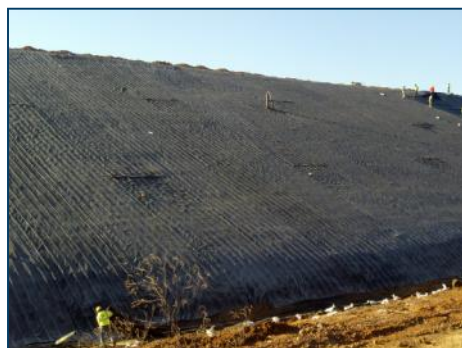


DRAINTUBE

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DRAINTUBE™
Installation Guidelines

www.dRAINTUBE.net



DRAINTUBE™

Liquid and Gas collection

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General Description and Requirements

The product consists of two geotextile layers comprised of short synthetic fibers of 100% polypropylene or polyester which are needlepunched 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.

The specific DRAINTUBE™ product supplied varies depending on the required hydraulic performance for such conditions as: flow length, slope, permeability, flow volume and maximum hydraulic pressure. The specifications for each product are shown on specific technical data sheets.

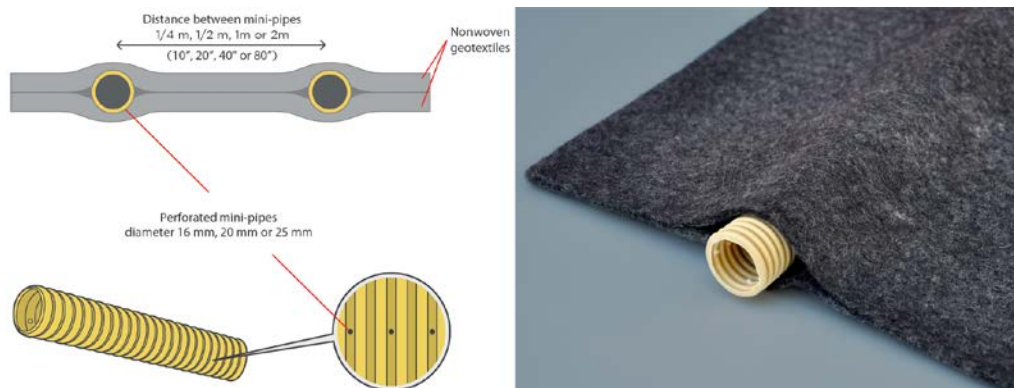
1 HANDLING AND STORAGE

Rolls of DRAINTUBE™ Geocomposite shall be shipped to the jobsite 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 3.98 m (13 ft.) wide (figures 1 & 2).



Figures 1: DRAINTUBE™ structure



Figure 2: DRAINTUBE™ packaging

2.2 Putting into place

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



Figure 3: Rolls of DRAINTUBE™



Figure 4: DRAINTUBE™ installation

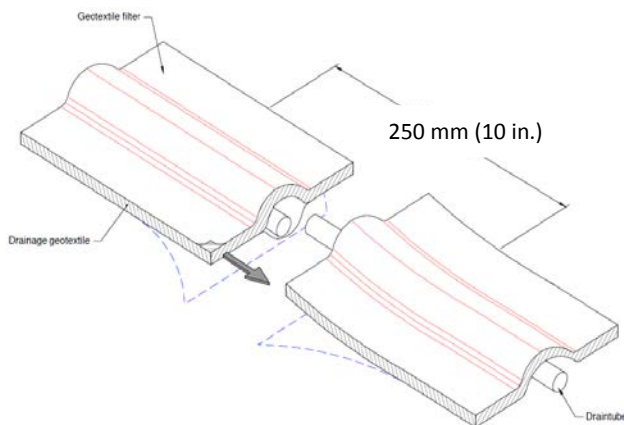
For steep slopes, the geocomposite must be properly anchored. For slopes longer than the length of a roll, only full length rolls should be used at the top. Overlaps shall be shingled down the slope and/or in the direction that backfilling will occur.

