

“Guideline Specifications To Turfgrass Sodding”

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These specification guidelines are presented in six specific sections, and produced in a manner that will permit the use of all or selected sections with tremendous ease and maximum flexibility. Each section can stand alone, be incorporated into an overall set of specifications for an entire **EMPIRE Turf™** project, or used in any combination. For example, firms that specialize in a certain type of activity may use these guideline specifications when bidding only on a portion of a project, such as supply or placement of topsoil, etc. On the other hand, a general contractor, architect or owner may present these specifications as a means of establishing comparable bidding considerations.

Sod Solutions, Inc. makes no representations or warranties concerning EMPIRE Turf, including any warranties concerning merchantability or fitness for a particular use or any warranties or representations concerning the marketability or growing capacity of EMPIRE Turf, or that EMPIRE Turf will perform in any particular way or manner.

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Important factors to consider when “Specifying the Class/Grade and Composition of **EMPIRE Turf** are detailed in a section of that title immediately preceding the actual specification sections. Familiarity with this information will assist with the completion of Section IV, “Specifications For **EMPIRE Turf.**”

The specifications are divided into the following six major areas:

- Section I. Specifications for Subsoil Preparation
(Where Topsoil Is To Be Added)**
- Section II. Specifications for Topsoil Material and Application**
- Section III. Specifications for Fertilizer pH Correction
Materials and Final Soil Preparation**
- Section IV. Specifications for EMPIRE Turf**
- Section V. Transplanting and Installing EMPIRE Turf**
- Section VI. Specifications for Maintenance of Transplanted EMPIRE Turf**

SECTION I

Specifications For Subsoil Preparation (Where Topsoil Is To Be Added)

(NOTE: This specification applies only if additional topsoil will be placed over existing soil.)

A. General: The area(s) to which these specifications apply and on which topsoil is to be placed shall be as indicated on the drawings or as otherwise specified. Equipment, labor and materials necessary for the preparation of the specified area(s) shall be furnished by the grading contractor.

B. Grading: Grades on the area(s) to be topsoiled, which have been previously established in conformance with the drawings and/or other applicable specifications, shall be maintained in a true and even grade.

C. Low pH Correction: Where the subsoil is highly acid, it shall be tested by a reputable laboratory and a pH correction material shall be spread at a rate sufficient to correct the pH to a range of 5.5 to 7.5. The material shall be distributed uniformly over the designated area(s) and worked into the soil in conjunction with an expanded tillage operation as described in Paragraph E below.

D. High pH Correction: Saline and alkali soils may be found in arid and semiarid regions and in areas near sea water. In many of these areas the salts can be leached, but other soils will require special amendments or management. In areas where these soil characteristics may occur, subsoil samples shall be tested by a reputable laboratory and subsequent recommendations, to include a possible delay in topsoil addition, shall be followed.

E. Tilling: After the area(s) to be topsoiled have been brought to grade, compacted where necessary and immediately prior to the dumping and spreading of topsoil, the subgrade shall be loosened by disking or by scarifying to a depth of at least 2 inches (50 mm) to permit bonding of the topsoil to the subsoil.

F. Acceptance: Acceptance shall be given by the general contractor, owner, architect or their agent, upon satisfactory completion of each section or area(s), as indicated on the drawings or as otherwise specified.

G. Payment: Specifications of method of payment, retainer and final payment shall be as customary to the industry in this area.

SECTION II

Specifications For Topsoil Material And Application

(NOTE: Topsoil on the existing site may often be used; however, it should meet the same standards as set forth in these specifications.)

A. General: The grading contractor shall furnish all topsoil, labor, material and equipment required to complete the work described herein in strict accordance with the drawings and/or terms of the contract.

B. Materials: Topsoil shall be loamy sand, sandy loam, clay loam, loam, silt loam, sandy clay loam or other soil approved by the architect. It shall not have a mixture of subsoil and shall contain no slag, cinders, stones, lumps of soil, sticks, roots, trash or other extraneous materials larger than 1.5 inches (40 mm) in diameter. Topsoil must also be free of viable plants or plant parts of common bermudagrass, quackgrass, johnsongrass, nutsedge, poison ivy, Canada thistle, or others as may be specified. All topsoil shall be tested by a reputable laboratory for pH and soluble salts. If needed, pH correction material shall be applied at a rate sufficient to correct the pH to a range of 5.5 to 7.5. Soluble salts shall not be higher than 500 parts per million.

No **EMPIRE Turf**™ shall be placed on soil which has been chemically treated until sufficient time has elapsed to permit dissipation of all harmful materials (see manufacturers recommendations for re-entry date calculation). The general contractor shall assume full responsibility for any loss or damage to **EMPIRE Turf** arising from improper use of chemicals or due to his failure to allow sufficient time to permit dissipation of chemical residues, whether or not such materials are specified herein.

