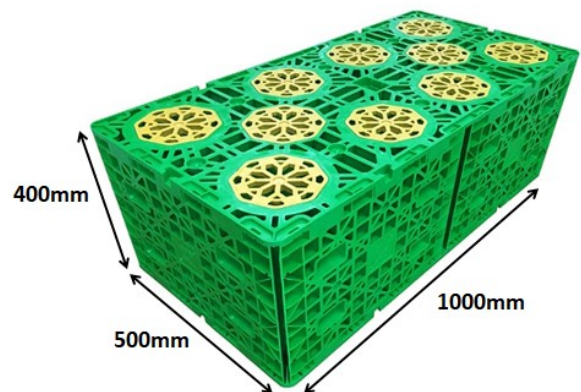


StormCell System Installation Manual

Specifications

- Length : 1000mm
- Width : 500mm
- Height : 400mm
- Weight : 16kg
- Void Ratio : 95%
- Net Volume : 190ltr



StormCell Module Dimensions

Durability	Service Life of 50 years Minimum
Load Strength	Vertical: 500kN/m ² @ 23°C Lateral: 93kN/m ² @ 23°C
Minimum Excavation Depth	1.0m to 9m
Minimum Backfill Depth	0.6m to 7m
Chemical & Biological Resistance	Unaffected by Moulds and Algae, Soil Borne Chemicals, Bacteria and Bitumen
Material	100% Virgin Polypropylene
Quality Control	Manufactured Under ISO:9001 (2015)

