
	Bowling Green, Kentucky Stormwater Best Management Practices (BMPs) Erosion Prevention Practices (EPPs)	EPP-11
PLANNING CONSIDERATIONS: Design Life: 1 yr Acreage Needed: None Estimated Unit Cost: Low Monthly Maintenance: 60% of Installation		
	Target Pollutants	
	<div style="display: flex; justify-content: space-around;"> Significant ♦ Partial ♦ Low or Unknown ♦ </div>	
	<div style="display: flex; justify-content: space-between; font-size: small;"> Sediment ♦ Heavy Metals ♦ Nutrients ♦ Oxygen Demanding Substances ♦ Toxic Materials ♦ </div> <div style="display: flex; justify-content: space-between; font-size: small;"> Oil & Grease ♦ Bacteria & Viruses ♦ Floatable Materials ♦ Construction Waste ♦ </div>	
Description Suitable Applications Approach	<p>The security measures ensured by a protective blanket or soil stabilization mat to help prevent and reduce erosion on preceding shaped and seeded swales, channels and slopes while assisting in the establishment of temporary or permanent vegetation on steep slopes, channels, or stream banks. The implementation of this BMP will create a significant reduction in sediment.</p> <ul style="list-style-type: none"> ➤ Preventing erosion of the soil surface. ➤ Promoting seed germination. ➤ Protecting young vegetation ➤ Preventing wind dispersal of seed or mulch ➤ Allowing for easy installation of seed and/or mulch. <p>Selection of an appropriate mat or blanket depends on the nature of the project. Manufacturers should be consulted in selecting the product for the intended purpose.</p> <p><u>Temporary Erosion Control Blankets</u> Temporary erosion control blankets include the following options:</p> <ul style="list-style-type: none"> • plastic netting intertwined with a natural organic or manmade mulch • jute mesh <ul style="list-style-type: none"> ➤ Typically used to stabilize concentrated flow areas where velocities meet or exceed 5 ft/sec and slopes 2.5:1 or steeper. ➤ Deteriorate in a short period of time ➤ Provide protection of the seed and soil from raindrop impact and subsequent soil displacement. ➤ Thermal consistency and moisture retention for seed. ➤ Accelerates germination of grasses and legumes more completely 	

**Approach
(cont'd)**

Permanent Erosion Control Matting

Consist of permanent, non-degradable, three-dimensional plastic structures that are filled with soil prior to planting.

- Typically used to stabilize concentrated flow areas where velocities are between 5 and 10 ft/sec.
- Linings should be designed and selected by a professional experienced in the use of these materials
- Provides the same benefits as erosion control blankets.
- Protects channels from erosion within high capacity storm water conveyance channels.
- Filters fine sediment during lower flow stormwater events.

**Installation
Procedures**

Always follow the manufacturer's recommendations for orientation, overlapping, trenching, and securing blankets and mats.

Temporary Blankets

Some of the pertinent characteristics required in some machine produced temporary blankets are found in [Table EPP-11-01](#)

**Table EPP-11-01
Temporary Blanket Characteristics**

Blanket	Materials	Mesh	Minimum Thickness	Minimum Dry Weight
Straw	weed-free straw from agricultural crops	5/16" x 5/16"	3/8"	0.5 lbs/sy
Excelsior	curled wood excelsior (80% fibers are six inches or longer)	1 1/2" x 3"	1/4"	0.8 lbs/sy
Coconut Fiber	100% coconut fiber	5/8" x 5/8"	1/4"	0.5 lbs/sy
Wood Fiber	reprocessed wood fibers	5/8" x 3/4"	N/A	0.35 lbs/sy
Jute Mesh	woven root fiber or yarn	N/A	N/A	1 lbs/sy

All blankets should have a minimum width of 48 inches.

- Blankets are typically installed vertically from top to bottom of slopes.
- Trim blankets as needed to optimize coverage.
- In areas of concentrated flows, such as the bottom of a ditch, orient blanket in the same direction of the flow.
- Entrench blanket at the top and bottom of the slope.
- Overlap vertical joints at least 3 inches.
- Staples should be used to anchor blankets. Do not use stakes.

