



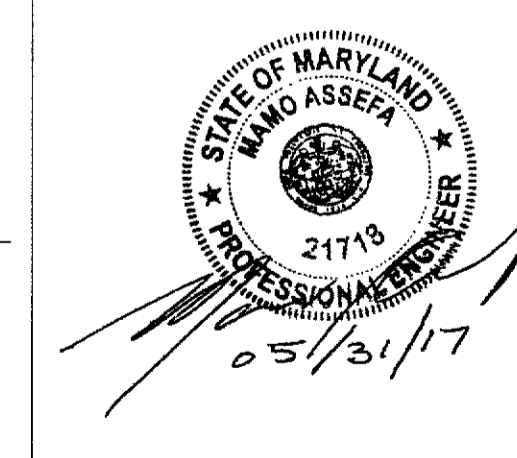
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4	SWM-ES	05/20/2017
3	SWM-ES	09/29/2016
2	SWM-ES	08/15/2016
1	BID-SET	02/5/2016
REV	DESCRIPTION	DATE
REVISION HISTORY		



Date: 02/5/2016
 Project # 1501.01
EROSION AND SEDIMENT CONTROL DETAIL - 4

C-3.50

Professional Certification: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
 License No. 21718, Expiration Date: 2017-09-16

ESD # 7121

B-4.3 STANDARDS AND SPECIFICATIONS
FOR SEEDING AND MULCHING

Definition
 The application of seed and mulch to establish vegetative cover.

Purpose
 To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies
 To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding

1. **Specifications**
 - a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to testing by a recognized seed laboratory. All seed must have been tested within the 6 months immediately preceding the date of seeding such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
 - b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - c. Inoculants: The inoculant for treating legume seed in the seed mixture must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended use when hydroseeding. Note: It is very important to keep inoculants as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - d. Soil or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit degradation of phytotoxic materials.
2. **Application**
 - a. **Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
 - i. Inoculants seed into the subsoil at the rate specified on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or otherwise specified.
 - ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

B-4.4 STANDARDS AND SPECIFICATIONS
FOR TEMPORARY STABILIZATION

Definition
 To stabilize disturbed soils with vegetation for 6 to 12 months.

Purpose
 To use fast growing vegetation that provides cover on disturbed soils.

Conditions Where Practice Applies
 Exposed soils where ground cover is needed for a period of 6 months or less. For longer duration of time, permanent stabilization practices are required.

Criteria

1. Select one or more of the species or seed mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3), and enter them in the Temporary Seeding Summary below along with application rates, seeding dates and seeding depths. If the Summary is not put on the plan and completed, then Table B.3 plus fertilizer and lime rates must be put on the plan.
2. For sites having soil tests performed, use and show the recommended rates by the testing agency. Soil tests are not required for Temporary Seeding.
3. When stabilization is required outside of a seeding window, apply seed and mulch or straw mulch alone as prescribed in Section B-4.3.A.1.3 and maintain until the next seeding window.

No.	Species	Hardiness Zone (from Figure B.3):		Fertilizer Rate (16-20-20)	Lime Rate
		Zone B.3	Zone B.4		
1	Annual Ryegrass	40	35 - 50%	0.8	
	Perennial Ryegrass	40	35 - 50%	0.8	
	Timothy	40	35 - 50%	1.0	436 lb/acre
	Oats	72	35 - 50%	1.0	(10 lb/1000 sf)
	Wheat	100	35 - 50%	1.0	(90 lb/1000 sf)

B-4.5 STANDARDS AND SPECIFICATIONS
FOR PERMANENT STABILIZATION

Definition
 To stabilize disturbed soils with permanent vegetation.

Purpose
 To use long-lived perennial grasses and legumes to establish permanent ground cover on disturbed soils.

Conditions Where Practice Applies
 Exposed soils where ground cover is needed for 6 months or more.

