



# Division 329200

# Turf and Grasses

## DESIGN GUIDE

## 329200 - Turf and Grasses

### PART 1 - GENERAL

#### 1.1 Summary

- A. The scope of work includes all labor, materials, appliances, tools, equipment, facilities, transportation and services necessary for, and incidental to performing all operations in connection with furnishing, delivery, and installation of plant (also known as "landscaping") complete as shown on the drawings and as specified herein.
- B. Section Includes:
  - 1. Hydroseeding.
  - 2. Turf renovation.
  - 3. Lay down area renovation.
  - 4. Turf mow strip around light poles
  - 5. Curbing and edge restraints

#### 1.2 Related Documents

- A. Drawings and general provisions of contract including general and supplementary conditions and Division I specifications apply to work of this section.
  - 1. Section 015639 - Tree and Plant Protection Plan
  - 2. Section 312000 - Earthwork
  - 3. Section 328400 - Irrigation
  - 4. Section 329000 - Planting

#### 1.3 Definitions



- A. Finish Grade: Elevation of finished surface of planting soil.
- B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- C. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- D. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- E. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

## 1.4 Quality Assurance

- A. Landscape Contractor Qualifications: Installer shall be licensed in the state of Washington with at least 5 years of documented experience of performing work of comparable size, scope, and quality, be a specialist in installing and planting landscape products, and experienced in landscape work of the highest professional quality. Firm shall have equipment and personnel adequate to perform the work specified.
- B. All seeds shall conform to the requirements of Washington State Seed Law and when applicable the Federal Seed Act and shall be "certified" grade or better.
- C. In the event of discrepancies between the drawings and the specifications, the final decision as to which shall be followed, shall be made by the Owner's Representative.
- D. In the event the installation is contradictory to the direction of the Owner's Representative, the installation shall be rectified by the Contractor at no additional cost to the Owner. The Contractor shall immediately bring any such discrepancies to the attention of the Owner's Representative.

## 1.5 Submittals



- A. Landscape Contractors Qualifications: Submit experience of Landscape Contractors meeting requirements as stated herein.
- B. Procedures: Submittal format shall be coordinated with format directions provided in Section - Submittal Procedures.
- C. Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of collection and date of packaging.
  - 1. Certification of each seed mixture. Include identification of source and name and telephone number of supplier.
- D. Fertilizer Guaranteed Analysis Label: If a starter fertilizer is required based on Soil Test analysis, Contractor shall provide a Commercial grade slow-release fertilizer containing no less than 10 percent Nitrogen, 6 percent Phosphorous, and 4 percent Potash by weight.
- E. Hydro Mulch Label: Contractor shall provide type and quantity of mulch used in hydroseed slurry.
- F. Tackifier Label: Contractor shall provide the manufacturer's label.
- G. Sod: Contractor shall provide the type and percent mixture of grass seed used in sod installed. Including the name, address, and phone number of the sod farm where the sod will be purchased.
- H. Schedule for hydroseed application.
- I. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of grasslands during a calendar year. Submit before expiration of required initial maintenance period.

## 1.6 Delivery, Storage and Handling

- A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of conformance with state and federal laws, as applicable.
- B. Bulk Materials:
  - 1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
  - 2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water runoff, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
  - 3. Accompany each delivery of bulk fertilizers and soil



amendments with appropriate certificates.

## **1.7 Protection of Work, Property and Person**

- A. The Contractor shall adequately protect the work, adjacent property, and the public, and shall be responsible for any damages or injury due to the Contractor's actions.

## **1.8 Changes in the Work**

- A. The Owner's Representative may order changes in the work, and the contract sum being adjusted accordingly. All such orders and adjustments plus claims by the Contractor for extra compensation must be made and approved in writing before executing the work involved.
- B. All changes in the work, notifications, and Contractor's request for information (RFI) shall conform to the contract general condition requirements.

## **1.9 Correction of Work**

- A. The Contractor, at their own cost, shall re-execute any work that fails to conform to the requirements of the contract and shall remedy defects due to faulty materials or workmanship upon written notice from the Owner's Representative, at the soonest as possible time that can be coordinated with other work and seasonal weather demands.

## **1.10 Observation of the Work**

- A. The Owner's Representative may inspect the work at any time. They may remove samples of materials for conformity. Rejected materials shall be immediately removed from the site and replaced at the Contractor's expense. The cost of testing materials not meeting specifications shall be paid by the Contractor.