**Installation
Procedures
(cont'd)**Permanent Matting

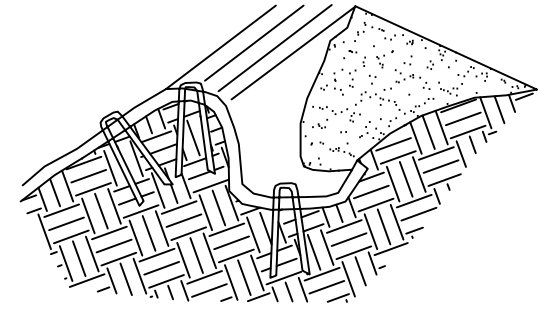
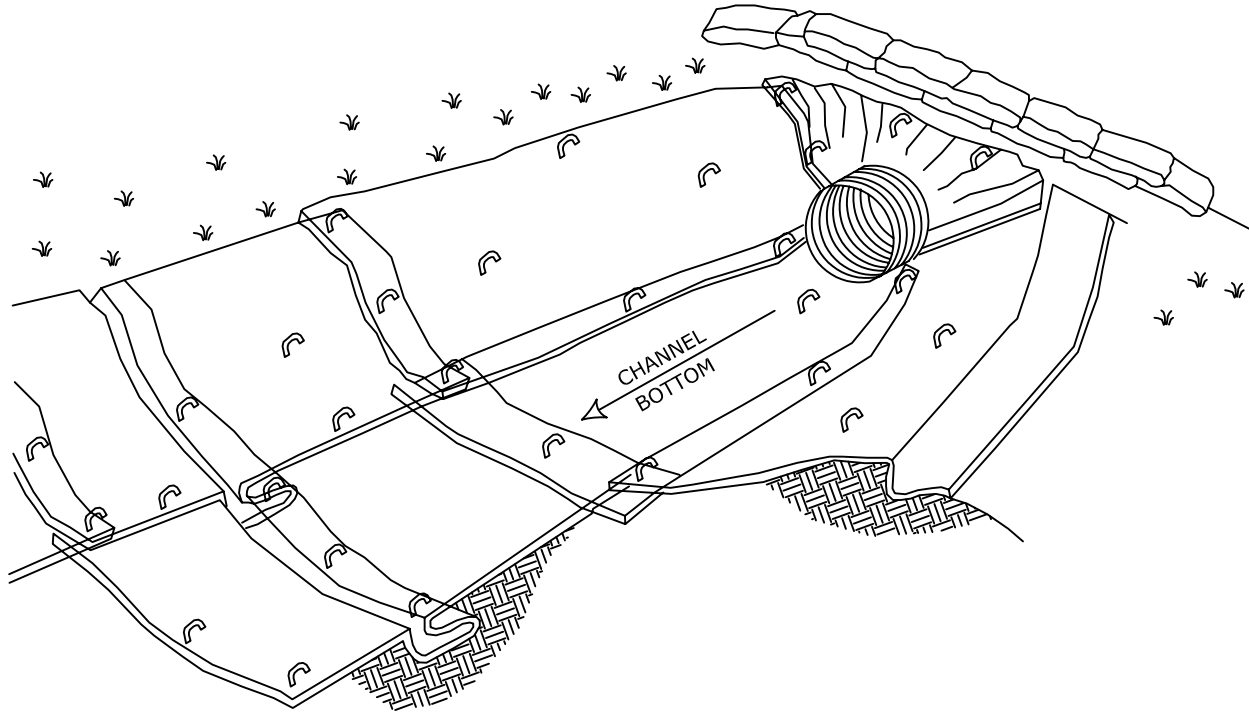
- Consists of webs, nettings, monofilaments or fibers that are entangled to form a strong and dimensionally stable matrix.
- Maintain shape before, during and after installation.
- Resistant to ultraviolet degradation
- Inert to chemicals in a natural soil environment.
- Begin installing permanent matting in storm conveyances at the bottom of the slopes and progress upstream.
- Staples or stakes can be used to anchor mats.

