

Oak Park Conservancy District Stormwater Best Management Practices (BMPs) Erosion Prevention Practices (EPPs)		EPP-10
Activity: Geotextiles		
PLANNING CONSIDERATIONS: Design Life: N/A Acreage Needed: None Estimated Unit Cost: Avg: N/A Range: N/A Monthly Maintenance: N/A		
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	Target Pollutants	
	Significant ♦ Partial ♦ Low or Unknown ◇ Sediment ♦ Heavy Metals ◇ Nutrients ◇ Oxygen Demanding Substances ◇ Toxic Materials ◇ Oil & Grease ◇ Bacteria & Viruses ◇ Floatable Materials ◇ Construction Waste ◇	
Description	<p>Runoff and pollution caused by construction activities can be prevented or reduced with this BMP. By utilizing rolled and bound fiber material, erosive impacts from rain, intercept runoff and pollutants to the storm drain system or to watercourses can be lessened. Geotextiles provides reduced flow velocity, releases runoff as sheet flow, removes some sediment from runoff and is likely to create a significant reduction in sediment.</p>	
Suitable Applications	<ul style="list-style-type: none"> ➤ Construction sites desiring stability for disturbed soils. ➤ Sloppy area where anchoring must take place. ➤ Slopes steeper than 3:1 (H:V) and/or where erosion hazard is high. ➤ Slow growing vegetated areas. ➤ Critical slopes adjacent to sensitive areas (streams, wetlands, etc.). 	

Activity: Geotextiles**Installation
Procedures*****Material Selection***

There are many types of erosion control blankets and mats, and selection of the appropriate type should be based on the type of application and site conditions. The following criteria should be considered in the selection of the appropriate material:

- Cost
 - Material cost
 - Preparation cost
 - Installation cost
 - Add-ons
- Effectiveness
 - Reduction of erosion
 - Reduction of flow velocity
 - Reduction of runoff
- Acceptability
 - Environmental compatibility
 - Institutional/regulatory acceptability
 - Visual impact
- Vegetation Enhancement
 - Native plant compatibility
 - Germination rate
 - Growth rate
 - Moisture retention
 - Temperature modification
 - Open space/coverage
 - Nutrient uptake
- Installation
 - Durability
 - Longevity
 - Ease of installation
 - Safety
- Operation and Maintenance
 - Maintenance frequency

Site Preparation

- Proper site preparation is essential to ensure complete contact of the blanket or matting with the soil.
- Grade and shape the installation area.
- Remove all rocks, clods, vegetation or other obstructions so that the installed blankets or mats will have complete, direct contact with the soil.

Activity: Geotextiles**Installation Procedures (Continued)**

- Prepare seedbed by loosening 2 in. (50 mm) to 3 in. (75 mm) of topsoil.
- Incorporate amendments, such as lime and fertilizer, into the soil according to soil tests, the seeding plan, and manufacturer's recommendations.

Seeding

Seed the area before blanket installation for erosion control and revegetation. Seeding after mat installation is often specified for turf reinforcement application. When seeding prior to blanket installation, all check slots and other areas disturbed during installation must be reseeded. Where soil filling is specified, seed the matting and the entire disturbed area after installation and prior to filling the mat with soil.

Anchoring

U-shaped wire staples, metal geotextile stake pins or wooden stakes can be used to anchor mats and blankets to the ground surface. Organic stakes may be used for temporary erosion prevention and sediment control blankets and mats. Wire staples should be minimum of 11 gauges. Metal stake pins should be 0.188-in. (5-mm) diameter steel with a 1.5-in. (40-mm) steel washer at the head of the pin. Wire staples and metal stakes should be driven flush to the soil surface. All anchors should be 6 in. (150 mm) to 18 in. (450 mm) long and have sufficient ground penetration to resist pullout. Longer anchors may be required for loose soils.

