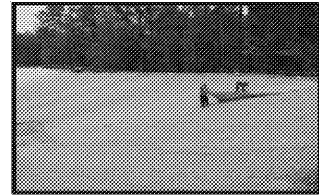


Slope Stabilization

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DEFINITION
A protective covering used to prevent erosion and establish temporary or permanent vegetation on steep slopes, shore lines, or channels.

PURPOSE
To provide a cover layer that stabilizes the soil and acts as a rain drop impact dissipater while providing a microclimate that protects young vegetation and promotes its establishment. If using slope stabilization to reinforce channels, please refer to specification, Ch-Channel Stabilization.

CONDITIONS
Slope stabilization can be applied to flat areas or slopes where the erosion hazard is high and slope protection is needed during the establishment of vegetation.

PLANNING CONSIDERATIONS
Care must be taken to choose the type of slope stabilization product that is most appropriate for the specific needs of a project. Two general types of slope stabilization products are discussed within this specification.

Roll Erosion Control Products (RECP)
A natural fiber blanket with single or double photodegradable or biodegradable nets.

Hydraulic Erosion Control Products (HECP)
HECP shall utilize straw, cotton, wood or other natural based fibers held together by a soil binding agent that works to stabilize soil particles. Paper mulch should not be used for erosion control.

CRITERIA
Roll Erosion Control Products (RECPs) and Hydraulic Erosion Control Products (HECPs):
• Installation and stapling of RECPs and application rates for the HECPs shall conform to manufacturer's guidelines for application.
• Short-Term RECPs as a minimum shall be used to stabilize concentrated flow areas with a velocity less than 5ft/sec on slopes 3:1 or greater with a height of 10 feet or greater.

Materials - RECP
Hydraulic erosion control products shall be prepackaged from the manufacturer. Field mixing of performance enhancing additives will not be allowed. Fibrous components should be all natural or biodegradable.

Products shall be determined to be non-toxic in accordance with EPA-821-R-02-012.

Materials - RECP
Blankets shall be nontoxic to vegetation, seed, or wildlife. Products shall be determined to be non-toxic in accordance with EPA-821-R-02-012. At minimum, the plastic or biodegradable netting shall be stitched to the fibrous matrix to maximize strength and provide for ease of handling.

RECPs are categorized as follows:

a. Short-Term (functional longevity 12 mo.)

i. Photodegradable
Straw blankets with a top and bottom side photo degradable net. The maximum size of the mesh should be openings of 1/2" X 1/2". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.35" and minimum density should be 0.5 lbs per square yard.

ii. Biodegradable
Straw blanket with a top and bottom side biodegradable jute net. The top side net should consist of machine direction strands that are

twisted together and then interwoven with cross direction strands (jute weave). The bottom net may be jute weave or otherwise to meet requirements. The approximate size of the mesh should be openings of 0.5" X 1.0". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.25" and minimum density should be 0.5 lbs per square yard.

b. Extended-Term (functional longevity 24 mo.)

i. Photodegradable
Blankets that consist of 70% straw and 30% coconut with a top and bottom side photodegradable net. The top net should have ultraviolet additives to delay breakdown. The maximum size of the mesh should be openings of 0.65" X 0.65". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.35" and minimum density should be 0.65 lbs per square yard.

ii. Biodegradable
Blankets that consist of 70% straw and 30% coconut with a top and bottom side biodegradable jute net. The top side net should consist of machine direction strands that are twisted together and then interwoven with cross direction strands (jute weave). The bottom net may be jute weave or otherwise to meet requirements. The approximate size of the mesh should be openings of 0.5" X 1.0". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.25" and minimum density should be 0.65 lbs per square yard.

c. Long-Term (functional longevity 36 mo.)

i. Photodegradable
Blankets that consist of 100% coconut with a top and bottom side photodegradable net. Each net should have ultraviolet additives to delay breakdown. The maximum size of the mesh should be openings of 0.65" X 0.65". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.3" and minimum density should be 0.5 lbs per square yard.

ii. Biodegradable
Blankets that consist of 100% coconut with a top and bottom side biodegradable jute net. The top side net should consist of machine direction strands that are twisted together and then interwoven with cross direction strands (jute weave). The bottom net may be jute weave or otherwise to meet requirements. The approximate size of the mesh should be openings of 0.5" X 1.0". The blanket should be sewn together on 1.5" centers with degradable thread. Minimum thickness should be 0.25" and minimum density should be 0.5 lbs per square yard.