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

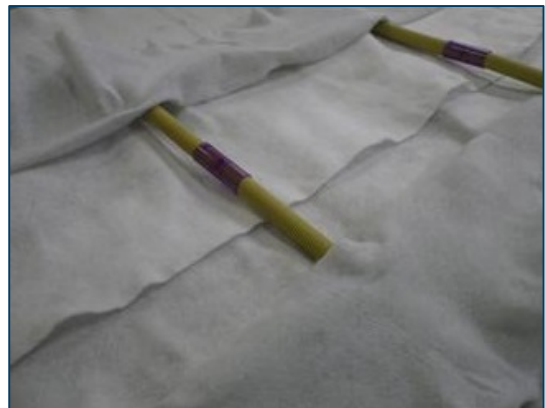
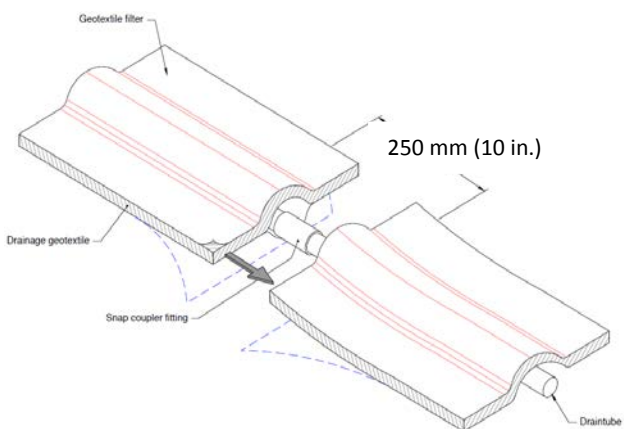
2.3 Transverse Connections (at the end of a roll)

To ensure continuity of flow in the pipe between rolls, transverse joints are used. The pipe joints may be either mechanical connectors or overlaps at the engineers' discretion. Mechanical connections are recommended under high compressive loads.

The filter layer of the geocomposite is rolled back. The end of the next roll is inserted into these openings with the pipes placed side by side (figures 5) or mechanically connected (figures 6 & 7) with snap couplers provided. Overlapped geotextiles shall be secured using sewn seams, welds (hot air or flame) or additional overlap.



Figures 5: Transverse connections without couplers



Figures 6: Transverse connections with couplers



Figure 7: Mini-pipe junction with couplers

2.4 Side by Side Connections

Side by Side Connections require an overlap of 250 mm (10 in.). To avoid displacement (due to wind, backfilling, etc.), the overlap may be secured with sewn seams, welds, hot air or additional overlap. The spacing between welds shall be no greater than 6 feet (figures 7). Connection method requirements shall be at the direction of the engineer.