Criteria

A. Seed Mixtures

1. **General Use**
 - a. Select one or more of the species or mixtures listed in Table B.3 for the appropriate Plant Hardiness Zone (from Figure B.3) and based on the site conditions or purpose listed on Table B.3. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The Summary is to be placed on the plan.
 - b. Additional planting specifications for exceptional sites such as shorelines, stream banks, or dunes or for special purposes such as wildlife or aesthetic treatment may be found in USDA-NRCS Technical Field Office Guide, Section 342 - Critical Area Planting.
 - c. For sites having disturbed areas over 5 acres, use and show the rates recommended by the soil testing agency.
 - d. For areas requiring low maintenance, apply areas from fertilizer (44-0-0) at 5 1/2 pounds per 1000 square feet (150 pounds per acre) at the time of seeding in addition to the soil amendments shown in the Permanent Seeding Summary.
2. **Turfgrass Mixtures**
 - a. Areas where turfgrass may be desired include lawns, parks, playgrounds, and commercial sites which will receive a medium to high level of maintenance.
 - b. Select one or more of the species or mixtures listed below based on the site conditions or purpose. Enter selected mixtures, application rates, and seeding dates in the Permanent Seeding Summary. The summary is to be placed on the plan.
 - i. Kentucky Bluegrass: Full Sun Mixture: For use in areas that receive intensive management. Irrigation required in the areas of central Maryland and Eastern Shore. Recommended Certified Kentucky Bluegrass Cutliver Seeding Rate: 1.5 to 2.0 pounds per 100 square feet. Choose a minimum of three Kentucky bluegrass cultivars with each ranging from 10 to 35 percent of the total mixture by weight.
 - ii. Kentucky Bluegrass/Perennial Ryegrass: Full Sun Mixture: For use in full sun areas where

B-4.6 STANDARDS AND SPECIFICATIONS
FOR STOCKPILE AREA

Definition
 A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
 To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
 Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Rerouting must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth ditch, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4.4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to prevent voids which would cause air drying of the stockpile.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 10 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.15

Permanent Seeding Summary

No.	Species	Application Rate (lb/acre)	Seeding Depth (in)	Fertilizer Rate (16-20-20)			Lime Rate
				N	P ₂ O ₅	K ₂ O	
1	Swath	40	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Timothy	40	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Oats	72	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Wheat	100	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)

B. Soil: To provide quick cover on disturbed areas (2" grade or better)

1. **General Specifications**
 - a. Clean of foreign soil must be Maryland State Certified. Soil labels must be made available to the job foreman and inspector.
 - b. Soil must be machine cut at a uniform soil thickness of 1/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and soil or uneven ends will not be acceptable.
 - c. Standard test sections of soil must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
 - d. Soil must not be harvested or emulsified when moisture content (consistently dry or wet) may adversely affect its survival.
 - e. Soil must be harvested, delivered, and installed within a period of 36 hours. Soil not transported within this period must be approved by an agronomist or soil scientist prior to its installation.
2. **Soil Installation**
 - a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the soil.
 - b. Lay the first row of soil in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Steeper levels (slopes) to promote more uniform growth and strength. Ensure that soil is not stretched or overlapped and that all joints are bolted tight in order to prevent voids which would cause air drying of the soil.
 - c. Whenever possible, lay soil with the long edges parallel to the contour and with staggered joints. Roll and tamp, peg or otherwise secure the soil to prevent slippage on slopes. Ensure solid contact exists between soil rows and the underlying soil surface.
 - d. Water the soil immediately following rolling and tamping with the underside of the rear end pad and soil surface below the soil are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of soil within eight hours.