## **1.11 Sequencing and Scheduling**

- A. Coordinate Work of the section with all other Project Work. Schedule hydroseeding or sod installation in relation to overall Project schedule and requirements for Lawn Establishment Period.
- B. Finish grading shall be inspected and approved by the Owner's Representative prior to seed application.
- C. Coordinate layout of lawn areas with layout of planting areas and



installation of irrigation, plants and trees.

- D. Notify the Owner's Representative not less than 48 hours in advance of seeding operation. Do not begin the work until areas prepared or designated for seeding have been accepted. Following acceptance, immediately begin seeding and fertilizing of the approved areas.
- E. All areas must be prepared and seeded during the first available planting period and shall not be allowed to sit idle for long periods of time without receiving the erosion control specified in the Contract.

## 1.12 Project Conditions

- A. Planting Restrictions for Seed: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion. Do not seed before or after these dates without written approval of the Owner's Representative.
  - 1. Spring Planting: May 1 to June 30.
  - 2. Fall Planting: September 1 to October 1.
  - 3. Written permission to seed from July 1 to August 31 may be granted only if automatic irrigation is available and operational at the site.
  - 4. Permission to seed from Oct 2 to March 31 will only be given when completion of the Contract is imminent, weather/soil conditions are met as defined below, and the environmental conditions are conducive to acceptable growth or additional erosion control measures are approved by Owner's Representative and installed by Contractor at no additional cost to Owner. Contractor shall submit erosion control measures in writing to Owner's Representative at the time of seeding schedule submittal. Erosion control measures shall stabilize soil and hydroseed mix during establishment period and shall be removed upon establishment of seed mix or as approved by Owner's Representative.
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions. Do not plant when the ground is frozen, or the soil is otherwise in an unsatisfactory condition for installing hydroseeding. Do not install hydroseed during periods of excessive heat, drought, moisture and cold. Do not hydroseed during windy weather (above 25 mph) or when the ground is saturated or freezing. Suspend hydroseeding operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.



- C. Restrict traffic from lawn areas until lawn is established. Erect signs and barriers as required.

## 1.13 Meetings and Inspections

- A. Meetings:

Preconstruction meeting: Arrange a preconstruction meeting to take place at least 2 weeks before commencement of grass lawn work between the Owner's Representative, Architect, Landscape Architect, Contractor, and Planting, Irrigation and Hydroseeding Subcontractor to review the proposed landscapeschedule, inspections, and execution of work.

- B. Inspections:

1. Request inspection for layout of lawn areas by the Owner's Representative prior to installation of hydroseed. Provide four working days notice.
2. Request inspection by the Owner's Representative upon completion of the work.
3. Request inspection by the Owner's Representative for Final Acceptance at the conclusion of the Warranty Period.

## 1.14 Maintenance Service

- A. Initial Seed Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required herein. Begin maintenance immediately after each area is planted and continue until acceptable turf or grassland is established but for not less than the following periods:

1. Seeding: 1 year from date of planting completion.
2. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.
3. Refer to Section 329000, Planting, for full requirements for the Warranty and Establishment Period.

## PART 2 – PRODUCTS

### 2.1 Seed



- A. Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances. Seed mixes shall be Washington, Idaho, or Oregon certified. All other crop shall be identified. Seed containing prohibited or restricted noxious weeds will be rejected. The following noxious weeds are prohibited from any mix: Bindweed, Canada Thistle, quackgrass, sedge kind weed, horse nettle, wild garlic, Bermuda grass, cheat, wild onion, corn cockle, dodder, Johnsongrass, perennial sweet Sudan grass, sorghum hybrids. Seed of grass species as follows, with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed, unless otherwise specified herein.
  - 1. Lawn Seed: CWU standard grass seed mix: 65% Perennial Rye, 25% Kentucky Bluegrass, 10% Creeping Red Fescue, or approved equal.
  - 2. Erosion Control Seed Mix: CWU standard erosion control mix: mix of bluebunchwheat grass, sheep fescue and big bluegrass, or approved equal.
- B. Seed varieties/cultivars shall be chosen from the following, unless approved by Owner's representative.
  - 1. Alliance for Low Input Sustainable Turf (A-LIST)
  - 2. Turfgrass Water Conservations Alliance (TWCA)

## 2.2 Hydroseed

- A. Hydromulch
  - 1. Wood cellulose fiber from Alder; containing a soil-binding agent (tackifier); dyed asuitable color to facilitate placement; and containing no growth or germination inhibiting substances. Straw hydromulch will not be accepted.
- B. Soil Binding Agent (Tackifier)
  - 1. Non-toxic, biodegradable, environmentally safe materials such as ESI - TAK or approved equal. Materials must be manufactured in such a manner that after addition and agitation in slurry tanks with fertilizers, grass seeds, water and otherimproved additives, the fibers in the material will become uniformly impregnated with grass seed, and which after application, will allow the absorption and percolation of moisture. Each package of the cellulose fiber shall be marked by the manufacturer to show the air-dry weight content. Wood cellulose fiber shall be utilized as mulch and applied with seed and fertilizer in one operation by approved hydraulic equipment.
- C. Mow strips around light poles



