



**GENERAL GUIDELINES / SEQUENCE OF WORKS FOR INSTALLING RAINSMART® 30MM NERO™ CELL.**

**PART 1 - GENERAL**

**1.01 General Provisions**

- A. The Conditions of the Contract and all Sections of Division 1 are hereby made a part of this Section.

**1.02 Description of Work**

A. Work Included:

1. Provide and install subsurface excavation grading and compaction per Geotechnical Engineer's recommendations and/or as shown on drawings, to provide positive drainage and support for surfaces above. See 2.02 Materials.

2. Provide and install products, including Rainsmart® Nero™ 30mm Drainage Cell, geotextile filter fabric and/or geomembrane, and additional pipe and/or drainage structures as may be identified elsewhere in these plans and specifications.

B. Related Work:

1. Subgrade preparation as per Geotechnical Engineer's recommendations.

**1.03 Quality Assurance**

- A. Installation: Performed only by skilled work people with satisfactory record of performance on drainage or paving projects of comparable size and quality.

**1.04 Submittals**

A. Submit manufacturer's product data and installation instructions.

B. Submit a 600mm(1,97') x 500mm (1,64') 30mm (1.18") section of Rainsmart® 30mm Nero™ Drainage Cell for review. Reviewed and accepted samples will be returned to the contractor.

C. Submit 2 sqm samples of geotextile, and/or geomembrane, materials, along with technical specifications for review and approval.

**1.05 Delivery, Storage, and Handling**

- A. Precaution must be taken to protect Rainsmart® Drainage Cell units from damage during delivery and store under tarp for protection from sunlight when time from delivery to installation exceeds one week.

## 1.06 Project Conditions

- A. Review installation procedures and coordinate Rainsmart® Nero™ Drainage Cell work with other associated works.
- B. All major subsurface and surface construction adjacent to Rainsmart® Nero™ Drainage Cell areas, especially including utilities, must be completed prior to installation of Rainsmart® Drainage Cell.
- C. Cold weather:
  - Do not use frozen materials or materials mixed or coated with ice or frost.
  - Do not build on frozen work or wet, saturated or muddy sub grade.
  - Do not lay Rainsmart® Nero Drainage Cell product when air temperatures are below 55 degrees F.

## PART 2 – PRODUCTS

### 2.01 Availability

- A. Manufacturer: Rainsmart Solutions Pty Ltd., 34, Ashcott Street, Kings Langley, NSW -2147, Australia. (Tele) +61 2-9674 2276. (Fax) +61 2-9674 2276
- B. Contact email: [minon@rainsmartsolutions.com](mailto:minon@rainsmartsolutions.com)
- C. Distributor:

### 2.02 Materials

- A. Rainsmart® 30mm Nero™ Drainage Cell: Lightweight injection-molded plastic units usually supplied in 30mm (1.18" thick) x 500mm (1,64') x 600mm (1,97') sheets, with a hexagonal cut out pattern allowing maximum water infiltration and conveyance. The plastic used is 90% recycled PP + 10%Propriety Mix. The Rainsmart® Nero™ Drainage cells have a cup structure at the bottom for passive irrigation and retain essential moisture and humidity for prolonged dry periods.
- B. Geotextile Fabrics and Geomembranes shall be supplied from reliable and proven sources, with known characteristics suitable to each specific application. These materials may be used to underlay, overlay, or surround the Rainsmart® 30mm Nero™ Drainage Cell product, depending upon specific need.

## PART 3 – EXECUTION

### 3.01 Inspection

- A. Examine sub grade and base preparation. Do not start Rainsmart® 30mm Nero™ Drainage Cell installation until unsatisfactory conditions are corrected. Check for improperly compacted trenches, debris, and improper gradients. In waterproofed sub-base situation leak detection procedure should be carried out prior to installation.
- B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance. If existing conditions are found unsatisfactory, contact Project Manager for resolution.

