

VEGETATION SCHEDULES

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[Introduction \(General Design Information\)](#)

[Vegetation Schedule Descriptions](#)

[Cell List for Vegetation Schedules](#)

[Blanks](#)

[Districts 1 and 2](#)

[Districts 3 and 5](#)

[Districts 6 and 7](#)

INTRODUCTION

General Design Information

The document was created to maintain the procedures for preparing vegetation schedules. The procedure was prepared by Mr. Mike L. Dickerson for Roadway Design in March of 1991 and formatted for this document.

Re-establishing vegetation on soil areas disturbed by highway construction is no easy task; it requires skill, technical knowledge and a certain amount of luck. Agronomics, unlike engineering, is not an exact science and is subject to many more variables. It is imperative; therefore, that the designer becomes involved at pre-design stages in the conditions prevailing on any given project and not rely on a set of standard specifications that may not be applicable.

Soil erosion is a problem from the time a contractor starts the clearing and grubbing operation until final acceptance of the project. Realizing this problem, adequate requirements should be included in each contract, stating in detail the temporary and permanent erosion control measures required to be performed by the contractor for the prevention or minimization of siltation and pollution from soil erosion.

Normally, vegetation is established in subsoil, or parent material that has a high content of sand, clay or other type materials which have very poor physical and chemical properties for plant growth. There are some areas within the state with deposits of gravel, rock, acid soils with a pH as low as 2, and very alkaline soils such as the Selma Chalk are (Macon, Starkville, Tupelo).

The contractor has the responsibility of finish grading immediately behind and progressing with the rough grading. Immediately following the finishing operation, the contractor is required to furnish and place the permanent erosion control items. This may be a time of year when adverse climatic conditions exist for growing vegetation. Many areas cannot be planted during the ideal planting season.

The appropriate, permanent vegetation erosion control items are determined for each project during the design stage. The Roadside Development Section within the Roadway Design Division is responsible for determining the necessary and appropriate items for each project. A plan sheet called the "Vegetation Schedule" is prepared, listing the erosion control items, rate of application, seasonal limitations and other requirements not specified in the specifications. This sheet becomes a part of the final plan assembly. The primary purpose for a vegetation schedule in the plans is to allow flexibility in the use of various erosion control items and their rates of application for a specified project. The specifications will not have to be modified to use different items, rates of applications, or seasonal limitations.

When a design squad is assigned to develop contract plans, they request a vegetation schedule, for that specified project. They furnish a copy of the title sheet, typical sections, original soil profile borings, district's recommendations, if any, and other data that may be necessary to design effective erosion control measures. The title sheet will indicate the location and if the project is rural, urban or booth. The typical sections will show the slope schedule and whether the project is grade and drain, paving, or other types of construction.

A study of the original soil borings taken along the centerline of the proposed highway is made to determine the different soil types. Where very sandy (A-1, A-2 and A-3) or highly acid soil and other types of unsuitable materials that will not support plant life are evident on grade and drain projects, these areas are specified to be plated with topsoil. The term "Topsoil" is used loosely because it is not high in organic matter and plant nutrients. The select material, if contractor furnished, does have enough clay to hold moisture and plant nutrients, and can be pulverized to form a well-prepared seedbed. State furnished topsoil is specified, if available and there is sufficient area for stockpiling, on some projects where the contractor is required to strip soil material from within the construction limits, place in stockpiles, and spread on slopes as topsoil. If topsoil is required, it will be specified on the vegetation schedule.

Standard ground preparation is bid per square yard, and the contractor is required to till the soil to a minimum depth of four inches on all areas requiring seeding and sodding. The agricultural limestone and fertilizer are normally spread and incorporated during the operation. Preparing the soil and incorporation the fertilizers prior to planting, are essential operations in growing and establishing vegetation on roadsides.

Agricultural limestone at the rate of 3 tons/acre and combination fertilizer (13-13-13) at 1000 lbs./acre is specified to be spread and incorporated into the soil prior to the seeding operation. The areas within the state where the soil is very acid or alkaline, we specify the 3 ton rate/acre as estimated for limestone and the actual rate/acre is determined by soil test during

construction. For paving projects where seeding is required on the various classes of granular material (base) agricultural limestone at the rate of 2 tons/acre is specified and required. After the vegetation has been planted for sixty days, and if the contract is in force, and still in the growing season(s), the contractor is required to apply and additional application of fertilizer on the existing vegetation. Normally, the types and rates of application of fertilizer is based on soil test for this application(s), and measured and paid for under the superphosphate bit item (0.5 tons/acre est.)

