

Interim Manufactured Perimeter Control and Slope Interruption Products (1071)

Wisconsin Department of Natural Resources
Technical Standard

I. Definition

Manufactured perimeter control and slope interruption products include a variety of products designed to detain or slow the flow of sediment-laden sheet flow runoff from small areas of disturbed soil. This definition does not include sediment bale barriers or silt fence which are covered under Technical Standards 1055 and 1056 respectively.

II. Purpose

The purpose of the installation of these products is to reduce uninterrupted slope length to slow the velocity of runoff so as to retain transported sediment from disturbed areas.

III. Condition Where Practice Applies

- A. This standard applies to the following conditions:
 - 1. Where only *sheet and rill erosion* occurs unless the product is listed as approved for use in concentrated flow areas (*channel erosion*) as a ditch check on the Wisconsin Department of Transportation (WisDOT) Erosion Control Product Acceptability List (PAL) and is designed and installed in accordance with WDNR Technical Standard 1062. All products that are not approved for use in concentrated flow areas and are to be installed on a slope that terminates in a channel shall be installed at an elevation no lower than 6 inches above the design flow depth of the channel.
 - 2. Where usage is limited to 12 consecutive months.

- 3. Where conditions allow for proper installation as outlined in the Criteria Section V and maintenance as outlined in Criteria Section VIII.

- B. Under no circumstance should products be used in the following applications:
 - 1. Below the ordinary high watermark or placed perpendicular to flow in streams.
 - 2. Where the maximum gradient upslope of the product is steeper than 50% (2:1).

IV. Federal, State and Local Laws

Users of this standard shall be aware of potentially applicable federal, state and local laws, rules, regulations or permit requirements governing manufactured perimeter control and slope interruption products. This standard does not contain the text of federal, state, or local laws.

V. Criteria

This section establishes the minimum standards for design, installation and performance requirements. Only products approved by the Wisconsin Department of Commerce (Commerce) for use on projects regulated under the Uniform Dwelling Code or products listed on the WisDOT PAL for use as ditch checks, perimeter control, or slope interruption will be accepted for use in this standard. The Commerce approval process is outlined in the document titled "Wisconsin Department of Commerce Manufactured Perimeter Control and Slope Interruption Product Approval Process (Commerce product approval process)."

- A. **Product Classes** – Products are organized into product classes based on the installed product height as illustrated on Figure 1. Product classes are specified in Table 1.

Table 1	
Product Height Class	Installed Height Above Grade (inches)
Class I	<i>Mat Products</i>
Class II	6-9
Class III	10-15
Class IV	16-20
Class V	>20

B. **Placement**

1. Products should be placed on the contour whenever possible. J-hooks may be used for sloping installations of *log-type products*. See Figure 1 for installation illustrations for log-type products.
2. Products should not be placed perpendicular to the contour.
3. The ends of product installations should be extended upslope to prevent water from flowing around the ends of the product.
4. Products that are placed on a curved alignment shall be installed at a large enough radius of curvature to prevent kinking.

C. **Entrenchment**

1. *Log – Type Products*
 - a) Disturbed Ground – Log-type products installed on disturbed ground shall be entrenched a minimum of 2 inches to ensure continuous ground contact.
 - b) Vegetated Ground – Log-type products installed on vegetated ground may be installed without entrenchment. All gaps and ruts creating an undercutting situation shall be filled with soil or log-type product filter media.

c) Frozen Ground

- i. No entrenchment required.
- ii. Only products approved for installation on frozen ground under the Commerce product approval process or listed in the WisDOT PAL for installation on frozen ground may be installed on frozen ground.
- iii. Products installed on frozen ground shall be assessed for effectiveness upon ground thaw and staked or replaced as needed.

2. *Other Products* – Products other than log-type products shall be entrenched as required by the manufacturer or as specified under Commerce product approval stipulations.

- D. **Overlap** – Minimum 24 inches or as required by the manufacturer if more restrictive. Overlap should be shingled in the direction of flow. See Figure 1.
- E. **Support** – Stake or anchor as needed to maintain constant ground contact along the entire length of product at all times and to prevent lateral movement and/or floatation. Staking or anchoring shall be performed per manufacturer’s recommendations or as specified under Commerce or WisDOT product approval stipulations.
- F. **Product Stacking** – Products shall not be stacked individually on top of one another. Products may be stacked in a “pyramid” manner (i.e., one on top of two) or for operation and maintenance purposes as stipulated in Section VIII.C.
- G. **Maximum Spacing** – The spacing in direction of slope shall not exceed the maximum slope lengths for the appropriate slope as specified in Table 2.

