

Polyfelt® TM13C High Performance Turf Reinforcement Mat



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1. General

This document is prepared to help ensure that the high performance turf reinforcement mat, once installed, will perform its intended design functions. To do so, the product must be identified, handled, stored and installed in such a way that its physical property values are not affected and the design conditions are ultimately met as intended. This document does not account for every possible construction scenario. This document contains information consistent with generally accepted practices of identifying, handling, storing and installing turf reinforcement mats for surficial erosion control applications. Failure to follow these guidelines may result in the unnecessary failure of the product in an otherwise properly designed application.

2. Product and Application

Polyfelt® TM13C is a three-dimensional, lofty synthetic, high performance turf reinforcement mat that provides bare soil retention, vegetation nurturing and high performance turf reinforcement for surficial erosion control applications in cut and fill slopes, swales, drainage channels, river banks, lakeshores, and flood levees (See Figure 1). The high tensile strength and enhanced UV stabilized polymer mesh provides long term high performance turf reinforcement function; and at the same time having optimum opening size to promote easy roots grow-through but small enough to minimise soil wash through, especially during seeding, germination and growing phases.

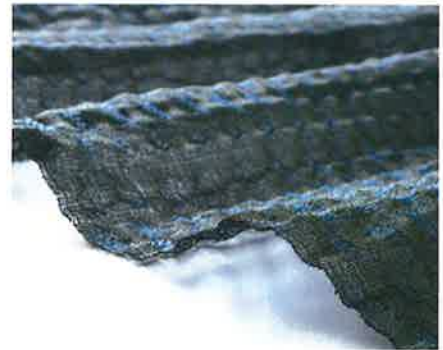


Figure 1. Polyfelt® TM13C High Performance Turf Reinforcement Mat

While the common function of the Polyfelt® TM13C is to prevent soil wash through and promote vegetation growth with its optimum opening size, the three-dimensional pattern of the product also has additional function of topsoil holding capability on slopes. Figure 2 shows the typical application of Polyfelt® TM13C turf reinforcement mat for high performance surficial erosion control of a fill slope.

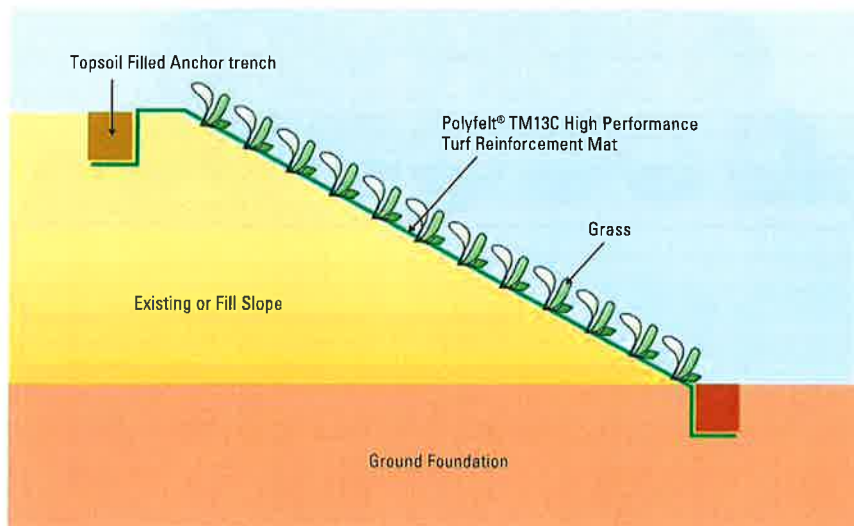


Figure 2. Typical Installation of Polyfelt® TM13C

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3. Material Identification, Storage and Handling

The turf reinforcement mat shall be rolled on cores having strength sufficient to avoid collapse or other damage from normal use. Each roll shall be wrapped with a plastic covering to protect the turf reinforcement mat product from damage during shipping and handling. Each roll shall be identified with a durable gummed label or the equivalent, clearly legible on the outside of the roll wrapping. The label shall indicate the manufacturer's name, the style number and the roll number.

Upon delivery, check the roll labels to verify that the correct turf reinforcement mat product has been received. Immediately inspect the turf reinforcement mat rolls to ensure it is free of any flaws or damage that might have occurred during shipping or handling. While unloading or transferring the turf reinforcement mat roll from one location to another, care should be taken to prevent damage to the wrapping, core, label or the turf reinforcement mat itself.

