

SECTION 32 92 00 – TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Preparation of turf/grass planting areas.
 - 2. Grass seed mixes.
 - 3. Sod application.
 - 4. Hydroseed application.
 - 5. Protection, maintenance, guarantee.
- B. Related Sections:
 - 1. 31 22 00 "EARTHWORK" for basic subgrade preparation and conservation of onsite topsoil.
 - 2. 31 25 00 "EROSION AND SEDIMENT CONTROL" for mulches or bonded fiber matrix mulch components to hydroseed mixes.
 - 3. 32 05 00 "COMMON WORKS FOR EXTERIOR IMPROVEMENTS" for furnished / import topsoil, mulches, and soil amendments.

1.2 REFERENCE SPECIFICATIONS AND DOCUMENTS

- A. Manual for Erosion and Sediment Control in Georgia, 2016 Edition, by the Georgia Soil and Water Conservation Commission, "Best Management Practices". Apply for permanent and temporary vegetation establishment where noted.

1.3 SUBMITTALS:

- A. Submit product data for all grassing materials, including, but not limited to:
 - 1. General disturbed areas hydroseed/mulch mix (state whether cool season or warm season mix)
 - 2. Meadow mix hydroseed/mulch.
 - 3. Lime, fertilizer and other soil amendments
- B. (Sub) Contractor Qualifications: Submit evidence of qualifications prior to work.
- C. Manufacturer's certificates: for each Sod application (include species).
- D. Testing:
 - 1. Copies of soil lab test results showing recommended amendments and application rates based on specific grass or grass land planting species.

1.4 QUALITY ASSURANCE (not used)

- A. (Sub) Contractor Qualifications:
 - 1. Bonded fiber matrix mulch application Contractor shall be certified by the producer / manufacturer of the bonded fiber matrix material. Provide evidence of Certification to the Design Professional prior to work.
 - 2. Grassing and lawn maintenance shall be performed by a reputable lawn maintenance contractor. Secure pre-approval of lawn maintenance Contractor by the Design Professional and Owner, prior to any lawn installation commencement.

1.5 SITE CONDITIONS

- A. Take all necessary precautions in bringing equipment on to and off of the site and protecting curbs, walks, paving, steps, trees & shrubs, and any other existing construction site during hydroseeding and grassing work.
- B. Establish grass in all areas disturbed by construction not required to be developed otherwise.

PART 2 - PRODUCTS

2.1 SOD

- A. Unless otherwise shown on the Plans, sod is at least 95 percent Bermuda Tifway 419 grass strongly rooted and free of pernicious weeds. Harvest netting shall be removed prior to installation.
- B. Acceptance criteria (sod rolls):
 - 1. Height of grass in sod rolls is uniform and does not to exceed 3 inches.
 - 2. Soil is between 1 and 1-1/2 inches thick

2.2 GRASS SEED

- A. Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America.

Germination and hard seed minimum	70%
Purity minimum	90%
Weed seed maximum	2%
Noxious seeds maximum	1% of mix, but not to exceed the specified seeds per lb for each listed noxious weed

	species in GDOT Standard Spec 890.
--	---------------------------------------

2.3 TEMPORARY SEED MIXES

- A. Conform to Table 6-4.1 Georgia Erosion and Sediment Control Manual for broadcast rate, for the Piedmont resource area within Georgia, and for the optimal planting dates for temporary grass seed. Plant the following species in accordance with the Georgia Erosion and Sediment Control Manual:
1. Sudan grass, *Sorghum Sudanese*.
 - a. Planting rate 60 lbs per acre.
 - b. Planting dates April 15-July 31.
 2. Annual Ryegrass, *Lolium temulentum*.
 - a. Planting rate 40 lbs per acre.
 - b. Planting dates: Year long except summer season (April 15- July 31), optimal from September 1 – December 31.
 3. Annual Lespedeza, *Lespedeza striata*.
 - a. Planting rate 40 lbs per acre.
 - b. Planting dates January 1 – April 15.

