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CONSTRUCTION SOLUTIONS

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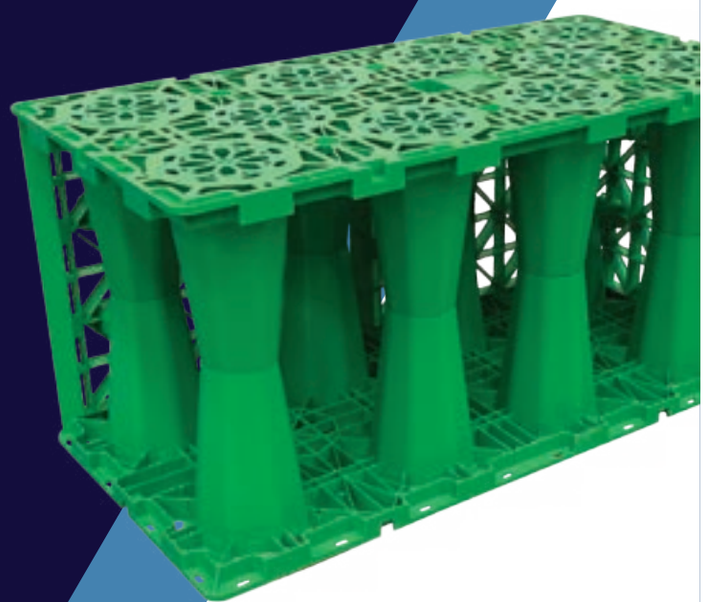
StormCell

Water Detention System

Installation Guide



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StormCell System Installation Manual

The StormCell is a smart engineered system designed for stormwater detention, to reduce weight and preload or to effectively fill a void.

The StormCell system offers a flexible design whilst being lightweight and high load-bearing. The system has minimal componentry for rapid assembly on-site and offers a offers a 95% void ratio enabling the best utilisation of space on your site.

Smart Engineered Design

Quick and easy to install

Saves TIME and MONEY

The StormCell system provides stormwater detention when installed in commercial, residential and vehicle-driving areas. Vehicular options are available for creating trafficable areas, and modules are stackable which ensures economical transportation and on-site storage.

The system is simple and clever, designed for quick and easy installation. As it is very portable, it can be carried in to hard-to-reach places, allowing for installation in difficult situations.

Contents

StormCell

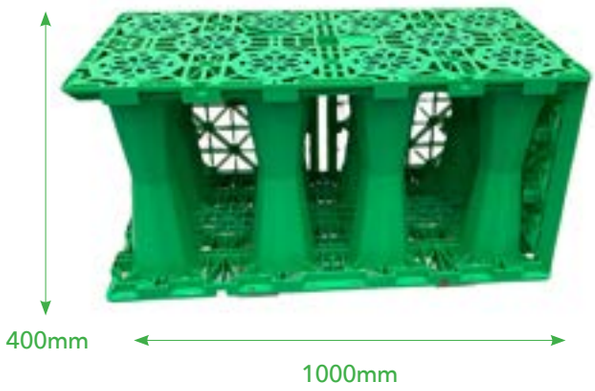
Specifications

Product specifications

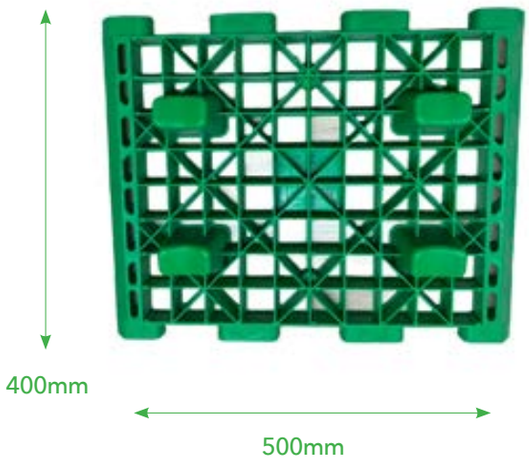
Length	1000mm
Width	500mm
Height	400mm
Weight	16kg
Void Ratio	95%
Net Volume	190ltr
Durability	Service Life of 50 years Minimum
Load Strength	Vertical: 500kN/m2 @ 23°C Lateral: 93kN/m2 @ 23°C
Minimum Excavation Depth	1.0m to 9m
Minimum Backfill Depth	.6m to 7m
Chemical & Biological Resistance	Unaffected by Moulds and Algae, Soil Borne Chemicals, Bacteria and Bitumen
Material	100% Virgin Polypropylene
Quality Control	Manufactured Under ISO:9001 (2015)

