**SECTION 32 92 19**

**SEEDING**

**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 the Preliminary Design review. Text in red should be customized by the A/E.

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## PART 1 - GENERAL

**SCOPE**

The work under this section shall consist of providing all work, materials, labor, equipment, and supervision necessary to complete lawn seeding, mulching, 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

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**REFERENCE STANDARDS**

Association of Official Seed Analysts (AOSA)

**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

Proposed Seed Mix to be submitted prior to purchase

Seed Mix Label: Contractor to provide seed analysis tag from product packaging

Request for Inspection

Seeding 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

Seed shall be delivered to the site in its original, unopened container, labeled as to weight, analysis and manufacturer. Store any seed delivered in a manner safe from damage from heat, moisture, rodents, or other causes. Any seed damaged after acceptance shall be replaced by the Contractor at his / her expense.

**INSTALLATION SCHEDULE**

Seed during one of the following periods:

Spring Installation: May 1 to Mid-July

Fall Installation: September 1 to Mid-October

Dormant Seeding: only permitted upon written approval by DFD Construction Representative and Architect/Engineer

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

Weather Limitations: Proceed with seed installation only when existing and forecasted weather conditions permit. No seeding shall occur on frozen ground or at air temperatures lower than 32o F. Do not broadcast or drop seed when wind velocity exceeds 5 mph.

**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 seeded lawn for a minimum of one growing season after date of Seeding 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 seeded lawn: At end of the warranty period, a healthy, uniform, and dense stand of grass has been established per Lawn Seeding Acceptance below.

Contractor shall re-seed 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**

# lawn Seed

Fresh, clean, dry, new seed that meets or exceeds the minimum requirements of purity and germination stated on an independent certificate of seed analysis document according to the Association of Official Seed Analysts (AOSA) rules.

Do not use wet seed or seed that is moldy or otherwise damaged. All seed packaging shall include a seed tag that contains: the name of the seller, the lot number, seed varieties with purity and germination percentages, as well as percentage of other crop seed, weed seed, noxious weeds and inert material. Variety Not Stated (VNS) seed is not permitted.

Seed shall have been test within the last 9 months and contain the following properties:

Purity >90%

Germination >85%

Other Crop <0.5%

Weed Seed <0.5%

Noxious Weeds None

Inert Matter <8%

Annual ryegrass shall not be permitted in lawn seed mixtures, except as a temporary cover for erosion control.

Select a high-quality lawn seed mixture that is adapted to the local site conditions and intended use of the turf, that is contains seed types fitting within one of the following percentages:

For Sunny areas (higher levels of maintenance), proportioned by weight as follows:

 Kentucky Bluegrass / Fine Fescue / Perennial Ryegrass Blend

 60 percent Kentucky bluegrass (at least three varieties)

 20 percent fine fescue including Chewings fescue, creeping red fescue, or hard fescue

 20 percent perennial ryegrass

***A/E may delete the seed mixes below if they are not being used in the project***

 OR

 Turf Type Tall Fescue Blend\* (high traffic areas or hot, dry sites)

 At least 80 percent turf type tall fescue blend (at least three varieties)

 No more than 20 percent Kentucky bluegrass

For Sunny areas (lower levels of maintenance – infrequent mowing), proportioned by weight as follows:

 Fine Fescue / Kentucky Blue Grass Blend

25 percent Creeping red fescue

25 percent Hard fescue

25 percent Chewings fescue

25 percent Kentucky bluegrass

For Sun and Partial Shade areas, proportioned by weight as follows:

 Kentucky Bluegrass / Fine Fescue / Perennial Ryegrass Blend

40 percent Kentucky bluegrass (at least two varieties)

40 percent fine fescue including Chewings fescue, creeping red fescue, or hard fescue

No more than 20 percent perennial ryegrass

***A/E may delete the seed mix below if it is not being used in the project***

OR

 Fine Fescue / Kentucky Blue Grass Blend

25 percent Creeping red fescue

25 percent Hard fescue

25 percent Chewings fescue

25 percent Kentucky bluegrass

For Shaded areas (best for dry shade), proportioned by weight as follows:

 Fine Fescue / Kentucky Blue Grass Blend

25 percent Creeping red fescue

25 percent Hard fescue

25 percent Chewings fescue

25 percent Kentucky bluegrass

# Water

Water to be free of wastewater effluent 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 product composed of not less than fifty (50) percent slow-acting, guaranteed analysis fertilizer. All fertilizers shall be delivered fully labeled according to applicable regulations, bearing name and trade name or trademark of producer.

