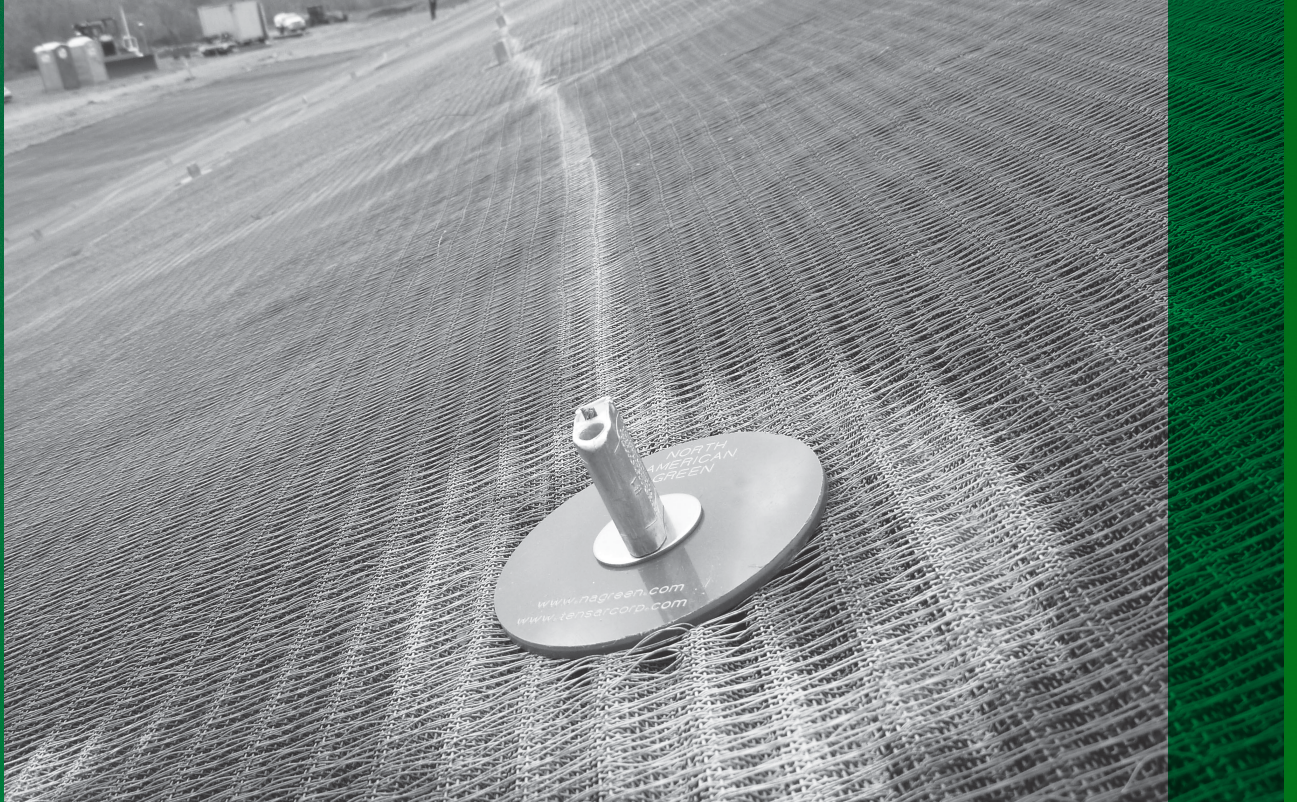


TURF AND EARTH REINFORCED MAT SYSTEMS (TERMS)

INSTALLATION GUIDE





Turf and Earth Reinforced Mat Systems (TERMS)

When your site requires the highest strength and performance available, protect your soils with a system that combines the RollMax™ VMax® Turf Reinforcement Mats (TRMs) with percussion earth anchors. The earth anchors reach deep into the soil strata to offer enhanced anchoring in the worst conditions, while our TRMs provide permanent protection of soils and vegetation. Our variety of earth anchors are designed for durability and holding power under extreme hydraulic stresses and adverse soil conditions (Table 1). And, when our earth anchors are used in combination with one of our high-performance TRMs, offer unmatched performance.

