

Technical Specification 025

LANDSCAPING

1.0 General

- a) The contractor shall be responsible for providing all labor, materials, tools, equipment, topsoil, fertilizer, lime, mulch, seed, or sod if necessary for restoration and stabilization of areas disturbed under this contract.
- b) All areas disturbed, whether in street rights-of-way, permanent easements or temporary construction easements, shall be restored by the contractor upon completion of backfilling. The contractor may be required to restore original structures, decorative vegetation, grass seed, sod, and shrubbery removed to as near the original condition as possible and to the approval of the Engineer and / or Brunswick County. County staff can provide the contractor with the terms and conditions of any county negotiated easement with regards to final restoration conditions.

2.0 Protection Measures

- a) The utility contractor shall make every effort to avoid damage to existing trees, shrubs, flower beds and structural improvements. Such measures shall include, but not be limited to the following:
 - 1) Remove and replant small trees and shrubs.
 - 2) Remove and reinstall fences, mailboxes, planters, trash racks and similar improvements.
 - 3) Tie back ornamental branches that interfere with construction to avoid damage.
 - 4) Trim damaged branches of vegetation to improve appearance.
 - 5) Treat tree trunks damaged by construction or removed with an asphalt tree dressing compound.
 - 6) Use small rubber tired back hoes, trench boxes and special equipment in areas restricted in work space.
 - 7) Stripping areas of grasses normally established by sodding or sprigging such as Zoysia, hybrid Bermudagrass, St. Augustine, Bahia, Carpetgrass, etc., maintaining with proper moisture content and re-sodding original lawn materials. The contractor shall re-sod at their cost if stripping of grasses and /or sod per this section is disregarded.

3.0 Submittals

- a) The utility contractor shall submit the names and composition of the fertilizers, sod and seed mixtures and mulch type to the Engineer prior to initiation of restoration activities for review and approval.

4.0 Lawn and Roadway Shoulder Replacement

- a) The utility contractor shall re-establish turf in all areas where grass existed prior to construction, and is disturbed or damaged by construction activities without additional compensation.
 - 1) Lawns:
 - a) The type of turf shall be equal to that existing prior to construction in disturbed areas on private property. The contractor shall be required to either seed or sod disturbed areas to provide a grass stand equivalent to that existing prior to the disturbing activities.
 - 2) Roadway right-of-way / easements / public property
 - a) The type of turf shall be equal to that existing prior to construction in disturbed areas which are located inside of the right-of-way. At a minimum, the contractor shall be required to provide a satisfactory stand of perennial grass with a root system sufficiently developed to survive dry periods and winter weather, capable of re-establishment in the spring. In well maintained areas within the roadway right-of-way, easements, and public property the Engineer may require sod to be installed. The Engineer may direct areas with irrigation systems to be sodded.

5.0 Materials

- a) The contractor shall use the following materials on the project unless otherwise approved by the Engineer and /or any special requirement of NCDOT for restoration work within NCDOT rights-of-way:
 - 1) Topsoil:
 - a) Where topsoil has been previously hauled in, it shall be restored by removal, stockpiling and replacing, or by hauling in new topsoil.
 - 2) Seed:
 - a) The seed shall have 97% purity and 90% germination guarantee. All seed must meet the requirements of the North Carolina Department of Agriculture. Bags shall be labeled to describe the composition, purity, germination, and the presence of restrictive or prohibited agents. Damp or moldy seed will be rejected.

- 3) Turfgrass sod shall be of good quality, free of weeds, disease and of good color and density. Turfgrass sod composition shall match the varieties replaced and shall be supplied by a reputable sod producer.
- 4) Fertilizers:
 - a) Fertilizer shall be 10-10-10 or equivalent of uniform, free-flowing granules. The fertilizer shall be delivered to the site in the original containers labeled with contents and producer's name. The Engineer may require additional or a different fertilizer based on seed performance or soil test.
- 5) Lime:
 - a) The dolomitic lime shall consist of ground agriculture limestone containing not less than 85% of combined calcium and magnesium carbonates with 60% passing a #60 mesh sieve and 95% passing a #10 mesh sieve.
- 6) Mulch:
 - a) Mulch shall consist of dry, unchopped, unweathered small grain straw or hay free of seeds of competing plants. Apply 1 to 2 tons/acre on all seeded areas. All slopes with straw mulch exceeding 3:1 slope shall have an asphalt tack applied at the rate of 225 gallons/acre. Straw mulch that is matted or lumpy shall be loosened and separated before being used. The utility contractor may use alternate mulches upon approval of the Engineer.
- 7) Asphalt Binding Material:
 - a) The asphalt binding material for anchoring mulch shall consist of emulsified asphalt per North Carolina Department of Transportation specifications.
- 8) Water:
 - a) Water shall be potable, and free of contents which could retard grass growth.

6.0 Preparation of Disturbed Areas

- a) Uncultivated Areas:
 - 1) All uncultivated areas that are disturbed by the pipe laying operation shall be restored to good condition with similar materials as original. Restoration includes, but is not limited to, asphalt, paint stripes, concrete, curbs, culvert pipe, mailboxes and signs. Areas shall be cleaned and surplus materials removed.

