

329223 TURF (SOD)**PART 1 – GENERAL****1.1 DESCRIPTION**

- A. The Contractor shall furnish all labor, material and equipment required to complete the work described herein in strict accordance with the terms and of this specification and the Contract Documents.
- B. The work shall be for new sodded turf areas indicated on the plans and shall include incorporation of topsoil, soil amendments, fine grading, planting, turf establishment and maintenance.

1.2 REQUIREMENTS

- A. Turf planting contractor shall coordinate planting procedures with the irrigation contractor to make certain all heads, lines and other system components are properly located and at the correct elevations.
- B. The playfield shall be surveyed as described in this Specification for approval by Owner's Representative.

1.3 SUBMITTALS

- A. Prior to delivery of materials, certificates of compliance shall be submitted certifying that materials meet the requirements specified. Copies of the statements for the following materials shall be submitted.
 - 1. Sod: The grower will submit to the Owner's Representative, prior to delivery, information as to the field location, species, purity and quality of the grass sod he intends to deliver.
 - 2. Imported Topsoil: Submit horticultural analysis of proposed topsoil. Analysis to provide information confirming that topsoil meets or exceeds requirements listed below under Section 2.01 C: Imported Topsoil.
- B. Manufacturer's Literature: Discussing physical characteristics, application and installation instructions for soil amendments.
- C. Delivery Schedule: Submittal of the schedule shall be at least 10 days before delivery.
- D. Construction Schedule: Schedule for all work including soil preparation, date when soil amendments will be added and sodding dates. Owner's Representative shall receive 48 hours notice of any changes in the schedule.
- E. Chemical Treatment Plan: Chemical treatment plan shall be submitted with proposed sequence of chemical treatment work. The common name, chemical composition, formulation, concentration, rate and method of application for all materials furnished; and the name and license of the state certified applicator(s) shall be included.

- F. Soil analysis of areas to be planted with turf grass with proposed soil amendments. Reference Motzz Laboratory Analysis Report 952285, 9/5/2024, provided at the end of the Western Technologies Geotechnical Evaluation Report.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Delivery
 - 1. Turf material shall be inspected upon arrival at the jobsite, and unacceptable material shall be removed from the jobsite.
 - 2. Sod shall be protected from drying out and from contamination during delivery.
 - 3. Delivery of fertilizer and other soil amendments to the site shall be in original, unopened containers bearing manufacturer's chemical analysis. Instead of containers, materials may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.
 - 4. Soil amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's chemical analysis. In lieu of containers, soil amendments may be furnished in bulk. A chemical analysis shall be provided for bulk deliveries.
- B. Storage
 - 1. Materials shall be stored in areas designated by the Owner.
 - 2. Sod shall be lightly sprinkled with water, covered with moist burlap, straw or other covering, and protected from exposure to wind and direct sunlight until planted. Covering shall be provided that will allow air to circulate and prevent internal heat from building up.
 - 3. Fertilizer and other similar materials shall be stored in cool, dry locations away from contaminants.
- C. Handling – Materials: Except for bulk deliveries, materials shall not be dropped or dumped from vehicles.
- D. Time Limitation for Sod: Limitation of time between harvesting and placing of sod shall be 24 hours.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Sod
 - 1. Sod Classification: Nursery-grown sod shall be provided as classified in the ASPA Guide Specifications to Sodding. Sod shall be machine cut to a uniform thickness of $\frac{1}{2}$ to $\frac{3}{4}$ inches within a tolerance of $\frac{1}{4}$ inch, excluding top growth and thatch. Each individual sod section shall be of a size to permit rolling and lifting without breaking. The sod shall be relatively free of weeds or undesirable plants, stones

larger than 2 inches in any dimension, woody plant roots and other material detrimental to the development of the turf.

2. Grass species shall be *Cynodon dactylon* x *C. transvaalensis* "Tahoma 31" hybrid or approved equal. Sod shall be installed from large rolls (3.5' x 105').
3. Broken Sections: Irregularly shaped pieces of sod and torn or uneven ends will be rejected.
4. Sod planted when the specified bermuda grass is dormant or nearing dormancy, as determined by the Owner's Representative, shall be overseeded with annual rye grass. Overseeded sod shall be normal for the turf-grass industry.
5. Sod shall be supplied without integrally netting. All netting or mesh used to separate sod rolls during transport shall be removed prior to sod installation. The netting material shall be removed from the project site.

B. Soil Amendments:

1. Soil Sulfur: Agricultural, degradable soil sulfur; grained or powdered containing 99.5 percent sulfur and 0.5 percent inert ingredients or approved alternative.
2. Ammonium phosphate (16-20-0) or approved alternative.
3. Additional Potassium can be applied if using N-P-K fertilizer.
4. Reference Motzz Laboratory Analysis Report 952285, 9/5/2024, provided at the end of the Western Technologies Geotechnical Evaluation Report for recommendations.

