



INSTALLATION GUIDELINE



DRAINTUBE® geocomposite



Earthworks applications

DRAINTUBE is manufactured by

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General Description

The product consists of geotextile layers comprised of short synthetic fibers 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.

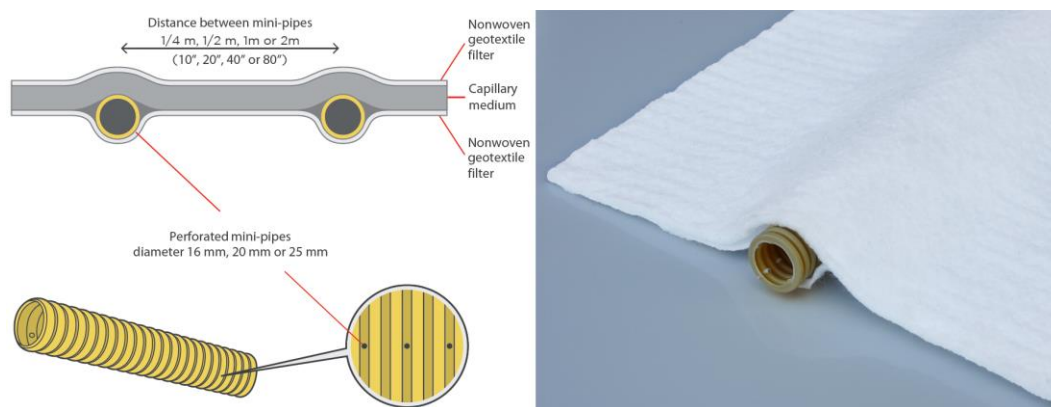
1 HANDLIND AND STORAGE

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 3.98 m (13 ft.) wide and 75 m (246 ft.) long (figures 1 & 2).



Figures 1: DRAINTUBE® structure



Figure 2: DRAINTUBE® packaging

2.2 Embankment

DRAINTUBE® is unrolled on a base which has been graded and compacted to the required elevation. Ensure that the product is properly oriented (figures 3). Overlaps shall be done in the direction that backfilling will occur.

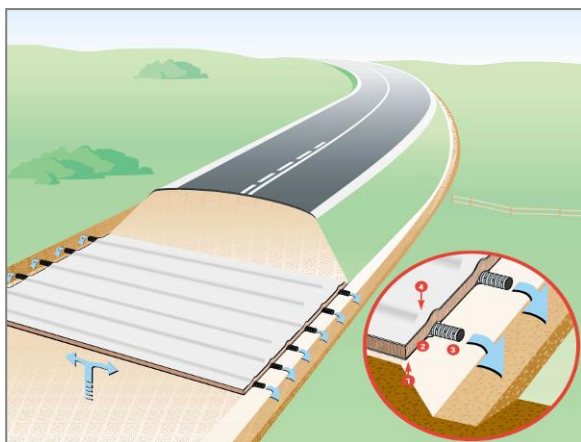


Figure 3: DRAINTUBE® deployment

In case of drainage on soft soil with vertical wick drains, DRAINTUBE® is unrolled directly on the wick drains. Hydraulic connection between wick drains and DRAINTUBE® is done by simple overlap (figures 4).



Figures 4: DRAINTUBE® placement over vertical wick drains

2.3 *Draining mask and MSE wall*

DRAINTUBE® is unrolled with mini-pipes in the direction of the slope, it must be properly anchored (figures 5). If needed, panels of DRAINTUBE® can be cut on site to the required length before being placed on the slope.



Figures 5: DRAINTUBE® installation on the slope

DRAINTUBE® can be anchored in the slope with steel bars or else to avoid any displacements (figures 6).