Table 2					
	Max. Spacing (ft) per Product Class				
Slope	I	II	III	IV	V
0-2%	30	30	55	75	100
2.1-5%	25	25	40	55	75
5.1-10%	15	15	30	40	50
10.1-33%	NA	10	15	20	25
>33%	NA	5	10	15	20

Notes:

1. NA = Not Allowed
2. Products from a higher class are suitable for applications in a lower class.
3. Manufacturer's recommendations for maximum slope and maximum spacing should be used if more restrictive than the guidelines established above.

- H. Products should be installed prior to disturbing the upslope area and/or when changes in disturbed slope or slope length require the installation of additional products.
- I. The width of mat type products used for perimeter control/slope interruption shall be as specified in the product approval from Commerce or as specified in the WisDOT PAL.

J. Filter Media

1. Filter media used in any product shall be non-toxic and may not present a hazard to human health or the environment.
2. Filter media shall be compatible with any substance for which it is expected to come into contact with during use.
3. Polymer used in any product shall conform to WDNR Technical Standard 1050 and/or 1051 as applicable.
4. Filter media consisting of reused materials that are regulated as solid waste under ch. NR 500, Wisconsin Administrative Code shall have received an exemption under s. NR 500.08(5), Wisconsin Administrative Code prior to use in an erosion control product.
5. Compost used in any product shall conform to WDNR Specification S100 compost.

VI. Considerations

- A. To protect products from damage in areas of active construction or heavy traffic, products should be flagged, marked or highlighted to improve visibility.
- B. To help ensure effectiveness, products should be inspected and repaired as necessary prior to forecasted rain events.
- C. Vehicular traffic should be diverted around the product unless allowed under the manufacturer's specifications.
- D. When products are used to divert runoff, discharge should be made to a stabilized area or sediment control practice.
- E. Products may be used in conjunction with other practices such as Seeding for Construction Site Erosion Control (1059), Non-channel Erosion Mat (1052), Mulching for Construction Sites (1058), or Vegetative Buffer for Construction Sites (1054) to enhance performance.

VII. Plans and Specifications

- A. Plans and specifications for installing products shall be in keeping with this standard and shall describe the requirements for installing the product to achieve its intended purpose. The plans and specifications shall address the following:
 1. Location of product
 2. Contributory drainage area
 3. Schedules
 4. Product specifications
 5. Standard drawings and installation details
 6. Restoration after removal
- B. All plans, standard detail drawings, or specifications shall include a schedule for installation, inspection, and maintenance. The responsible party shall be identified.

VIII. Operation and Maintenance

- A. Products shall be inspected 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.
- B. If the product becomes undermined, the voids shall be backfilled with soil and compacted to establish continuous contact between the ground and product.
- C. If sediment reaches ½ of the log-type product height, the sediment shall be removed or a second log-type product may be positioned immediately upslope and in contact with the original log-type product.
- D. If a product rolls out of position, the product shall be repositioned and secured with additional stakes.
- E. Holes, rips or tears in the fabric of a log-type product less than 12 inches in any direction and located within the top 1/3 of the product may be repaired by stitching or wrapping a new piece of fabric around the product and securing. Sections of log-type product with holes, rips, or tears greater than or equal to 12 inches in any direction or located within the bottom 2/3 of the product shall be removed and replaced with new product or a second log-type product may be placed immediately upslope with a minimum 24 inches of overlap beyond the hole, rip, or tear.
- F. Pinched, settled, or deformed log-type products may be re-contoured to their original diameter by hand if possible or a second log-type product shall be placed immediately upslope with a minimum 24-inch overlap beyond the deformation.
- G. Destroyed or irreparable sections of log-type product shall be removed and replaced with new log-type product or a second log-type product may be placed immediately upslope with a minimum 24-inch overlap beyond the deformation.

- H. Mat products shall be replaced when visible sediment covers 50% of the installed width or if damaged or degraded. A second mat may be placed immediately adjacent to or on top of the first mat in lieu of replacement.
- I. Once the area the product is serving has been stabilized, the product should be removed and disposed of in accordance with relevant Federal, State, or Local regulations and per the manufacturer's recommendations.

IX. References

- WDNR Technical Standard 1050 – Land Application of Anionic Polyacrylamide
- WDNR Technical Standard 1052 – Non-channel Erosion Mat
- WDNR Technical Standard 1054 – Vegetative Buffer for Construction Sites
- WDNR Technical Standard 1055 – Sediment Bale Barrier (Non-Channel)
- WDNR Technical Standard 1056 – Silt Fence
- WDNR Technical Standard 1058 – Mulching For Construction Sites
- WDNR Technical Standard 1059 – Seeding For Construction Site Erosion Control
- WDNR Technical Standard 1062 – Ditch Check (Channel)
- Wisconsin Department of Commerce
Manufactured Perimeter Control and Slope Interruption Product Approval Process
(<http://www.commerce.state.wi.us/SB/docs/SB-SoilErosionControlInterruptProc.pdf>)
- Wisconsin Department of Transportation Erosion Control Product Acceptability List
(<http://www.dot.wisconsin.gov/business/engrserver/pal.htm>)

