02920 – SEEDING, SODDING AND GROUNDCOVER

(Last Revised 6/21/10)

SELECTED LINKS TO SECTIONS WITHIN THIS SPECIFICATION

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this specification.

B. Section 02200 – EARTHWORK.

C. Section 02275 – TRENCHING, BACKFILLING, & COMPACTION OF Utilities

D. Section 02510 – WATER DISTRIBUTION

E. Section 02530 – SANITARY SEWER

F. Section 02630 – STORM DRAINAGE

1.2 SUMMARY

A. This section includes preparation of surfaces and application for seeding and sodding of areas proposed to be stabilized and landscaped in utility easements, on sites, along roadways and other applicable areas disturbed by construction.

B. This specification covers seeding, sodding and groundcover but excludes trees, shrubs, plants, edgings, planters and irrigation.

1.3 DEFINITIONS

A. **GENERAL**: For the purposes of this specification, the following definitions refer to landscaping items that come under the authority of the Town of Clayton as specified within this section and other sections of this manual.

1) **Finish Grade**: In terms of landscaping, the surface that has been established, graded, raked, and prepared to receive groundcover, fertilizer, seed, and mulch; the finished surface of planting soil.

2) **Groundcover**: The material placed on a prepared surface and used to stabilize the soil from erosion.

3) **Mulching**: A protective covering, usually of organic matter such as straw, placed over bare earth to minimize evaporation of moisture and erosion of bare earth soils.

4) **Mulch Binders (Tackifiers)**: Liquid asphaltic or fibrous mixture intended to bind straw and hold in place.

5) **Mulch Netting**: Lightweight plastic, cotton, or paper nets intended to be stapled over straw mulch.

6) **Sod**: An existing established matt of grass that has been removed from one area by a mechanical harvester and transferred to a prepared subgrade at another location; used to render a finished appearance and/or provide immediate resistance to erosion.

7) **Subgrad**e: Surface or elevation remaining after completing the excavation before placement of topsoil.

8) **Topsoil**: A native, imported, or modified soil which is primarily organic in nature, free of rocks, clumps of clayey soils and otherwise friable in texture.

1.4 SUBMITTALS

A. Submit product data and shop drawings for the following:

1) **Seed certification**: All seed shall be labeled to show it meets North Carolina Seed Law requirements. All seed must have been tested within 6 months of planting.

2) A seed bag tag shall be submitted with final payment request from each type or mixture of seed used.

3) Topsoil analysis, if requested by Town Engineer. Soil testing shall state percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; deleterious material; pH; and mineral and plant-nutrient content of topsoil. Report is to state suitability of topsoil for lawn growth and recommend quantities of nitrogen, phosphorus, potash nutrients and soil amendments to be added to produce satisfactory topsoil.

1.5 QUALITY ASSURANCE

A. Materials and operations shall comply with the latest revision of all applicable Codes and Standards.

1.6 QUALITY STANDARDS

A. Materials and operations shall comply with the latest revision of the Codes and Standards listed below:

American National Standards Institute

ANSI Z60.1 American Standard for Nursery Stock

American Society for Testing and Materials

ASTM C602 Specification for Agricultural Liming Materials

ASTM D977 Standard Specification for Emulsified Asphalt

ASTM D5268 Specification for Topsoil Used for Landscaping purposes

1.7 STANDARD ABBREVIATIONS

AASHTO American Association of State Highway Transportation Officials.

ANLA American Nursery & Landscaping Association

ANSI American National Standards Institute

ASTM American Society for Testing and Materials

FS Federal Specifications

MSDS Material Safety Data Sheets

NCDOT North Carolina Department of Transportation

NCSPA North Carolina Sod Producers Association

USDA United States Department of Agriculture

1.8 PRODUCT DELIVERY, STORAGE AND HANDLING

A. **Handling/Storage**:

1) See Part 3 - EXECUTION of these specifications for handling of sod materials during placement.

2) Observe Nursery's directions for delivery and storage of seed and sod materials.

3) Store and protect fertilizer and lime until item is applied.

1.9 PROJECT CONDITIONS

A. The Contractor is responsible for obtaining all applicable permits (encroachment, grading, etc.), making application, and paying permit fees.

B. Seed mixture shall be chosen to ensure the development of plants during the season of planting, and to ensure future growth and permanence.

C. Protect structures, utilities, sidewalks, pavements, and other facilities, along with lawns and existing exterior plants from damage caused by planting operations.

D. **Temporary Seeding**: Denuded areas to be graded during the construction phases that are not to be brought to final grade within 21 calendar days shall receive temporary seeding and mulching. Areas to be stabilized with permanent vegetation must be seeded or planted within 15 working days or 90 calendar days after final grade is reached, unless temporary stabilization is applied.

Temporary seeding shall also be used to stabilize finished grade areas if the time of year is outside the specified permanent seeding periods.

E. **Environmental - Wetlands**: Before crossing or entering into any jurisdictional wetlands, Contractor shall verify whether or not a wetlands permit has been obtained for the encroachment and whether special restrictions have been imposed. Care shall be taken not to disrupt drainage, alter, or destroy non-permitted wetlands unless a permit has been obtained. Restore areas noted on the project drawings, the contract documents, and/or in the permit. All encroachments shall be subject to US COE and NCDENR Division of Water Quality approval and permitting conditions.

F. **Safety**: The Contractor shall keep the surface in a safe a satisfactory condition during the progress of the work.

G. After seeding and mulching, care shall be taken to prevent future runoff destruction of seeded areas.

1.10 LOCATING SERVICES

Contact ***"NC One Call"*** at 811 before digging.

1.11 COORDINATION

A. Coordinate placement of groundcover with other Contractors and with the Town of Clayton Town Engineer.

B. Proceed with planting only when existing and forecasted weather conditions permit.

C. Protect undisturbed lawns, shrubs and trees and promptly repair damages caused by seeding, sodding, and groundcover operation.

1.12 Warranty

Warranty period for groundcover: 12 months from date of substantial completion if not designated as temporary cover.

PART 2 – PRODUCTS

2.1 MISCELLANEOUS

2.1.1 TOPSOIL

A. **Topsoil**: Comply with ASTM D 5268, *Standard Specification for Topsoil Used for Landscaping Purposes,* pH range of 5.5 to 7, a minimum of 4% organic material content; free of stones 1 inch or larger in any dimension and other extraneous materials harmful to plant growth.

1) On-site Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials

harmful to plant growth. Provide erosion control measures to prevent erosion, and off-site deposition of topsoil.

a. Contractor may supplement on-site source with imported or manufactured topsoil when quantities are insufficient. Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches in depth. Do not obtain from swamps or marshes.

2) Off-site Topsoil Source: Obtain topsoil from naturally well-drained sites where topsoil occurs at least 4 inches in depth. Do not obtain from swamps or marshes.

2.1.2 FERTILIZER

A. **Commercial Fertilizer**: Commercial-grade complete fertilizer of neutral character, consisting of fast and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the composition as shown on **Standard Detail 350.01**.

B. **Slow-Release Fertilizer**: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the composition as shown on **Standard Detail 350.01**.

2.1.3 LIME

A. **Lime**: ASTM C602, *Standard Specification for Agricultural Liming Materials*, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, Class O, with a minimum 95 percent passing through No. 8 sieve and a minimum 55 percent passing through No. 60 sieve.

If ordered by the Town Engineer, a pelted form of limestone with a water-soluble binder may be required to speed breakdown of limestone.

2.1.4 MULCH

A. **Straw mulch material**: Straw mulch shall consist of wheat, barley, oat or rye straw, or tame hay. The mulch material shall be air-dry, reasonably light in color, and shall not be musty, moldy, caked, or otherwise of low quality. If straw mulching results in competing stands of grain, maintenance shall include mowing of the grain weed stand to a height of 4 inches prior to reaching a height of 10 inches. Grain weed stands shall not be considered part of the minimum 95% area cover. Unacceptable grass stands shall be overseeded, after aeration by spiker, at half the original rate, as many times as necessary to establish an acceptable stand. The use of mulch that contains noxious weeds is not permitted. Straw that can be windblown should be anchored to hold in place. The contractor shall provide a method satisfactory to the Town Engineer for determining weight of mulch furnished.

B. **Other mulch materials**: Mulching materials, such as wood cellulose fiber mulch, mulch tackifiers, synthetic fiber mulch, netting, and mesh, are other mulching materials that may be required for specialized locations and conditions. These materials, when specified, must be accompanied by the

manufacturer's recommendations for methods of application. Wood chips are not permitted.

C. **Mulch tackifiers**: Asphalt emulsion tackifiers shall conform to the requirements of ASTM D977, Specification for Emulsified Asphalt. The emulsified asphalt may be rapid setting, medium setting, or slow setting. When directed by the Town Engineer, because of environmental considerations, nonasphaltic tackifiers may be required.

Mulch, tackifiers and nettings shall be biodegradable or photo-degradable within 2 years but without substantial degradation for 5 months. Such material shall be free of contaminants that pollute the air or waters of the US or State when properly applied. Mulch, tackifiers and nettings shall also be capable of being applied evenly such that they provide 100% initial soil coverage and still adhere to the soil surface, do not slip on slopes when it rains or is watered, do not blow off site, and dissipate rain-drop splash.

PART 3 – EXECUTION

3.1 CONSTRUCTION OF SUBGRADE

A. **EXCAVATION, GRADING AND SUBGRADE PREPARATION FOR SEEDING/SODDING**: Excavation, grading and subgrade preparation for seeding and/or sodding shall be in strict compliance with 02200, *Earthwork* and 02275, *Trenching, Backfilling, and Compaction of Utlities*, and this specification section, as applicable. The subgrade upon which this work is to be placed shall be smoothly shaped and compacted to a firm, even surface conforming to the elevation and cross-sections shown on the plans, the standard drawings, or as directed by the Town Engineer. All soft, frozen, and unsuitable material shall be removed and replaced with approved material.

B. **FINE GRADING (Trimming)**: Fine grading shall be the responsibility of the Contractor to ensure that the finished grade conforms to the proposed finished grades as shown on the plans and the applicable standard details.

3.2 SEEDING, SODDING, AND GROUNDCOVER

3.2.1 GENERAL

Seeding and groundcover includes seedbed preparation, liming, fertilizing, seeding, and mulching of all disturbed areas. Areas inside or outside the limits of construction that are disturbed by the Contractor’s operation and activity shall be seeded and mulched.

A. Unless called for otherwise on the Erosion and Sedimentation Control Plan, in areas where natural sod or vegetation has been disturbed, the area shall be fertilized, limed, seeded, and mulched in accordance with **Standard Detail 350.01**.

If a utility line is installed through a landscaped lawn, the seeding shall be modified to restore ground cover comparable to the existing lawn.

B. Seeding shall be carried out as soon as practical after the construction in any one area, and shall be maintained against erosion through the completion of the project. Seeding shall be accomplished as work progresses.

The Contractor shall be responsible for proper care of the seeded area during the period that vegetation is being established. In the event of an erosive rain before an adequate stand of vegetation has been established, damaged areas shall be repaired, fertilized, seeded, and mulched at the Contractor's expense.

C. Seeding on rights of way of NCDOT maintained roads shall be in accordance with NCDOT specifications and the requirements of the approved encroachment permit.

D. **Stockpile Area**: The Contractor is responsible for securing a material lay down and stockpile storage area. As such, the Contractor is responsible for the necessary erosion control measures, including but not necessarily limited to, a construction entrance, silt fence, protection of streams/buffers, clean up and restoration of site to the satisfaction of the City and the NCDENR, Department of Water Quality, Land Quality Section. Stockpile and/or waste areas must be maintained within the limits of the areas protected by the proposed measures and otherwise temporarily seeded if to be left stockpiled over 30 days.

3.2.2 SODDING/SEEDING

A. **GENERAL**

The goal of sodding/seeding, where specified, is to return the disturbed area to its original vegetative condition, and to return the area to an aesthetically pleasing environment. Thus, all sodding/seeding shall meet the following requirements:

In most instances the areas requiring sod restoration versus seed restoration should be readily determinable by the Contractor based on preconstruction conditions. In general, where streets have roadside ditches, the area from the edge of pavement to the centerline of the ditch will be reseeded or sodded, depending on the existing condition of the grass. Installation in areas where there are no roadside ditches and traffic does not generally frequent, and has an existing good thick uniform stand of grass, shall be resodded.

Any questionable areas shall be restored in the manner (sodded or seeded) determined on site by the Town Engineer.

Vegetative restoration (sodding or seeding) shall be done as the work progresses. Areas to be protected by a vegetative cover include, but are not limited to, any areas disturbed during construction that are not otherwise stabilized by gravel, concrete, or asphaltic paving, or other impervious built-upon surface.

Any area disturbed without owner authorization will be restored by the Contractor at his own expense. In all cases the Contractor will guarantee a stand of grass over the entire area.

The work to be done to acquire the necessary vegetative cover shall include but is not specifically restricted to appropriate tilling of the area, the application of fertilizer and lime for areas to be seeded, placement of sod, or sowing of seed and placing of a straw mulch to hold the seed and soil in place until germination and growth occur.

After bringing the area to be sodded or seeded to proper grade, the entire area shall be tilled to a minimum depth of 4 inches by discing, harrowing, or other approved means. Following tilling, all large debris and stones shall be removed to the satisfaction of the Town Engineer and the surface leveled.

3.2.3 MAINTENANCE OF SEEDED/SODDED AREAS:

Contractor shall provide a suitable backflow prevention devise for filling of water tank trucks or trailers. Contractor shall water sodded/seeded areas as necessary for providing for growth of sod/seed.

The Contractor shall provide general care for the restored areas as soon as the sod has been laid (or seeded and mulched), and such care shall continue until final inspection and acceptance of the work. All restored areas shall be protected against traffic or other use by warning signs or barricades approved by the City.

The Contractor shall mow the sodded and/or seeded areas with approved mowing equipment, depending upon climatic and growth conditions and the need for mowing specific areas. In the event that weeds or other undesirable vegetation are permitted to grow to such an extent that, either cut or uncut, they threaten to smother the species, they shall be mowed and the clippings raked and removed from the area. When the surface has been damaged during the period covered by this contract, the affected areas shall be repaired to re-establish the grade and the condition of the soil, as directed by the Town Engineer, and shall then be sodded, or seeded, as specified.

3.2.4 SODDING

All existing ornamental grass stands (commercial or private lawns) may be carefully taken up, protected and replaced to their original condition or the Contractor may elect to install new sod of the same grass type. Sod furnished by the Contractor shall have a good cover of living or growing grass. This shall be interpreted to include grass that is seasonally dormant during the cold or dry seasons and capable of renewing growth after the dormant period. All sod shall be obtained from areas where the soil is reasonably fertile and contains a high percentage of loamy topsoil. Sod shall be cut or stripped from living, thickly matted turf relatively free of weeds or other undesirable foreign plants, large stones, roots, or other materials, which might be detrimental to the development of the sod or to future maintenance. At least 70% of the plants in the cut sod shall be composed of the existing lawn species, and any vegetation more than 6 inches in height, shall be mowed to a height of 3 inches or less before sod is lifted. Sod, including the soil containing the roots and the plant growth showing above, shall be cut uniformly to a thickness not less than 2 inches.

After inspection and approval of the source of sod by the Town Engineer, the sod shall be cut with approved sod cutters to such a thickness that after it has been compacted, it shall have a uniform thickness of not less than 2 inches. Sod sections or strips shall be cut in uniform widths, not less than 10 inches, and in lengths of not less than 18 inches, but of such length as may be readily lifted without breaking, tearing, or loss of soil. Where strips are required, the sod must be rolled without damage with the grass folded inside. The Contractor may be required to mow high grass before cutting sod.

The sod shall be transplanted within 24 hours from the time it is stripped, unless circumstances beyond the Contractor's control make storing necessary. In such cases, sod shall be stored in an unrolled condition, irrigated, and protected from exposure to air drafts and sun and shall be kept from freezing. Sod shall be cut and moved only when the soil moisture conditions are such that favorable results can be expected. Where the soil is too dry, permission to cut sod may be granted only after it has been watered sufficiently to moisten the soil to the depth the sod is to be cut.

Sodding shall be performed only during the seasons when satisfactory results can be expected. Frozen sod shall not be used and sod shall not be placed upon frozen soil. Sod may be transplanted during periods of drought with the approval of the Director, provided the sod bed is watered to moisten the soil to a depth of at least 4 inches immediately prior to laying the sod.

The sod shall be moist and shall be placed on a moist earth bed. Pitchforks shall not be used to handle sod, and dumping from vehicles shall not be permitted. The sod shall be carefully placed by hand, edge to edge and with staggered joints, in rows at right angles to the slopes, commencing at the base of the area to be sodded and working upward. The sod shall immediately be pressed firmly into contact with the sod bed by tamping or rolling with approved equipment to provide a true and even surface, and ensure knitting without displacement of the sod or deformation of the surfaces of sodded areas. Where the sod may be displaced during sodding operations, the workmen when replacing it shall work from ladders or treated planks to prevent further displacement. Screened soil of good quality shall be used to fill all cracks between sod sections. The quantity of the fill soil shall not cause smothering of the grass. Where the grades are such that the flow of water will be from paved surfaces across sodded areas, the surface of the soil in the sod after compaction shall be set approximately 1 inch below the pavement edge. Where the flow will be over the sodded areas and onto the paved surfaced around manholes and inlets, the surface of the soil in the sod after compaction shall be placed flush with pavement edges.

Adequate water and watering equipment must be on hand before sodding begins, and sod shall be kept moist until it has become established and its continued growth assured. Contractor shall water sodded areas a minimum of 1 inch of water, twice per week until re-established and once per week thereafter until work is accepted. In all cases, watering shall be done in a manner, which will avoid erosion from the application of excessive quantities and will avoid damage to the finished surface.

3.2.5 SEEDING

Following surface preparation as described in paragraph 3.1A, *Excavation, Grading and Subgrade Preparation for Seeding/Sodding*, above, unless no soil test results are available, areas to be seeded shall be given an initial application of agricultural lime at a rate of at least 4,000 pounds per acre as well as fertilize and phosphate as shown on **Standard Detail 350.01**, all of which shall be thoroughly mixed with the soil. Dense or compacted soil areas and cut grade soil areas shall be ripped at greater than 6 inches of depth with a spring toothed ripper or similar equipment after finish grade but before tillage. Severely compacted surfaces shall be ripped to at least 12-inches of depth. No compaction soils shall be covered with soil fill until ripped. Finish grades on slopes shall be roughened parallel to contours to maximize surface storage and minimize runoff.

Upon completion of ground and soil preparation work, a grass seed mixture applied in accordance with **Standard Detail 350.01** shall be sown. Bermuda grass seed shall be in an unhulled condition from September 1 to April 1 and be in a hulled condition at all other times. Centipede grass seed is permitted to be planted from March 1 through July. Target pH at 5.5 for centipede grass. Substitutions for "Rebel" fescue will be considered acceptable only if the substituted fescue variety has no ratings less than "5" as determined by the USDA 1983 Tall Fescue Trails or more recent USDA trail data. No rye grass or other ground cover species shall be included in the seeding mixture. This shall be followed by placing a suitable cover of clean straw or approved equivalent mulch at the rate specified in **Standard Detail 350.01**. If straw is used as a temporary cover only, these rates shall be doubled or tripled depending upon average slope conditions.

A stand of grass shall be considered acceptable when area cover is at least 95%. The Contractor shall overseed, and otherwise maintain the grassed areas until the stand of grass has reached a uniform height of 3 to 4 inches and a state of uniform species maturity. The Contractor shall then top-dress the stand of grass with a minimum of 300 pounds per acre of 12-4-8 (4-1-2 or 3-1-2 ratio) fertilizer (or equivalent). Supply at least 1 lb. of nitrogen. Annual weed grasses and grain weeds shall not be considered part of the area cover, and seeding stands shall not be considered acceptable until the stand reaches a state of uniform post-seeding maturity for the specified species.

3.3 MULCHING

A. See **Standard Detail 350.01** for application rate. Mulch materials shall be spread uniformly by hand or machine to the designated areas. Anchor straw immediately after spreading to prevent displacement. All straw shall be stabilized by the application of an asphalt emulsion tackifiers or other approved binding material. Alternative stabilization methods such as Krimper, synthetic binders, chemical mulches, mulch nettings, hydro-seeding or hydro-mulching may be considered on an individual basis.

When the mulch crimper or equivalent anchoring tool is used, it shall have

straight blades and be the type manufactured expressly for and capable of firmly punching the mulch into the soil. Where the equipment can be safely operated, it shall be operated on the contour. Hand methods shall be used where equipment cannot safely operate to perform the work required.

Tackifiers shall be applied uniformly over the mulch material sufficient to bind/hold the straw, or they shall be injected into the mulch material as it is being applied. Mesh or netting stabilizing materials shall be applied smoothly, but loosely on the designated areas. The edges of these materials shall be buried or securely anchored using spikes or staples per the manufacturer's recommendations, as shown on the contract drawing details, or as directed by the Town Engineer.

B. **Maintenance**:

All mulches and soil coverings should be inspected periodically and after rainstorm events to check for erosion. Where erosion is observed in mulched areas, additional mulch should be applied. Nets and mats should be inspected after rainstorm evens for dislocation or failure. If washouts or breakage occur, re-install netting or matting as necessary after repairing damage to the slope or ditch. Inspections should take place up until grasses are firmly established.

If straw mulching results in competing stands of grain, maintenance shall include mowing of the grain weed stand to a height of 4 inches prior to reaching a height of 10 inches. Grain weed stands shall not be considered part of the minimum 95% area cover. Unacceptable grass stands shall be overseeded, after aeration by spiker, at half the original rate, as many times as necessary to establish an acceptable stand.

3.4 CLEANUP

A. Disposal: Remove surplus soil and waste material, unsuitable soil, trash, and debris and legally dispose of off-site.

END OF DIVISION 02920

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