

SPECIAL NOTE FOR TURF REINFORCING MAT

1.0 DESCRIPTION. Install turf reinforcement mat at locations specified in the Contract or as the Engineer directs.

2.0 MATERIALS.

2.1 Turf Reinforcement Mat. Use a Turf Reinforcement Mat from the Department's List of Approved Materials. Ensure product labels clearly show the manufacturer or supplier name, style name, and roll number. Ensure labeling, shipment and storage follows ASTM D-4873. Mats must be machine constructed with 100 percent UV stabilized synthetic materials that are continuously bonded at the filament intersections. Ensure the blanket is smolder resistant without the use of chemical additives. When stored, maintain the protective wrapping and elevate the mats off the ground to protect them from damage.

- A) Dimensions. Furnish in strips with a minimum width of 4 feet and length of 50 feet.
- B) Weight. Ensure the mat has a minimum mass per unit area of 10 ounces per square yard according to ASTM D 6566.
- C) Performance. The Department will use AASHTO's NTPEP laboratory evaluations for determining product performance.
 - 1) Germination and Plant Growth. Ensure the percent improvement versus control when tested according to ECTC Test Method 4 is less than or equal to 300.
 - 2) Shear Stress. Ensure the blanket can sustain a minimum shear stress of 3.00 pounds per square foot without physical damage or excess erosion (> 0.5 inches soil loss) when tested according to ECTC Method 3.

Current mats meeting the above criteria are:

<u>Manufacturer</u>	<u>Product</u>
North American Green	P550
North American Green	P300
SI Geosolutions	Landlok TRM 1060
Western Excelsior	PP5-12
East Coast Erosion Control Blankets	ECP-2
ErosionControlBlanket.com Inc.	P42

2.2 Staples. When the mat manufacturer does not specify a specific fastener, use steel wire U-shaped staples with a minimum diameter of 0.09 inches (11 gauge), a minimum width of one inch, and a minimum length of 12 inches. Use a heavier gauge when working in rocky or clay soils and longer lengths in sandy soils. Provide staples with colored tops when requested by the Engineer.

3.0 CONSTRUCTION. Install according to the Manufacturer's recommendations. When requested by the Engineer, provide a Manufacturer's Representative on-site to oversee and approve the initial installation of the mat. When requested by the Engineer, provide a letter from

the Manufacturer approving the installation. When there is a conflict between the Department's criteria and the Manufacturer's, construct using the more restrictive. The Engineer and Manufacturer's Representative must approve all alternate installation methods prior to execution. Construct according to the Manufacturer's recommendations and the following:

3.1 Site Preparation. Grade areas to be treated with matting and compact. Remove large rocks, soil clods, vegetation, and other sharp objects that could keep the mat from intimate contact with subgrade. Prepare seedbed by loosening the top 2 to 3 inch of soil above final grade. Apply soil amendments, lime, fertilizer and seed as required by the seeding plan or by the Engineer or Manufacturer's Representative to a scarified soil surface prior to the installation of the mat.

3.2 Installation. Install mats at the specified elevation and the alignment. Anchor the mats with stakes, pins, or staples with a minimum length of 12 inches. Use longer anchors for installations in sandy, loose, or wet soils or when directed by the Engineer or Manufacturer's Representative.

A) General Slope Applications:

- 1) Construct a 6-inch x 12-inch anchor trench at the top of the slope to inhibit undermining from stray surface water. Extend the upslope terminal end of the mat 30 inches past the anchor trench.
- 2) Using stakes or staples, fasten the mat into the upslope anchor trench on 12-inch centers. Backfill the trench with soil and compact. Apply seed to the backfilled soil surface and cover this area with the remaining 12-inch of the mat's terminal end. Stake or staple the terminal end down slope of the anchor trench on 12-inch centers.
- 3) Securely fasten the mat to the soil by installing stakes or staples at a minimum rate of 1.5 stakes per square yard. Anchors shall be selected so that they have sufficient ground penetration to resist pullout. Increase anchoring frequency if site conditions (loose or wet soils) are such that the Engineer or Manufacturer's Representative determines it necessary.
- 4) For slope applications, unroll the mat parallel to the primary direction of water flow and place in direct contact with the soil surface. Do not stretch or allow the material to bridge over surface inconsistencies. Overlap the edges of adjacent (vertically down the slope) mats a minimum of 3-inch with the upslope roll overlapping on top of the down slope roll in shingle style.
- 5) The edges of parallel (horizontal across the slope) blankets shall be overlapped 3 to 6 inches depending on the type of mat used.

B) General Channel Applications:

- 1) For channel installations, construct excavated anchor trenches, and or staple check slots perpendicular to the flow direction across the entire width of the channel at 25-foot intervals and at the terminal end of the channel reach.

- 2) Construct a 6-inch x 12-inch beginning anchor trench. Extend the downstream end of the mat 30 inches past the anchor trench and use the slack mat material to cover the backfilled soil. Fasten the mat material into the anchor trench on 12-inch centers.
- 3) Excavate 6-inch x 6-inch check slots every 25 feet along the length of the channel.
- 4) At the engineer's discretion, excavated check slots shall be replaced by a double row of staples or stakes. For staple or stake check slots, place the 2 rows of stakes or staples 4 inches apart and install each row of staple or stakes on 12-inch centers. Drive all stakes and staples flush with the soil surface.
- 5) Beginning at the downstream end in the center of the channel, place the initial end of the first mat in the anchor trench and secure it with ground anchor devices at 12-inch intervals.
- 6) Position adjacent rolls in the anchor trench in the same manner, overlapping the proceeding roll a minimum of 3 inches. Secure the mat at 12-inch intervals along the anchor trench, backfill and compact with specified soil or as directed by the Engineer or Manufacturer's Representative.
- 7) Unroll center strip of mat upstream over compacted trench. Stop at next check slot or terminal anchor trench. Unroll adjacent mats upstream in similar fashion, maintaining a 3-inch overlap.
- 8) Fold and secure the mat snugly into transverse check slots. Lay material in bottom of the slot, and then fold the material back against itself as indicated. Anchor through both layers of mat at 12-inch intervals. Backfill with soil and compact. Continue unrolling the mat upstream over compacted slot to next check slot or terminal anchor trench.
- 9) Secure mats on slopes 1:1 or steeper and channel bottoms with ground anchoring devices at a frequency of 2-½ anchors per square yard. Use anchors having sufficient ground penetration to resist pullout. Increase anchoring frequency if site conditions (loose or wet soils) are such that the Engineer or Manufacturer's Representative determines it necessary.

Slope Grade	Anchoring Frequency
Up to 2H:1V	1.5 anchors/square yard
2H:1V to 1H:1V	2 anchors/square yard
Steeper than 1H:1V and Channel Bottoms	2.5 anchors/square yard

- 10) Cut longitudinal anchor slots 4-inch x 4-inch at the top of each slope. Fasten the mat into the longitudinal anchor slots on 12-inch centers.

4.0 MEASUREMENT. The Department will measure the quantity of Turf Reinforcement Mat by the square yard of surface covered. The Department will not measure preparation of the bed or seeding for payment and will consider them incidental to the Turf Reinforcement Mat. The Department will not measure any reworking of slopes or channels for payment as it is considered corrective work and incidental to the Turf Reinforcement Mat.

5.0 PAYMENT. The Department will make payment for the completed and accepted quantities under the following:

<u>Code</u>	<u>Pay Item</u>	<u>Pay Unit</u>
21261ED	Turf Reinforcement Mat	Square Yard

The Department will consider payment as full compensation for all work required under this note.

March 20, 2008