B.16

Mulching

1. **Mulch Materials (in order of preference)**
 - a. Straw consisting of thoroughly threshed wheat, rye, oat, or barley and reasonably bright in color (green or tan) or free of disease weed seeds as specified in the Maryland Seed Law and not smelly, moldy, caked, decayed, or excessively dusty. Note: Use only sterile straw mulch to areas where no species of grass is desired.
 - b. Wood Cellulose Fiber Mulch (WCFM) consisting of specially prepared wood cellulose processed into a uniform fibrous physical state.
 - i. WCFM is to be dyed green or contain a green dye in the package that will provide an appropriate color to facilitate visual inspection of the uniformly spread slurry.
 - ii. WCFM, including dye, must contain no germination or growth inhibiting factors.
 - iii. WCFM materials are to be manufactured and processed so such a manner that the wood cellulose fiber mulch will remain in uniform suspension in water under agitation and will bind with seed, fertilizer and other additives to form a homogeneous slurry. The mulch material must form a filter-like ground cover, on application, having moisture absorption and penetration properties and must cover and hold grass seed in contact with the soil without inhibiting the growth of the grass seedlings.
 - iv. WCFM material must not contain elements or compounds at concentrations levels that will be phytotoxic.
 - v. WCFM must conform to the following physical requirements: fiber length of approximately 10 millimeters, diameter approximately 1 millimeter, pH range of 4.0 to 8.5, ash content of 1 percent maximum and water holding capacity of 90 percent minimum.
2. **Application**
 - a. Apply mulch to all seeded areas immediately after seeding.
 - b. When straw mulch is used, spread it over all seeded areas at the rate of 2 tons per acre in a uniform loose depth of 1 to 2 inches. Apply mulch to achieve a uniform distribution and depth so that the soil surface is not exposed. When using a mulch seeding tool, increase the application rate to 2.5 tons per acre.
 - c. Wood cellulose fiber mulch must be applied at a wet dry weight of 1500 pounds per acre. Mix the wood cellulose fiber with water to attain a mixture with a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
3. **Seeding**
 - a. Perform mulch seeding immediately following application of mulch to minimize loss by wind or water. This may be done by use of the following methods (listed by preference), depending upon the size of the area and erosion hazard:
 - i. A mulch seeding tool is a tractor drawn implement designed to punch and anchor mulch into the soil surface a minimum of 2 inches. This practice is most effective on large areas, but is limited to faster slopes where equipment can operate safely. If used on sloping land, this practice should follow the contour.
 - ii. Wood cellulose fiber may be used for anchoring straw. Apply the fiber binder at a wet dry weight of 750 pounds per acre. Mix the wood cellulose fiber with water at a maximum of 50 pounds of wood cellulose fiber per 100 gallons of water.
 - iii. Synthetic binders such as Acrylic GEL (Agro-Tack, DCA-70, Permac-Terra Tack II, Terra Tack AR) or other approved equal may be used. Follow application rates as specified by the manufacturer. Application of liquid binders needs to be heavier at the edges where wind causes mulch, such as in valleys and on crests of banks. The use of asphalt binders is strictly prohibited.
 - iv. Lightweight plastic netting may be applied over the mulch according to manufacturer recommendations. Netting is usually available in rolls 4 to 15 feet wide and 300 to 3,000 feet long.

B.17

Sod Maintenance

1. **General Specifications**
 - a. In the absence of adequate rainfall, water daily during the first week or so often and sufficiently as necessary to maintain soil moisture to a depth of 4 inches. Water soil during the heat of the day to prevent wilting.
 - b. After the first week, soil watering is required as necessary to maintain adequate moisture content.
 - c. Do not mow until the sod is firmly rooted. No more than 1/4 of the grass leaf must be removed by the initial cutting or subsequent cuttings. Maintain a grass height of at least 3 inches unless otherwise specified.

B.18

Stockpile Area

Definition
 A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
 To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
 Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Rerouting must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth ditch, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4.4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to prevent voids which would cause air drying of the stockpile.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 10 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.19

Stockpile Area

Definition
 A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
 To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
 Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Rerouting must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth ditch, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4.4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to prevent voids which would cause air drying of the stockpile.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 10 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.20

Stockpile Area

Definition
 A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
 To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
 Stockpile areas are utilized when it is necessary to salvage and store soil for later use.

Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
2. The footprint of the stockpile must be sized to accommodate the anticipated volume of material and based on a side slope ratio no steeper than 2:1. Rerouting must be provided in accordance with Section B-3 Land Grading.
3. Runoff from the stockpile area must drain to a suitable sediment control practice.
4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth ditch, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
6. Where runoff concentrates along the toe of the stockpile fill, an appropriate erosion/sediment control practice must be used to intercept the discharge.
7. Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4.4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to prevent voids which would cause air drying of the stockpile.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 10 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.21

Stockpile Area

Definition
 A mound or pile of soil protected by appropriately designed erosion and sediment control measures.

Purpose
 To provide a designated location for the temporary storage of soil that controls the potential for erosion, sedimentation, and changes to drainage patterns.

Conditions Where Practice Applies
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Criteria

1. The stockpile location and all related sediment control practices must be clearly indicated on the erosion and sediment control plan.
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4. Access the stockpile area from the upgrade side.
5. Clear water runoff into the stockpile area must be minimized by use of a diversion device such as an earth ditch, temporary swale or diversion fence. Provisions must be made for discharging concentrated flow in a non-erosive manner.
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7. Stockpiles must be stabilized in accordance with the 3:1 day stabilization requirement as well as Standard B-4.1 Incremental Stabilization and Standard B-4.4 Temporary Stabilization.
8. If the stockpile is located on an impervious surface, a liner should be provided below the stockpile to prevent voids which would cause air drying of the stockpile.