- 2) Natural areas shall be graded to final grade, limed, fertilized, seeded and mulched as required and as described in Part 6.0 Cultivated Areas, except no topsoil application is required. Wetland areas are to be restored with original vegetation or with plants of same species as specified by the regulating authority. Topsoil will not be required on road shoulder adjacent to uncultivated areas except in those areas where suitable erosion ground cover is unattainable through seeding.
- b) Cultivated Areas:
- 1) Existing seeded and/or planted areas disturbed by construction shall be dressed with topsoil, limed, fertilized, seeded and mulched. Furnish and apply soil conditioners and seed as specified.
 - 2) Excess stone from construction activities left on private property or rights-of-way shall be removed by the Contractor, at his expense, to prevent damage to maintenance equipment and operations.
- c) Topsoil:
- 1) After approval of rough grading, the Contractor shall place the topsoil on all cultivated areas damaged by his operations, except for road shoulders adjacent to undeveloped and uncultivated areas. Topsoil shall be at least four (4) inches deep. All topsoil from stripping which is not used at the job site shall be removed from the site.
- d) Soil Conditioners:
- 1) Lime and fertilizer shall be spread and thoroughly worked into the topsoil at the rates of 3,000 lbs/acre and 1,000 lbs/acre, respectively. Then the soil shall be raked until the surface is finely pulverized and smooth and shall be compacted with rollers, weighing not over 100 pounds per linear foot of tread, to an even surface conforming to the prescribed lines and grades.
- e) Seeding / sodding:
- 1) Seeding / sodding shall be done when weather conditions are approved as suitable. If there is a delay, during which weeds grow or soil is washed out, the Contractor shall remove the weeds or replace the soil before seeding / sodding, without additional compensation. Immediately before seeding / sodding is started, the soil shall be lightly raked.
 - 2) Seed shall be sown during the following dates at the following pound per acre rates. On a calm day and preferably by machine, but if by hand, only by experienced workmen. Hydroseeding may be permitted.

- a) For soils with good moisture retention from February 15 to April 30 or September 1 to October 31. Seed with 80 lbs tall Fescue, 50 lbs unhulled Common Bermuda Grass, 40 lbs Kobe Lespedeza.
 - b) For soils with poor moisture retention from April 1 - July 15, seed with 50 lbs unhulled Common Bermuda Grass, 5 lbs Centipede Grass and 10 lbs German Millet.
 - c) Temporarily seeding all other times (to be reseeded at the first available date listed in 1 or 2 above), 120 lbs rye (grain), 50 lbs Kobe Lespedeza.
- 3) Seed shall be raked lightly into the soil to a depth of 1/4 inch and rolled with a roller weighing not more than 100 pounds per linear foot of tread.
- 4) Wherever poor germination occurs in areas larger than three (3) square feet, the Contractor shall reseed, roll, and water as necessary to obtain proper germination. The Contractor shall water, weed, cut and otherwise maintain and protect seeded areas as necessary to produce a dense, healthy growth of perennial lawn grass.
- f) Mulch:
- 1) All seeded areas shall be mulched unless otherwise indicated in the Special Provisions or directed by the Engineer.
 - 2) Grain straw may be used as mulch at any time of the year. If permission to use material other than grain straw is requested by the Contractor and the use of such material is approved by the Engineer, the seasonal limitations, the methods and rates of application, the type of binding material, or other conditions governing the use of such material will be established by the Engineer at the time of approval.
 - 3) Mulch shall be applied within 36 hours after the completion of seeding unless otherwise permitted by the Engineer. Care shall be exercised to prevent displacement of soil or seed, or other damage to the seeded area during the mulching operations.
 - 4) Mulch shall be uniformly spread by hand or by approved mechanical spreaders or blowers which will provide an acceptable application. An acceptable application will be that which will allow some sunlight to penetrate and air to circulate, but also partially shade the ground, reduce erosion, and conserve soil moisture. Mulch rate shall be 2 tons per acre. When there are seasonal limitations on seeding or when other weather or erosion conditions make it desirable to mulch in advance of seeding, the Engineer may direct that mulch be applied after the application and incorporation of limestone into the seedbed, and the fertilizer and seed then applied later through the mulch in proper season or under more favorable weather conditions.

- 5) Mulch shall be held in place by applying a sufficient amount of asphalt or other approved binding material to assure that the mulch is properly held in place. The rate and method of application of binding material shall meet the approval of the Engineer. Where the binding material is not applied directly with the mulch, it shall be applied immediately following the mulch application. During the application of asphalt binding material, or other approved binding materials which may cause damage, adequate precautions shall be taken to prevent damage to traffic, structures, guardrails, traffic control devices, or any other appurtenances. The contractor shall either provide adequate covering or change methods of application as required to avoid such damage. When such damage occurs, the Contractor shall repair it, including any cleaning that may be necessary.
- 6) The Contractor shall take sufficient precautions to prevent mulch from entering drainage structures through displacement by wind, water, or other causes and shall promptly remove any blockage to drainage facilities which may occur.

7.0 Inspection and Acceptance

- a) The Engineer and Owner will be furnished with duplicate copies of invoices for all sod, seed, fertilizer and lime used on the project.
- b) At the beginning of the next planting season after that in which the permanent grass crop is sown, the seeded areas will be inspected. Any section not showing dense, vigorous growth at that time shall be promptly reseeded by the Contractor at his own expense.
- c) Restoration shall be accepted when a healthy growth of the vegetation is achieved and maintained to a height of 4" with 85% coverage; provided that no bare spots larger than 10 square feet exist.
- d) No separate payment will be made for Landscaping. All costs incurred by the contractor for this work shall be included in the unit or lump sum price for the item of work to which it pertains.