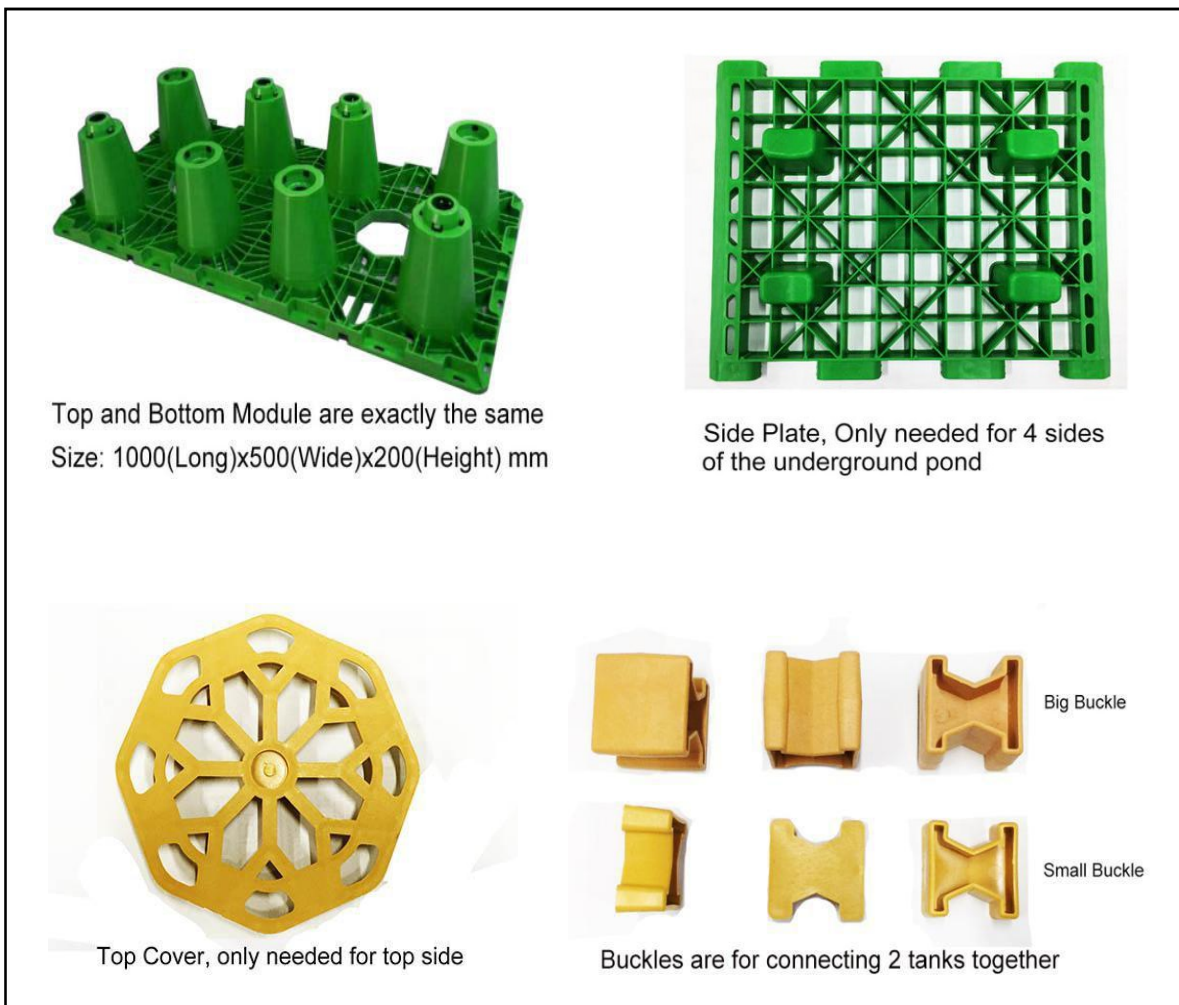
StormCell Module Design

Important Information

- ❖ When installing StormCell modules, the upper and lower panels with a height of 400mm must be loaded on the top and bottom to make sure the modules have maximum strength.
- ❖ StormCell modules are directional; they must only be installed horizontally on a flat surface with the internal columns vertically aligned.
- ❖ The StormCell modules can be installed in residential and commercial trafficable areas, as long as the load capacities are not exceeded and the minimum cover of 0.6m is *strictly* adhered to.
- ❖ The loading strength of the module is tested by authorized departments, with ciria c737 (2016) as the test standard. The modules are tested with the highest strength in a controlled, even-soil and static environment.
- ❖ Independent testing has also been completed by WPS laboratories Wellington; under test, the result of deflection or $e = < 2\text{mm}$, eliminating the need for any additional strengthening or geogrid products.

StormCell System Components

The StormCell system components are delivered packed on pallets and can be unloaded manually or with the use of a forklift. The quantity and specifications of the individual StormCell system components are listed on the delivery notes. The recipient or project manager is required to check that *all* of the StormCell system components have been delivered, *prior* to starting the installation process. This eliminates any delays or safety issues occurring during the construction period due to lack of materials.



StormCell System Components

Pre-Construction Checklist

Tools You Will Need:

- Measuring Tape
- String Line
- Knife
- Laser Level
- Marking Paint
- Sabre Saw or similar

Equipment You Will Need:

- Digger to Excavate for Foundation
- Suitable Trench Roller/Plate Compacter for Back-Filling
- Lifting Chains and Strops

Materials You Will Need:

- StormCell System
- Permeable nonwoven Geotextile
- Clean Bedding and Back-Fill Material as per the Design Specifications or manufacturers requirements
- Rodding Eye Box or similar as per the Design Specifications
- Finishing Material as per the Design Specifications

Excavation

Prepare the foundation pit location as per the design plans, to meet the size and depth requirements in the specified location.

Based on the size of the StormCell system, excavate the foundation pit allowing 500mm around the perimeter of the StormCell system to allow for proper compaction.

Ensure there is an allowance for bedding materials (if needed) and enough depth to achieve minimum cover requirements as set out in the specifications or on page 1.

Level the base of the excavation to achieve a flat, level surface and compact to a minimum of 95%MDD (or as per the design specifications).



it is recommended a thin layer of coarse sand be used to blind the base and create a level working platform (if the site is sandy, this may not be required).

A CBR>5% must be achieved prior to installing the StormCell system.

if the foundation appears soft or weak, the designer should be contacted for advice.



This can be managed with geogrid and compacted material that drains and will be sufficient to take the bearing capacity of the forces above.

The excavation must be constructed in strict accordance with the Worksafe excavation guidelines: <http://construction.worksafe.govt.nz/guides/excavation-safety>



Safety fences and safety warning barriers must be installed around the excavated site in accordance with Worksafe excavation guidelines.