EXPERIENCE YOU CAN RELY ON

Tensar North American Green is the world's leading provider of performance-guaranteed erosion control solutions. For more than 25 years, our line of erosion and sediment control products has kept our customers on solid ground. The RollMax™ Systems' family of Rolled Erosion Control Products (RECPs) is solid evidence of Tensar North American Green's ongoing investment in innovation. Our short-term and

long-term ECBs and TRMs keep you one step ahead of just about any erosion challenge. We have developed integrated systems and products with the sole objective to ensure absolute customer satisfaction. Our products are backed by the most thorough quality assurance practices in the industry. And, we provide comprehensive design assistance for every Tensar system.

Tensar North American Green provides everything you need to know for quick, accurate erosion control installation tailored to your site. From start to finish, our RollMax Systems' product installation instructions are based on extensive research and field-proven techniques to ensure project success. The following pages offer instructions and guidelines for several scenarios you may encounter during the installation of RollMax TRMs with percussion earth anchors.

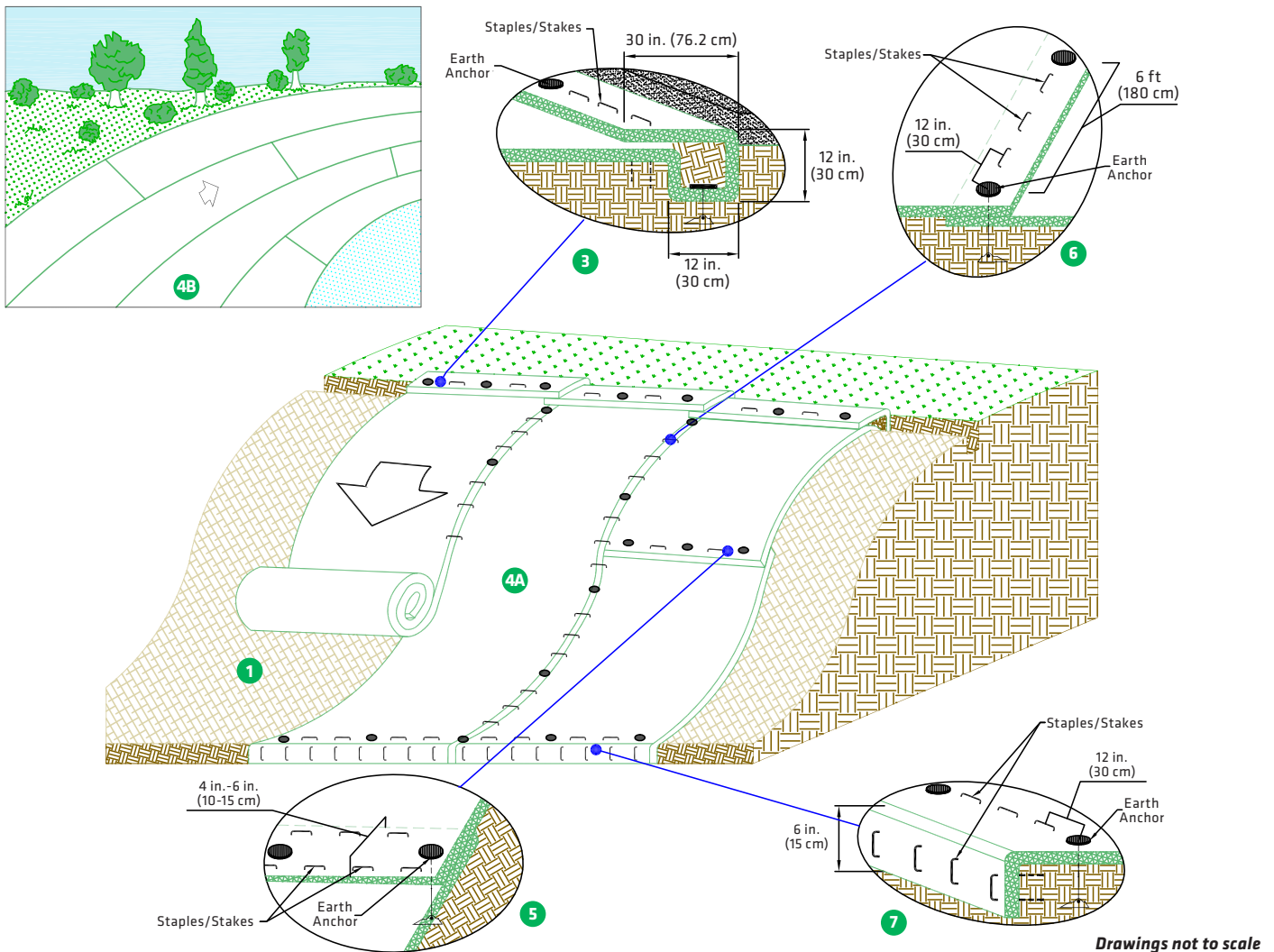
For additional installation assistance, please call **800-TENSAR-1**, visit www.tensarnagreen.com or e-mail info@tensarcorp.com and we will be happy to put you in touch with an erosion control specialist who can assist you.