2.4 PERMANENT SEED MIXES

- A. Conform to Table 6-5.2 Georgia Erosion and Sediment Control Manual for broadcast rate, for the Piedmont resource area within Georgia, and for the published optimal planting dates for permanent grass seed. Do not plant shrub species or vine species published in Table 6-5.2 unless otherwise shown on the Plans. Unless otherwise specified, plant the following species:
1. Common Bermuda, *Cynodon dactylon*
 - a. Planting rate 10 lbs per acre.
 - b. Planting dates Jan., Feb., Oct., Nov., Dec. for unhulled seeds and when planted with 30 lbs of winter annuals or Tall Fescue.
 - c. Planting dates March – June for hulled seeds.
 - d. Mowing maintenance height 4 inches.
- B. Steep Slope Mix:
1. Warm season mix applied at a rate of 50 lbs / acre or cool season mix applied at rate of 100 lbs / acre as applicable.
 2. Apply on slopes 3H:1V or steeper.
 3. Mowing maintenance height 6 inches.
 4. Submitted mixes to conform with the following characteristics:
 - a. Permanent and temporary seed varieties, season dependent that may include: turf type tall fescue, unhulled *Serecia* Lespedeza, White Clover, and Bermuda grass.
 - b. Min. 5% Durana white clover.
 - c. Weed seed, other crop seed < 1.5%.
 - d. Coating: Inoculated with Germax Seed Treatment and Myco Advantage, or similar.
 5. Acceptable Products and Manufacturers
 - a. Slopemaster mixes from Pennington Seed Inc. Seed Production, Madison GA (or approved equal).

2.5 HYDROSEED EQUIPMENT

- A. Hydroseeding equipment shall have a built in mechanical agitating system to maintain a homogenous mixture of mulch, seed, lime, and fertilizer for each 150 gallons of water.

2.6 GENERAL HYDROSEED / MULCH MIX

- A. Hydroseed / mulch mix components:
 - 1. General seed mixtures as specified or shown on the Plans.
 - 2. Wood cellulose mulch or wood pulp applied at a rate of 2000 lbs/acre. Substitute bonded fiber matrix mulch applied at a rate of 3,500 lbs per acre when specifically shown on the Plans.
 - 3. Fertilizer: Apply nutrients at the ratios and rates as recommended by soil test(s), however in no case exceed 1500 lbs/ac/yr of a 6-12-12 commercial grade.
 - 4. Finely ground fast acting lime (95% passing No. 100 sieve) applied at a rate of 80 lbs/acre if soil pH is less than 5.5, or if no soil analysis is performed.

2.7 NATIVE SEED HYDROSEED / MULCH MIX

- A. Hydroseed / mulch mix components for Native seed mixes:
 - 1. Native seed mixtures as specified or shown.
 - 2. Wood cellulose mulch or wood pulp applied at a rate of 2000 lbs/acre. Substitute bonded fiber matrix mulch applied at a rate of 3,500 lbs per acre when specifically shown on the Plans.
 - 3. Fertilizer: Apply Phosphorous (P) and Potassium (K) nutrients at the ratios and rates as recommended by soil test(s), however in no case exceed 1500 lbs/ac/yr of a 0-10-10 commercial grade. **Do not apply Nitrogen to native seed mix areas.**
 - 4. Finely ground fast acting lime (95% passing No. 100 sieve) applied at a rate of 80 lbs/acre if soil pH is less than 5.5, or if no soil analysis is performed.

2.8 STEEP SLOPE HYDROSEED/ MULCH MIX

- A. Hydroseed / mulch mix component for steep slope mixes:
 - 1. Steep slope seed mixes as specified or shown.
 - 2. 3500 lbs per acre of hydraulic mulch with Cover Factor (ASTM D7101) ≤ 0.01 (soil loss treated surface / soil loss untreated surface).
 - 3. Fertilizer: 19-19-19 commercial grade applied at a rate of 250 lbs / acre.
 - 4. Lime- fast release at 80 lbs / acre if soil pH is less than 5.5 or if no soil analysis is performed.
- B. Acceptable Products and Manufacturers
 - 1. Slopemaster mixes from Pennington Seed Inc. Seed Production, Madison GA (seed mix).

2. Flexterra Flexible Growth Medium Fiber Mulch and Neutra Lime Dry, by Profile Products, Profile Products LLC, Buffalo Grove IL (hydraulic mulch and lime products).

2.9 SEEDBED PREPARATION AMENDMENTS

- A. Refer to 31 22 00 "EARTHWORK" for conserved onsite topsoil if available. Refer to 32 05 00 "COMMON WORKS FOR EXTERIOR IMPROVEMENTS" for furnished (import) topsoil, lime, water, compost, fertilizers, mulches for grassing and erosion control.