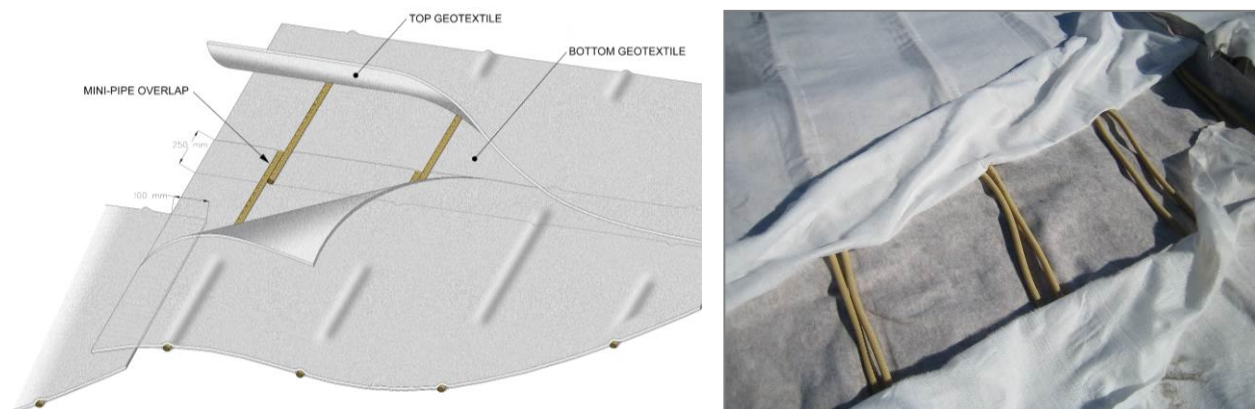
Figures 6: Mechanical fixations

3 CONNECTIONS

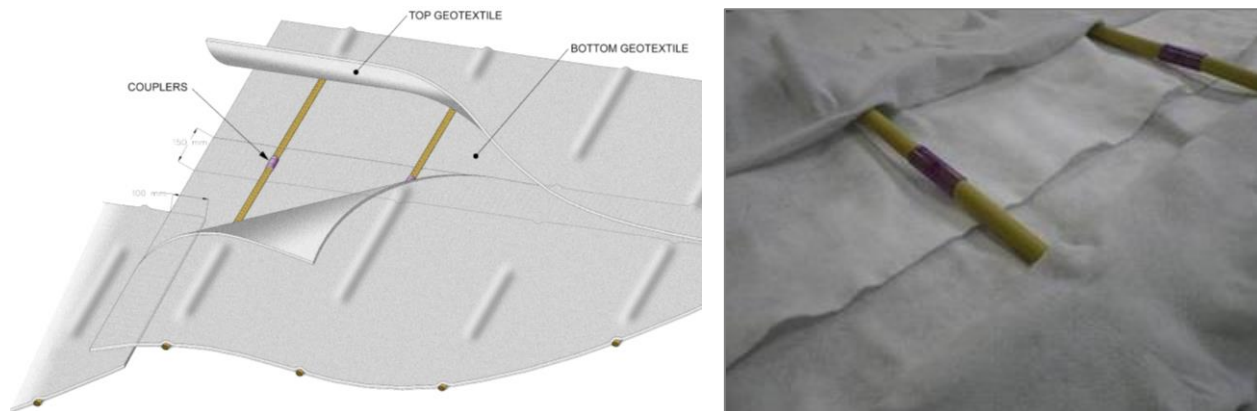
3.1 Transverse Connections (at the end of a roll)

Connection at the leading or terminating edge of the DRAINTUBE® shall be overlapped such that the upper geotextile layer can be rolled back 150 mm (6 in.) minimum and the end of the next roll inserted into the opening. Mini-pipes may be either overlapped by 250 mm (10 in.) minimum (figures 7) or connected using snap coupler fittings supplied by the geocomposite manufacturer (figures 8). 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.



Figures 7: Transverse connections without couplers



Figures 8: Transverse connections with couplers

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

To ensure proper performance of the geocomposite during its installation and placement of the backfill, transverse connections are not recommended in draining mask and MSE wall applications, unless otherwise specified by the engineer.

3.2 Side by Side Connections

Connections along the side of the DRAINTUBE® roll shall be overlapped 100 mm (4 in.) minimum and shall be secured using sewn seams, additional overlap, or welds (figure 9). Connection method requirements shall be at the direction of the engineer.