Maintenance

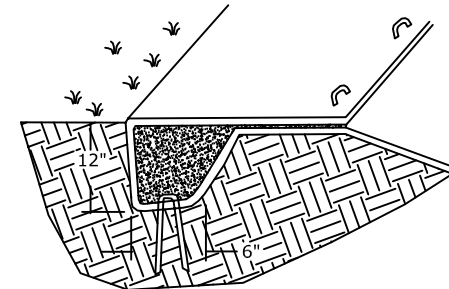
- Inspect erosion control matting before (if anticipated) and within 24 hours following rainfall events to check for movement of topsoil, mulch or erosion. Continue checking until vegetation is firmly established.
- Inspect blankets or mats at least every 14 days.
- Repair or replace netting that has been washed out, broken, eroded, and/or needing surface repair, re-seeding, re-sodding, re-mulching or topsoil replacement.

**Inspection
Checklist**

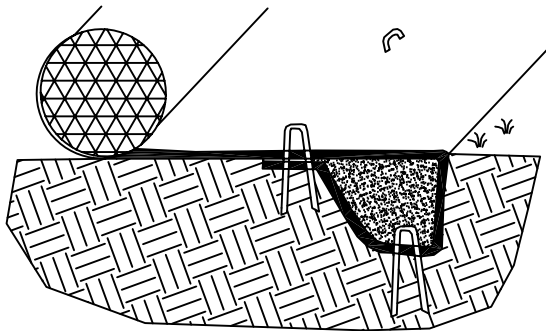
- Channel grades are adequately managing runoff velocity.
- Staples are appropriately spaced to avoid loss of seed, topsoil and mulch to stormwater runoff and winds.
- Nets are adequately covered or anchored to prevent erosion, washout, and poor plant establishment.



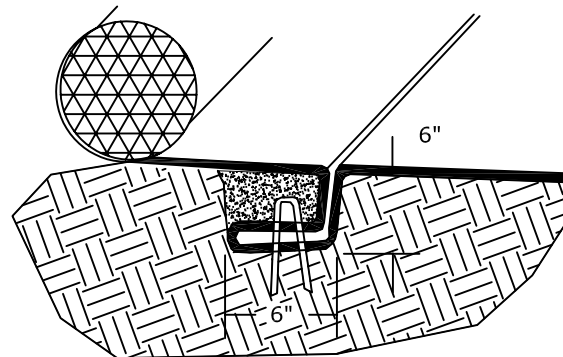
LONGITUDINAL ANCHOR TRENCH



TERMINAL SLOPE AND CHANNEL ANCHOR TRENCH



INITIAL CHANNEL ANCHOR TRENCH



INTERMITTENT CHECK SLOT

1. CHECK SLOTS TO BE CONSTRUCTED PER MANUFACTURERS SPECIFICATIONS.
2. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.