Prepare the Base

StormCell System Foundation Layer (if required); should be Compacted and Levelled with Coarse Sand or as per the Design Specifications:

⚠ (Compact Density \geq 95%MDD) (\geq 100mm Depth)

If the foundation material is soft, check with the designer for confirmation that the base is acceptable, **before** proceeding.

Grade and level the base making sure there is **no** water present and there is no more than a 5-10mm variance. The base **must be clear** of any debris and contaminants. Compact the base with a trench roller or plate compactor to achieve a CBR>5%.



The base floor **must** be smooth to allow the StormCell modules to fit together correctly.



Base Material Requirements:

- ❖ **Compaction:** To 95% MDD minimum.
- ❖ **Shape:** Angular.
- ❖ **Size:** No Larger than 20mm in diameter.
- ❖ **Consistency:** Base must free of debris and sharp objects that could puncture the geotextile fabric.
- ❖ **Applicability:** Stone or sand is acceptable, providing in meets the specified requirements.

Install the Geotextile

Line the foundation pit with the geotextile.

Use TNZ F/7 2003 class C strength nonwoven geotextile fabric with class 1 filtration,

Overlap the edges of the geotextile, a **minimum** of 300mm and ensure there is enough geotextile to wrap over the sides and top of the StormCell system when the construction is complete.



Ensure the geotextile is secured around the top of the foundation pit, using sand bags or similar heavy objects, to prevent the geotextile slipping into the bottom of the pit.



During the installation process, it is important to not damage or pierce through the geotextile fabric, to avoid any ingress of unwanted materials or contaminants entering the StormCell system.



Geotextile Fabric Placement

StormCell Module Construction Instructions

①

- Each StormCell Module takes approximately 1 minute to assemble
- A Top Module inverted onto a Bottom Module creates One (1) StormCell Module
- Each completed StormCell Module Size **must** be 1000mm x 500mm x 400mm



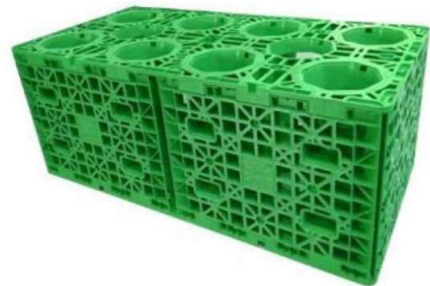
StormCell Module



The Height, Width and Length Sides *must* remain Vertical *and* Horizontal to construct a StormCell Module; this ensures that the StormCell System can bear the *Maximum Rated Load*.

②

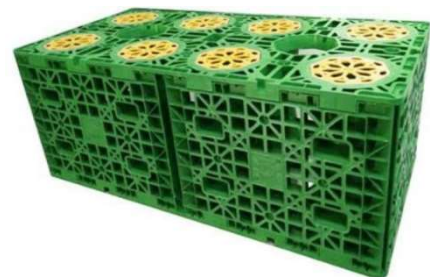
- Each StormCell Module has six (6) Sides
- Fit Side Plates only to the Out Side of the StormCell Modules located on the Outer Perimeter of the StormCell System



Outer Perimeter StormCell Modules

③

- Fit the Top Covers only to the Top Side of the StormCell Modules located on the Top layer of the StormCell System



Top Layer StormCell Modules

Install the StormCell System

Prior to commencing installation, please ensure that the entire StormCell installation manual has been read.

All of the StormCell system components and the necessary back-fill materials are ready.



During the installation of the StormCell system, any issues *must* be handled cautiously and timely. For example, back-filling *must* be done *immediately* after the installation of the StormCell system, to prevent any potential rain causing the whole system to float or shift and thus create costly damage and project delays.

1. Lift the top and bottom modules into the foundation pit.
2. Construct an installation platform (or choose a flat surface) large enough to accommodate a single StormCell module (fig: ①).
3. Construct StormCell modules. Slightly tapping on a StormCell module with a rubber hammer can help fit the StormCell modules together easier.
4. Connect each completed StormCell module to an adjacent StormCell module using the StormCell buckles, thus creating the StormCell system.
5. Fit side plates to the outside of the StormCell modules installed on the outer perimeter of the StormCell system (fig: ②) not to any internal StormCell modules.
6. Fit top covers to the top side of the StormCell modules installed on the top layer of the StormCell system (fig: ③) not to any internal StormCell modules.