C. Imported Topsoil

1. Topsoil shall be fertile, friable soil obtained from well-drained potable land which has or is producing healthy crops, grasses or other vegetation. It shall be free draining, nontoxic and capable of sustaining healthy plant growth.
2. Topsoil shall be reasonably free of calcium carbonate, subsoil, refuse, roots, heavy clay, clods, noxious weed seeds, phytotoxic materials, coarse sand, large rocks, sticks, brush, litter and other deleterious substances.
3. Topsoil shall have a pH not lower than 6.0 or greater than 8.0 and the soluble salts in the material shall not exceed 1,500 parts per million when tested in accordance with the requirements of Arizona Test Method 237.
4. The plasticity index of the topsoil shall be between 5 and 20 when tested in accordance with the requirements of AASHTO T 90 and the gradation shall be as follows:

| Sieve Size | Percent Passing |
|------------|-----------------|
| 2-inch | 100 |
| ½ inch | 85-100 |
| No. 40 | 35-100 |

- D. Chemical Treatment Material: EPA-registered and approved herbicide.

PART 3 EXECUTION

3.1 SEASONAL TIMING OF SOD INSTALLATION

- A. Sod that is not overseeded shall be planted between April 2 and September 30, only. Overseeded sod may be planted between October 1 and April 1.
- B. Seasonal timing may require adjustments based on weather forecast.

3.2 SITE PREPARATION

- A. General
 - 1. The planting of turf grass shall not commence until the soil preparation has been completed and the irrigation system in the area to be planted has been made fully operational.
 - 2. Site preparation work shall be performed only during periods when beneficial results can be obtained. When high winds, excessive moisture or other unsatisfactory conditions prevail, the work shall be stopped until satisfactory conditions resume.
- B. Rough Grading
 - 1. Prior to tilling and application of soil amendments, Contractor shall verify with the Owner's Representative that the site has been properly rough graded. Rough grades shall be sufficient to allow for imported topsoil and new sod so that finished grades shall be as shown on project plans.
- C. Application of Soil Amendments
 - 1. Soil Sulfur (DisperSul): Agricultural, degradable soil sulfur to be applied at the rate of 10 Lbs. per 1000 Square Feet or approved alternative. After applying sulfur, irrigate heavily.
 - 2. Apply 1-1.5 Lbs. N per 1000 Square Feet and 1 Lb. P205 per 1000 Square Feet.
 - 3. An additional 1 Lb Potassium per 1000 Square Feet can be applied if using an N-P-K fertilizer.
 - 4. Reference Motzz Laboratory Analysis Report 952285, 9/5/2024, provided at the end of the Western Technologies Geotechnical Evaluation Report for recommendations.
- D. Tillage
 - 1. The rough grade shall be initially ripped or tilled to a depth of not less than 8 inches to thoroughly break up the soil. Contractor to confirm with Owner's Representative that tilling has been performed to the required depth.
 - 2. Following tillage, rock-pick entire field. Remove all rocks greater than 1" from surface.

3. Apply soil amendments specified above and then till to a minimum depth of 6 inches by plowing, disking, harrowing, rototilling or other method to thoroughly incorporate amendments to the full 6-inch depth.
 4. In order to prevent settlement following planting of the turf, Contractor shall settle and compact tilled area to approximately 85 percent maximum density. This shall be accomplished by water settling, rolling or other methods necessary to ensure all voids are removed and soil has attained final settlement. Contractor will be responsible for repairs of any areas, which settle following planting operations during the guaranteed period.
 5. Final Physical Nature: Upon completion of the tillage settlement operation, the physical nature of the soil shall be such as to permit a water infiltration rate of not less than 0.6 inches per hour. Contractor shall verify this condition has been met. There shall be no sticks or debris and no rocks or soil clods larger than ½ inch following the tillage operation.
- E. Finished Grading
1. Place imported topsoil over entire area to receive new sod. Depth should not be less than 2 inches. Final grades must account for thickness of sod and imported topsoil.
 2. Turf areas compacted by construction operations shall be completely pulverized by tillage. New surfaces shall be blended to existing areas.
 3. Topsoil to be compacted to 80% prior to sodding. Apply additional topsoil as needed.
 4. Turf areas shall have debris and stones larger than ½ inch in any dimension removed from the surface.
 5. Survey the play fields at edges and on 50' grid and submit results to the Owner's Representative prior to sodding. The Owner's Representative shall also inspect the area just prior to starting the sodding operation. Owner's Representative shall confirm that minimum depth of imported topsoil has been installed as described in this specification.
 6. The finished grades in turf grass areas shall be within plus or minus 1/10 of a foot of the grades noted on the drawings or interpolated from the contours shown on the drawings. Within the field areas the surface shall not vary more than 3/4 inch from the bottom surface of a 10-foot straightedge when the straightedge is laid on the prepared soil surface
 7. Finished graded areas shall be protected from damage by vehicular or pedestrian traffic and erosion.

