**SECTION 32 92 23**

**SODDING**

**Based On DFD Master Specification Dated 01/06/2023**

This section has been written to cover typical situations that contractors will encounter. The Division of Facilities Development expects changes to this document to account for project specific conditions and design requirements. Use “Track Changes” when making modifications for Preliminary Design review. Text in red should be customized by the A/E.

PART 1 – GENERAL

Scope

Related Work

Reference Standards

Submittals

Quality Assurance

Soil Testing

Delivery, Storage and Handling

Installation Schedule

Job Conditions

Warranty

PART 2 – PRODUCTS

Sod

Water

Topsoil

Sand

Fertilizer

Amended Topsoil

PART 3 – EXECUTION

Site Preparation

Soil Preparation

Placing Topsoil

Soil Amendments and pH Adjustment

Fertilizer Amendments

Sodding

Cleaning and Repair

Maintenance

Sodding Acceptance

**PART 1 - GENERAL**

**SCOPE**

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to complete sodding and lawn maintenance operations. Included are the following topics:

**RELATED WORK**

Applicable provisions of Division 1 govern work under this Section.

Section 31 25 00 – Erosion Control

Section 32 91 19 – Soil Preparation

Section 32 92 00 – Plants

Section 00 00 00 – Section Title

**REFERENCE STANDARDS**

Guideline Specifications to Turfgrass Sodding – 2006 Edition, by Turfgrass Producers International

**SUBMITTALS**

Provide copies of all quality assurance testing reports:

Soil-testing: For native topsoil, stockpiled/stored topsoil, and imported topsoil

Topsoil Description: Contractor to provide a written description and quantity of topsoil required; as native or imported, or a breakdown of each, prior to performing landscape work on the site.

Provide product data, including applicable analytical data, for required topsoil amendments including:

Organic Compost

Fertilizer

Proposed Fertilizer to be submitted prior to purchase

Fertilizer Label: Contractor to provide tag from product packaging

Sod species information indicating the species/varieties of the proposed sod to be submitted prior to purchase

Request for Inspection

Sod Maintenance Log

**QUALITY ASSURANCE**

***If the A/E is including section 32 91 13 – Soil Preparation, the following soil testing section should be deleted, and replaced with:***

Refer to Section 32 91 13 Soil Preparation for topsoil testing requirements and quality assurance procedures related to topsoil sampling, testing and amendment.

**SOIL TESTING**

The Contractor shall retain the services of an independent soil-testing laboratory to conduct testing and analysis of existing, salvaged/stockpiled, and imported topsoil. The selection of the soil-testing laboratory shall be subject to approval by the DFD Construction Representative and Architect/Engineer.

Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated, and that specializes in types of tests to be performed.

The soil-testing laboratory shall oversee soil sampling; with depth, location, and number of samples to be approved by the Architect/Engineer. A minimum of three representative samples shall be taken, per-acre. Samples shall be taken from varied locations to test topsoil for all landscape planting types proposed in the Contract Documents.

The Contractor shall be responsible for scheduling soil tests and shall take into account the time period needed by the soil testing laboratory to conduct tests, to process the samples, and to publish the results and recommendations, and the time needed by the Architect/Engineer to approve submittals and amendments recommended. This is typically at least a two-month process. Contractor is responsible for coordinating all testing and reporting tasks without adversely affecting the project schedule.

Contractor is responsible for paying for all costs related to testing of soil samples.

Soil Analysis: For each un-amended topsoil sample, submit for approval by the DFD Construction Representative and Architect/Engineer a soil analysis and a written report by a qualified soil-testing laboratory, stating existing percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; harmful material; pH; and mineral and plant-nutrient content of the soil.

Topsoil testing methods shall comply with ASTM D5268, Standard Specification for Topsoil Used for Landscaping Purposes.

Report suitability of tested soil to support turf and plant growth.

Based on the test results, provide written recommendations for soil treatments and amendments to be incorporated to support turf and plant growth. State recommendations in weight per 1000 sq. ft. or volume per cu. yd. for nitrogen, phosphorus, and potash nutrients; and soil amendments to be added to topsoil.

Report presence of harmful salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such harmful materials are present, provide recommendations for corrective action.