C. Grading: The topsoil shall be uniformly distributed on the designated area(s) and it shall be a minimum of 3 inches (75 mm) deep after firming, if you have installed irrigation, if you do not then 5-6 inches. Spreading shall be performed in such a manner that sod installation can proceed with a minimum of additional soil preparation and tillage. Any irregularities in the surface resulting from topsoiling or other operations shall be corrected in order to prevent the formation of depressions or water pockets. Topsoil shall not be placed while in a frozen or muddy condition, when the subgrade is excessively wet, or in a condition that may otherwise be detrimental to proper grading or proposed for turfgrass sod installation.

D. Clean Up: After the topsoil has been spread and the final grade approved, it shall be cleared of all grade stakes, surface trash or other objects that would hinder installation and/or maintenance of turfgrass sod and other plantings. Paved areas over which hauling operations are conducted shall be kept clean and any soil which may be brought upon the surfacing shall be promptly removed. The wheels of all vehicles shall be kept clean to avoid tracking soil on the surfacing of roads, walks or other paved areas.

E. Acceptance: Acceptance will be given by the general contractor, owner, architect or their agent, upon satisfactory completion of each section or area(s), as indicated on the drawings or as otherwise specified.

F. Payment: Specifications of method of payment, retainer and final payment shall be customary to the industry in this area.

SECTION III

Specifications For Fertilizer, pH Correction Materials and Final Soil Preparation

(NOTE: Specifications given in this section apply both to areas where topsoil has been added and to areas where soil from the existing site is used.)

A. General: The general contractor shall furnish, or have furnished by others, all labor, material and equipment required to complete the work described herein, in strict accordance with the drawings and/or terms of the contract.

B. Materials: Soil tests shall be made to determine the exact requirements for any amendments. Soil tests shall be conducted by a reputable laboratory. (Note: For the next three items, use appropriate recommendations of the state agricultural experiment station, extension service, or other reputable agent, for the variety of turfgrass being specified.)

1. Fertilizers: All fertilizers (either granular or liquid) shall be uniform in composition, free flowing and suitable for application with approved equipment. Fertilizers shall be delivered to the site fully labeled, according to applicable fertilizer laws and shall bear the name, trade name or trademark, and warranty of the producer or manufacturer.

Fertilizer applications shall be determined by soil tests. If soil testing is waived where there is insufficient time for complete soil tests, fertilizer materials that supply the following levels of nutrients can be applied:

- a. **0.5 lbs actual N per 1000 sq ft**
- b. **1.0 lbs actual P₂O₅ per 1000 sq ft**
- c. **1.0 lbs actual K₂O per 1000 sq ft**

Fertilizers shall be distributed and incorporated uniformly over the entire area(s) where **EMPIRE Turf™** is to be installed. Use a slow release source of Nitrogen.

2. Low pH Correction Materials: Lime material shall be ground limestone (hydrated or burnt lime may be substituted), which contains at least 50% total oxides (calcium oxide plus magnesium oxide). Ground limestone shall be ground to such fineness that at least 50% shall pass through a 100-mesh sieve and 98% to 100% shall pass through a 20-mesh sieve.

Application rates for liming materials shall be determined by soil tests. If soil testing is waived, when there is insufficient time for a complete soil test, **lime shall be applied at a minimum rate of 50-100 lbs of ground limestone or its equivalent per 1000 sq ft.**

Lime shall be distributed uniformly over the entire area(s) where **EMPIRE Turf** is to be installed.

3. High pH Correction Materials: Materials and application rates shall be determined by appropriate soil tests performed by a reputable laboratory. If leaching or special management is necessary, final grading will be delayed as specified.

C. Grading:

1. Tillage: Soil amendments, such as fertilizer and lime, shall be uniformly incorporated into the top 4 inches (100 mm) of soil by discing, harrowing or other approved method. It is important to incorporate so there is no direct contact between the sod roots and the fertilizer granules. ***DO NOT LAY EMPIRE Turf DIRECTLY ON FERTILIZER.***

2. Final Grading: Any undulations or irregularities in the surface, resulting from fertilizing, liming, tilling or other causes, shall be smoothed prior to turfgrass installation. Flooded, washed out areas, damaged or otherwise, shall be reconstructed and all grades re-established by the grading contractor in accordance with the drawings and/or other applicable specifications.

D. Clean-Up: Prior to installation of **EMPIRE Turf**, the surface shall be cleared, to a depth of 4 inches (100 mm), of all trash, debris, stones larger than 1.0 inches (25mm) in diameter, and of all roots, brush, wire, grade stakes and other objects that would interfere with planting or maintenance operations.

E. Acceptance: Acceptance shall be given by the general contractor, owner, architect or their agent, upon satisfactory completion of each section or area(s) as indicated on the drawings or as otherwise specified.