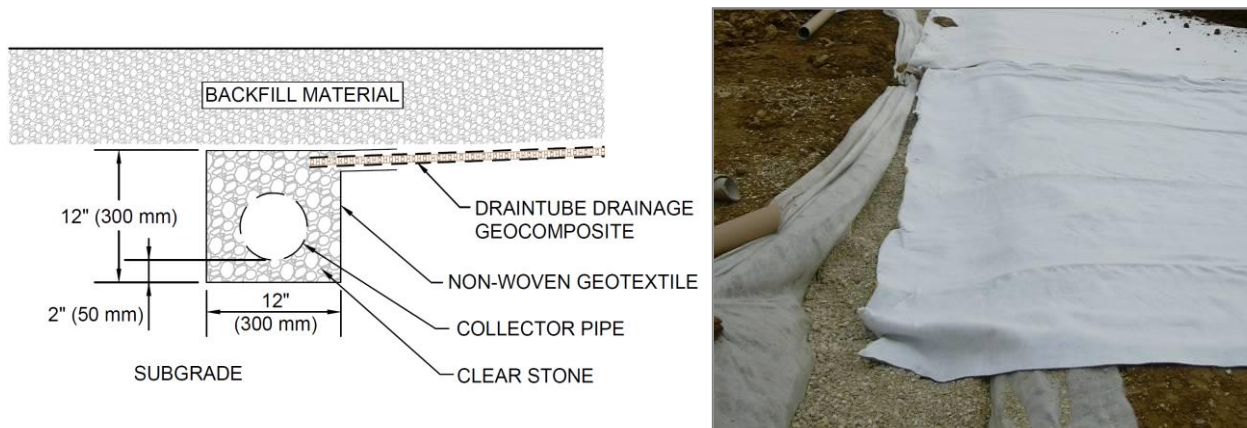


Figure 9: Side by side connections

4 TERMINATION

4.1 Connection to a collector trench

Connection to a collector trench requires an overlap of a minimum of 200 mm (8 in.) and a geotextile cover (figures 10).



Figures 10: Connection to a collector trench

4.2 Termination in a ditch

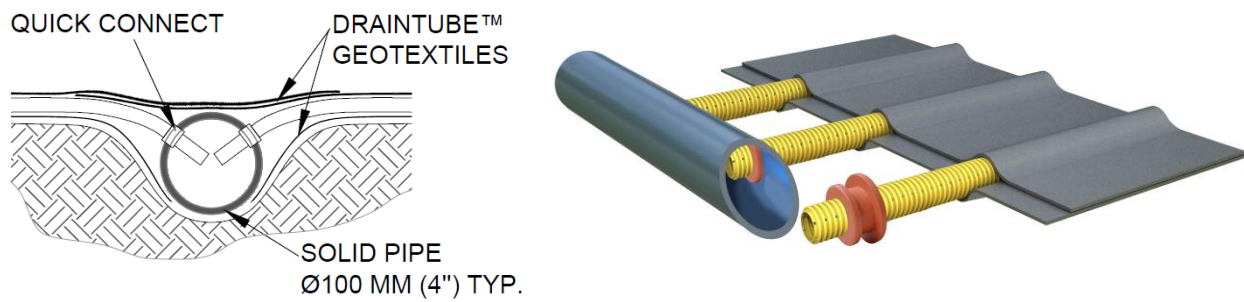
To terminate in a ditch, DRAINTUBE® should be unrolled to the edge of the ditch (figures 11).



Figures 11: Termination in a ditch

4.3 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.



Figures 12: Quick Connect system



Figures 13: Connection to a plain drain with Quick Connect

5 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 150 mm (6 in.) 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 150 mm (6 in.) 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.

6 UPPER LAYERS INSTALLATION

6.1 *Geosynthetic installation*

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

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.

Geosynthetic is to be installed without displacing the DRAINTUBE® (figure 14).



Figure 14: Upper geosynthetic layer placement

6.2 *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 15 & 16). Care should be taken to avoid displacement of the geocomposite.



Figures 15: Backfilling - Embankment



Figures 16: Backfilling – Draining mask and MSE wall

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 m (3 ft.) above the DRAINTUBE®.

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