Wisconsin Department of Natural Resources
Technical Standard
Channel Erosion Mat
1053

DEFINITION

A protective soil cover made of straw, wood, coconut fiber or other suitable plant residue, or plastic fibers formed into a mat, usually with a plastic or biodegradable mesh on one or both sides. Erosion mats are rolled products available in many varieties and combinations of material and with varying life spans.

PURPOSE

The purpose of this practice is to protect the *channel* from erosion, or to act as turf reinforcement during or after the establishment of grass or other vegetation in the channel. This practice applies to *Erosion Control Revegetative Mats (ECRM*) and *Turf-Reinforcement Mats* (*TRM*).

CONDITIONS WHERE PRACTICE APPLIES

This standard applies where storm runoff drains in channels in intermittent flow and vegetation is to be established. Some products may have limited applicability in projects adjacent to navigable *waterways* due to potential wildlife entrapment.

Be aware of applicable federal, state, and local laws, rules, regulations, or permit requirements governing the use and placement of erosion mat. This standard does not contain the text of federal, state, or local laws.

CRITERIA

Products

Use channel erosion mat products identified on the Wisconsin Department of Transportation (WisDOT) Erosion Control Product Acceptability List (PAL).

Selection

Use WisDOT PAL classes and types to select and specify erosion mat.

Select the appropriate erosion mat based on the calculated shear stress, given drainage area characteristics and channel geometry for the design storm depth.

If applicable, select the appropriate channel erosion mat based on site channel grade and channel length in accordance with the WisDOT Facilities Development Manual (FDM Section 10-5) Channel Erosion Control Matrix.

Select erosion mat that will last until turf grass or other vegetation becomes densely established.

[1] Words in the standard that are shown in italics are described in the Definitions section. The words are italicized the first time they are used in the text.

Installation

Install and anchor erosion mat in accordance with manufacturer's instructions.

At time of installation, retain material labels and manufacturer's installation instructions until the site has been stabilized.

Install ECRMs after topsoil is placed and seeding is complete.

Install TRMs in conjunction with placement of topsoil, followed by ECRM installation.

Install erosion mat so that it bears completely on the soil surface.

Use staples that are at least 6 inches long.

CONSIDERATIONS

Some erosion mat products can have detrimental effects on local wildlife. Plastic netting without independent movement of strands can easily entrap small animals moving through the area, leading to dehydration, desiccation, and eventually mortality. Netting that contains biodegradable thread with the "leno" or "gauze" weave (contains strands that can move independently) have the least impact on wildlife.

PLANS AND SPECIFICATIONS

Prepare plans and specifications in accordance with criteria of this standard and describe requirements for applying the practice to achieve its intended use.

OPERATION AND MAINTENANCE

Inspect erosion mat at least weekly and within 24 hours after every precipitation event that produces 0.5 inches of rain or more during a 24-hour period.

If there are signs of erosion under the mat, install more staples or more anchor trenches. If erosion becomes severe enough to prevent vegetation, remove the section of mat where the damage has occurred. Fill eroded area with topsoil, compact, reseed and replace the section of mat, trenching and overlapping ends per manufacturer's recommendations. Additional staking is recommended at points of repaired erosion.

In situations where soil type, topography, or other conditions result in poor observed performance, use multiple practices such as adding additional mulch under the mat, or installing appropriately placed check devices to reduce local velocity.

If the reinforcing plastic netting has separated from the mat, remove the plastic and replace the mat, if necessary.

Complete maintenance as soon as possible with consideration to site conditions.

REFERENCES

WisDOT "Erosion Control Product Acceptability List" is available online at:

http://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/tools/pal/default.aspx

DEFINITIONS

Channel: A constructed swale or ditch designed to convey storm water.

Channel Erosion: The deepening and widening of a channel due to soil loss caused by flowing water.

Erosion Control Revegetative Mats (ECRM) (II): A blanket like covering laid on top of a prepared seed bed to protect the soil and seed from the erosive forces of nature.

Turf-Reinforcement Mats (TRM) (II): Helps to permanently stabilize the soil by acting as reinforcement for the roots of the vegetation. This open weaved, synthetic mat is installed on top of soil and filled with topsoil and seeded. As the vegetation grows, the roots intertwine into the mat and reinforces the turf.

Waterways: Natural watercourses such as lakes or streams.