The primary warm season grasses that are established on roadsides are common Bermuda grass and Bahia grass. Normally Bermuda grass and Bahia grass seeds are specified to be planted all seasons of the year. Bahia grass seed is only specified on rural grade and drain projects outside the Delta area in Districts 1, 2, 3, and 5. Bahia grass seed is specified to be planted on all type projects except urban in Districts 6 and 7. During the spring and summer, the Bermuda grass will germinate, grow and give the desired quick slope protection. The Bahia grass seed is slow to germinate, but within three to four years, it will be the predominate vegetative cover. Bahia grass competes well with weeds and requires less fertilizer and mowing than Bermuda grass. Some object to the rapid elongation of seed heads by Bahia grass, but the seed stalks tend to be of uniform length and are not unattractive.

During the fall and winter months, added to the Bermuda grass and/or Bahia grass mixture is tall fescue (KY 31) seed and for projects outside the Delta crimson clover seed. Tall fescue seed is required to be planted all seasons of the year in Districts 1 and 2.

The fescue and crimson clover seeds will germinate grow and give adequate slope protection during this period when the Bermuda grass and/or Bahia grass seeds are dormant. Tall fescue is the only cool season perennial grass found to be successful in our vegetation program. Crimson clover has been the most successful legume and during the early spring while in bloom, many favorable comments are received from the traveling public.

On grading projects with high fill and deep cuts, sericea lespedeza seed is added to the seeding mixture and planted on high cut and fill slope areas selected by the Engineer during construction.

Crimson clover seed is not planted in the Delta causing an inrate/acre of tall fescue seed in this area. It has been documented through research by the USDA Experiment Station at Stoneville, Mississippi that crimson clover is one of the primary host plants in the early spring for the first generation of the bollworm and the tobacco budworm. Since the crops in the Delta are primarily cotton and soybeans, they are trying to eliminate the known host plants.

All seeded areas are required to be mulched. The Vegetation Schedule specified an estimated 2 tons/acre rate and the Project Engineer determines the actual rate/acre, from one to two tons, depending on the time of year the areas are being seeded.

When solid sod is required in the contract, it is specified on the Vegetation Schedule. Watering at the estimated rate of 20 gals./sq. yd. is specified and required for the solid sod, but not for seeded areas.

Insect pest control is specified as a pay item on all projects. This item is used primarily for the control of army worms during the summer and early fall months.

VEGETATION SCHEDULE DESCRIPTIONS

There are two (2) different original blank Vegetation Schedules. The only difference between the two is that one has solid sodding and watering listed. If solid sod is required on the project, select the schedule with solid sodding and watering to be filled out. If solid sodding is not required, select the schedule without it.

Cell List for Vegetation Schedules

Listed below are the cells that can be found in Roadway Design cell library RWD.CELL. They are good examples of the various kinds of projects for each District. All the necessary instructional notes, if any, for filling out or completing the appropriate vegetation schedule will appear at the top of the sheet.

Blanks

Cell: Description

Veg4: blank

Veg5: blank with solid sod

Districts 1 and 2

Cell: Description

Veg6: Rural – Grade and Drain and/or Bridges, Excluding Miss. Delta

Veg7: Rural – Grade, Drain and Paving, Excluding Miss. Delta

Veg8: Rural – Paving, Bridge Replacements or Guardrail, Excluding Miss. Delta

Veg9: Urban – All type projects, Excluding Miss. Delta

Veg10: Miss. Delta (District 2) – All type projects

Veg11: Temporary Erosion Control Items for Detours – All type projects.

Districts 3 and 5

Cell: Description

Veg12: Rural – Grade and Drain and/or Bridges, Excluding Miss. Delta

Veg13: Rural – Grade, Drain and Paving, Excluding Miss. Delta

Veg14: Rural – Paving, Bridge Replacements or Guardrail, Excluding Miss. Delta

Veg15: Urban – All type projects, Excluding Miss. Delta

Veg16: Miss. Delta (District 3) – All type projects

Veg17: Temporary Erosion Control Items for Detours – All type projects

Districts 6 and 7

Cell: Description

Veg18: Rural – Grade and Drain, Bridges and/or Bridge Replacements

Veg19: Rural – Grade, Drain, and Paving

Veg20: Rural – Paving and/or Guardrail

Veg21: Urban – All type projects

Veg22: Temporary Erosion Control Items for Detours – All type projects