The DFD Construction Representative and Architect/Engineer reserve the right to reject improperly amended native topsoil or imported topsoil that does not meet the quality assurance specifications. If rejected, Contractor is responsible for costs of replacement, and/or amendment, and re-testing of topsoil to provide topsoil that will support turf and plant growth.

**DELIVERY, STORAGE AND HANDLING**

Protect sod from sun, wind and dehydration during transport to site. Do not deliver more sod than can be installed within 24 hours.

**INSTALLATION SCHEDULE**

Install sod during one of the following periods.

Spring Installation: May 1 to Mid-July

Fall Installation: September 1 to Mid-October

Coordinate installation periods with on-going maintenance requirements throughout sodding operations.

Weather Limitations: Proceed with sodding only when existing and forecasted weather conditions permit. Do not install when the air temperature is above 95º F (35º C) or below 40º F (4.4º C).

**JOB CONDITIONS**

During construction, protect all structures, utilities, sidewalks, pavements, and other facilities and existing and newly installed vegetated areas from damage at all times. All vegetation damaged during construction shall be treated, repaired or replaced with new material as necessary, to restore to the original condition.

Work areas shall be kept clean and orderly during the installation period. Under no condition shall debris from planting activities result in a safety hazard on-site or to adjacent off-site property.

***Verify warranty requirements below based on project specific conditions.***

# WARRANTY

Contractor shall warranty the establishment of a satisfactory sodded lawn for a minimum of one growing season after date of sodding acceptance. This assumes the Owner performs required maintenance (i.e., regular watering) after the Contractor’s maintenance period is completed. Contractor shall inform Owner when required maintenance has concluded.

Satisfactory sodded lawn: At end of the warranty period, a healthy, uniform, and dense stand of grass has been established per Lawn Sodding Acceptance below.

Contractor shall re-sod and maintain lawn areas that do not comply with requirements until lawns are satisfactory at the Contractor’s expense.

Contractor shall provide an additional period of lawn maintenance following any actions needed to re-seed per the warranty requirements at the Contractor’s expense.

Damage to vegetated and lawn areas incurred as a result of warranty replacement operations shall be repaired by Contractor at no cost to Owner.

During the Warranty Period, damage to lawn areas not caused by Contractor shall be excluded from Warranty. Such damage shall include ruts caused by driving vehicles over lawns, excavation and backfill work in lawn areas, damage from animals, or acts of vandalism or extreme weather conditions. Where evidence of such damage exists, advise Owner in writing, stating location, cause and extent of damage. Owner, upon receipt of such notice may order Contractor to correct damage at Owner’s expense to exclude damaged area from Warranty provisions and correct damage by any arrangement deemed by Owner in his/her best interest.

**PART 2 - PRODUCTS**

**SOD**

Turfgrass Sod: Furnish viable sod of uniform density, color, and texture, strongly rooted, and capable of vigorous growth and development when planted. Sod shall comply with “Guideline Specifications to Turfgrass Sodding" by Turfgrass Producers International, including having minimal bare patches or other defects.

Sod shall be machine cut at a uniform soil thickness of 0.60 inch plus or minus 0.25 inch, with grass height at 1 ½ to 2 inches at the time of cutting. Measurement for thickness shall exclude top growth and thatch.

Individual pieces of sod 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 on width and plus or minus five percent on length. Broken pads and torn or uneven ends will not be acceptable.

Standard size sections of sod shall be strong enough to support their own weight and retain their size and shape when suspended vertically from a firm grasp on the upper 10% of the section.

Sod shall not be harvested or transplanted when moisture content (excessively dry or wet) may adversely affect its survival.

Sod shall be relatively free of thatch, up to 0.5-inch allowable (uncompressed).

Sod shall be free of objectionable grassy and broad-leaf weeds. Sod shall be considered free of such weeds if less than five such plants are found per 100 square feet of area. Sod will not be acceptable if it contains any of the following weeds: Common Bermuda grass (wire grass), quack grass, Johnson grass, poison ivy, nut sedge, nimblewill, Canada thistle, bindweed, bentgrass, wild garlic, garlic mustard, ground ivy, perennial sorrel and/or bromegrass.

Sod shall be reasonable free of diseases, nematodes and soil-borne insects.