FIGURE 1

SOURCE: LOUISVILLE MSD
TDEC



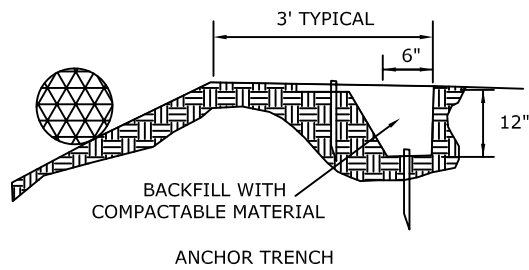
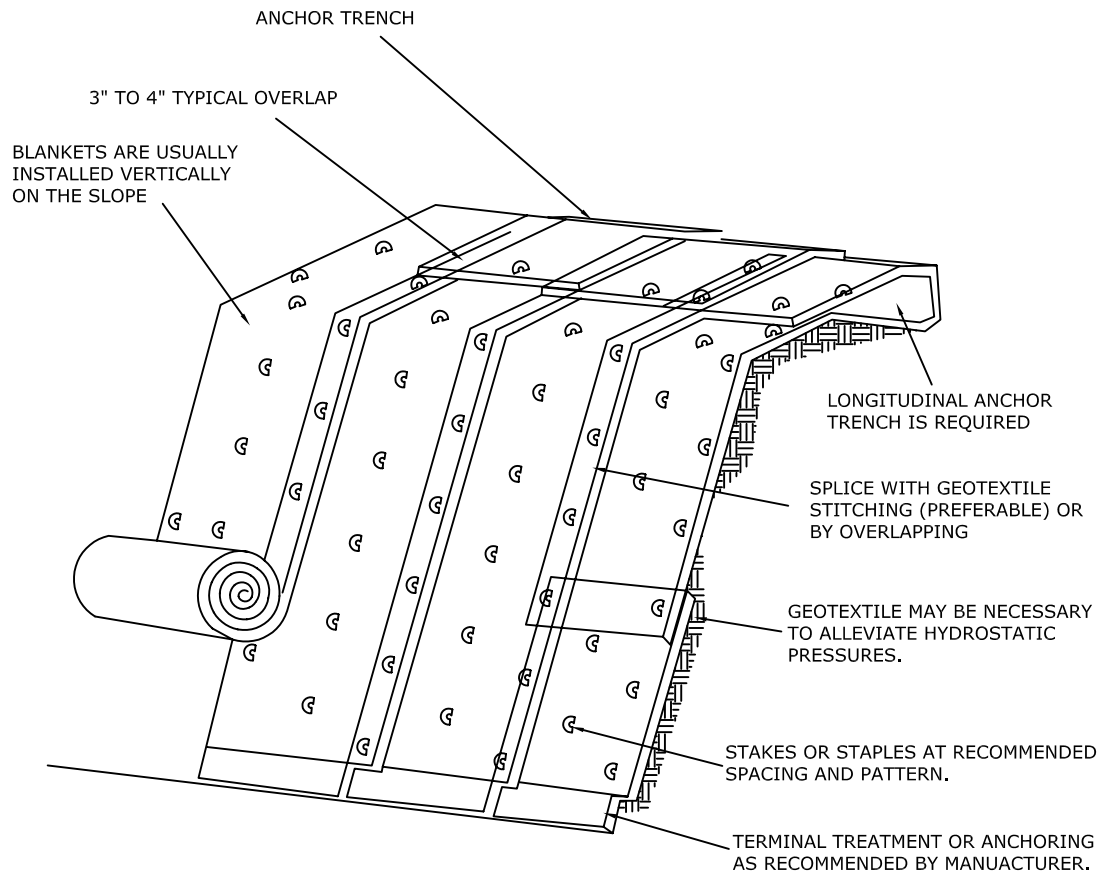
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Public Works Planning and Design
1011 College Street
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**EROSION BLANKETS & MATS
CHANNEL INSTALLATION**

STANDARD DRAWING NO. **EPP-11-01**

APPROVED BY: _____ DATE _____
DIRECTOR OF ENGINEERING




NOTES:

1. STITCHING BLANKET SEAMS IS PREFERABLE TO OVERLAPPING BLANKET SETAMS.
2. STAKING OR STAPLING LAYOUT SHALL CONFORM TO MANUFACTURER'S RECOMMENDATIONS FOR SLOPE AND GRADE.

FIGURE 2

SOURCE: LOUISVILLE MSD
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**EROSION BLANKETS AND MATS
SLOPE INSTALLATION**

STANDARD DRAWING NO.

EPP-11-02

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CONDITIONS

Matting and blankets can be applied to steep slopes where erosion hazards are high and conventional seeding is likely to be too slow in providing adequate protective cover. Concentrated flow areas, all slopes steeper than 2.5:1, with a height of ten feet or greater, and cuts and fills within stream buffers, should be stabilized with the appropriate erosion control matting or blanket. Maintenance of the final vegetative cover must be considered when choosing blankets versus matting.

PLANNING CONSIDERATIONS

Care must be taken to choose the type of blanket or matting which is most appropriate for the specific needs of a project. Manufacturer's recommendations should be followed when choosing products.