Module Dimensions

Top and Bottom module



Side Plate



StormCell

Pre-Construction Checklist

Tools You Will Need:

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

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 Geotextile (≥ 300g)
- Clean Bedding and Back-Fill Material as per the Design Specifications
- Rodding Eye Box or similar as per the Design Specifications
- Finishing Material as per the Design Specifications

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 .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 Reflection or E = < 2mm, eliminating the need for any additional strengthening or Geogrid products.

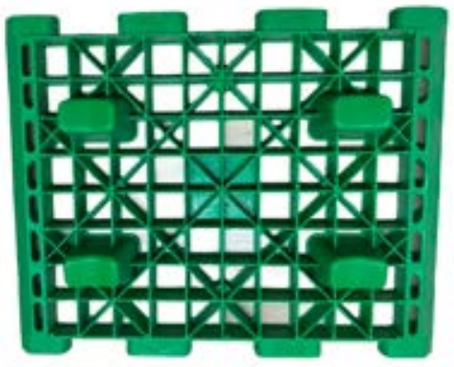
StormCell

System componets

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.

Top and Bottom Module are exactly the same.
Size 1000 (long)x 500 (wide) x200 (height) mm



Side plates, only required to the external face / perimeter of the installation.

Top cover, only needed for top side

Buckles are for connecting 2 tanks together.

StormCell

Excavation

Prepare the Foundation Pit location as per the Design Plans, to meet the Size and Depth requirements.

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 on Page 1. Level the Base of the Excavation to achieve a Flat, Level Surface and Compact to a minimum of 95%SPD (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, seek GEOTECHNICAL Engineer Advice.

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

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StormCell

Prepare the Base

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

(Compact Density ≥ 95%) (≥ 100mm Depth)

If the Foundation Material is soft, check with the Designer for confirmation that the Base is acceptable, ***before*** proceeding.

- Level the excavation base ensuring there is no water present. A 5-10mm variance across the base is acceptable, however if present it should fall towards an outlet.
- 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 be free of debris and sharp objects that could puncture the Geotextile Fabric.
- **Applicability:** Stone or Sand is acceptable, providing it meets the specified requirements.

StormCell

Install the Geotextile

Line the Foundation Pit with the Geotextile. Use Class 2 Strength Geotextile Cloth with Class 1 Filtration, this is the equivalent of an AS 410.

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.

StormCell

Module Construction Instructions

1 StormCell Module

- 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 long x 500mm wide x 400mm high

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 Outer Perimeter StormCell Modules

- 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

3 Top Layer StormCell Modules

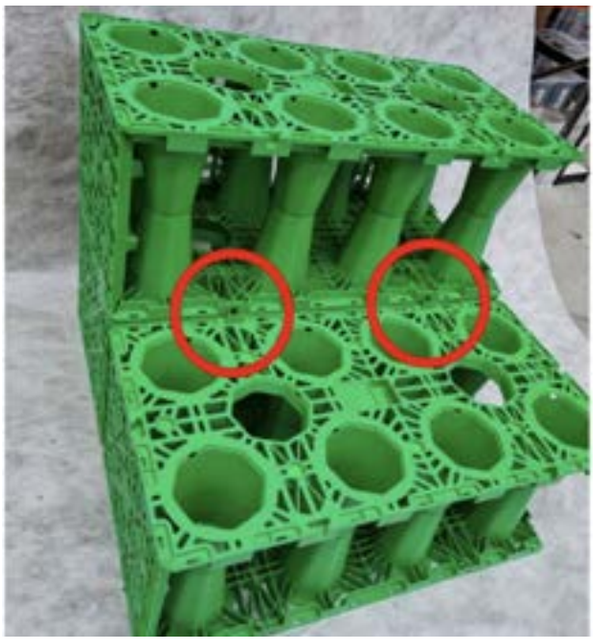
- Fit the Top Covers only to the Top Side of the StormCell Modules located on the Top layer of the StormCell System