Earth Anchor Options								
					EA 400		EA 680	
End Piece Options with a PVC Face Plate	Tendon Type (½ in. x 36 in.)	Assembly Description	Fast Install	Economic Anchor	Stainless	Galvanized	Stainless	Galvanized
	Copper Stop Sleeve with Stainless Steel Washer	Manually crimped to the stainless steel cable to secure the face plate.		X	X		X	
	Grip End Piece with Stainless Steel Washer	Three-dimensional, self-securing metal end piece that does not require manual crimping for tendon tensioning.	X	X	X	X	X	X
	Wedge Grip Piece	Self-securing end piece that installs flush to the face plate. Does not require manual crimping for tendon tensioning.	X		X	X	X	X
	Aluminum Stop Sleeve with Stainless Steel Washer	Manually crimped to the galvanized cable to secure the face plate.			X		X	X

TABLE 1

Slope and Levee Installation Detail

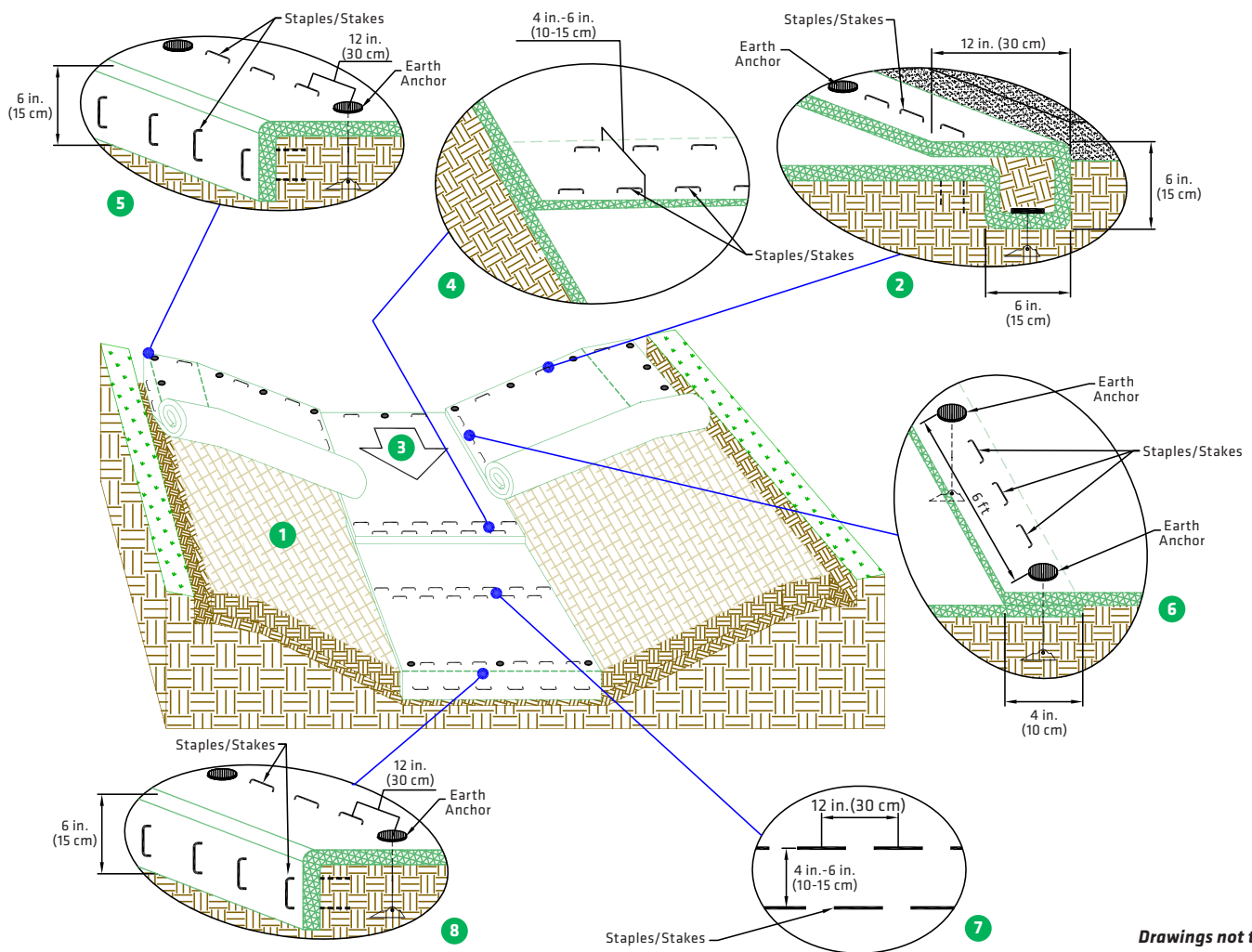
Choosing the right solution is half the battle against costly erosion. The other half is proper installation. Tensor® North American Green® provides all of the tools and instructions you need for quick, effective installation on your site.



GENERAL INSTALLATION

1. Prepare soil before installing the High-Performance Turf Reinforcement Mat (HPTRM), including any necessary application of soil amendments such as lime or fertilizer.
2. See Seeding and Vegetating section for details regarding preseeding, overseeding, or use with sod.