Sod shall be field-grown in same climatic conditions as that of the project site.

Sod shall be composed of improved turf cultivars registered for sale in the United States and appropriate for the region, site conditions and intended function of each project or area.

# Water

Water to be free of wastewater effluent, salt or other hazardous chemicals.

**topsoil**

Naturally fertile, agricultural soil, classified as sandy loam to silty loam, capable of supporting turf and plant growth; of uniform composition throughout, without admixtures of subsoil, free of clay lumps, stones larger than 1” diameter [¾” diameter for athletic field uses], roots, trash and debris of any kind.

Soil-testing results shall indicate that topsoil falls within the following acceptable ranges, or can be amended to conform to the following requirements:

pH between 5.5 -7.0

USDA classification loam, sandy loam, clay loam

Phosphorous (P) between 6-10 ppm

Potassium (K) between 51-100 ppm

Organic Matter between 5-8%

C:N Ratio between 12:1 to 15:1

Soluble Salts in the range of 0-2 dS/m

Moisture Capacity of greater than 15%

Heavy Metals acceptable ranges are as follows:

Cd 0.01-3.0 ppm

Co 1.0-40.0 ppm

Cr 5.0-1000.0 ppm

Cu 2.0-100.0 ppm

Fe 10000-50000 ppm

Mn 100-4000 ppm

Mo 0.5-40.0 ppm

Ni 1.0-200.0 ppm

Pb 2.0-200.0 ppm

Zn 10-300 ppm

Li 1.2 – 90.0 ppm

**SAND**

Particles of natural or manufactured rock that will pass through a No. 4 sieve., and be retained on a No. 200 sieve; clean, washed, and free of toxic materials.

**Fertilizer**

Fertilizer: Granular, non-burning product composed of not less than fifty (50) percent slow-acting, guaranteed analysis fertilizer. Fertilizer shall conform to Wisconsin State Statutes, Section 94.64 and meet the standards of the Wisconsin Department of Agriculture for registration and labeling.

Starter Fertilizer: shall be composed of nitrogen, phosphorus and potassium with higher phosphorus ratio than found in maintenance fertilizers.

All fertilizers shall be delivered fully labeled according to applicable regulations, bearing name, trade name or trademark of producer, along with producer’s warranty.

**AMENDED TOPSOIL**

Topsoil amended in accordance with recommendations from the soil testing analysis.

**PART 3 – EXECUTION**

# SITE PREPARATION

During construction, protect all structures, utilities, sidewalks, pavements, and other facilities and existing and newly installed vegetated areas from damage at all times.

Delay grading and spreading topsoil if unfavorable weather conditions may result in washouts or loss of material.

***A/E delete the following section if using Section 32 19 12: Soil Preparation***

**SOIL PREPARATION**

Newly graded subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

Existing vegetated areas: If sodding occurs in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare surface soil as follows:

Remove existing vegetation. Do not mix vegetation into surface soil. Loosen existing topsoil to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

Rough grade areas to within 1 inch of subgrade elevations. Areas shall be graded to a smooth uniform surface plane with loose, uniformly fine texture. Areas shall be restored if eroded or otherwise disturbed after rough grading is complete.

# placing topsoil

Areas to be sodded shall have a minimum of [4 to x] inches of topsoil of existing, amended or imported topsoil, but not less than required to meet finish grades after light rolling and natural settlement. Do not spread topsoil if subgrade is frozen, muddy, or excessively wet.

If required topsoil depth is greater than 6 inches, topsoil shall be installed in lifts. Moisten the topsoil surface between lifts. Allow water to thoroughly percolate through and settle and dry before rolling and placing the next lift.

Limit fine grading to areas that can be sodded in the immediate future. After finish grading, restore any eroded or otherwise disturbed areas before sodding.

Do not place topsoil on top of saturated or frozen subgrade soil.

# SOIL AMENDMENTS AND pH ADJUSTMENT

Provide lime, sand, or other soil amendments as recommended by soil-testing analysis. If topsoil has been determined acceptable by a soil test, no amendments are needed.

Uniformly apply recommended soil amendments and incorporate into the top 4 to 6 inches of soil by tilling or disking.