If the turf reinforcement mat is to be stored for an extended period of time, the turf reinforcement mat shall be located and placed in a manner that ensures the integrity of the wrapping, core and label as well as the physical properties of the turf reinforcement mat product. This can be accomplished by elevating the turf reinforcement mat rolls off the ground on dunnage (see Figure 3).

Care should be taken to ensure that the turf reinforcement mat rolls are adequately covered and protected from ultraviolet radiation, chemicals that are strong acids or strong bases, fire or flames including welding sparks, temperatures in excess of 60°C, and human or animal destruction.



Figure 3. Recommended setup for safe onsite stacked storage of Polyfelt® TM13C High Performance Turf Reinforcement Mat

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4. Ground Preparation

The slope, levee or channel surface shall be prepared by trimming the slope and / or ground including removal of any large roots, stumps, large rock or sharp objects that might puncture or tear the turf reinforcement mat (see Figure 4). Eroded slopes that have gullies, rills and any other disturbed areas must be levelled and fine graded prior to installation of the turf reinforcement mat. Compaction of soil shall be carried out in accordance to the project specifications.



Figure 4. Preparation of the slope surface

5. Installation

Polyfelt® TM13C high performance turf reinforcement mats are supplied generally in standard rolls of specific roll length and width. Before unrolling the turf reinforcement mat, verify the roll identification, length, and installation location with the contract drawings. While unrolling the turf reinforcement mat, inspect it for damage or defects. Discard or repair any damage that occurred during storage, handling or installation as directed by the Engineer.

Steel “J” or “U” pins are used to hold down the turf reinforcement mat (as per Engineer’s specification) until vegetation has matured with the turf roots growing through the turf reinforcement mat. Typically, the steel pins may be fabricated using 5 mm diameter steel bars bent to the shape of “J” or “U” and able to penetrate the ground by 300 mm or more. The grid spacing of the anchor pins should not be more than 1 m apart or as per Engineer’s specification.

5.1 For slopes

Typically, the machine direction of the turf reinforcement mat is laid parallel to the downward sloping direction. Excavate a trench at 300mm deep and 300mm wide on top of slopes to anchor and secure the turf reinforcement mat. The trench shall be at least 1.0m behind the crest of slope. Place one end of the turf reinforcement mat in the trench, backfill and compact. Unroll the turf reinforcement mat down to the toe of slope. Trench at the toe of slope shall be specified by engineer. See Figure 5(a) for trench detailing and Figure 5(b) for typical installation of Polyfelt® TM13C turf reinforcement mat over a prepared slope surface.

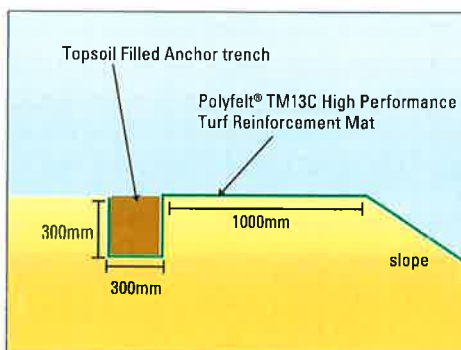


Figure 5a. Trench Detailing

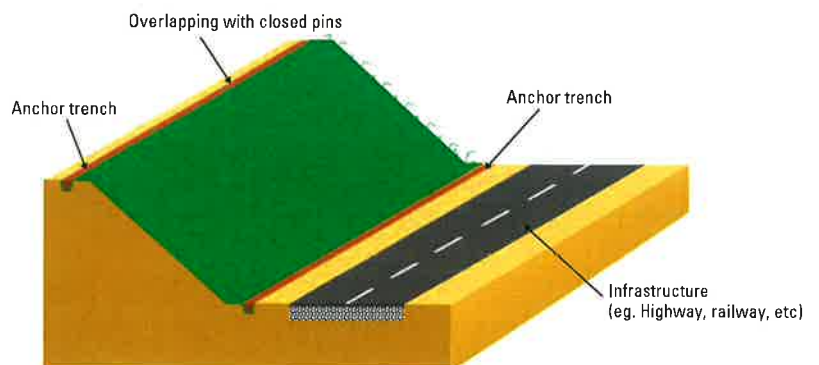


Figure 5b. Typical Installation of TM13C on Slope

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5.1 For channels

Typically, the machine direction of the turf reinforcement mat is laid perpendicular to the channel flow direction. Excavate a trench at 300mm deep and 300mm wide on top of slopes to anchor and secure the turf reinforcement mat. Also, excavate initial and terminal trench at 300mm deep and 300mm wide across the channel section at the lower and upper ends of the channel. See Figure 6(a) for initial and terminal trench detailing.