3.3 INSTALLING SOD

- A. Cleanup: Prior to sodding, the surface shall be cleared of all trash, debris and stones larger than ½ inch in any direction, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting, maintenance operations or safety for users.
- B. The planting of turf grass shall not commence until the irrigation system has been made fully operational within the work area.
- C. The irrigation system in all areas to be planted with turf grass shall be operated as required to wet the top four inches (4") of soil and as required for settlement of soil in graded areas. Areas that settle shall be filled or repaired as required to meet the surface tolerances noted herein.
- D. General: Areas shall be sodded as indicated. Sod shall be placed in accordance with the ASPA Guidelines Specifications to Sodding in the areas indicated. The time limitation between harvesting and placing sod is 24 hours. Sod that has become dry, moldy or yellow from heating will be rejected.
- E. Placing Sod: Adequate soil moisture shall be ensured prior to sodding by spraying water on the area to be sodded and wetting the soil to a minimum depth of 2 inches. Surface shall be smooth and friable. Sod shall be laid with joints tight, staggered 18-inch minimum.
- F. Open joints shall be top-dressed with sand. Topdressing work shall be completed within 24 hours of the placement of sod.
- G. Elevation of new sod to meet elevations called for on the grading plan. Contractor shall adjust fine grade as the sod is installed by the addition of a 50-50 mix of peat moss and sand or the removal of the planting mix as necessary to achieve a smooth final grade.
- H. Finishing: Air pockets shall be eliminated and a true and even surface shall be provided by tamping or rolling the sod in place. Displacement of the sod shall be ensured by knitting of sod to the soil. Frayed edges shall be trimmed and holes or missing corners shall be patched in the sod.
- I. Watering Sod: Watering shall be started immediately after completing each day of sodding. Water shall be applied at the rate sufficient to ensure moist soil conditions to a minimum depth of 8 inches. Runoff and puddling shall be prevented.
- J. Roll sod with a hand or power roller immediately after sodding and irrigation.
- K. Areas which are not smooth and even or are not draining shall be adjusted by re-laying the sod or by top dressing with sand. The choice of which method is used shall be made by the Owner's Representative.
- L. Restoration and Cleanup: Excess and waste material shall be removed and disposed of off the site. Adjacent paved areas shall be cleaned.
- M. Protection of Turfed Areas: Immediately after turfing, the area shall be protected against traffic or other use by erecting barricades and providing signage as required.

3.4 TURF ESTABLISHMENT PERIOD

- A. Length of Period: On completion of the last day of the turfing operation, the turf establishment period will be in effect until the turf has been mowed 6 times, but in no case will the period be less than 75 days.
- B. Stand of Turf
 - 1. A stand of turf from the sodding operation is defined as living sod uniform in color and leaf texture.
- C. Maintenance During and After the Establishment Period
 - 1. Contractor shall maintain new sod for 75 days after the turf establishment period and acceptance of the new turf.
 - 2. General: Maintenance of the turfed areas shall include eradicating weeds, protecting areas from erosion, and protecting turfed areas from traffic before they are ready to accept play.
 - 3. Repair: Turf condition shall be re-established as specified herein for eroded, damaged or barren areas. Turf shall be repaired or replaced as required.
 - 4. Mowing: Turfed areas shall be mowed to a minimum height of $\frac{3}{4}$ inch when the average height of the turf becomes 2 inches. Clippings shall be removed when the amount of cut turf is heavy enough to damage the turfed areas.
 - 5. Watering: Watering shall be at intervals to obtain a moist soil condition to a minimum depth of 2 inches. Frequency of watering and quantity of water shall be adjusted in accordance with the growth of the turf. Runoff, puddling and wilting shall be prevented.
 - 6. Fertilizing: The newly renovated turf shall be fertilized every 20 days during the establishment period with a balanced fertilizer (16-8-4) at the rate of 6lbs. Per 1,000 square feet. Water immediately after application. After establishment, fertilize turf every 30 days. Verify with turf supplier representative.
 - 7. Chemical Treatment
 - a. When a pest or disease becomes apparent during the turf establishment period, a state-certified applicator shall apply required chemicals in accordance with EPA label restrictions and recommendations. Hydraulic equipment for the liquid application of chemicals shall be provided with a leak-proof tank, positive agitation methods, controlled application pressure and metering gages. Pre-emergent herbicides will not be used.
 - b. A chemical treatment plan shall be provided to the Owner as stated in the paragraph SUBMITTALS.

3.5 FINAL ACCEPTANCE

At the end of the turf establishment period, a final inspection will be made. Final acceptance of the turf will be based upon a satisfactory stand of turf as defined in the paragraph TURF ESTABLISHMENT PERIOD. Rejected areas shall be replanted or repaired as directed by the Owner.

3.6 CLEANUP

Contractor shall at all times maintain his operations in a neat and safe manner free of debris and blowing trash. Any direction given by the Owner's Representative regarding the removal of debris or correction of hazardous situations shall be immediately followed.

END OF SECTION