1. A concrete skirt shall be installed around light pole bases installed within lawn adjacent to sidewalks and other paved surfaces, as detailed in Contract Drawings.
- D. Curbing and Edge Restraints
1. Lawn adjacent to building shall have a 6" concrete curbing detail a minimum of 18" from the building exterior or adequate room for mower access to safely mow lawns near the building.
  2. No metal edge retains shall be used.

## PART 3 – EXECUTION

### 3.1 Examination

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a seeding area..
  2. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  3. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Landscape Architect and replace with new planting soil before seeding.

### 3.2 Preparation

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by seeding operations.
1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  2. Protect grade stakes set by others until directed to remove them.





- B. Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Perform installation of topsoil for lawn areas and soil testing per Section, Planting. Incorporate amendments as required per Section - and per required soil testing.
- D. Irrigation shall be installed and accepted by the Owner's Representative per Section prior to installation of hydroseeding.
- E. Final grades shall be inspected and accepted by the Owner's Representative per Section, Planting, prior to installation of hydroseeding.
- F. Use every possible precaution to prevent damage to existing conditions to remain, such as structures, utilities, plant materials and walks on or adjacent to the site of the Work.
- G. Provide barricades, fences or other barriers to protect existing conditions to remain from damage during construction.
- H. Do not store materials or equipment, permit burning, or operate or park equipment under the branches of existing plants to remain.
- I. Submit written notification of damaged plants and structures to the Owner's Representative immediately.
- J. Maintain the site in an orderly condition during the progress of Work. Continuously and promptly remove excess and waste materials; keep lawn areas, walks and roads clear. Store materials and equipment where directed. Immediately remove rejected materials from the property. Promptly remove equipment, surplus material, debris and trash resulting from operations under this Contract upon completion and prior to initial acceptance of Work. Leave the site in a neat, orderly condition, "broom clean".

### 3.3 Hydroseed Installation

- A. Hydroseeding for Seed Mixes: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
  - 1. Mix slurry with fiber-mulch and tackifier.



2. Seed rate and hydroseed technique as follows
  - a. Lawn Seed Mix equals 100lbs per acre - Single-stage process
  - b. Erosion Control Seed Mix equals 100lbs per acre - Single-stage process
3. Single-stage process: Apply slurry uniformly to all areas to be seeded in a one- step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.
4. Equipment: use a continuous, built-in agitation system that uses water as a carrying agent. Equipment with a gear pump is not acceptable.
5. Pump a continuous, non-fluctuating supply of homogenous slurry to provide a uniform distribution of material over designated areas.

### 3.4 Protection during Construction

- A. The Contractor shall protect planting and related work and other site work from damage due to planting operations, operations by other Contractors or trespassers. Maintain protection during installation until Substantial Completion Acceptance. Treat, repair or replace damaged work immediately.
- B. Damage done by the Contractor, or any of their sub-contractors to existing or installed plants, or any other parts of the work or existing features to remain, including roots, trunk or branches of large existing trees, soil, paving, utilities, lighting, irrigation, other finished work and surfaces including those on adjacent property, shall be cleaned, repaired or replaced by the Contractor at no expense to the Owner. The Owner's Representative shall determine when such cleaning, replacement or repair is satisfactory.
- C. Refer to Section - Temporary Tree and Plant Protection for requirements in the areas of Trees and Plants to remain. Do not store materials or equipment, permit burning, or operate or park equipment under the branches or on the root ones of existing plants to remain. Contractor must report and repair, per the Specification, any damage to plants and structures to the Owner's Representative.
  1. Damage to existing trees shall be assessed by a certified arborist.

### 3.5 Renovation of Existing Turf and Lay Down Areas

- A. Renovate existing turf and construction laydown areas damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.



1. Remove any waste and foreign materials imported during construction operations, including, weeds, soil cores, grass, vegetation, turf, oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations and legally dispose of them off Owner's property.
2. Remove sod, soil, and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.
3. Mow, dethatch, core aerate, and rake any existing turf.
4. De-compact soils affected by construction operations thoroughly to a soil depth of 12 inches and import fresh clean Topsoil to achieve preconstruction grades, unless specified by Owner's Representative.
5. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
6. Repair irrigation damaged by construction operations to preconstruction condition at minimum, unless specified by Owner's Representative.
7. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 6 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
8. Apply applicable Seed Mix by hydroseeding.
9. Water newly planted areas and keep moist until new turf is established.
10. Re-establish turf where settlement or washouts occur or where minor regrading is required.