### 3.02 Preparation

- A. Prepare base soils or granular fill materials to grades shown on plans, suitable for drainage application (as determined by Project Engineer). Allow 30 mm (1.18”) for Rainsmart® Drainage Cell thickness.
- B. Ensure that any vertical projections through the Rainsmart® Drainage Cell layer are properly protected from settlement, and/or water penetration (if critical) prior to placement of liners or Rainsmart® Drainage Cell.
- C. Ensure that any sharp objects on the subsurface are removed to avoid penetration of fabric or membrane liners. Keep the subsoil surface as smooth as possible while working.

### 3.03 Installation of Rainsmart® 30mm Nero™ Drainage Cell

- A. Install the underlayment liner (fabric and/or membrane), if called for, over the prepared sub grade, according to manufacturer’s guidelines for seams, joints, bonding, etc.
- B. Install the Rainsmart® 30mm Nero™ Drainage Cell units by placing on top of the Water proof membrane or on top of the geo-textiles as specified, cells can be butted or clipped to one to another. Cells can be easily shaped to size required, by removing, with pruning shears or saw the undesired section. Cells placed on slopes and vertical surfaces shall be secured as appropriate to maintain cells in place.
- C. Place overlay hydrophilic geotextile as specified by Designer, according to manufacturer’s guidelines.
- D. Place porous cover material in landscaping, (or proper course backfill for flooring, pavement, etc.) on top of the overlay geotextile as specified by the Designer, taking care to avoid punctures or dislodging of the geotextile.

END OF SECTION

If you have any questions regarding this specification, please contact Rainsmart Solutions or Local Distributor.

## Rainsmart® 30mm Nero™ Drainage Cell Data Sheet

### Product Description

**Materials:** Rainsmart® 30mm Nero™ Drainage Cell is made with an injection mould consisting of very strong Hexagon cut out pattern for multi directional vortex flow. Rainsmart® 30mm Nero™ Drainage Cell are made of 90% recycled PP + 10% Propriety Mix.

Core materials contain special inhibitors, which are non-biodegradable, and offer excellent chemical resistance.

This product can also be provided pre-assembled with one or both sides having layers of non-woven polypropylene (PP), or polyester, geotextile fabric (featuring low stretch characteristics) with joints sewn or glued as required to keep soils out. Fabrics must be selected to meet local engineering requirements, and are supplied locally, and installed on-site.

**Size:** Rainsmart® 30mm Nero™ Drainage Cell panels is supplied in pre-assembled panels of 30mm (1.18") x 1m (3, 28') x 1.2m (3.93') for quick and easy installation.

### Applications

**Standard Use:** Rainsmart® 30mm Nero™ Drainage Cell is a lightweight, yet incredibly strong drainage panel, ready to be covered with geotextile fabric for vertical and horizontal drainage applications, including:

- Landfills Drains
- Roof Decks, Planter Boxes, Podium gardens
- Sports Turf Facilities
- Foundation Walls
- Subfloors
- Tunnels
- Retaining Walls
- Highway Edge Drains
- Landscape French Drains
- Biofilters & Gas Dispersion systems

Rainsmart® 30mm Nero™ Drainage Cell is designed to intercept and collect only excess water from soils, and then transport this water to existing drainage system or Rainsmart tanking system for Reuse.

The standard fabric characteristics and open nature of the structure provide capability for large infiltration and flow volumes in multi direction.

### Features

- Very high compressive load.
- Very high lateral flow capacity.
- Maintains actual void size for effective drainage after backfill& compaction

- Fit-in system.
- Low weight - reduces deck loads.
- Thin - reduces depth of cover and allows the use of mature planting.
- Reduces hydrostatic forces upon sub-grade walls.
- Easy to shop, store and install.

### **Maintenance**

Under normal conditions, with suitable backfill materials used, Rainsmart® 30mm Nero™ Drainage Cell will require no maintenance. Flush out points and maintenance port can be easily incorporated in the design, providing total excess.