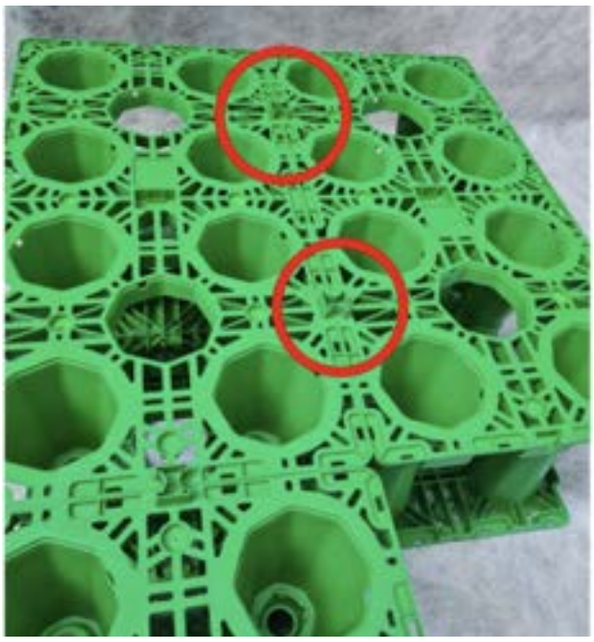
StormCell

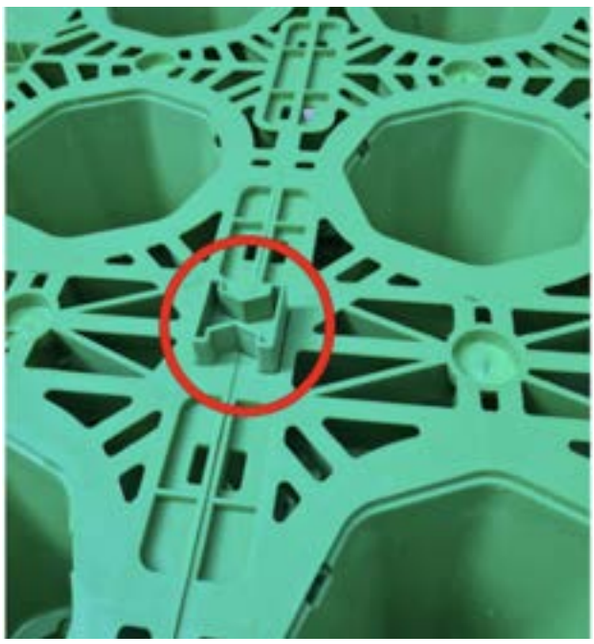
Install the StormCell System

Continued

The unique StormCell Buckle System ensures quick, efficient, and robust on-site assembly. No voids or gaps exist between the modules and locks the system together.







StormCell

Install the StormCell System

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

Ensure 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. Construct an Installation Platform (or choose a flat surface) large enough to accommodate a Single StormCell Module (Fig: 1).
2. Lift the Top and Bottom Modules into the Foundation Pit.
3. Construct StormCell Modules. Slightly tapping on a StormCell Module with a Rubber Hammer can help lock the StormCell modules together.
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 Out Side 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 right)

StormCell

Inspection/ Maintenance Ports

The StormCell system will typically 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.