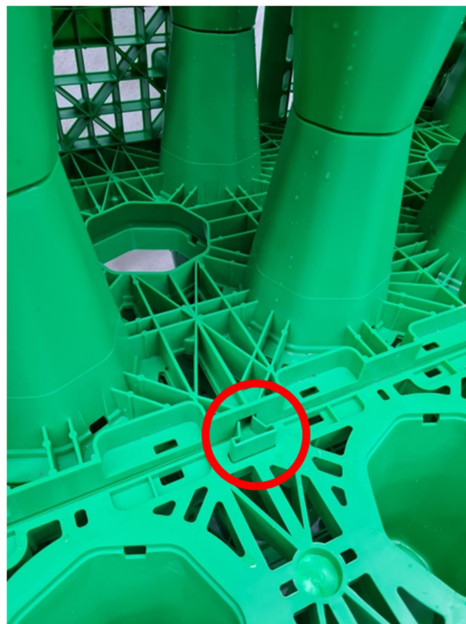
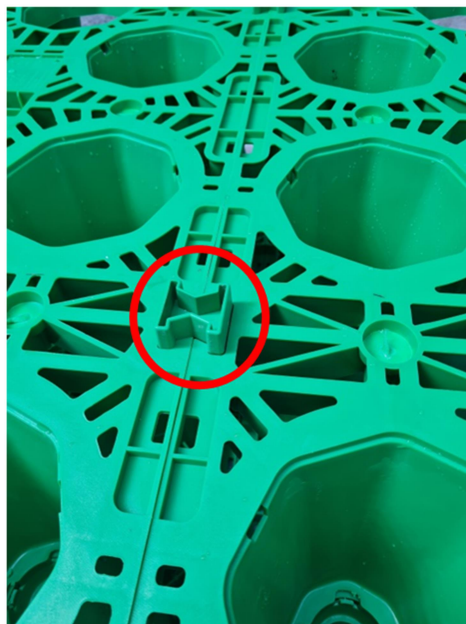
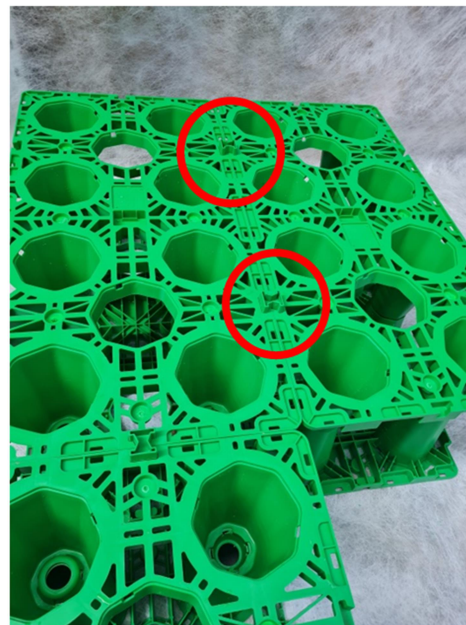
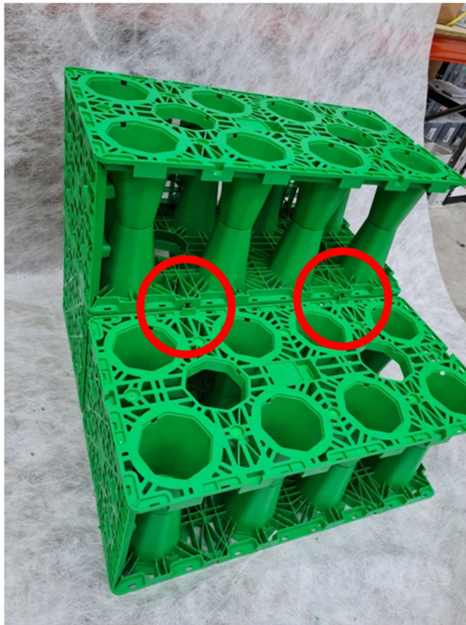


StormCell Modules are directional; they must only be installed horizontally with the Internal Columns Vertically aligned (as pictured above)

Install the StormCell System Cont.