Temporary Erosion Control Blankets

This includes rolled erosion control blankets consisting of a plastic netting which covers and is intertwined with a natural organic or manmade mulch; or, a jute mesh which is typically homogenous in design and can act alone as a soil stabilization blanket. Temporary blankets as a minimum should be used to stabilize concentrated flow areas with a velocity less than 5 ft/sec and slopes 2.5:1 or steeper with a height of 10 feet or greater. Because temporary blankets will deteriorate in a short period of time, they provide no long-term erosion prevention protection when used alone.

Benefits of using temporary erosion control blankets include the following:

- Protection of the seed and soil from raindrop impact and subsequent displacement
- Thermal consistency and moisture retention for seedbed area
- More complete and faster germination of grasses and legumes

Permanent Erosion Control Matting

Consists of a permanent, non-degradable, three-dimensional plastic structure that is filled with soil prior to planting. These mats are also known as turf reinforcing mats. Roots penetrate the matrix, forming a continuous anchorage for vegetation. Matting should be used when a vegetative lining is desired in storm water conveyance channels where the projected or designed velocity is between about five and ten feet per second. These velocities are suggestions only. Concentrated flow channel linings should be designed by a professional experienced in the use of these materials, and according to the manufacturer's recommendations.

Benefits of using erosion control matting include the following:

- All of the benefits gained from using erosion control blankets
- Provides erosion protection from flows of high capacity storm water conveyance channels
- Acts as a filter for fine sediment during lower flow storm water events

CONSTRUCTION SPECIFICATIONS

All blanket and matting materials should be nontoxic to vegetation and to the germination of seed. Netting should be intertwined with the mulching material/fiber to maximize strength and provide for ease of handling.

SOURCE: LOUISVILLE MSD
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**EROSION BLANKETS AND MATS
INSTALATION/MAINTANCE**

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Temporary Blankets

Machine produced temporary blankets should have a consistent thickness with the organic material evenly distributed over the entire blanket area. All blankets should have a minimum width of 48 inches. Machine produced temporary blankets include the following:

1. Straw blankets are temporary blankets that consist of weed-free straw from agricultural crops formed into a blanket. Blankets with a top side of biodegradable plastic mesh size of 5/16 x 5/16 inch and sewn to the straw with biodegradable thread are appropriate for slopes. The blanket should have a minimum thickness of 3/8 inch and minimum dry weight of 0.5 pounds per square yard.

Site Preparation: After the site has been shaped and graded to the approved design, prepare a friable seedbed relatively free from clods and rocks more than one inch in diameter, and any foreign material that will prevent contact of the blanket or mat with the soil surface.

Temporary Blankets: Erosion control blankets should generally be installed vertically from the top of the slope to the bottom (See Figure 2). Trim blankets as necessary to fit the area to be covered. For slopes shallower than 2:1, and with a height of twice the width of the blanket roll or less, up to a maximum height of 16 feet, the blanket may be applied horizontally across the slope. For use in concentrated flow areas, place the blanket in the direction of the water flow. Always entrench the blanket beyond the top and bottom of the slope and at any horizontal joint a minimum of 6 inches, or per manufacturer's recommendation. Overlap vertical joints at least 3 inches, or per manufacturer's recommendation.

Permanent Matting: When installing permanent matting in a storm water conveyance channel, begin at the bottom of the slope and progress upstream, centering the mat in the middle of the channel. Shingle upstream layer over downstream layer, overlapping 3 feet. Overlap 3 inches minimum along longitudinal seams. Entrench the upper and lower edges beyond the slope (See Figure 1).

Staples: Staples should be used to anchor temporary blankets, and either staples or stakes should be used to anchor permanent matting. Follow manufacturer's recommendations for stapling or staking pattern and frequency.

Planting: Seed and any necessary soil amendments should be applied prior to installation of temporary blankets. For permanent mats, the area should be brought to final grade, and any soil amendments tilled or plowed into the soil surface. After the permanent mat has been installed and backfilled with topsoil, the area should be seeded and mulched.

MAINTENANCE

Inspections of blankets and matting should be made before anticipated storm events (or series of storm events such as intermittent showers over one or more days) and within 24 hours after the end of a storm event of 0.5 inches or greater, and at least once every fourteen calendar days. Blanket and matting inspections should identify washed out areas, areas needing additional staples, and/or additional areas needing blankets or matting. Maintenance needs identified in inspections or by other means shall be accomplished before the next storm event if possible, but in no case more than seven days after the need is identified.