Place the first layer of the turf reinforcement mat across the channel, with one edge of the mat anchor in the initial trench and top end of the mat anchor in the trench on the slope, follow by backfill and compaction. Continue the placement of the adjacent turf reinforcement mats from lower to upper channel until it reached the terminal trench. If the channel length is longer than 18m, an intermittent trench at 12m intervals is recommended, or otherwise instructed by engineer. See Figure 6(b) for typical installation of Polyfelt® TM13C turf reinforcement mat over a channel.

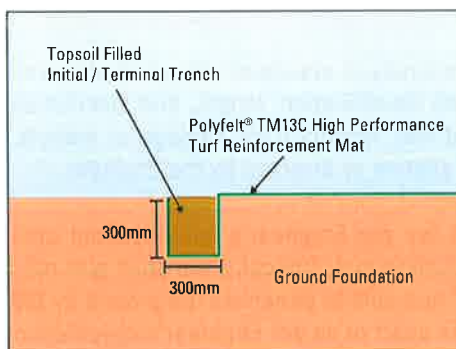


Figure 6a. Initial & Terminal Trench

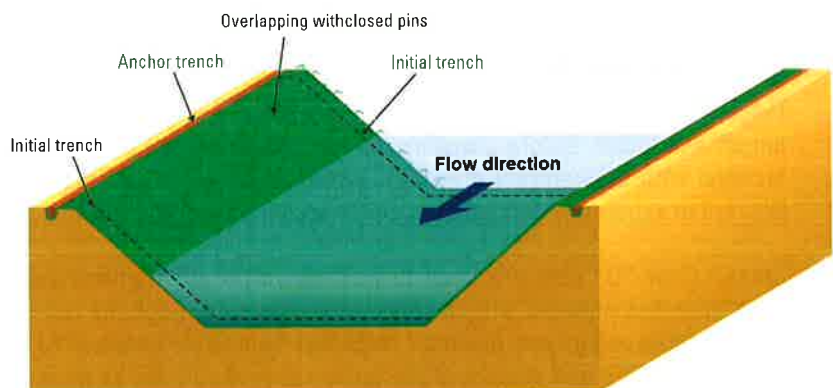


Figure 6b. Typical Installation of TM13C in Channel

6. Jointing

Typically, the machine direction of the Polyfelt® TM13C high performance turf reinforcement mat is laid down slope continuously without jointing. However, in the cross-machine direction of the turf reinforcement mat an overlap of the edge protrusion of a panel with adjacent panel may be acceptable. For joints done using the overlap method, steel "J" or "U" pins may be used to hold down the overlap. The dimensions of the pins and spacings shall be as directed by the Engineer.

For laying in channels, the machine direction of the Polyfelt® TM13C high performance turf reinforcement mat shall be laid across the channel continuously without jointing. If jointing is unavoidable across the channel, overlapping with closer pin spacing is recommended for both machine direction and cross-machine direction. This is typically to ensure flowing water does not have a chance of find a flow path underneath the laid-out turf reinforcement mat to cause bottom soil erosion of mat uplift.

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7. Top Soil Placement

Polyfelt® TM13C comes in the form of a bumpy 3-D polymer mat surface to help holding the topsoil for vegetation growth process enhancement. If topsoil placement is specified along with Polyfelt® TM13C, the selected topsoil is placed typically starting at the top of slope, berm or channel.

8. Seeding

If seeding is specified during the construction process, it can be carried out through physical spreading of seeds or by the hydroseeding process. Seeding may be entirely on top of topsoil filled Polyfelt® TM13C turf reinforcement mats or alternatively with 50% prior to placement of the mat and 50% on top of topsoil filled mat.

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