Installation on Slopes

- Always consult the manufacturer's recommendations for installation. In general, these will be as follows:
- Begin at the top of the slope and anchor the blanket in a 6-in. (150-mm) deep by 6-in. (150-mm) wide anchor trench. Backfill anchor trench and tamp earth firmly.
- Unroll blanket down slope in the direction of water flow.
- Overlap the edges of adjacent parallel rolls 2 in. (50 mm) to 3 in. (75 mm) and staple every 3 ft (1 m).
- When blankets must be spliced, place blankets end over end (shingle style) with 6-in. (150-mm) overlap. Staple through overlapped area, approximately 12 in. (300 mm) apart.
- Lay blankets loosely and maintain direct contact with the soil do not stretch.
- Staple blankets sufficiently to anchor blanket and maintain contact with the soil. Staples shall be placed down the center and staggered with the staples placed along the edges. Steep slopes, 1:1 (H: V) to 2:1 (H: V), require a minimum of 2 staples/yd² (2 staples/m²). Moderate slopes, 2:1 (H:V) to 3:1 (H:V), require a minimum of 12 staples/yd² (12 staples/m²), placing 1 staple/yd (1 staple/m) on centers. Gentle slopes require a minimum of 1 staple/yd² (1 staple/m²).

Activity: Geotextiles**Installation Procedures (Continued)*****Installation in Channels***

Always consult the manufacturer's recommendations for installation. In general, these will be as follows:

- Dig initial anchor trench 12 in. (300 mm) deep and 6 in. (150 mm) wide across the channel at the lower end of the project area.
- Excavate intermittent check slots, 6 in. (150 mm) deep and 6 in. (150 mm) wide across the channel at 25 ft. (8 m) to 30 ft. (10 m) intervals along the channels.
- Cut longitudinal channel anchor slots 4 in. (100 mm) deep and 4 in. (100 mm) wide along each side of the installation to bury edges of matting, whenever possible, extend matting 2 in. (50 mm) to 3 in. (75 mm) above the crest of the channel side slopes.
- Beginning at the downstream end and in the center of the channel, place the initial end of the first roll in the anchor trench and secure with fastening devices at 12-in. (300-mm) intervals. Note: matting will initially be upside down in anchor trench.
- In the same manner, position adjacent rolls in anchor trench, overlapping the preceding roll a minimum of 3 in. (75 mm)
- Secure these initial ends of mats with anchors at 12-in. (300-mm) intervals, backfill and compact soil.
- Unroll center strip of matting upstream. Stop at next check slot or terminal anchor trench.
- Unroll adjacent mats upstream in similar fashion, maintaining a 3-in. (75-mm) overlap.
- Fold and secure all rolls of matting snugly into all transverse check slots. Lay mat in the bottom of the slot then fold back against itself. Anchor through both layers of mat at 12-in. (300-mm) intervals, then backfill and compact soil. Continue rolling all mat widths upstream to the next check slot or terminal anchor trench.
- Anchor, fill, and compact upstream end of mat in a 12-in. (300-mm) by 6-in. (150-mm) terminal trench.
- Secure mat to ground surface using wooden or organic stakes, U-shaped wire staples, or geotextile pins.
- Seed and fill turf reinforcement matting with soil, if specified.

Soil Filling (if specified for turf reinforcement)

- Always consult the manufacturer's recommendations for installation. In general, these will be as follows:
- After seeding, spread and lightly rake 0.25 in. (6 mm) to 0.5 in. (13 mm) of fine topsoil into the mat apertures to completely fill mat thickness. Use backside of rake or other flat implement.
- Spread topsoil using lightweight loader, backhoe, or other power equipment. Avoid sharp turns with equipment.
- Do not drive tracked or heavy equipment over mat.
- Avoid any traffic over matting if loose or wet soil conditions exist.

Activity: Geotextiles**Installation
Procedures
(Continued)**

- Use shovels, rakes or brooms for fine grading and touch up.
- Smooth out soil filling; just exposing top netting of mat.

Maintenance

- Inspection to occur periodically, if any portion of the material is damaged, immediate correction is required.
- Inspection to occur after significant rain storms to check for erosion and undermining. Any failures are to be replaced immediately.
- Repairs to the slope and re-installation should occur as a result of wash-out or breakage.
- Perform required maintenance.

**Inspection
Checklist**

- Site is adequately prepared (grading or shaping, rocks, vegetation and debris removal, etc.).
- Seeding meets geotextile requirements.
- Anchoring is established at an acceptable depth.
- Anchoring trenches are used at the top and bottom of slopes.
- Trenches start, join and terminate geotextiles placed in channels.
- Soil filling is even and flat.