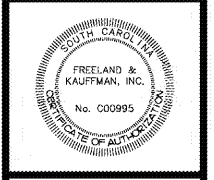


REVISIONS	BY

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NO BID SET FOR CONSTRUCTION



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Permanent Seeding

Permanent Seeding

Plan Symbol

Description

Controlling runoff and preventing erosion by establishing a perennial vegetative cover with seed.

When and Where to Use It

A major consideration in the selection of the type of permanent grass to establish is the intended use of the land. Land use is separated into two categories, high-maintenance and low-maintenance.

High-maintenance

High maintenance areas are mowed frequently, lime or fertilized on a regular basis, and require maintenance to an aesthetic standard. Land uses with high maintenance grasses include homes, industrial parks, schools, churches, and recreational areas such as parks, athletic fields, and golf courses.

Low-maintenance

Low maintenance areas are mowed infrequently, if at all, and lime and fertilizer may not be applied on a regular schedule. These areas are not subject to intense use and do not require a uniform appearance. The vegetation must be able to survive with little maintenance over long periods of time. Grass and legume mixtures are favored in these areas because legumes are capable of fixing nitrogen in the soil for their own use and the use of the grasses around them. Land uses requiring low-maintenance grasses include steep slopes, stream and channel banks, road banks, and commercial and industrial areas with limited access.

Seed Selection

The use of native species is preferred when selecting vegetation. Base plant seed selection on geographical location, the type of soil, the season of the year in which the planting is to be done, and the needs and desires of the permanent land user. Failure to carefully follow agronomic recommendations results in an inadequate stand of permanent vegetation that provides little or no erosion control.

Installation

Topsoil

Apply topsoil if the surface soil of the seedbed is not adequate for plant growth.

Tillage

If the area has been recently plowed, no tillage is required other than raking or surface roughening to break any crust that has formed leaving a textured surface. Disk the soil for optimal germination when the soil is compacted less than 6-inches. If the soil is compacted more than 6-inches, sub-soiled and disk the area.

Soil Testing

Soil testing is available through Clemson University Cooperative Extension Service.

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Unless a specific soil test indicates otherwise, apply 1½ tons of ground course textured agricultural limestone per acre (70 pounds per 1000 square feet).

Fertilizer

Apply a minimum of 1000 pounds per acre of a complete 10-10-10 fertilizer (23 pounds per 1000 square feet) or equivalent during permanent seeding of grasses unless a soil test indicates a different requirement. Incorporate fertilizer and lime (if used) into the top 4-6 inches of the soil by disking or other means where conditions allow. Do not mix the lime and the fertilizer prior to the field application.

Seeding

Loosen the surface of the soil just before broadcasting the seed. Evenly apply seed by the most convenient method available for the type of seed applied and the location of the seeding. Typical application methods include but are not limited to cyclone seeders, rotary spreaders, drop spreaders, broadcast spreaders, hand spreaders, cultipacker seeder, and hydro-seeders. Cover applied seed by raking or dragging a chain or brush mat, and then lightly firm the area with a roller or cultipacker. Do not roll seed that is applied with a hydro-seeder and hydro-mulch.

Mulching

Cover all permanent seeded areas with mulch immediately upon completion of the seeding application to retain soil moisture and reduce erosion during establishment of vegetation. Apply the mulch evenly in such a manner that it provides a minimum of 75% coverage. Typical mulch applications include straw, wood fiber, hydromulches, BFM and FGM. Use hydromulches with a minimum blend of 70% wood fibers.

The most commonly accepted mulch used in conjunction with permanent seeding is small grain straw. Select straw that is dry and free from mold damage and noxious weeds. The straw may need to be anchored with netting or asphalt emulsions to prevent it from being blown or washed away. Apply straw mulch by hand or machine at the rate 2 tons per acre (90 pounds per 1000 square feet). Frequent inspections are necessary to check that conditions for growth are good.

Irrigation

Keep permanent seeded areas adequately moist, especially late in the specific growing season. Irrigate the seeded area if normal rainfall is not adequate for the germination and growth of seedlings. Water seeded areas at controlled rates that are less than the rate at which the soil can absorb water to prevent runoff. Runoff of irrigation water wastes water and can cause erosion.