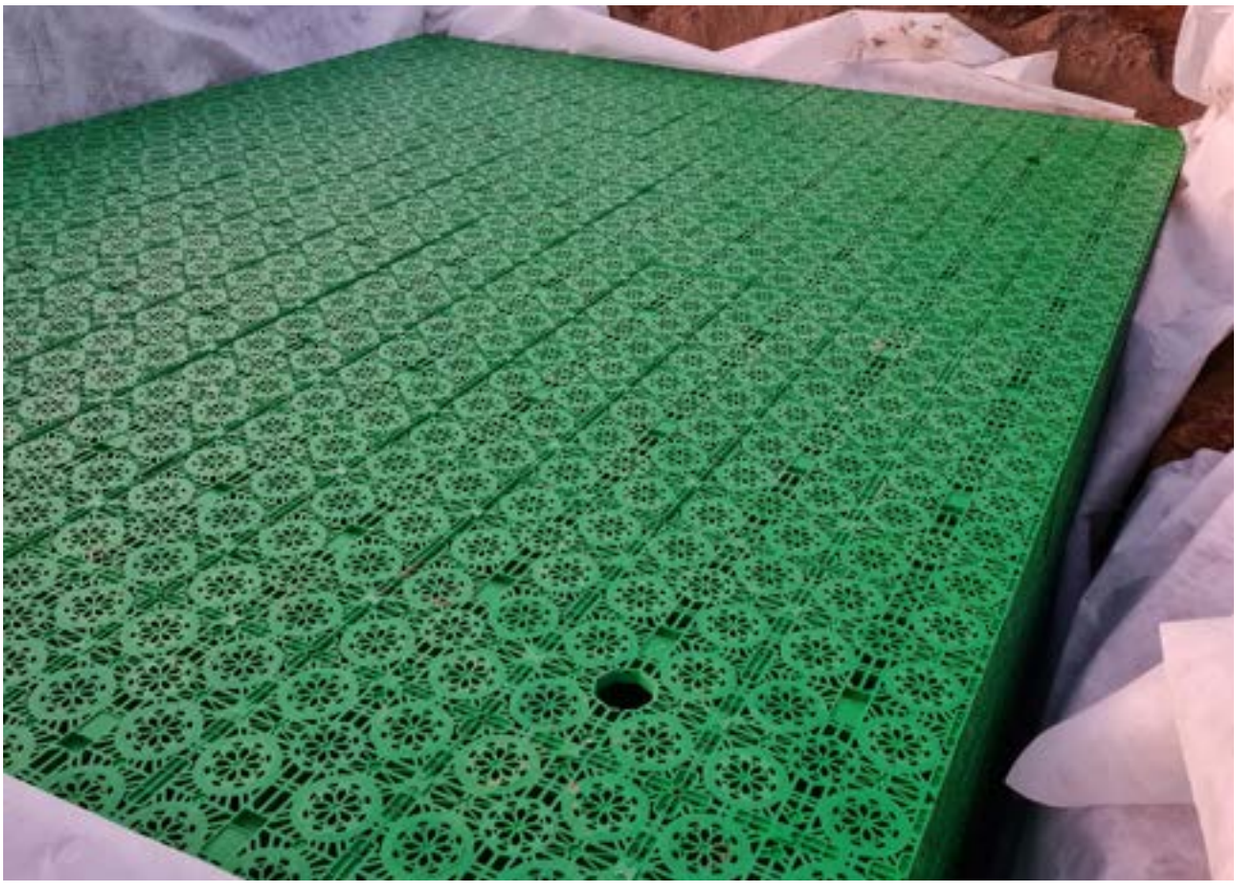
The Ports must be constructed from a maximum diameter 150mm UPVC, positioned on the designated Tanks at opposing ends of the StormCell System and be capped off using a Rodding Eye Box or similar, as per the Designers Specifications.

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.