2.10 WILDFLOWER SEED MIX AND INSTALLATION.

- A. If wildflower areas are specified or shown conform to GDOT Standard Specification Section 701.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine grading, substrates and conditions where turf and grasses will be established.
- B. Do not proceed with permanent grassing installation unless satisfactory conditions exist. Satisfactory conditions include but are not limited to:
 1. Subgrades prepared in accordance with 31 22 00 "EARTHWORK".
 2. Provide allowances when establishing subgrade elevations for topsoil and soil amendment installation and settlement.
 3. Slopes are stable, do not exceed 3H:1V for Steep Slope areas, and do not exceed 4H:1V for all other other areas,
 4. Slopes have been graded to divert any concentrated flow away from slope faces.

3.2 TEMPORARY TURF

- A. Season: Plant temporary seed mixes at the rates and species, in accordance with the time of year, as shown in Part 2 and on the Plans.
- B. Maintain temporary turf until the permanent planting season, at which time the temporary grass shall be mowed down to the ground surface, the area disk harrowed (for conversion to permanent grassing), the soil prepared for the permanent surface as shown on the Plans.

3.3 GENERAL GRASSING PREPARATION & SOIL TESTING

- A. For general areas with removed topsoil or insufficient topsoil and slopes 3H:1V, and flatter:
 - 1. Loosen subgrade as necessary to a depth no less than 4 to 6 inches achieving compaction levels no greater than 80% of standard proctor mixing any topsoil and soil additives into the loosened subgrade.
 - 2. Spread 2 inches of topsoil evenly over disturbed areas and mix along with other initial soil amendments into the loosened subgrade.
 - 3. Do not apply topsoil or compost in a frozen or muddy condition. Provide positive drainage in all cases.
- B. For areas where the topsoil **has not been** removed:
 - 1. Scarified, smooth, and remove large sticks, stones (>4") and all rubbish.
- C. For general areas, steeper than 3H:1V
 - 1. Loosen soil to a practical depth by scarifying, plowing as practical, dragging a spiked chain, walk the surface with cleated equipment or if shown by making serrated cuts. Spread 2" of topsoil starting at the top of slope only if the surface is prepared with serrated cuts.
- D. Perform soil test of the upper 4 to 6 inches of mixed subgrade and topsoil to determine application rates of lime, fertilizer, and other amendments. Soil tests may be performed by County extension offices, University laboratories or other laboratories mutually agreed by the Design Professional and Contractor.
- E. Apply 1 ton of lime per acre to seedbed, or as otherwise needed to increase pH to between 6.0 and 6.5.
- F. Apply any additional fertilizer than shown or proposed in non-native turf type hydroseed mix at the recommended rates for grassing areas as determined by a soil analysis not to exceed 1500 lbs per acre per year of 6-12-12 fertilizer.
- G. For native grass mixes only: apply additional phosphorous and potassium based fertilizer at the recommended rates for grassing areas as determined by a soil analysis. **Do not apply nitrogen to native grass mixes.** Maximum additional fertilizer for native grass areas is 1500 lbs per acre per year of 0-10-10 fertilizer.
- H. Scarify or till soil to a depth of 6 inches, mixing any lime, fertilizer, and other amendments.
- I. Remove sticks, stones and rubbish from surface.
- J. Perform finish grading to achieve smooth contours and meet finish grades shown on the Plans, with allowances made for settlement and sod thickness where applicable. Finish surface textures as follows:
 - 1. Smooth the final surface on areas 4H:1V or flatter.

2. Provide surface grooves with a tracked vehicle on slopes exceeding 4H:1V. Surface grooves are perpendicular to the fall line of the slope.

3.4 ADDITIONAL PREPARATION FOR TURF AREAS INCLUDING: SOD AREAS, IRRIGATED GRASSING AREAS, GRASS PLAY AREAS

- A. Stone / gravel products, regardless of size, that are brought in to the site by the Contractor shall be fully removed from lawn / turf areas under this section prior to additional preparation activities noted below.
- B. Spread 1 inch of nutrient grade compost and an additional X inches of topsoil, for 4 inches min. total depth of topsoil on loosened subgrade and prior to performing soil tests.
- C. Contractor option to blend topsoil, compost, and other soil amendments prior to spreading on loosened subgrade at onsite or offsite location if approved by the Design Professional and if blending is observed by Design Professional or Testing Agency.
- D. Remove all stones, sticks and rubbish over 1/2" by hand raking or by a rockhound attachment.