The unique StormCell Buckle System ensures there are no voids or gaps between the StormCell Modules which means, that during the installation & completion process, the StormCell System is effectively one piece.



Inspection/Maintenance Ports

The StormCell system must be rectangular or square shaped and be equipped with inspection/maintenance ports.

The port locations will be noted on the drawings provided by the designer and will accommodate any site specific constraints.

The ports must be constructed from 150mm UPVC, positioned on the designated tanks at opposing ends of the StormCell system and be capped off using a rodding eye box or similar, as per the designers specifications.

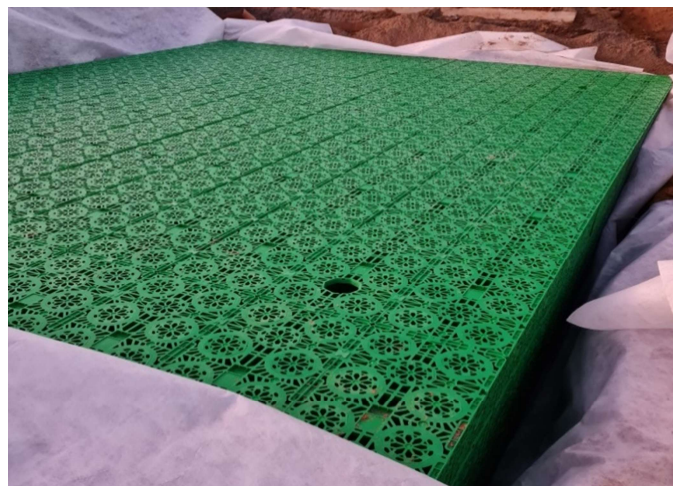


The inspection/maintenance ports should be located at opposing ends of the StormCell system, allowing the monitoring for any infiltration of silt or debris caused by failure of the rainwater interceptor filtration device.

Should infiltration occur; the StormCell system should be flushed through one of the inspection/maintenance ports.

Contaminants can then be removed via another maintenance port at the opposing end of the StormCell system, using a vacuum truck.

The interceptor filtration device should be examined for damage and either be repaired or replaced to prevent infiltration re-occurring.



Inspection/Maintenance Port

Backfill and Compaction



Once the installation of the StormCell modules is complete, the foundation pit *must immediately* be back-filled and compacted.

1. Wrap the entire StormCell system on all sides and the top using the excess geotextile fabric allowed for at the start of the installation.
2. Evenly, back-fill the StormCell system with clean bedding and back-fill material on all sides and on the top, maintaining the *maximum required* thickness of [300mm] at all times.
3. Continue placing back-fill material in 300mm layers, compacting with a trench roller or plate compactor, until you reach the top of the StormCell system. Make sure your inspection ports are in place and continue to compact the top.



Completed StormCell System Construction



Wrapped StormCell Modules & Back-Filling

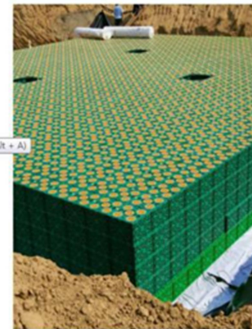
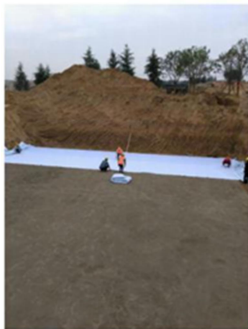
Connecting to the StormCell System



Connections to the StormCell system can be done by penetrating through the side plates or by inserting a pipe down one of the two access points installed in every StormCell module.

Wherever a pipe must pass through the geotextile, the following procedure *must* be followed:

1. Cut an “x” in the geotextile.
2. Insert the pipe.
3. Secure the four sections (flaps) of geotextile back over the pipe away from the StormCell system.
4. Using duct tape, secure the geotextile around the pipe.
5. Attach a stainless steel hose clamp to ensure the connection is securely fastened and sealed.



StormCell System



Example of Packed and Delivered StormCell System