StormCell

Backfill and Compaction

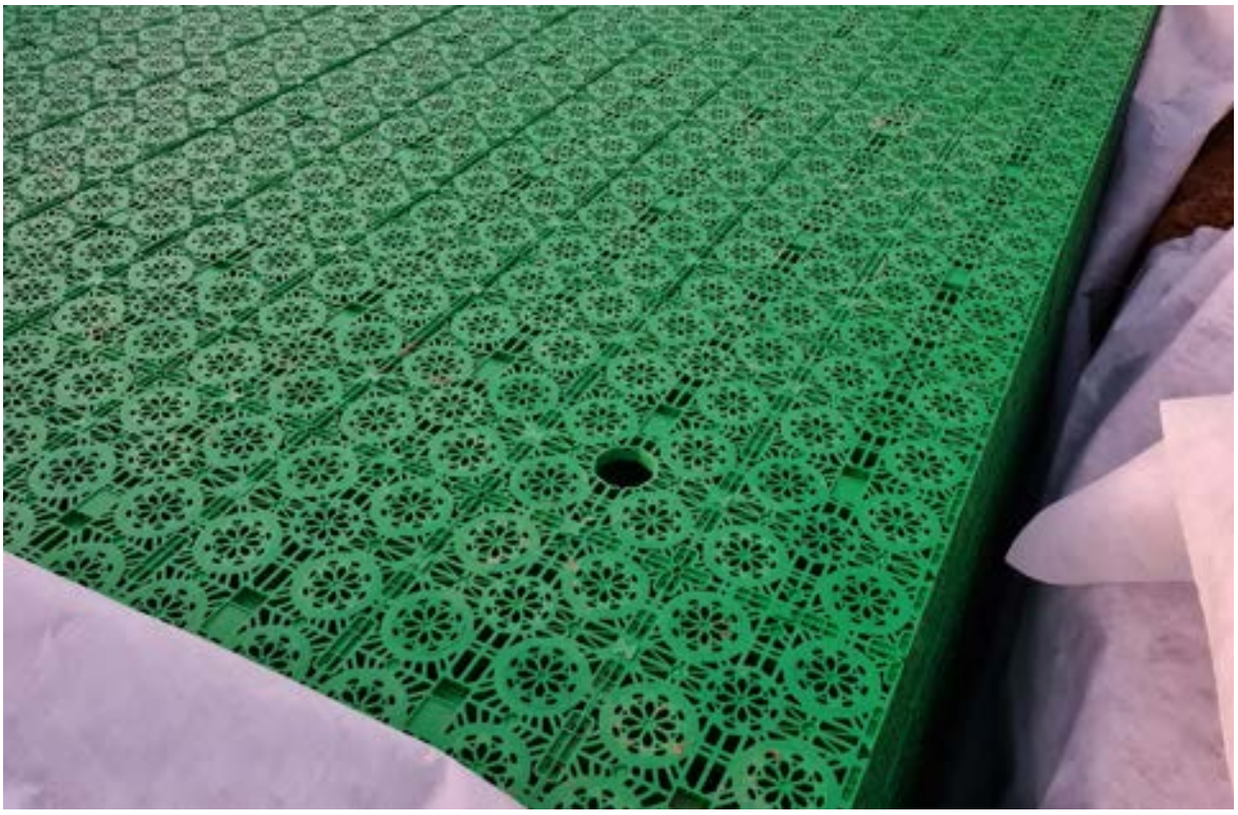
Once the installation of the StormCell Modules is complete, the Foundation Pit must immediately be Back-Filled and Compacted.

1. Wrap the entire StormCell System on all sides and top using Class 2 Strength GeoTextile fabric. Terminate the Geotextile cloth on the top of the StormCell system maintaining a minimum 300mm overlap as specified.

2. Evenly, Back-Fill the StormCell System with clean Bedding and Back-Fill Material on all Sides and on the Top, maintaining the minimum required thickness [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.

Wrapped StormCell Modules & Back-Filling



Completed StormCell System Construction

StormCell

Connecting to the 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.

Example of Packed and delivered StormCell System

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