Maintenance

The stockpile area must continuously meet the requirements for Adequate Vegetative Establishment in accordance with Section B-4 Vegetative Stabilization. Side slopes must be maintained at no steeper than a 2:1 ratio. The stockpile area must be kept free of erosion. If the vertical height of a stockpile exceeds 20 feet for 2:1 slopes, 10 feet for 3:1 slopes, or 40 feet for 4:1 slopes, benching must be provided in accordance with Section B-3 Land Grading.

B.22

Seeding and Mulching

Definition
 The application of seed and mulch to establish vegetative cover.

Purpose
 To protect disturbed soils from erosion during and at the end of construction.

Conditions Where Practice Applies
 To the surface of all perimeter controls, slopes, and any disturbed area not under active grading.

Criteria

A. Seeding

1. **Specifications**
 - a. All seed must meet the requirements of the Maryland State Seed Law. All seed must be subject to testing by a recognized seed laboratory. All seed must have been tested within the 6 months immediately preceding the date of seeding such material on any project. Refer to Table B.4 regarding the quality of seed. Seed tags must be available upon request to the inspector to verify type of seed and seeding rate.
 - b. Mulch alone may be applied between the fall and spring seeding dates only if the ground is frozen. The appropriate seeding mixture must be applied when the ground thaws.
 - c. Inoculants: The inoculant for treating legume seed in the seed mixture must be a pure culture of nitrogen fixing bacteria prepared specifically for the species. Inoculants must not be used later than the date indicated on the container. Add fresh inoculants as directed on the package. Use four times the recommended use when hydroseeding. Note: It is very important to keep inoculants as cool as possible until used. Temperatures above 75 to 80 degrees Fahrenheit can weaken bacteria and make the inoculant less effective.
 - d. Soil or seed must not be placed on soil which has been treated with soil sterilants or chemicals used for weed control until sufficient time has elapsed (14 days min.) to permit degradation of phytotoxic materials.
2. **Application**
 - a. **Dry Seeding:** This includes use of conventional drop or broadcast spreaders.
 - i. Inoculants seed into the subsoil at the rate specified on Temporary Seeding Table B.1, Permanent Seeding Table B.3, or otherwise specified.
 - ii. Apply seed in two directions, perpendicular to each other. Apply half the seeding rate in each direction. Roll the seeded area with a weighted roller to provide good seed to soil contact.

B.23

Permanent Seeding Summary

No.	Species	Application Rate (lb/acre)	Seeding Depth (in)	Fertilizer Rate (16-20-20)			Lime Rate
				N	P ₂ O ₅	K ₂ O	
1	Swath	40	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Timothy	40	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Oats	72	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)
	Wheat	100	3/4 - 1 1/4	45 pounds per acre	90 lb/acre (2 lb/1000 sf)	90 lb/acre (2 lb/1000 sf)	2 tons/acre (90 lb/1000 sf)

B. Soil: To provide quick cover on disturbed areas (2" grade or better)

1. **General Specifications**
 - a. Clean of foreign soil must be Maryland State Certified. Soil labels must be made available to the job foreman and inspector.
 - b. Soil must be machine cut at a uniform soil thickness of 1/4 inch, plus or minus 1/8 inch, at the time of cutting. Measurement for thickness must exclude top growth and thatch. Broken pads and soil or uneven ends will not be acceptable.
 - c. Standard test sections of soil must be strong enough to support their own weight and retain their size and shape when suspended vertically with a firm grasp on the upper 10 percent of the section.
 - d. Soil must not be harvested or emulsified when moisture content (consistently dry or wet) may adversely affect its survival.
 - e. Soil must be harvested, delivered, and installed within a period of 36 hours. Soil not transported within this period must be approved by an agronomist or soil scientist prior to its installation.
2. **Soil Installation**
 - a. During periods of excessively high temperature or in areas having dry subsoil, lightly irrigate the subsoil immediately prior to laying the soil.
 - b. Lay the first row of soil in a straight line with subsequent rows placed parallel to it and tightly wedged against each other. Steeper levels (slopes) to promote more uniform growth and strength. Ensure that soil is not stretched or overlapped and that all joints are bolted tight in order to prevent voids which would cause air drying of the soil.
 - c. Whenever possible, lay soil with the long edges parallel to the contour and with staggered joints. Roll and tamp, peg or otherwise secure the soil to prevent slippage on slopes. Ensure solid contact exists between soil rows and the underlying soil surface.
 - d. Water the soil immediately following rolling and tamping with the underside of the rear end pad and soil surface below the soil are thoroughly wet. Complete the operations of laying, tamping and irrigating for any piece of soil within eight hours.