3.5 SODDING

- A. Harvest nettings shall be removed prior to installation.
- B. Lay sod by butting the ends and sides up evenly and staggering the rolls of sod. Do not overlap sod.
- C. As soon as the sod is laid or as it is being laid, roll over it with a light roller, ensure all of the sod is in contact with the soil. The completed sodded areas shall be true to finish grade, even and firm at all points.
- D. Commence watering within 4 hours of placement.

3.6 SEEDING AND MULCHING

- A. Apply seed and mulch to smoothed finish grade surface at the rates specified in Part 2. Permanent planting dates shall be approved by the Design Professional and conform to Part 2 for individual mixes.
- B. Comply with manufacturer recommendations for hydroseed/ mulch mixtures, generally install in a 2 step process.
 1. Step 1- apply seed, amendments, and small amount of mulch for visual metering of areas to be vegetated. Apply seed and amendments at the specified rates.
 2. Step 2- Immediately mix and apply the remaining mulch and growing media and applying in opposing directions to achieve total specified

mulch rate per are and with complete coverage. Remove any mulch slurry sprayed onto any hardscape surface or non-grass planting bed.

- C. Any areas not specifically called out as sod shall be hydroseeded unless otherwise specified.

3.7 GENERAL MAINTENANCE, PROTECTION, GUARANTEE

- A. Protect and maintain all grass areas by watering, mowing as necessary, replanting, and overseeding to establish a uniform stand. Reseed if satisfactory initial growth does not occur within 18 days of planting.
- B. Maintain through acceptance by Owner and a minimum of 60 days after material completion of the project.
- C. Provide frequent light irrigation if no natural rain events during the first 2 weeks of seeding to prevent the top of the soil from drying out.
- D. After seed germination and when grass is about 1 inch tall, reduce irrigation frequency and increase volume as necessary to maintain growth and establish root zone.
- E. Repair all seed washing and erosion.
- F. Apply maintenance fertilization each subsequent growing season as required based on recommended rate from soil analysis and based on plant species needs.
- G. Maintain grass height as recommended in Part 2 seed mixtures or as indicated in other Part 3 articles.

3.8 MAINTENANCE FOR TURF AREAS (SOD, IRRIGATED GRASS, PLAY AREAS)

- A. Repair bare spots and re-fertilize and lime the soil based on soil analysis of failed areas. Replant if satisfactory initial growth does not occur within 18 days of planting. Scattered bare spots less than 1 square foot are acceptable when accounting for no more than 3% of the total area.
- B. For sod, irrigated turf areas, play turf areas apply 150 lbs per acre of ammonium nitrate 30 calendar days from seeding operation. Do not apply nitrogen between October 15 and March 15.
- C. For sod areas, apply 2 topdressing applications of coarse sand and peat moss (75% sand and 25% peat) as required to fill gaps and smooth lawn surface.

3.9 MAINTENANCE FOR NATIVE OR NATIVE MEADOW MIX GRASS MIX AREAS

- A. Reseed and water areas that do not show satisfactory growth within 45 days of planting.

- B. Native mix areas shall be fully established at the end of the 2nd growing season with grass heights over 1.5 feet and scattered bare spots with no vegetation are limited to no more than 4 square feet in size account for no more than 10% of the total area.
- C. Do not provide general mowing during the first 2 growing seasons. Provide only spot treatments of mowing, applications of an appropriate herbicide or mechanical removal as required to control weeds and invasive plants that would interfere with establishment of the native mix.
- D. Long Term Maintenance:
 - 1. After native or native meadow mixes are established mow to a height of 6-12" height each year, late fall or winter, after seed heads have dried and plants are dormant.
 - 2. Continue spot removal or control of invasive vegetation as needed each growing season. Remove such vegetation prior to it going to seed.
- E. Contractor to provide maintenance on native or native meadow mix grass areas through the end of the 2nd growing season on no more frequently than a monthly basis.

3.10 CLEAN UP:

- A. Remove any soil, mulch or similar material which has been brought onto paved areas. Upon completion of the planting, remove all excess soil, stones, and debris which has not previously been cleaned up as directed by the Design Professional.

END OF SECTION 32 92 00