Work included:
 - I) It is the manufacturer's recommendation to install Atlantis Drainage Cell 30mm (1.00") as a medium to eliminate excess water from the soil profile. At the same time using the cup system of the 30mm drainage cell for passive irrigation of the turf during prolonged dry periods.
 - II) 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 design loads.
 - III) Provide Turf Cell® Paving System products including Turf Cell® units, and installation as per the manufacturer's instructions furnished under this section.
 - IV) Provide and install clean sharp sand to fill the Turf Cell® units, when needed.
 - v) Provide and install grass by using sod or hydro seeding.
- b. Related Work:
 - I) Subgrade preparation
 - II) Subsurface drainage materials
 - III) Irrigation installation
 - IV) Quality Assurance
- a. Follow ISO 9002 requirements.
- b. Installation: Performed only by skilled/semi skilled workforce with satisfactory record of performance on landscaping or paving projects of comparable size and quality.
- c. Submittals
 - a. Submit manufacturer's product data and installation instructions.
 - b. Submit material certificates for base course and sand fill materials.
- d. Delivery, Storage, and Handling
 - a. Protect Turf Cell® units from damage during delivery and store under tarp to protect from sunlight, when time from delivery to installation exceeds one week.

- a. Review installation procedures of Drainage Cell and coordinate Turf Cell® work with other work affected. Generally, Drainage Cell and Turf Cell® are installed at the same time as project grass installation, nearly the last site construction activity.
- b. All hard surface paving adjacent to Turf Cell® areas, including concrete walks and asphalt paving must be completed prior to installation of Turf Cell®.
- c. Gradients for grass porous paving surfaces can vary from flat to 20%, depending upon vehicle types to use the surface. Please note that the 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. Be careful in handling Drainage Cell and Turf Cell® in temperatures below 0 Celsius.
 - II) Do not build on frozen work or wet, saturated or muddy subgrade.
- e. Protect partially completed paving against damage from other construction traffic when work is in progress, and until grass root system has matured (about 3 to 4 weeks). Any barricades constructed must still be accessible by emergency and fire equipment during and after installation.
- f. Protect adjacent work from damage during Drainage Cell and Turf Cell® installation.

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