F. General Contractor's Responsibility: The general contractor shall be responsible for maintaining the accepted area(s) which are to be sodded until the effective date to begin installation. The effective turfgrass sod installation date shall be specified in a written notice from the general contractor.

G. Payment: Specifications or method of payment, retainer and final payment shall be customary to the industry in this area.

SECTION IV

Specifications For **EMPIRE Turf™**

A. General: The **EMPIRE Turf** supply contractor shall furnish all labor, material and equipment required to complete the work described herein, in strict accordance with the drawings and/or terms of the contract.

B. Materials:

1. Class/Grade of Sod and Composition:

a. In those states where Sod Solutions requires certification, **EMPIRE Turf** shall be classified as certified stock or shall originate from certified stock.

b. This turfgrass sod shall be composed of **EMPIRE Turf** (*Zoysia japonica*)

2. Thickness of Cut: **EMPIRE Turf** shall be machine cut at a uniform soil thickness of approximately 0.60 inch (19 mm), plus or minus 0.25 inch (6 mm), at the time of cutting, unless otherwise agreed upon. Measurement for thickness shall exclude top growth and thatch.

3. Pad Size: Individual pieces of **EMPIRE Turf** shall be cut to the supplier's standard width and length. Maximum allowable deviation from standard widths and lengths shall be plus or minus 0.5 inch (15 mm) on width and plus or minus five percent on length. Broken pads and torn or uneven ends will not be acceptable.

4. Strength of Sections: Standard size sections of **EMPIRE Turf** shall be strong enough that it can be picked up and handled without damage.

5. Moisture Content: **EMPIRE Turf** shall not be harvested or transplanted when its moisture content (excessively dry or wet) may adversely affect its survival.

6. Mowing Height: Before harvesting, **EMPIRE Turf** shall be mowed uniformly at the following height: 0.75 to 1.5 inches.

7. Time Limitations: **EMPIRE Turf** shall be harvested and delivered within a period of 24 hours. **EMPIRE Turf** should be installed/transplanted as soon as possible after delivery, unless a suitable preservation method is approved prior to delivery. **EMPIRE Turf** not transplanted shortly after delivery shall be inspected and approved by the inspecting officer or his representative prior to its installation.

8. Diseases, Nematodes and Insects: **EMPIRE Turf** shall be reasonably free of diseases, nematodes and soil-borne insects. Specific nursery and/or plant materials laws may require that all sod entering inter-state commerce be inspected and approved for sale. The inspections and approval must be made by the appropriate government representative of the agriculture department or office of entomologist.

9. Weeds: Field Grown **EMPIRE Turf** shall be 100% free of all noxious weeds. Field Grown **EMPIRE Turf** shall be considered free of grassy and broad leaf weeds if, on average, less than 1 such plant is found per 100 square feet (10 sq m) of area. For a complete list of noxious weeds, please go to the following website at - <http://plants.usda.gov/java/noxiousDriver#composite> .

10. Opportunity to Remedy: If the responsible sod farm fails to deliver **EMPIRE Turf** that meets these guideline specifications, they shall have 30 days to remedy the situation to their satisfaction.

C. Delivery and Off-Loading: **EMPIRE Turf** shall be delivered to the site specified in this contract and off-loaded using equipment furnished by the turfgrass sod supply contractor. Palletized or large-roll **EMPIRE Turf** shall be off-loaded at the location(s) designated for this purpose at the installation site.

D. Damage Disclaimer:

1. The general contractor, owner, architect or their agent shall accept full responsibility and hold harmless the **EMPIRE Turf** supply contractor for any and all damage that may be caused by the sod delivery truck driving onto a driveway and/or walkway, if the driver of the loaded sod truck has been instructed to position the truck in an area where such damage might occur.

2. The **EMPIRE Turf** supply contractor shall not be held liable for damages incurred to the **EMPIRE Turf** as a result of de-icing compounds, fertilizers, pesticides or other materials not applied by him or under his supervision, nor for those caused by acts of God or vandalism.

E. Acceptance: Acceptance will be given by the general contractor, owner, architect or their agent, upon satisfactory completion of each delivery to the area(s) as indicated on the drawings or as otherwise specified.

F. Payment: Specifications of method of payment, retainer and final payment shall be customary to the industry in this area.

SECTION V

Specifications For **EMPIRE Turf™**

Transplanting and Installation

A. General: The installation contractor shall furnish all labor, material and equipment required to complete the work described herein, in strict accordance with the drawings and/or terms of the contract.

B. Grading: All previously established grades shall be maintained in conformance with the drawings and/or applicable specifications.

C. Time Limitations: **EMPIRE Turf** shall be transplanted/installed as soon as possible following delivery, unless a suitable preservation method is approved prior to delivery. **EMPIRE Turf** not transplanted shortly after delivery shall be inspected and approved by the inspecting officer or his representative prior to its installation.