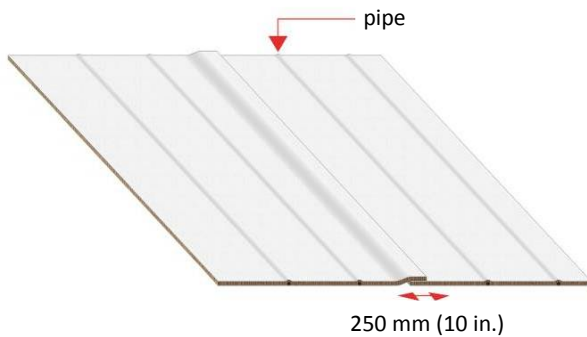
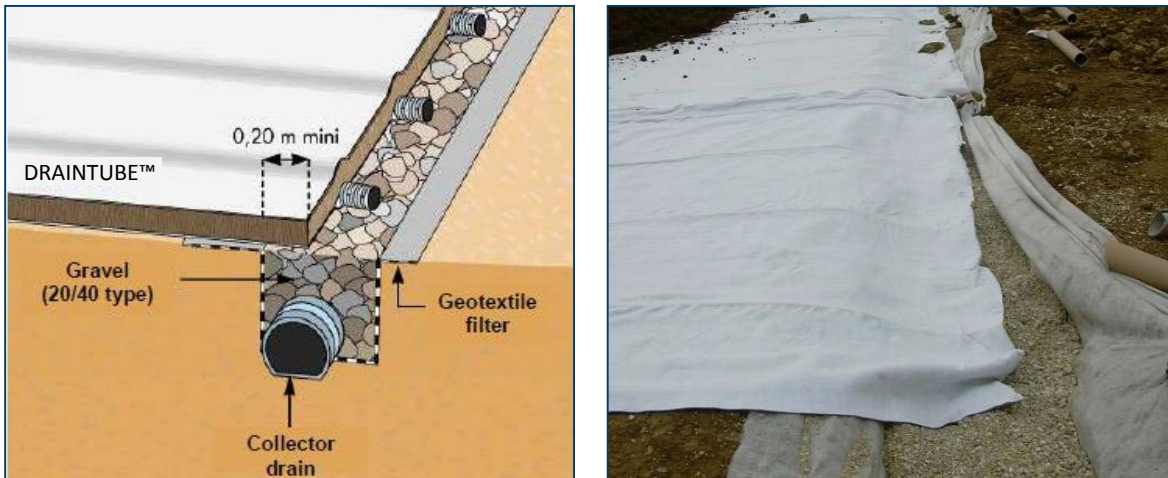


Figure 8: Side by side connections

3 TERMINATION

3.1 Connection to liquid interceptor drains

Connection to an interceptor drain requires an overlap of a minimum of 200 mm (8 in.) (figure 9) and a geotextile cover.



Figures 9: Connection to liquid interceptor drain

3.2 Termination in a ditch

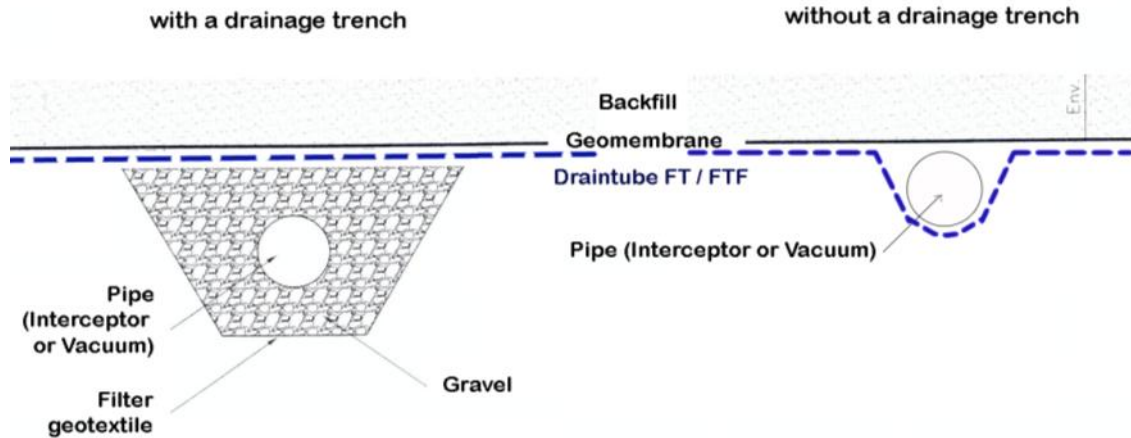
To terminate in a ditch, DRAINTUBE™ should be unrolled to the edge of the ditch (figure 10).



Figure 10: Termination in a ditch

3.3 Connection to gas interceptor drains or vacuum

Connection to an interceptor drain or a vacuum may be made with or without a drainage trench (figures 11 & 12). The connections should be at the direction of the engineer.