### **Warranty**

Rainsmart Solutions Pty Ltd. warrants that Rainsmart® 30mm Nero™ Drainage Cell will be supplied without manufacturing defects, and will perform as stated in this document provided the applications and installation methods follow our recommendations.

If defects are found prior to installation, we will replace the product free of charge, or refund the purchase price of the product.

Product replacement or refund is the Buyer's sole remedy for breach of warranty or negligence and we will not be liable for any indirect, consequential, special or resultant damages.

To the best of our knowledge, the information contained herein is accurate. A final decision as to the suitability of information or product is sole responsibility of user.

#### **1. Installation:**

##### **Horizontal Installation:**

1. Waterproof the base and the sidewall surface as per engineering details.
2. Lay geo textile if specified.
3. Lay Rainsmart® 30mm Nero™ Drainage Cell as a uniform continuous blanket.
4. Place the Rainsmart® 30mm Nero™ Drainage Cell continuously over the top of drains inlets. Place some form of marker at finish grade to locate drain inlets.
5. Rainsmart® 30mm Nero™ Drainage Cell can be cut or bent to meet inside or outside corners with an electric saw. Rainsmart® 30mm Nero™ Drainage Cell may be cut with diagonal cutter, pruning shear, or snips.
6. Unroll geotextile fabric over panels using widest roll possible to minimize joints. Fabric joints should be made with overlaps of 150mm (1.75') minimum - secured with duct tape or similar as necessary to prevent soil intrusion.
7. Torn or punctured fabric must be covered with patches of new fabric, held in place by tape or continuous bead of adhesive.
8. Cover the panels as soon as possible, taking care to not puncture or tear the fabric, using materials least likely to clog the fabric - avoid fine silts, clays, and dusty organic materials. Perform clogging test beforehand if questions of backfill suitability exist.

## Placement of Other Materials:

Other materials placed directly upon the fabric should be done with caution as follows:

- Large Tree Balls - a slight cone of sand should be placed at the center point of the tree location, with a 30 mm (1.18") liner minimum thickness, 2 feet larger in diameter than the tree ball placed over the sand cone. This will encourage strong tree roots to grow horizontally. Drainage water will flow to the edge of the liner before passing into the drainage layer.
- Paving materials - such as brick, concrete pavers and slabs, wood decking, stone slabs, etc., can be placed directly upon the fabric - provided the edges of the materials will not tear or puncture the fabric during handling. This will allow weight to be minimized. Otherwise, use traditional setting beds of sand, or lightweight aggregate and cement binder (allowing for drainage) between the drainage fabric and the paver. Aluminum or plastic "L" or "T" edging materials can be used to contain paving materials.
- Planter Retaining Walls - masonry or wood (railroad ties) planter walls can be placed directly upon the Rainsmart® 30mm Nero™ Drainage Cell and fabric covered structure, preferably with an additional layer of geotextile in between to act as a cushion. These planter walls should be designed to be self supporting, with opposite walls tied together to maintain shape and resist "blow-out" pressure. Segments of upstanding pre cast concrete pipe can be used successfully for planters also.
- Irrigation systems - If possible, use of low-pressure spray, or drip, irrigation systems should be used (especially on roof decks) with all lines placed above the drainage fabric to minimize penetrations and chances for soil leakage. Valve boxes, supply mains and manifolds can be placed below and/or through the drainage layer and treated like any other vertical obstruction.
- Electrical Wiring - all electrical wiring for current above 24v should be placed in conduit with watertight joints per electrical codes, and placed above the drainage fabric layer. If codes allow, low voltage wiring can be laid loose, run in plastic pipe conduit (which allows easy replacement without disturbance of landscaping). Penetrations of drainage fabric layer should be avoided, or at least minimized.

END OF SECTION

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

Manufacturer: Rainsmart Solutions Pty Ltd., 34, Ashcott Street, Kings Langley, NSW -2147, Australia. (Tele) +61 2-9674 2276. (Fax) +61 2-9674 2276

Distributor: