SECTION 329223
SODDING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preparation of subsoil.
2. Placement of topsoil.
3. Fertilization.
4. Sod installation.
5. Maintenance.

B. Related Requirements:

1. Section 312316.13 – Trenching and Backfilling
2. Section 329119 - Landscape Grading
3. Section 329219 - Seeding: Seeding and soil supplements

1.2 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.3 UNIT PRICE - MEASUREMENT AND PAYMENT

A. Section 012000 - Price and Payment Procedures: Contract Sum/Price modification procedures.

1.4 REFERENCE STANDARDS

A. ASTM International:

1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

B. Turfgrass Producers International:

1. TPI - Guideline Specifications To Turfgrass Sodding.

1.5 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with installation of underground sprinkler system piping and watering heads.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit sod producer's information for sod grass species.
2. Submit manufacturer information for fertilizer, mulch and other accessories.

C. Samples:

1. Submit two 10-oz. samples of topsoil proposed.
2. Forward samples to approved testing laboratory in sealed containers to prevent contamination.

D. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

E. Sod Producer's Certificate: Certify that sod grass meets or exceeds specified requirements.

F. Test and Evaluation Reports: Indicate topsoil nutrient and pH levels, with recommended soil supplements and application rates.

G. Source Quality-Control Submittals: Indicate results of factory tests and inspections.

H. Qualifications Statements:

1. Submit qualifications for sod producer, manufacturer, and installer.
2. Submit sod producer's approval of installer.

1.7 SUSTAINABLE DESIGN SUBMITTALS – (NOT USED)

A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design submittals.

B. Manufacturer's Certificate:

1. Certify that products meet or exceed specified sustainable design requirements.
2. Materials Resources Certificates:

    a. Certify source for regional materials and distance from Project Site.

C. Product Cost Data:

1. Submit cost of products to verify compliance with Project sustainable design requirements.
2. Exclude cost of labor and equipment to install products.
3. Provide cost data for following products:

    a. Regional products.

1.8 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Operation and Maintenance Data:

1. Submit maintenance instructions, cutting method, and maximum grass height.
2. Submit fertilizer types, application frequency, and recommended coverage.

1.9 QUALITY ASSURANCE

A. Sod: Ensure root development capable of supporting its own weight without tearing when suspended vertically by holding upper two corners.

B. Perform Work according to Authority and current industry standards.

1.10 QUALIFICATIONS

A. Sod Producer: Company specializing in products as specified in this Section with minimum three years' documented experience.

B. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

C. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience.

1.11 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Delivery:

1. Deliver sod on pallets or in rolls.
2. Do not deliver more sod than can be laid within 24 hours.

C. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

D. Store materials according to manufacturer instructions.

E. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Protect exposed roots from dehydration.
3. Provide additional protection according to manufacturer instructions.

1.12 AMBIENT CONDITIONS

A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.

B. Minimum Conditions: Do not place sod when temperature is lower than 32 deg. F.

C. Sod shall be planted only when the soil is moist and favorable to growth. No planting shall be done between October 1 and April 1 unless weather and soil conditions are considered favorable and permission is granted by the Engineer.

PART 2 - PRODUCTS

2.1 SOD

A. Sod Growers:

1. Super Sod, division of the Pattern Seed Company.
2. Substitutions: As specified in Section 012500 – Substitution Procedures.

B. Description:

1. Sod shall consist of a live, dense, well-rooted growth of turf grass species as noted on the Drawings. The sod shall be free from Johnson grass, nut grass and other obnoxious grasses and shall be of suitable character for the purpose intended and for the soil in which it is to be planted. It shall be un-injured at the time of planting.
2. Sod shall be uniform in thickness, having not over 2-inches or less than 1-inch of soil.
3. Sod strips shall have a consistent width of 12 or 18-inches.

C. Species and uses are recommended as follows:

1. Bermuda Grass (TifGrand, TifTuf, TifWay, Wintergreen Painted)
   a. Commonly used in large landscapes, residential and commercial developments, golf courses, public and private parks in the warm climates.
   b. Best in full sun.
   c. Extremely drought tolerant.
   d. A fine textured, dense, and lush grass which is less subject to weed invasion and more resistant to disease
   e. Not suited for poorly drained soils where water may stand or pool.

2. Centipede (TifBlair)
   a. Commonly used in large landscapes, roadsides and linear projects, and public and private parks in the South U.S.
   b. Best in full sun or partial shade.
   c. Environmentally friendly, warm season grass.
   d. A non-attractant of Canadian geese and deer makes it a good choice for highway and airport projects.
   e. A medium textured, slow growing grass that forms a relatively dense sod resistant to invasive grass and weed intrusion.

f. Not suited for poorly drained soils where water may stand or pool.

3. Tall Fescue (Elite)
   a. Commonly used in fine residential lawns, roadsides and linear projects, large corporate and commercial landscapes including public and private parks.
   b. A dark green, medium textured grass composed of two or more first quality fescue selections.
   c. A superior blend of blue-tag and gold-tag certified fescue consisting of the latest best performing varieties with superior disease and pest resistance.
   d. Adaptable to sun or shade.
   e. A cool season grass.
   f. Water Star Qualified grass seed.

4. Zoysia (Emerald, Leisure Time, Zenith)
   a. Commonly used in residential lawns, roadsides and linear projects, commercial landscapes, golf courses, and sports fields.
   b. Dense, slow growing, low maintenance turfgrass that can tolerate traffic and wear better than most warm season grasses.
   c. Shade tolerant. Adaptable to full sun or light shade.
   d. Tolerant of extreme heat and cold.
   e. Drought tolerant.
   f. More heat and drought tolerant than Tall Fescue.
   g. Not suited for poorly drained soils where water may stand or pool.

5. Refer to Table 1 for species and tolerance ratings.

TABLE 1

SOD SUITABILITY PARAMETERS

Species	Type	Season	Traffic and Wear Tolerance	Shade Tolerance	Heat Tolerant	Drought Tolerance
Bermuda	TifGrand	Warm	Excellent	Good	Yes	Excellent
	*TifTuf	Warm	*Excellent	Good	Yes	*Excellent
	TifWay	Warm	Excellent	Poor	Yes	Excellent
	Wintergreen Painted	Warm	Excellent	Good	Yes	Excellent
Centipede	TifBlair	Warm	Good	Good	Yes	Excellent
Fescue	Elite	Cool	Good	Excellent	No	Good
Zoysia	Emerald	Warm	Excellent	Good	Yes	Excellent
	Leisure Time	Warm	Excellent	Good	Yes	Excellent
	Zenith	Warm	Excellent	Good	Yes	Excellent

*TifTuf Bermuda grass has a higher traffic and wear tolerance and uses 38% less water than other types of grasses.

D. Harvesting of Sod:

1. Machine-cut sod and load on pallets according to TPI.
2. Cut sod in area with minimum 1-inch and maximum 2-inch topsoil base.

2.2 SUSTAINABILITY CHARACTERISTICS – (NOT USED)

A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design compliance.

B. Material and Resource Characteristics:

1. Regional Materials: Furnish materials extracted, processed, and manufactured in state of Georgia.

2.3 MATERIALS

A. Topsoil:

1. Topsoil: As specified in Section 329113, 2.2, A.

2.4 FERTILIZER & AGRICULTURAL LIME

A. Fertilizer (5-10-15) used in connection with sodding, shall contain 5 percent nitrogen, 10 percent phosphoric acid, and 15 percent potash. The fertilizer shall be furnished in standard containers with the name, weight, and guaranteed analysis of the contents clearly marked. The containers shall ensure proper protection in handling and transporting the fertilizer. All commercial fertilizer shall comply with local, state, and federal fertilizer laws.

B. Ammonium nitrate shall be a standard commercial product, shall conform to the requirements for other commercial fertilizers as specified above, and shall have a minimum of 32-1/2 percent nitrogen.

C. Agricultural Lime shall be dolomitic and contain not less than 85 percent of calcium carbonate and magnesium carbonate combined, and shall be crushed so that at least 85 percent will pass the No. 10 mesh sieve and 50 percent will pass a No. 40 mesh screen.

2.5 ORGANIC HUMUS COMPOST

A. Organic humus compost shall be Soil^3 or approved equal.

B. Organic humus compost shall be comprised of grass clippings, wheat straw, and dairy cow waste and shall be certified by Organic Materials Review Institute (OMRI).

C. Organic humus compost may be used as a soil amendment and/or seed bed. Compost shall have the consistency of coffee grounds.

D. Organic humus compost shall not contain sludge (biosolids), peanut hulls, vermiculite, perlite, bark, and peat fillers, pesticides, fertilizers, or chunky debris.

E. Apply organic humus compost at the following rates:

1. Amending soil – 1 C.Y. per 1,000 S.F.

2.6 SOD ACCESSORIES

A. Wood Pegs: Softwood, sufficient size and length to anchor sod on slope.

B. Wire Mesh: Interwoven hexagonal mesh, 2 inches in size

C. Herbicide: As recommended by sod producer.

2.7 WATER

A. Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of grass.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that prepared soil base is ready to receive Work of this Section.

3.2 INSTALLATION

A. Subsoil Preparation:

1. Eliminate uneven areas and low spots.
2. Maintain indicated lines, levels, profiles, and contours.
3. Slopes:
    a. Make gradual changes in grade.
    b. Blend slopes into level areas.
4. Foreign Materials:
    a. Remove foreign materials and undesirable plants and their roots.
    b. Do not bury foreign materials beneath areas to be sodded.
5. Remove contaminated subsoil.
6. Scarify subsoil to depth of 4 inches where topsoil is to be placed.
7. Repeat cultivation in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

B. Placing of Topsoil:

1. Spread topsoil to minimum depth of 4 inches over area to be sodded.

2. Place topsoil during dry weather and on dry unfrozen subgrade.
3. Remove vegetable matter and foreign nonorganic material from topsoil while spreading.
4. Grade topsoil to eliminate rough, low, or soft areas, and to ensure positive drainage.
5. Install edging at periphery of sodded areas in straight lines to consistent depth.

C. Fertilizing:

1. Apply lime at application rate recommended by soil analysis.
2. Work lime into top 6 inches of soil.
3. Apply fertilizer at application rate recommended by soil analysis.
4. Apply fertilizer after smooth raking of topsoil and prior to installation of sod.
5. Apply fertilizer no more than 48 hours before laying sod.
6. Mix fertilizer thoroughly into upper 4 inches of topsoil.
7. Lightly water soil to aid dissipation of fertilizer.

D. Laying of Sod:

1. Moisten prepared surface immediately prior to laying sod.
2. Lay sod immediately after delivery to Site to prevent deterioration.
3. Joints:

    a. Lay sod tightly with no open joints visible and no overlapping.
    b. Stagger end joints minimum 12 inches.
    c. Do not stretch or overlap sod pieces.

4. Lay smooth and align with adjoining grass areas.
5. Place top elevation of sod 1/2 inch below adjoining edging, paving and curbs.
6. Slopes:

    a. On slopes 6 in./ft. and steeper, lay sod perpendicular to slope and secure every row with wooden pegs at maximum 2 feet o.c.
    b. If using "big roll," lay sod parallel to slope.
    c. Drive pegs flush with soil portion of sod.
    d. Prior to placing sod on slopes exceeding 8 in./ft. or where indicated, place wire mesh over topsoil and securely anchor wire mesh in place with wood pegs sunk firmly into ground.

7. Watering:

    a. Water sodded areas immediately after installation.
    b. Saturate sod to 4 inches of soil.

8. Rolling:

    a. After sod and soil have dried, roll sodded areas to bond sod to soil and to remove minor depressions and irregularities.
    b. Roll sodded areas with roller as recommended by sod manufacturer.
    c. Roll before first watering.

3.3 MAINTENANCE

A. Section 017000 - Execution and Closeout Requirements: Requirements for maintenance service.

B. Provide service and maintenance of sodded areas until final acceptance.

C. Mowing:

1. Mow grass at regular intervals to maintain at maximum height of 2-1/2 inches.
2. Do not cut more than 1/3 of grass blade at each mowing.
3. Neatly trim edges and hand-clip where necessary.
4. Immediately remove clippings after mowing and trimming.

D. Water to prevent grass and soil from drying out. Sod shall be watered as directed by the Engineer for a period of two weeks after which ammonium nitrate shall be applied at the rate of three pounds per 1,000 square feed and the sod given a final watering.

E. Roll surface to remove irregularities.

F. Weed Control:

1. Control growth of weeds by applying herbicides.
2. Remedy damage resulting from improper use of herbicides.

G. Immediately replace sod on areas showing deterioration or bare spots.

H. Protect sodded areas with warning signs during maintenance period.

3.4 ATTACHMENTS

A. Front Sodded Area:

1. Sod: As specified.
2. Topsoil Thickness: 3 inches.

B. Rear Sodded Area:

1. Sod: Grass mixture as specified except substitute clover for Kentucky blue grass.
2. Topsoil Thickness: 2 inches.

END OF SECTION 329223