



DRAINTUBE® Geocomposite

Installation Guidelines

Liquid drainage and/or gas collection



Global Synthetics
LEADERS IN GEOSYNTHETICS

Table of Contents

General Description	3
1 Handling and Storage	3
2 Installation	3
2.1 Draintube® Description	3
2.2 Installing the Product	4
2.3 Transverse Connections (at the end of a roll)	5
2.4 Side by Side Connections	6
3 Termination	6
3.1 Connection to a Collector Trench	6
3.2 Termination in a Ditch	7
3.3 Connection to Interceptor Drains	7
3.4 Quick Connect System	8
4 Repair	9
5 Upper Layers Installation	9
5.1 Geosynthetic Installation	9
5.2 Backfill Placement	10

Installation Guidelines - DRAINTUBE® Geocomposite

General Description

The product consists of geotextile layers comprised of short synthetic fibres of 100% polypropylene or polyester, which are needle punched together. Corrugated polypropylene pipes with two perforations per valley at 180-degree spacing and rotated 90 degrees per valley are inserted longitudinally between the geotextile layers during the manufacturing process at uniform intervals. DRAINTUBE® is manufactured in Canada.

1. Handling and Storage

Rolls of DRAINTUBE® geocomposite shall be shipped to the job site in a manner that will not cause damage to the rolls. The rolls shall be stored flat on a smooth surface (no wooden pallets) away from dirt, mud and excessive heat. For more detailed handling and storage information, please refer to ASTM D4873. The contractor shall handle the rolls so that they are not damaged in any way.

2. Installation

2.1 DRAINTUBE® Description

DRAINTUBE® geocomposite is supplied on rolls 3.98m wide and 75m long (Figures 1 & 2).

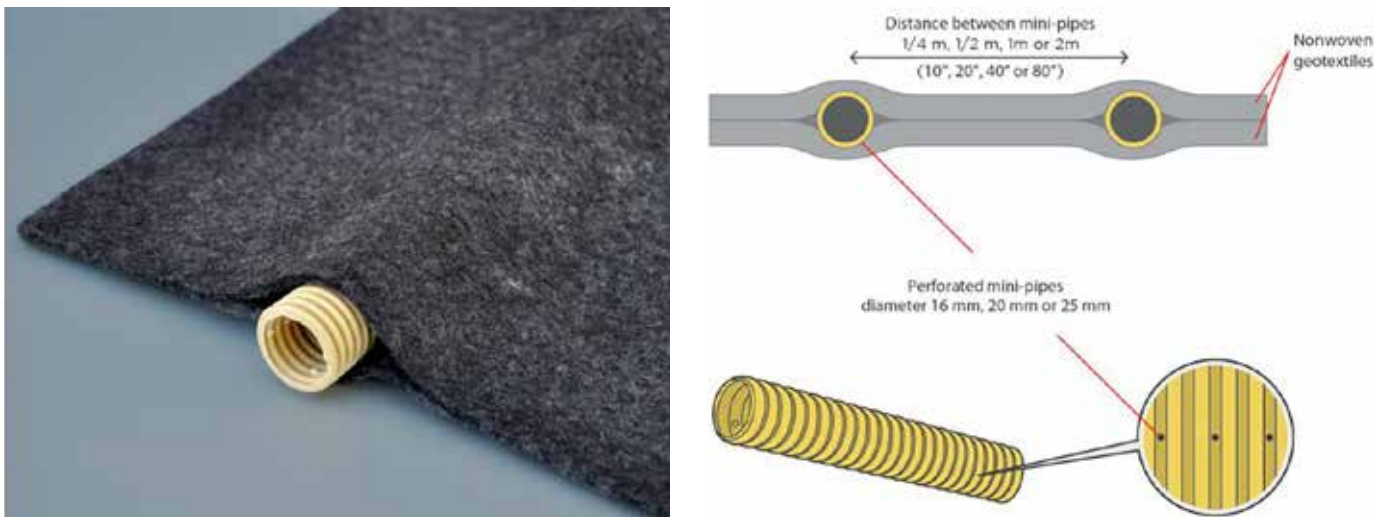


Figure1: DRAINTUBE® Structure



Figure 2: DRAINTUBE® packaging

Installation Guidelines - DRAINTUBE® Geocomposite

2.2 Installing the Product

DRAINTUBE® is unrolled on a base which has been graded and compacted to the required elevation (Figure 3) or on a geomembrane (Figure 4). Ensure that the product is properly oriented.