Re-seeding

Inspect permanently seeded areas for failure, make necessary repairs and re-seed or overseed within the same growing season if possible. If the grass cover is sparse or patchy, re-evaluate the choice of grass and quantities of lime and fertilizer applied. Final stabilization by permanent seeding of the site requires that it be covered by a 70% coverage rate.

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Permanent Seeding

Inspection and Maintenance

- Inspect seeded areas for failure and make necessary repairs and re-seed immediately. Conduct a follow-up survey after one year and replace failed plants where necessary.
- If vegetative cover is inadequate to prevent rill erosion, overseed and fertilize in accordance with soil test results.
- If a stand of permanent vegetation has less than 40 percent cover, re-evaluate choice of plant materials and quantities of lime and fertilizer.
- Re-establish the stand following seed bed preparation and seeding recommendations, omitting lime and fertilizer in the absence of soil test results.
- If the season prevents re-sowing, mulch is an effective temporary cover.
- Final stabilization of the site requires a 70 percent overall coverage rate. This does not mean that 30 percent of the site can remain bare. The coverage is defined as looking at a square yard of coverage, in which 70 percent of that square yard is covered with vegetation.

Permanent Seeding Permanent Seeding

Preventive Measures and Troubleshooting Guide

Field Condition	Common Solutions
Soils have eroded.	Re-seed or replace eroded areas.
Vegetation cover is inadequate and soil erosion is occurring.	Overseed and fertilize in accordance with soil test results.
Stand of permanent vegetation has less than 40% cover.	Re-evaluate choice of plant materials and quantities of lime and fertilizer.
Vegetation show signs of wilting before noon.	Water vegetation by wetting soil to a depth of 4-inches.

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Mulching

Mulching

Plan Symbol

Description

Mulching is a temporary soil stabilization erosion control method where materials such as grass, hay, wood chips, wood fibers, or straw are placed on the soil surface. In addition to stabilizing soils, mulching enhances the absorption of water by the soil, reduce evaporation losses, regulate soil temperatures, and reduce the speed of storm water runoff over an area.

When and Where to Use It

Use erosion control mulching on level areas or on slopes up to 50 percent. Where soil is highly erodible, nets should only be used in connection with organic mulch such as straw and wood fiber.

Mulch is an effective ground cover when the establishment of vegetation is improbable due to severe weather conditions (winter conditions), poor soil, or steep slopes.

Installation

Grading is not necessary before mulching but may be required if vegetation is expected to grow.

Anchor loose hay or straw by applying tackifier, stapling netting over the top, or crimping with a mulch-crimping tool.

Effective use of netting and matting material requires firm contact between the materials and the soil. If there is no contact, the material will not hold the soil and erosion will occur underneath the material.

Materials that are heavy enough to stay in place (for example, straw or wood chips on flat slopes) do not need anchoring.

Apply hydro-mulch in spring, summer, or fall to prevent deterioration of mulch before vegetation becomes established.

There must be adequate coverage to prevent erosion, washout, and poor plant establishment. If an appropriate tacking agent is not applied, or is applied in insufficient amounts, mulch is lost to wind and runoff.

Inspection and Maintenance

- Inspect every 7 calendar days and within 24-hours after each rainfall event that produces ½-inches or more of precipitation.
- Repair or replace damaged areas of mulch or tie-down material immediately.

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Mulching

Straw Mulch Straw Mulch with Tackifier

Preventive Measures and Troubleshooting Guide

Field Condition	Common Solutions
Mulch blows away.	Anchor straw mulch in place by applying a tackifier, crimping, punching, or track walking. May need to use a different BMP.
Coverage is inadequate.	Follow recommended application rates. Ensure that the correct amount of material is implemented. Reapply as necessary.
Mulch has washed away.	Do not place mulch in concentrated flow areas. Reapply as necessary.
Area was improperly dressed before application.	Remove existing vegetation and roughen embankment and fill areas by rolling with a punch type roller or by track walking.
Excessive water flows across stabilized surface.	Use other BMPs to limit flow onto stabilized area and/or to reduce slope lengths. Do not use to stabilize areas with swift moving concentrated flows.

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