3. Begin at the top of the slope by anchoring the HPTRM in 12 in. (30 cm) deep x 12 in. (30 cm) wide trench with approximately 30 in. (76.2 cm) of HPTRM extended beyond the up-slope portion of the trench. Anchor the HPTRM with a row of anchors/staples approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Compact soil and fold remaining 30 in. (76.2 cm) portion of HPTRM back over compacted soil. Secure HPTRM over soil with a row of staples/stakes spaced approximately 12 in. (30 cm) across the width of the HPTRMs.
4. Roll the HPTRM (4A) down or (4B) horizontally across the slope. HPTRM will unroll with appropriate side against the soil surface. All HPTRM must be securely fastened to soil surface by placing anchors/staples/stakes in appropriate locations as shown in the anchoring detail.
5. Place consecutive HPTRMs end over end (shingle style) with a 4 in.-6 in. (10 cm-15 cm) overlap. Staple/stake through overlapped area, approximately 12 in. (30 cm) apart across entire HPTRM width.
6. Adjacent HPTRMs must be overlapped approximately 4 in. (10 cm) and fastened using staples/stakes every 12 in. (30 cm) between earth anchors. For curved sections, adjust the overlap edges accordingly to accommodate transitional segments.
7. The terminal end of the HPTRM must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.