Figure 3: Rolls of DRAINTUBE®



Figure 4: DRAINTUBE® unrolled

For steep slopes, the geocomposite must be properly anchored. For slopes longer than the length of a roll, overlaps shall be shingled down the slope and/or in the direction that backfilling will occur.

Protect underlying layers from damage during placement of the geocomposite. Use sandbags or similar to weigh down the geocomposite prior to backfilling to prevent displacement by the wind.

Installation Guidelines - DRAINTUBE® Geocomposite

2.3 Transverse Connections (at the end of a roll)

Connection at the leading or terminating edge of the DRAINTUBE® shall be overlapped such that the upper geotextile layer can be rolled back 150mm minimum and the end of the next roll inserted into the opening. Mini-pipes may be either overlapped by 250mm minimum (Figure 5) or connected using snap coupler fittings supplied by the geocomposite manufacturer (Figures 6 & 7). Connection method requirements shall be at the engineers' discretion. Mechanical connections are recommended under high compressive loads.

Overlapped geotextiles shall be secured using sewn seams, welds (hot air or flame) or additional overlap.

The mini-pipes of the geocomposite must always be maintained between the geotextile layers to prevent contamination by soil particles.

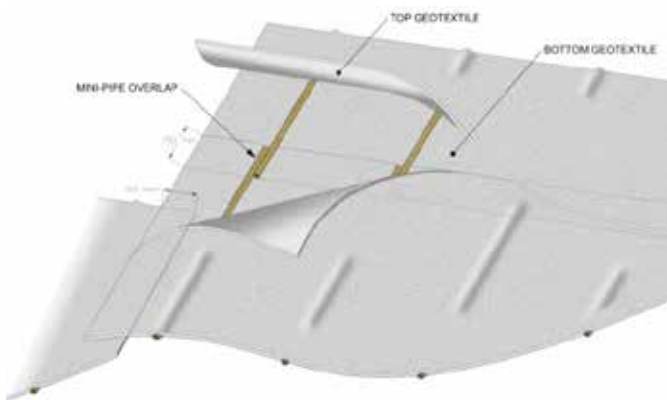


Figure 5: Transverse connections without couplers

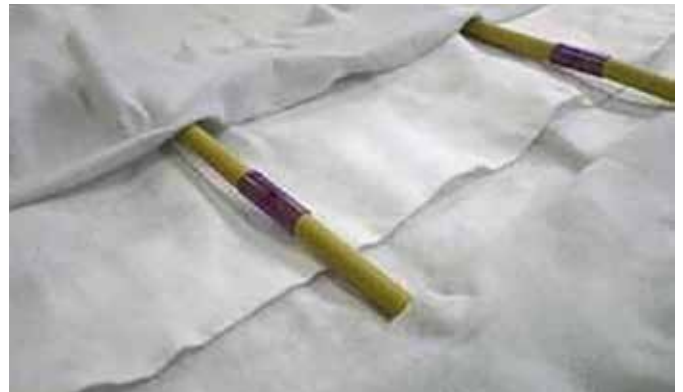
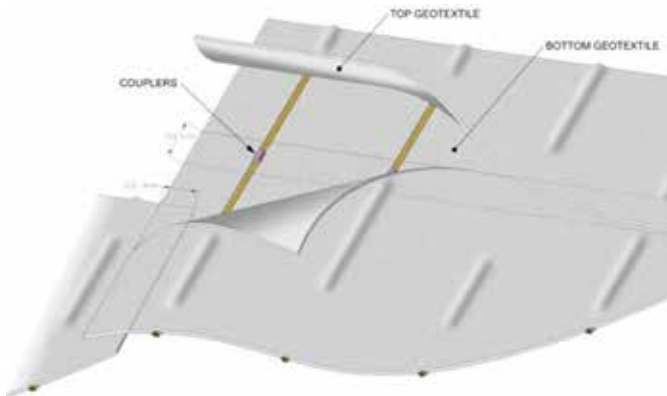


Figure 6: Transverse connections with couplers



Figure 7: Mini-pipe junction with couplers

Installation Guidelines - DRAINTUBE® Geocomposite

2.4 Side by Side Connections

Connections along the side of the DRAINTUBE® roll shall be overlapped 100mm minimum and shall be secured using sewn seams, additional overlap, or welds (Figure 8). Connection method requirements shall be at the direction of the engineer.