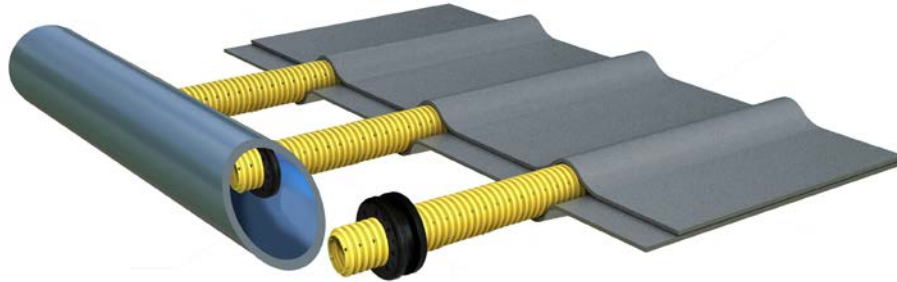
Figures 11: Typical cross section for gas interceptor drain connections



Figure 12: Connection to an interceptor drain

3.4 Quick Connect™ system

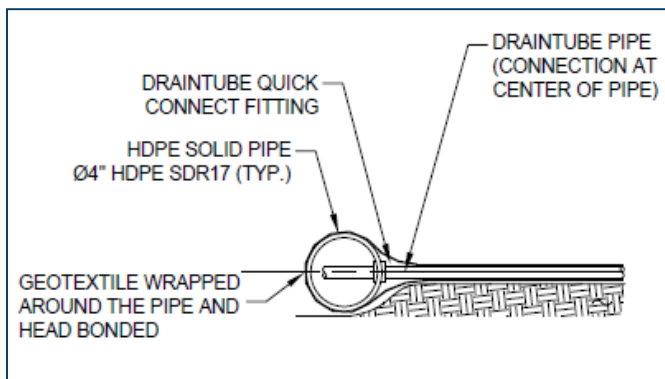
DRAINTUBE™ can be connected directly to the collector drain using the Quick Connect™ system (figures 13, 14 & 15). For vacuum applications, this allows a positive connection of the mini-pipes to the collector drain.



Figures 13: Quick Connect™ system



Figures 14: Connection to a plain drain with Quick Connect™



Figures 15: Connection details

4 REPAIR

Prior to covering the deployed geocomposite, each roll shall be inspected for damage. Any rips, tears or damaged areas on the geocomposite shall be removed and patched.

If a section of pipe is damaged during installation, add a piece of undamaged pipe of the same size next to the damaged pipe plus a minimum 200 mm (8 in.) extending beyond the damaged section of pipe at each end (see longitudinal connection). If the underneath geotextile is damaged, install an undamaged piece of the same material under the hole and extending a minimum of 200 mm (8 in.) beyond the hole. Damaged filter must be replaced by another filter to properly protect the pipe.

If the area to be repaired is more than 50 percent of the width of the panel, the damaged area shall be cut out and replaced with undamaged material using the connection methods described above.

5 UPPER LAYERS INSTALLATION

5.1 *Geosynthetic installation*

DRAINTUBE™ shall not stay uncovered for more than 14 days after deployment. Geosynthetic (geomembrane, geogrid, etc.) is to be installed without displacing the DRAINTUBE™ (figures 16).

Low ground pressure All-Terrain Vehicle (ATV) that exerts a maximum load of 6 psi 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.



Figures 16: Upper geosynthetic layer placement

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™ (figures 17). Care should be taken to avoid displacement of the geocomposite.



Figures 17: Backfilling

The backfill shall not be dropped directly onto the drainage geocomposite from a height greater than 1 meter (3 ft.). The backfill shall be pushed over the geocomposite drainage layer in an upward tumbling motion that prevents wrinkles in the drainage layer.

Low ground pressure All-Terrain Vehicle (ATV) that exerts a maximum load of 6 psi 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 300 mm (12 in.) 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 1 meter (3 ft.) above the DRAINTUBE™.

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