NOTES
It is the intention of this section to allow interchangeable use of RECPs and HECPs for erosion protection on slopes. The project engineer should select the type of erosion control product that best fits the need of the particular site.

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 soil stabilization mat with the soil surface. Surface must be smooth to ensure proper contact of blankets or matting to the soil surface. If necessary, redirect any runoff from the ditch or slope during installation.

MAINTENANCE
All erosion control blankets and matting should be inspected periodically following installation, particularly after rainstorms to check for erosion and undermining. Any dislocation or failure should be repaired immediately. If washouts or breakage occurs, reinstall the material after repairing damage to the slope or ditch. Continue to monitor these areas until they become permanently stabilized.

TYPICAL INSTALLATION GUIDELINES FOR ROLLED EROSION CONTROL PRODUCTS (RECP)

BLANKET AND MATTING CROSS-SECTIONS

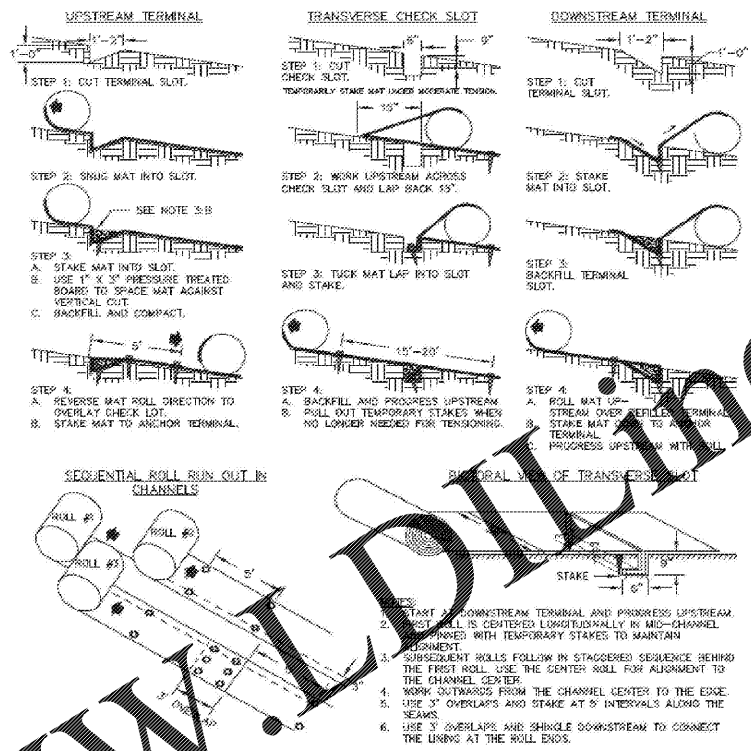


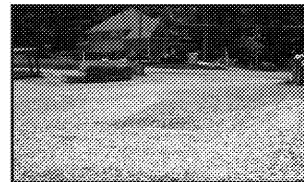
Figure 6-10.1 - Typical Installation Guidelines for Matting and Blankets

SLOPE STABILIZATION

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Construction Exit

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DEFINITION
A stone stabilized pad located at any point where traffic will be leaving a construction site to a public right-of-way, street, alley, sidewalk or parking area or any other area where there is a transition from bare soil to a paved area.

PURPOSE
To reduce or eliminate the transport of mud from the construction area onto public rights-of-way by motor vehicles or by runoff.

CONDITIONS
This practice is applied at appropriate points on construction egress. Geotextile underliners are required to stabilize and support the pad aggregate.

DESIGN CRITERIA
Formal design is not required. The following standards shall be used:

Aggregate Size
Stone will be in accordance with National Stone Association R-2 (1.5 to 3.5 inch stone).

Pad Thickness
The gravel pad shall have a minimum thickness of 6 inches.

Pad Width
At a minimum, the width should equal full width of all points of vehicular egress, but not less than 20 feet wide.

Pad Length
The gravel pad shall have a minimum length

of 50 feet. When the construction is less than 50' from the paved access, the length shall be from the edge of existing pavement to the permitted building being constructed.

Washing
If the action of the vehicle traveling over the gravel pad does not sufficiently remove the mud, the tires should be washed prior to entrance on public rights-of-way. When washing is required, it shall be done on an area stabilized with crushed stone and provisions that intercept the sediment laden runoff and direct it into an approved sediment trap or sediment basin.

Location
The exit shall be located or protected to prevent sediment from leaving the site.

CONSTRUCTION SPECIFICATIONS
It is recommended that the egress area be excavated to a depth of 3 inches and be cleared of all vegetation and roots.