Figure 8: Side by side connections

3. Termination

3.1 Connection to a collector trench

Connection to a collector trench requires an overlap of a minimum of 200mm and a geotextile cover (Figure 9).

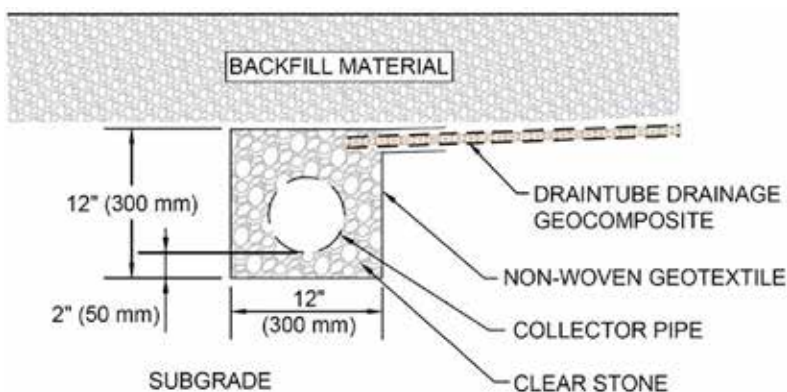


Figure 9: Connection to a collector trench

Installation Guidelines - DRAINTUBE® Geocomposite

3.2 Termination in a Ditch

To terminate in a ditch, DRAINTUBE® should be unrolled to the edge of the ditch (Figure 10).

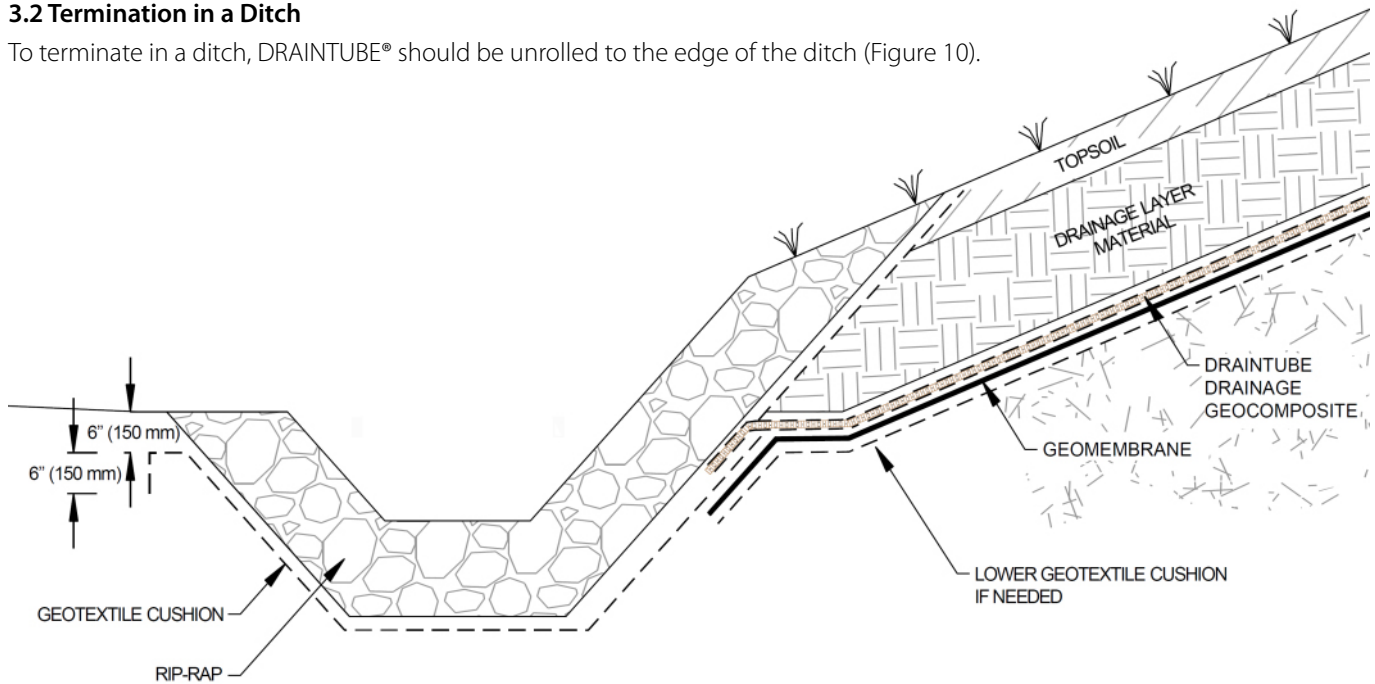


Figure 10: Termination in a ditch

3.3 Connection to Interceptor Drains

Connection to an interceptor drain may be made with or without a drainage trench (Figure 11). The connection should be at the direction of the engineer.