### **3.6 Warranty**

- A. The warranty period for all plants and related furnishings shall be one (1) year from the date of Substantial completion.

### **3.7 Maintenance of Seeded Areas During Warranty Period by Installer**

- A. General requirements:
  1. All work shall be undertaken by trained planting crews under the supervision of a foreman with a minimum of 5 years' experience supervising commercial plant maintenance crews.
  2. All chemical and fertilizer applications shall be made by licensed



applicators within the State of Washington for the type of chemicals to be used. All work and chemical use shall comply with all applicable local, state, and federal requirements and be approved by the Owner following the Integrated Pest Management Plan (IPM).

3. Assure that hoses and watering equipment and other maintenance equipment does not block paths or be placed in a manner that may create tripping hazards. Use standard safety warning barriers and other procedures to maintain the site in a safe manner for visitors at all times.
4. All workers shall wear required safety equipment and apparel appropriate for the tasks being undertaken.
5. The Contractor shall not store maintenance equipment at the site at times when they are not in use unless authorized in writing by the Owner's Representative.
6. Maintenance vehicles shall not park on the site including walks and lawn areas at any time without the Owner's Representative's written permission.
7. Maintain a detailed log of all maintenance activities including types of tasks, date of task, types and quantities of materials and products used, watering times and amounts, and number of each crew. Periodically review the logs with the Owner's Representative and submit a copy of the logs at the end of each year of the maintenance agreement.
8. Meet with the Owner's Representative a minimum of three times a year to review the progress and discuss any changes that are needed in the maintenance program. At the end of the warranty period attend a hand over meeting to formally transfer the responsibilities of maintenance to the Owner's Representative. Provide all information on past maintenance activities and provide a list of critical tasks that will be needed over the next 12 months. Provide all maintenance logs and soil test data. Make the Contractor's supervisor available for a minimum of one year after the end of the warranty period to answer questions about past maintenance.

#### B. Turf and Grasses

1. Maintain and establish seeded areas by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and mulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
2. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged



- or lost in areas of subsidence.
3. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
- C. Watering: See Planting Irrigation section
1. Keep hydroseeded areas uniformly moist to a depth of 4 inches.
  2. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  3. Revise controller program as necessary.
  4. Water hydroseeded areas with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- D. Mowing
1. Mow new lawn areas as soon as top growth is 3 inches high, but not more than 4 inches high. Repeat mowing to maintain 3 inches height of cut without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height: 3 inches to 3 1/2 inches. Remove pioneering invasive species to maintain original species mix as listed herein. Remove grass clippings from site or as directed by Owner's Representative.
- E. Soil Nutrient Levels
1. Take a minimum of 4 soil samples from around the site in the spring and fall and have them tested by an accredited agricultural soil testing lab for chemical composition of plant required nutrients, pH, salt and % organic matter. Test results shall include laboratory recommendations for nutrient applications. Apply fertilizers at rates recommended by the soil test.
  2. Post-fertilization: Apply fertilizer after initial mowing and when grass is dry.
  3. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to turf area.

### 3.8 Satisfactory Hydroseeded Areas

- A. Hydroseeded area installations shall meet the following criteria as determined by Owner's Representative:
1. Satisfactory lawn: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds



and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

- B. Use specified materials to reestablish grassland that does not comply with requirements and continue maintenance until lawn is satisfactory.

### **3.9 Cleanup and Protection**

- A. Promptly remove soil and debris created by seeding work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.
- C. Remove non-degradable erosion-control measures after grass establishment period.

### **3.10 End of Warranty Final Acceptance / Maintenance Observation**

- A. At the end of the Warranty and Maintenance period the Owner's Representative shall observe the work and establish that all provisions of the contract are complete and the work is satisfactory.
  - 1. If the work is satisfactory, the maintenance period will end on the date of the final observation.
  - 2. If the work is deemed unsatisfactory, the maintenance period will continue at no additional expense to the Owner until the work has been completed, observed, and approved by the Owner's Representative.
- B. **FAILURE TO PASS OBSERVATION:** If the work fails to pass final observation, any subsequent observations must be rescheduled as per above. The cost to the Owner for additional observations will be charged to the Contractor at the prevailing hourly rate of the Owners Representative.

END OF SECTION