**FERTILIZER AMENDMENTS**

Provide fertilizer amendments as recommended by soil-testing analysis. If topsoil has been determined acceptable by soil-testing, no fertilizer amendments are needed.

**SODDING**

Install sod within 24 hours of harvesting. Do not install sod if dormant or if ground is frozen or muddy.

Install sod at the finish grade(s) per plan on prepared surface.

Install sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips to offset joints in adjacent courses.

On 3:1 or greater slopes, sod shall be laid at right angles to slopes or the flow of water to avoid damage due to erosion. Sod shall be secured by pegging, stapling or other approved methods of temporarily securing each piece.

Tamp and/or roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into gaps less than 3/4 inch wide. Gaps wider than 3/4 inch shall be corrected with new, full sod rolls.

Saturate sod with fine water spray within two hours of installation to a 1-inch depth below the new sod.

Protect newly sodded areas from foot traffic during and after installation.

# CLEANING AND REPAIR

Waste and excess material from the sodding operation shall be promptly removed. Adjacent paved areas are to be cleaned, and any damage to existing adjacent landscape areas shall be repaired.

***Verify maintenance watering and mowing requirements based on project specific conditions.***

**MAINTENANCE**

Contractor to provide regular watering, fertilizing, weeding, pest management, and trash removal services for all new sodded areas starting from installation until 60 (sixty) days after the date of Sodding Acceptance, at which time maintenance duties will be taken over by the Owner.

Contractor shall provide a temporary irrigation system or import water via watering truck as often as necessary to maintain moist soil to a depth of at least 3 inches. During periods of hot weather (higher than 80º-85ºF) in the first few weeks after installation, the sod may need additional irrigation in the early afternoon to reduce the temperature of the sod.

Fertilizing: Apply starter fertilizer with a mechanical rotary or drop-type distributor approximately thirty (30) days after sodding, at manufacturer’s recommended rate, and thoroughly water into the soil.

Contractor shall remove all weeds by the roots on a bi-weekly basis. Use of herbicide for weed control shall be requested by Contractor and allowed only with approval by Owner in writing.

Chemical applications of fertilizer or herbicides are to be performed in accordance with current Federal, State and local laws, through EPA-registered materials and application techniques, and performed under the supervision of a licensed certified applicator.

Mowing: The first mowing shall not be performed until the sod is firmly rooted and securely in place. Lawn shall be mown as often as necessary to maintain a height of 2-1/2 to 4 inches.

No more than one third of the height of grass leaf shall be removed during any single mowing operation. The mowing operation is to include trimming around obstacles and the removal of excess grass clippings.

Line trimmers shall not be used around tree trunks.

Sod Maintenance Log: Contractor shall submit a written record to the DFD Construction Representative, and the Architect/Engineer which documents regular maintenance visits and actions performed. Failure of Contractor to provide documentation of regular required landscape maintenance duties that result in unsuccessful lawn establishment, will require lawn re-sodding at full cost to Contractor per sodding Warranty

Contractor shall inform Owner when required maintenance period has concluded.

**SODDING ACCEPTANCE**

The DFD Construction Representative and the Architect/Engineer shall perform inspections with the Contractor after the conclusion of the installation operations to verify that sodded lawn areas have been satisfactorily established.

A satisfactory installation shall meet the following requirements:

Sod shall have shown signs of rooting into the topsoil and knitting into adjoining sod. Open joints between sod rolls or sod slippage on slopes will not be accepted.

Sod shall be in a thriving and vigorous condition exhibiting a healthy green color. Bare spots or brown spots will not be accepted.

Request for Inspection: Contractor shall submit a request for inspection to the DFDM Construction Representative and Architect/Engineer. The request shall be received at least 7 (seven) days before the anticipated date of inspection.

Contractor shall re-sod lawn areas that do not comply with requirements and continue required maintenance until lawns are satisfactory.

Any defects or imperfections appearing in whole, or any part of the work caused by or due to any fault or negligence on the part of the Contractor shall be corrected before the work is accepted.

Sodding work may be accepted in stages when the Contractor and Owner deem that practice to be in their mutual interest. Approval must be given in writing by Owner to the Contractor verifying that work may be completed in stages.

Acceptance of sodding work shall not waive any provisions of the Warranty.

END OF SECTION