D. Transplanting:

1. Moistening the Soil: During periods of higher than optimal temperature for the species being specified, and after all unevenness in the soil surface has been corrected, the soil shall be lightly moistened immediately prior to installation of the **EMPIRE Turf**.

2. Starter Strip: The first row of **EMPIRE Turf** shall be laid in a straight line, with subsequent rows placed parallel to and tightly against each other. Lateral joints shall be staggered to promote more uniform growth and strength. Care shall be exercised to insure that the pieces are not stretched or overlapped and that all joints are butted tightly to prevent voids that would cause air drying of the roots.

3. Sloping Surfaces: On 3:1 or greater slopes, traditional size (1 sq yd / 1 sq m) **EMPIRE Turf** shall be laid across the angle of the slope (perpendicular), with staggered joints and secured by tamping, pegging, stapling or other approved methods of temporarily securing each piece. Large-roll **EMPIRE Turf** shall be laid in the direction of the slope, with temporary securing being at the discretion of the installation contractor.

4. Swales and Intermittent Waterways: The installation of **EMPIRE Turf** within drainways or intermittent waterways shall be determined after considering maximum channel velocities for storms of a designated intensity. Traditional size **EMPIRE Turf** shall be laid perpendicular to the direction of flow and pegged to resist washout during the establishment period, while large-roll pieces shall be laid in the direction of the flow, with temporary securing being at the discretion of the installation contractor.

5. Watering and Rolling: The installation contractor shall water **EMPIRE Turf** immediately after transplanting to prevent excessive drying during progress of the work. As sodding is completed in any one section, the entire area shall be lightly rolled. It shall then be thoroughly watered to a depth sufficient that the underside of the new sod pad and soil immediately below the pad are thoroughly wet. The general contractor shall be responsible for having adequate water available at the site prior to and during installation.

E. Acceptance: Acceptance of the transplanted **EMPIRE Turf** shall be on a daily basis, within 12 hours of completion of an area or section, unless otherwise specified.

F. Disclaimer: The installation contractor shall not be held liable for damages incurred to the **EMPIRE Turf** as a result of de-icing compounds, fertilizers, pesticides or other materials not applied by him or under his supervision, nor for those caused by acts of God or vandalism.

G. Guarantee: The installation contractor shall guarantee work covered by this specification to the extent that all transplanted **EMPIRE Turf** shall be uniform in color, leaf texture and shoot density and be reasonably free of visible imperfections at acceptance.

H. General Contractor's Responsibility: The general contractor shall be responsible for maintaining the accepted sodded area until the effective date for turfgrass maintenance operations. The effective date shall be specified in a written notice from the general contractor.

I. Payment: Specifications of methods of payment, retainer and final payment shall be customary to the industry in this area.

SECTION VI

Specifications For Maintenance of Transplanted EMPIRE Turf™

A. General: The contractor shall furnish all labor, material and equipment required to complete the work described herein, in strict accordance with the drawings and/or terms of the contract.

B. Watering: The general contractor shall supply adequate water to the site. The single-most important factor in the successful rooting of newly installed **EMPIRE Turf** is adequate, regular watering. Watering should begin immediately after installation. The amount of water required will vary depending upon season, weather, temperature, wind, slope and turfgrass variety. The general contractor shall designate the party responsible to ensure adequate water supply and application.

1. First Week: The contractor shall provide all labor and arrange for all watering necessary for rooting of **EMPIRE Turf**. Soil on sod pads shall be kept moist at all times. In the absence of adequate rainfall, watering shall be performed daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least 4 inches (100 mm). Watering should be done during the heat of the day to prevent wilting.

2. Second and Subsequent Weeks: The contractor shall water **EMPIRE Turf** as required to maintain adequate moisture in the upper 4 inches (100 mm) of soil, necessary for the promotion of deep root growth.

C. Mowing: The first mowing shall not be attempted until **EMPIRE Turf** is firmly rooted and securely in place. Not more than 30 percent of the grass leaf shall be removed by the initial or subsequent mowings. Care shall be taken to assure cutting blades are maintained in a sharp condition.

EMPIRE Turf shall be mowed at the following height: .75 to 1.5 inches.

D. Time Limitations: Duration of maintenance responsibilities shall be for 30 days unless otherwise specified.

E. Disclaimer: The contractor shall not be held liable for damages incurred to **EMPIRE Turf** caused by de-icing compounds, fertilizers, pesticides and other materials not applied by him or under his supervision, nor those caused by acts of God or vandalism.

F. Guarantee: The contractor shall guarantee work covered by this specification to the extent that all **EMPIRE Turf** shall be uniform in color, leaf texture and shoot density and shall be reasonably free of weeds, diseases and other visible imperfections at acceptance.

G. Payment: Specifications for method of payment, retainer and final payment shall be customary for this industry in this area.

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