Channel Installation Detail

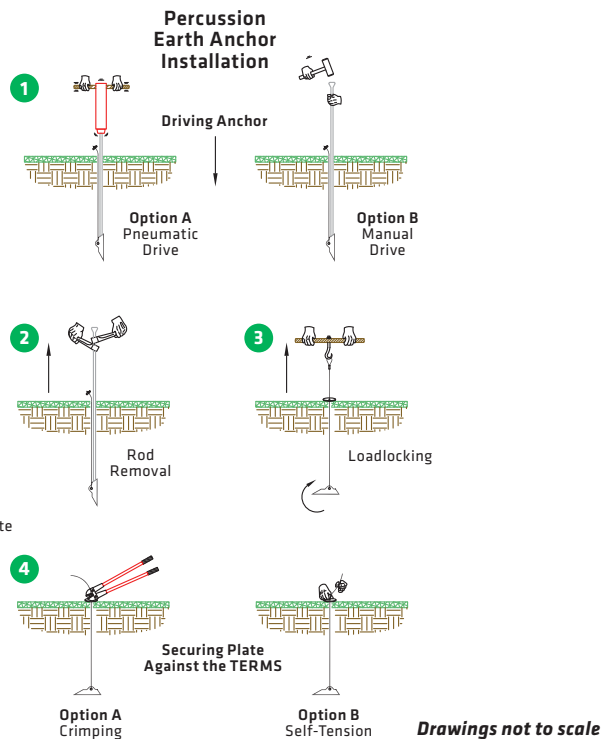
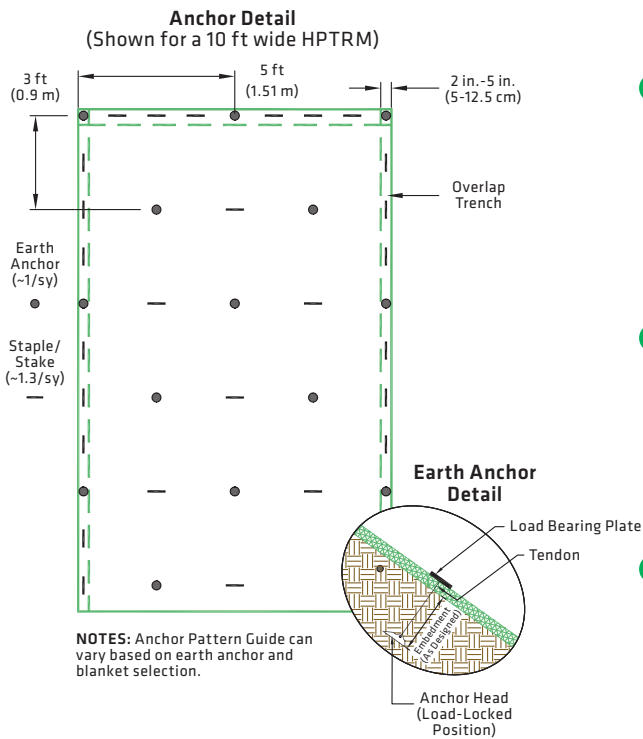