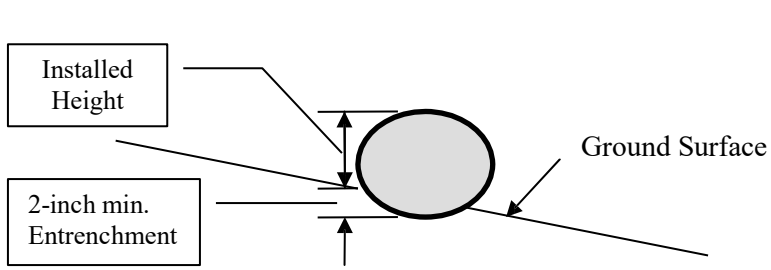
X. Definitions

Channel Erosion: The deepening and widening of a channel due to soil loss caused by flowing water. As rills become larger and flows begin to concentrate, soil detachment occurs primarily as a result of shear.

Sheet and Rill Erosion (III.A.1.): Sheet and rill erosion is the removal of soil by the action of rainfall and shallow overland runoff. It is the first stage in water erosion. As flow becomes more concentrated rills occur. As soil detachment continues or flow increases, rills will become wider and deeper forming gullies.

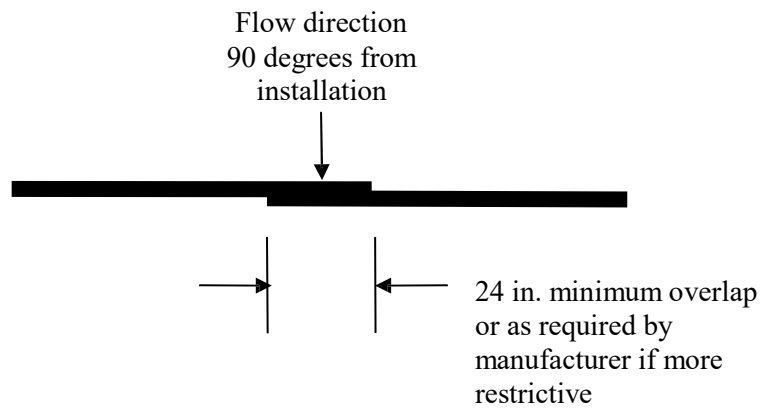
Log-Type Products: Sediment control products constructed of an outer sock of geotextile or other type of netting or permeable containment media surrounding an inner filtering media.

Mat Products: Low profile products consisting of one or more layers of fibrous material designed to slow and filter runoff.

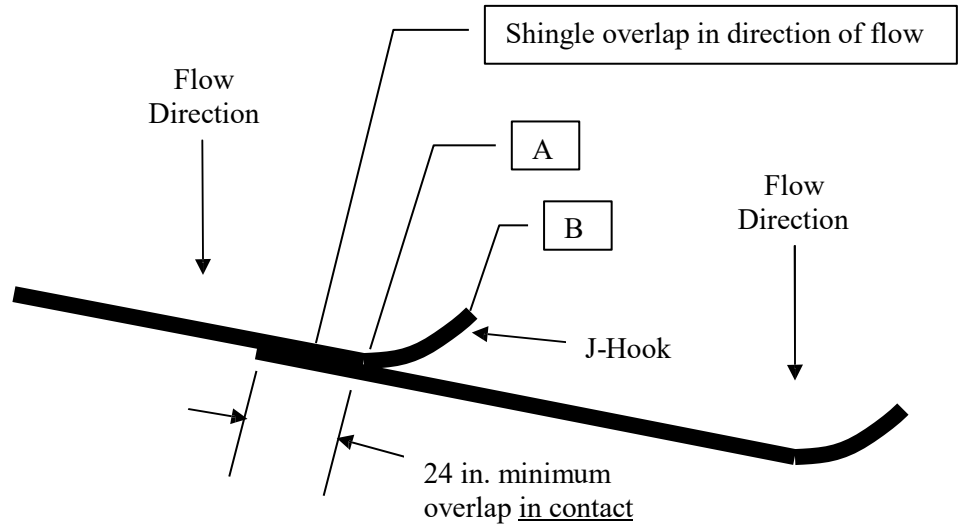


Note:
 Installed height is measured from the upslope ground surface to the top of the product. Due to settlement and/or deformation, the installed height may not be equivalent to the nominal diameter of the product.

CROSS SECTION



TYPICAL INSTALLATION
 (Plan View)



- Notes:**
1. J-hooks shall be installed so that the ground-product interface elevation at location B is higher than the top of product elevation at location A to create a weir at point A.
 2. J-hooks shall be installed every 2 vertical feet of drop along the length of the installation.
 3. Stake overlap as required by manufacturer.

SLOPING INSTALLATION
 (Plan View)

FIGURE 1
LOG-TYPE PRODUCT INSTALLATION ILLUSTRATION