Diversion Ridge
On sites where the grade toward the paved area is greater than 2%, a diversion ridge 6 to 8 inches high with 3:1 side slopes shall be constructed across the foundation approximately 15 feet above the road.

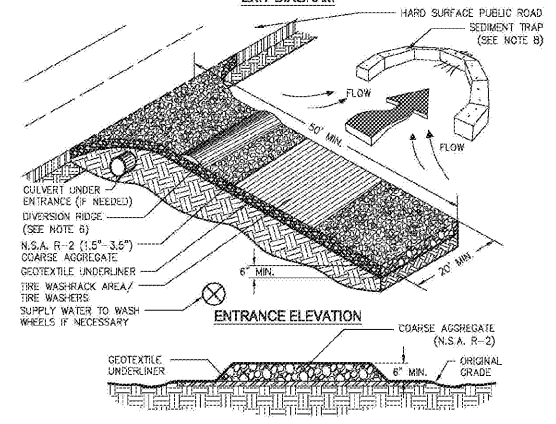
Geotextile
The geotextile underliner must be placed the full length and width of the entrance. Geotextile selection shall be based on AASHTO M288-06 specification:

- For subgrades with a CBR greater than or equal to 3 or shear strength greater than 90 kPa, geotextile must meet requirements of section AASHTO M288-06 Section 7.3, Separation Requirements.
- For subgrades with a CBR between 1 and 3 or shear strength between 30 and 90 kPa, geotextile must meet requirements of section AASHTO M288-06 Section 8, Geotextile Property Requirements for Sub-surfaces Drainage, Separation, Stabilization, and Permanent Erosion Control (Geotextile Property Requirements).

MAINTENANCE
The exit shall be maintained in a condition that will prevent tracking or flow of mud onto public rights-of-way. This may require periodic top dressing with 1.5-3.5 inch stone, as conditions demand, and repair and/or cleanout of any structures to trap sediment. All materials spilled,

dropped, washed, or tracked from vehicles or site onto roadways or into storm drains must be removed immediately.

CRUSHED STONE CONSTRUCTION EXIT



- NOTES:**
- AVOID LOCATING ON STEEP SLOPES OR AT CURVES ON PUBLIC ROADS.
 - REMOVE ALL VEGETATION AND OTHER UNSUITABLE MATERIAL FROM THE FOUNDATION AREA, GRADE, AND CROWN FOR POSITIVE DRAINAGE.
 - AGGREGATE SIZE SHALL BE IN ACCORDANCE WITH NATIONAL STONE ASSOCIATION R-2 (1.5"-3.5" STONE).
 - GRAVEL PAD SHALL HAVE A MINIMUM THICKNESS OF 6".
 - PAD WIDTH SHALL BE EQUAL FULL WIDTH AT ALL POINTS OF VEHICULAR EGRESS, BUT NO LESS THAN 20'.
 - A DIVERSION RIDGE SHOULD BE CONSTRUCTED WHEN GRADE TOWARD PAVED AREA IS GREATER THAN 2%.
 - INSTALL PIPE UNDER THE ENTRANCE IF NEEDED TO MAINTAIN DRAINAGE DITCHES.
 - WHEN WASHING IS REQUIRED, IT SHOULD BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE THAT DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN (DIVERT ALL SURFACE RUNOFF AND DRAINAGE FROM THE ENTRANCE TO A SEDIMENT CONTROL DEVICE).
 - WASHRACKS AND/OR THE WASHERS MAY BE REQUIRED DEPENDING ON SCALE AND CIRCUMSTANCE. IF NECESSARY WASHRACK DESIGN MAY CONSIST OF ANY MATERIAL SUITABLE FOR TRUCK TRAFFIC THAT REMOVE MUD AND DIRT.
 - MAINTAIN AREA IN A WAY THAT PREVENTS TRACKING AND/OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAYS. THIS MAY REQUIRE TOP DRESSING, REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.

Figure 6-14.1

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WOODWARD CROSSING BLVD

Hilton Garden Inn

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REVISION HISTORY

NO.	DATE	DESCRIPTION
1	10/06/2019	ISSUE FOR PERMIT
2	10/06/2019	ISSUE FOR PERMIT
3	10/06/2019	ISSUE FOR PERMIT
4	10/06/2019	ISSUE FOR PERMIT
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ERIK HOUSTON
Level II Certified Design Professional
CERTIFICATION NUMBER: 0000064029
ISSUED: 10/01/2018 EXPIRES: 10/01/2021

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