Drawings not to scale

GENERAL INSTALLATION

1. Prepare soil before installing the HPTRM, including any necessary application of soil amendments such as lime or fertilizer. See seeding and vegetating section for details regarding preseeding, overseeding or use with sod.
2. Begin at the top of the channel by anchoring the HPTRM in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of HPTRM extended beyond the upslope portion of the trench. Anchor the HPTRM with a row of anchors/staples/stakes spaced approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Compact soil and fold remaining 12 in. (30 cm) portion of HPTRM back over compacted soil. Secure HPTRM over soil with a row of anchors/staples/stakes spaced approximately 12 in. (30 cm) across the width of the HPTRM.
3. Roll center HPTRM in direction of water flow in bottom of channel. HPTRMs will unroll with appropriate side against the soil surface. All HPTRMs must be securely fastened to soil surface by placing anchors/staples/stakes in appropriate locations as shown in the anchoring detail.
4. Place consecutive HPTRMs end over end (shingle style) with a 4 in. x 6 in. (10 cm-15 cm) overlap. Use a double row of staples/stakes staggered 12 in. (30 cm) apart and 12 in. (30 cm) on center to secure HPTRMs.
5. Full length edge of HPTRMs at top of side slopes must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.
6. Adjacent HPTRMs must be overlapped approximately 4 in. (10 cm) and fastened.
7. In high flow channel applications, a staple/stake check slot is recommended at 30 ft to 40 ft (9 m-12 m) intervals. Use a double row of staples/stakes staggered 4 in. (10 cm) apart and 12 in. (30 cm) on center over entire width of the channel.
8. The terminal end of the HPTRMs must be anchored with a row of staples/stakes approximately 12 in. (30 cm) apart in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench. Backfill and compact the trench after stapling.

Anchoring Detail



ANCHORING DETAIL

The performance of ground anchoring devices is highly dependent on numerous site/project specific variables. It is the sole responsibility of the project engineer and/or contractor to select the appropriate anchor type and length. Anchoring shall be selected to hold the mat in intimate contact with the soil subgrade and resist pullout in accordance with the project's design intent.

1. Staples and/or stakes should be at least 6 in. (15 cm) in length and with sufficient ground penetration to resist pullout. Longer staples and/or stakes may be needed in looser soils.
2. The percussion earth anchor assembly consists of an anchor head, a tendon, a faceplate, and an end-piece device. See Tensar® North American Green® Earth Anchor specification for detailed information on assembly components and associated pull-out strength.

PERCUSSION EARTH ANCHOR INSTALLATION

1. Insert the drive rod into the assembly's anchor head then use either a sledge hammer or vibratory hammer to drive the anchor to their desired depth.
2. After the desired anchor depth is achieved, retract the drive rod.
3. Lock the anchor assembly by swiftly pulling the cable upwards until the anchor head rotates as signaled by sudden resistance to pulling. A hooked setting tool may be used to aid in this step.

NOTE: Larger anchors may require more force to set the anchor. This can be achieved through using simple mechanical equipment for greater leverage, such as a fulcrum, manual or hydraulic jack, winch, or post puller.

4. Secure the faceplate to the High-performance Turf Reinforcement Mat (HPTRM) surface by locking the end-piece. If using a copper or aluminum stop, crimp the ferrule to

secure. If using a self-tensioning end-piece (grip or wedge grip) set by simply tightening the end-piece against the faceplate. If desired, cut the remaining cable assembly, above end-piece, to desired length.

SEEDING AND VEGETATING

When using a Composite Turf Reinforcement Mat (C-TRM) with fiber components:

1. Pre-seed prepared soils prior to the installation of the C-TRM. Install matting as directed. C-TRM does not require soil infill or a top dressing of seed. Overseeding may be done as a secondary form of seeding.
2. Sod may be installed in place of seeding on top of the C-TRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.

When using a woven HPTRM:

1. Install the HPTRM as directed prior to seed and soil filling.
2. Place seed into the installed HPTRM. After seeding, spread a layer of fine soil into the mat. Using the flat side of a rake, broom or other tool, completely fill the voids. Smooth soil-fill in order to just expose the top of the HPTRM matrix. Do not place excessive soil above the mat.
3. Additional seed, hydraulic mulching or the use of a temporary Erosion Control Blanket (ECB) can be applied over the soil-filled mat for increased protection.
4. Sod may be installed in place of seeding. Install HPTRM, and soil-fill as outlined above. Place sod directly onto the soil-filled HPTRM. Additional staking of sod is recommended in high-flow conditions. Sodded areas should be irrigated until rooting through the mat and into subgrade occurs.
5. Consult with a manufacturer's technical representative for installation assistance if unique conditions apply.



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