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

Maintenance Fertilizer: shall have nutrient ratios of nitrogen, phosphorus, and potassium to support any deficiencies indicated by soil-testing analysis.

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

**Mulch**

Straw Mulch: Provide air-dry, clean, mildew and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

Hydro Mulch: wood fiber mulch with or without tackifier.

**EROSION CONTROL MEASURES *[A/E to edit information]***

***If site has steep slopes or stormwater conveyances, A/E to provide more detailed product specifications and installation instructions.***

**EROSION CONTROL BLANKET**

100% biodegradable weed free wood excelsior, straw, or coconut-fiber mat enclosed in a biodegradable netting stitched with biodegradable thread/yarn, (biodegradable within 12 months of installation) or net free. Include manufacturer's recommended steel wire staples, 6" long or biodegradable anchoring staples, T shaped with barbed head and shoulders, 6 inches. Wisconsin DOT approved Class 1 Type B Urban erosion mat or similar are acceptable. Biodegradable materials are intended to avoid entrapment of animals. Erosion mat shall be American Excelsior-Curlex Net-Free, Erosion Control Blanket-S32BD, Western Excelsior-Excel SS-2 All Natural, Ero-Guard EG-25 (NN), Erosion Tech ETRS2BN or approved equal.

**EROSION CONTROL FIBER MESH**

100% biodegradable twisted jute mesh. Include manufacturer's recommended steel wire staples, 6 inches long or biodegradable anchoring staples, T shaped with barbed head and shoulders, 6 inches.

**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 seeding 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 seeded 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 seeded 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 except in the case of lawn seeding where starter fertilizer is required.

Apply starter fertilizer to surface of finely graded topsoil.

# SEEDING

Methods of seed installation may vary at the discretion of the Contractor in order to establish and guarantee a smooth, uniform quality lawn. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.

Install seed mixes at manufacturer’s recommended rates.

Rake seed lightly into top 1/8 inch of topsoil, roll lightly, and water with fine spray.

***A/E to delete the following lines if not applicable***

Alternative methods of seeding or hydroseeding may be proposed in writing by Contractor and must be approved by DFD Construction Representative.

Dormant seeding may be proposed in writing by Contractor and must be approved by DFD Construction Representative.

# MULCHING

Protect seeded areas by spreading straw mulch. Spread uniformly at a minimum rate of 2 tons/acre to form a continuous blanket 1-1/2 inches in loose depth over seeded areas. Spread by hand, blower, or other suitable equipment.

***A/E to modify or delete the following sentences***

Provide seed stabilization measures **[erosion blanket, jute mat, tackifier, etc.]** to prevent erosion or displacement of soils and seed on steep slopes. The use of plastic netting is prohibited.

Alternative methods of mulching or hydromulching may be proposed in writing by Contractor and must be approved by DFD Construction Representative.

# CLEANING AND REPAIR

Waste and excess material from the seeding 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, weeding, pest management, and trash removal services for all newly seeded areas for a period of 60 (sixty) days after the date of seeding 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 2 inches. Seed installation shall be watered unless natural rainfall precludes the need for specific visits. During periods of hot weather (higher than 80º-85ºF), the seed installation may need additional irrigation.

Contractor to replace any mulch and/or seed that has been blown or washed away.

Fertilizing: Apply maintenance fertilizer with a mechanical rotary or drop-type distributor approximately thirty (30) days after seed installation, 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 lawn has grown to a height of approximately 3 to 4 inches. 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.

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

Contractor shall inform Owner when required maintenance period has concluded.

**SEEDING ACCEPTANCE**

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

A satisfactory installation shall meet the following requirements:

 An established root system (leaf blades break before seedlings can be pulled from the soil by hand)

 Uniform coverage throughout all turf areas with no bare spots larger than 5 inches by 5 inches

 No bare areas comprising more than 1% of any given 1,000 square foot area

 No deformation of the turf areas caused by mowing or other Contractor equipment

 Shall be free of weeds, disease and harmful pests

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

Contractor shall re-seed 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.

Seeding 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 seeding work shall not waive any provisions of the Warranty.

## END OF SECTION