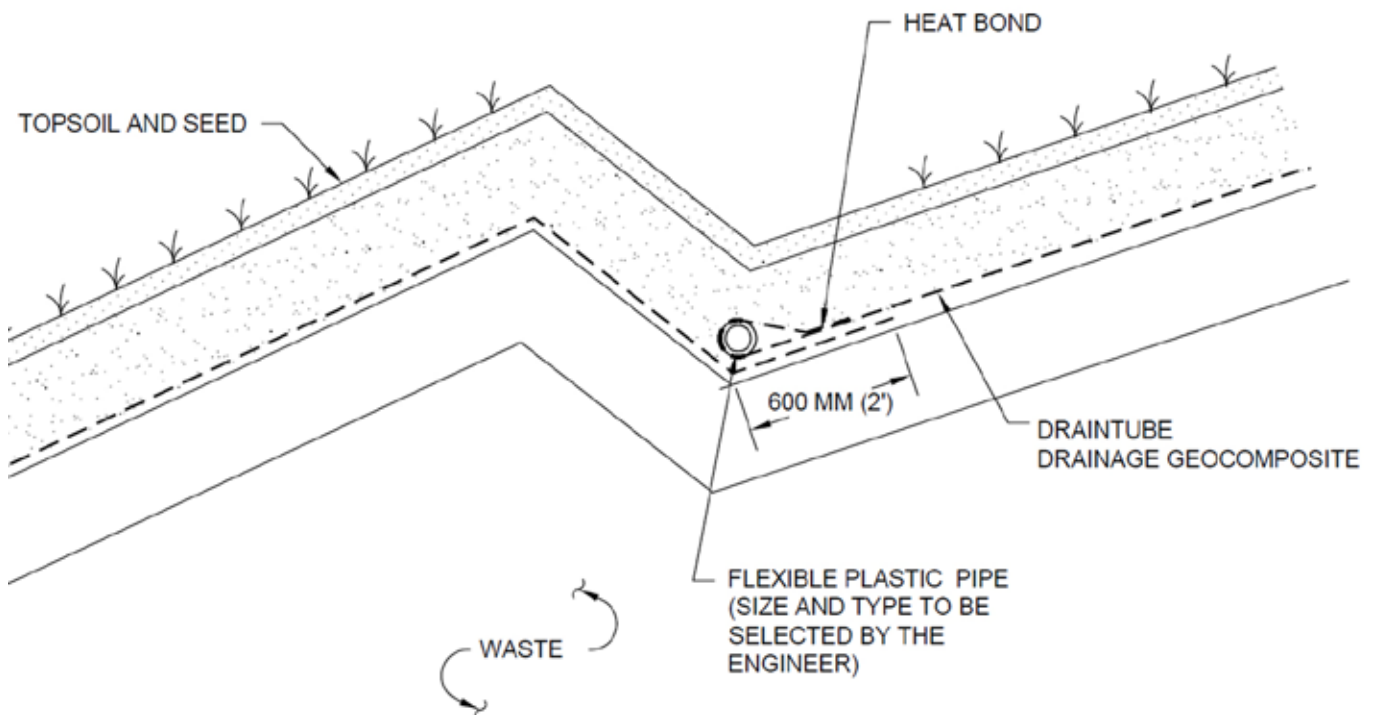


Figure 11: Typical cross section for interceptor drain connection

Installation Guidelines - DRAINTUBE® Geocomposite

3.4 Quick Connect System

DRAINTUBE® can be connected directly to a collector drain using the Quick Connect system (Figures 12 & 13). For vacuum applications, this allows a positive connection of the mini-pipes to the collector drain.