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EROSION BLANKETS AND MATS INSTALLATION/MAINTANCE

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SOURCE: LOUISVILLE MSD
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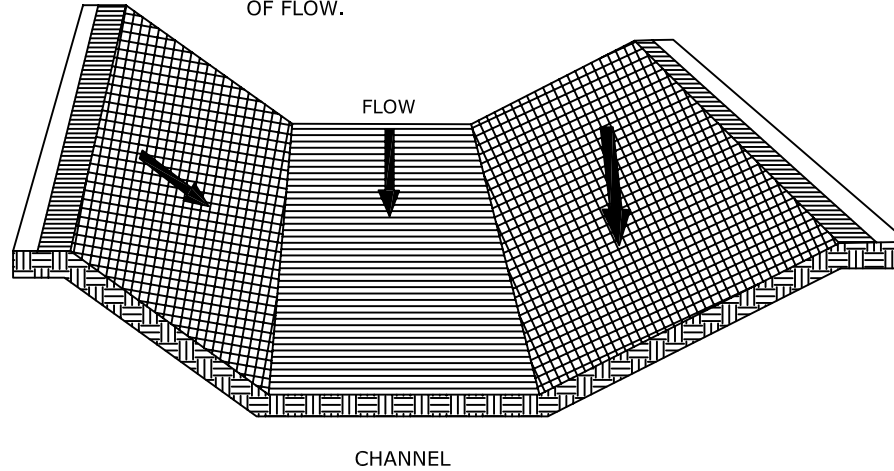
ON STEEP SLOPES, APPLY STRIPS OF NETTING PARALLEL TO THE DIRECTIONS OF FLOW AND ANCHOR AS PER MANUFACTURER'S SPECIFICATIONS (SLOPES GREATER THAN 1:1)

STEEP SLOPE

IN CHANNELS, APPLY NETTING PARALLEL TO THE DIRECTION OF FLOW.

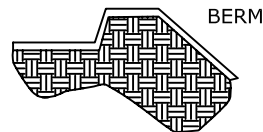
SHALLOW SLOPE

LAY FROM BOTTOM UP W/4" LAP. KEY IN AT TOP OF SLOPE/BERM.

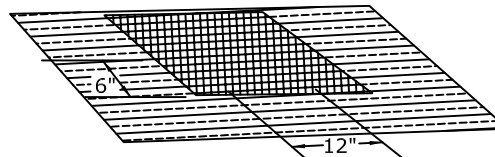


ON SHALLOW SLOPES, STRIPS OF NETTING MAY BE APPLIED ACROSS THE SLOPE. (SLOPES UP TO 1:1)

WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, BRING THE NETTING OVER THE BERM AND ANCHOR IT BEHIND THE BERM.



BRING NETTING DOWN TO LEVEL AREA BEFORE TERMINATING THE INSTALLATION.



SOURCE: LOUISVILLE MSD



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**EROSION BLANKETS & MATS
ORIENTATION**

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Installation:

The proper installation of netting and matting is different for each product, therefore the recommended installation procedure from the manufacturer should be followed.

Overlap the edges of each strip at least 4-inches and staple every 3-feet down the center of the overlap when overlapping separate strips of netting and matting,

Bring netting and matting down to a level area before terminating the installation. Turn the ends under at least 6-inches and staple the end of the matting at 12-inch intervals.

Netting and Matting must be applied so that it is in complete contact with the soil. If not, erosion will occur beneath it.

Netting should be securely anchored to the soil as recommended by the manufacturer guidelines. Mulch binders should be applied at rates recommended by the manufacturer.

Inspection and Maintenance:

Areas protected by netting and matting should be checked for dislocation or failure every seven (7) calendar days and within 24-hours after each rainfall event that produces *-inches or more of precipitation.

Regular inspections should take place until grasses are firmly established.

If washouts or breakage occurs, re-install netting and matting as necessary after repairing any slope damage.



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**EROSION BLANKETS & MATS
ORIENTATION**

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