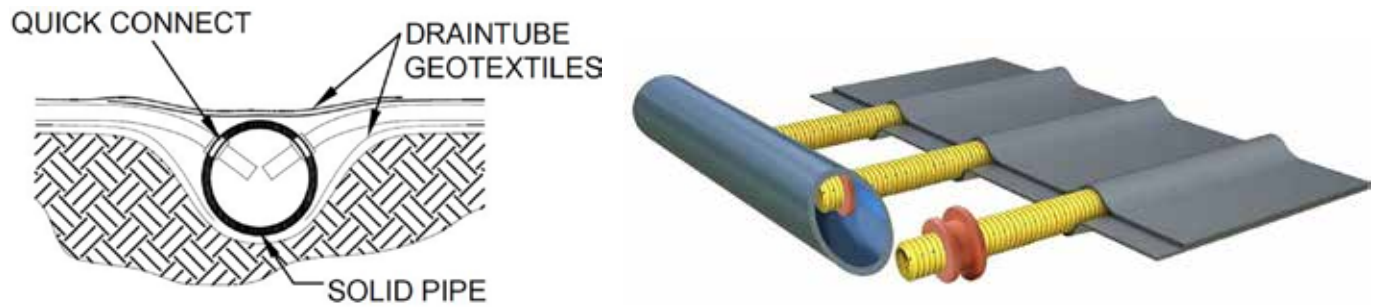


Figure 12: Quick Connect System



Figure 13: Connection to a plain drain with Quick Connect

Installation Guidelines - DRAINTUBE® Geocomposite

4. Repair

Prior to covering the deployed DRAINTUBE® drainage geocomposite, each roll shall be inspected for damage. Any rips, tears or damaged areas on the geocomposite shall be repaired.

If a section of pipe is damaged during installation, add a piece of undamaged pipe of the same diameter next to the damaged pipe, extending a minimum of 150mm beyond each end of the damaged section of pipe.

If the geotextile is ripped or torn, install an undamaged piece of the same material under the hole that extends a minimum of 150mm beyond the hole in all directions, to ensure that protection of the geomembrane is maintained.

If the area to be repaired is more than 50 percent of the width of the panel, then the damaged area shall be cut out and replaced with undamaged material. Damaged geotextile shall be replaced by the same type of geotextile.

5. Upper Layers Installation

5.1 Geosynthetic Installation

DRAINTUBE® shall not stay uncovered for more than 14 days after deployment.

A low ground pressure All-Terrain Vehicle (ATV) that exerts a maximum load of 6psi may be used on DRAINTUBE®. It shall be operated to avoid abrupt stops, starts, and/or turns. ATV tires shall be clean, and no passengers are allowed on the ATV. No other equipment shall be operated on the top surface of the geocomposite drainage layer without permission from the engineer.

Geosynthetic materials (geomembrane, geogrid, etc.) are to be installed without displacing the DRAINTUBE® (Figure 14).



Figure 14: Upper geosynthetic layer placement

Installation Guidelines - DRAINTUBE® Geocomposite

5.2 Backfill Placement

The geocomposite drainage layer shall be covered with the specified material within 14 days of deployment. The backfill shall be free of foreign matter which could damage the geocomposite drainage layer. Backfill may usually be placed directly on DRAINTUBE® (Figure 15). Care should be taken to avoid displacement of the geocomposite.



Figure 15: Backfilling

The backfill shall not be dropped directly onto the drainage geocomposite from a height greater than 1 metre. The backfill shall be pushed over the geocomposite drainage layer in an upward tumbling motion that prevents wrinkles in the drainage layer.

A low ground pressure All-Terrain Vehicle (ATV) that exerts a maximum load of 6psi may be used on DRAINTUBE®. It shall be operated to avoid abrupt stops, starts, and/or turns. ATV tires shall be clean and no passengers are allowed on the ATV. No other equipment shall be operated on the top surface of the geocomposite drainage layer without permission from the engineer.

The contractor must maintain a minimum of 300mm of backfill between DRAINTUBE® and the backfill equipment or use adapted lightweight equipment. Heavy equipment like dumpers shall operate on access roads with a minimum thickness of 1m above the DRAINTUBE®.

More about Global Synthetics



Global Synthetics
LEADERS IN GEOSYNTHETICS

Global Synthetics is a 100% Australian-owned company, proud to offer a complete range of high-quality geosynthetic products backed by over 200 years of combined staff experience in the industry.

We have supplied products to some of the largest recent infrastructure works in Australia. Global Synthetics provides major benefits to any geotechnical engineering project with the right products and our technical expertise.

Stay on top of the latest Global Synthetics information and visit our website at www.globalsynthetics.com.au

SYDNEY	(02) 9725 4321
PERTH	(08) 9459 4300
BRISBANE	(07) 3865 4444
ADELAIDE	(08) 8384 8894
MELBOURNE	(03) 9791 1772

