

LS 659 – LANDSCAPE RESTORATION

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes:
1. 4" Topsoil.
 2. Seeding or Sodding.
 3. Straw Blankets for seeding.
 4. Maintenance.

1.02 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.
- B. Base Mix: Homogenously blended mix of the specified topsoil and the specified sand which is then used for mixing with the specified organic amendment to create various Planting Mixes.
- C. Compost: An organic material that has been aerobically composted and stabilized from feedstocks such as a green waste (yard debris) or other suitable organic materials
- D. Finish Grade: Elevation of finished surface of planting soil.
- E. Manufactured Planting Soil Mix: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce a planting soil mix.
- F. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. That also includes substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.
- G. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
- H. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
- I. Sand: a naturally occurring material that has been processed to remove coarse gravel, silt and clay and sized to meet the specifications.
- J. Straw blanket: a manufactured blanket with weed-free straw intended to protect the seeding, retain moisture and promote the growth of vegetation.
- J. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.
- K. Subsoil: All soil beneath the topsoil layer of the soil profile and typified by the lack of organic matter and soil organisms.

- L. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

1.03 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
- B. INFORMATIONAL SUBMITTALS
- C. Qualification Data: For landscape Installer.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
 - 2. Experience: Five years' experience in turf installation.
 - 3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
 - 4. Personnel Certifications: Installer's personnel assigned to the Work shall have certification in one of the following categories from the Professional Landcare Network:
 - a. Certified Landscape Technician - Exterior, with installation or maintenance
- D. Qualification Data: For qualified landscape Installer. Include list of similar projects completed by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
- E. 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 production and date of packaging.
 - 1. Certification of each seed mixture for turfgrass sod and plugs. Include identification of source and name and telephone number of supplier.
- F. Product Certificates: For fertilizers and straw blankets from manufacturer.
- G. Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.
- H. Maintenance Instructions: To be submitted upon lawn work acceptance. Recommended procedures to be established by the Owner for maintenance of lawns during a calendar year. Submit before expiration of required maintenance periods.

1.04 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.
 - 1. Professional Membership: Installer shall be a member in good standing of either the Ohio Nursery and Landscape Association or the American Nursery and Landscape Association.
 - 2. Experience: Five years' experience in turf installation.

3. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
4. Personnel Certifications: Installer's field supervisor personnel assigned to the Work shall have certification in one of the following categories from the Ohio Nursery and Landscape Association:
 - a. Ohio Certified Nursery Technician – Master Status
 - b. Ohio Certified Nursery Technician – Landscape Status
5. Pesticide Applicator: State licensed, commercial.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory or university 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.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
 1. Report suitability of topsoil for lawn growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
- D. Finish Grading. Match in-kind and/or use field surveying to check that grading provides positive drainage to the roadway surface.
- E. Pre-installation Conference: Conduct pre-installation conference prior to beginning seedbed preparations. Construction Manager, Owner and Landscape Architect should be notified at least one week prior to the intended meeting date.
- F. Note: Work installed without prior notification will be rejected.

1.05 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 compliance with state and Federal laws, as applicable.
- B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding." Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.
- C. 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 blankets 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 materials with appropriate certificates.

1.06 PROJECT CONDITIONS

- A. Planting Season: Install seeded turf lawns between April 1 to June 1 or August 15 to October 15. Correlate planting with specified maintenance periods to provide required maintenance from date of Contract Completion.
- 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.
- C. Work notification: Notify the City Representative at least seven working days before installation of lawn materials.
- D. Verify location and extent of underground utilities. Protect existing utilities, irrigation, paving and other facilities from damage caused by lawn work operations.
- E. Perform lawn work only after planting and other work affecting ground surface has been completed.
- F. Restrict traffic from lawn areas until grass is established. Erect temporary signs and barriers as needed to prevent damage.
- G. Locate, protect and maintain existing and/or newly installed irrigation system during lawn work operations. Repair irrigation system components damaged during lawn work operations, at Contractor's expense.
- H. Provide necessary hose and watering equipment as required for lawn maintenance.
- I. When specified - All turf areas shall be sodded, if turf small areas of restoration are required, all seeding must be approved by the Landscape Architect.

1.07 WARRANTY

- A. Warranty Period: Warrant that grasses shall be in a healthy and flourishing condition of active growth at the end of the next growing season after the date of Final Completion.
- B. Conditions: Established turf that is free of dead or dying patches and shows vigorous growth of foliage of normal density, size, and color.
- C. Delays: Delays in completion of planting operations which extend the planting into more than one planting season shall extend the Warranty period accordingly.

PART 2 - PRODUCTS

2.01 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.
- B. Timing of the seeding is determined by the date; see 1.8 A. in this section for details. If seeding is to be split because of time of planting, multiply each of the following percentage by 2 for the proper mix at each seeding.
- C. Grass Seed Mix: Proprietary seed mix as follows: see seed schedule 3.15 at the end of this section.

2.02 TURFGRASS SOD

- A. Turfgrass Sod: Approved source, complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable 12 month old (minimum) established growth sod with of uniform density, color, and texture, weed free, strongly rooted, and capable of vigorous growth and development when planted.
 - 1. Client to inspect prior to harvesting
 - 2. Sod is to be net free
- B. Grass Seed Mix - Seed mix as follows: see seed schedule 3.15 at the end of this section.
 - 1. Full Sun: Endophyte enhanced, Turf Type Tall Fescue, a minimum of two cultivars.

2.03 PLANTING SOIL MIX

- A. Topsoil per ODOT Item 653 and free of deleterious materials.
 - 1. Mix topsoil with soil amendments and fertilizers as indicated in Soils Test Reports.

2.04 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.
- B. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
 - 1. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

2.05 PESTICIDES

- A. General: Pesticide, registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides unless authorized in writing by authorities having jurisdiction.
- B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
- C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

2.06 SINGLE-SIDED STRAW BLANKETS

- A. Single-Sided straw blankets shall be manufactured by SRW products, North American Green DS75, American Excelsior or approved equal. Include

manufacturer's recommended 11 gauge staples, 6 inches long. 100% Straw fiber that is weed-free straw shall be used.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.
 - 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 planting area. Remove and properly dispose of these materials.
 - 2. Suspend planting 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 or which is 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.
- D. Begin lawn installation only after finished grading has been approved in writing by Owner's Representative. Examine lawn areas to verify they are ready to receive work under this section. Start of installation constitutes acceptance of work by other trades.
- E. Verify limits of each type of lawn material with the Landscape Architect in the field before starting lawn work.

3.02 PROTECTION

- A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
 - 1. 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.

3.03 PREPARATION OF SUBGRADE

- A. Prepare the subgrade with a Rockhound landscape rake attachment to a rubber-tired or track skid steer to remove all foreign materials/rocks, level the ground and prepare for topsoil placement.

3.04 PLACEMENT OF PLANTING SOIL MIX

- A. Place 4" of NEW topsoil per ODOT Item No. 653.

3.05 APPLICATION OF FERTILIZER

- A. Fertilizers and conditioners shall be applied at the following rates:
 - 1. Fertilizer – per manufacturer’s recommendations and application rates.
- B. Mixing with planting soil:
 - 1. Fertilizer and conditioners shall be spread over the entire lawn areas at the application rates indicated above.
 - 2. Materials shall be uniformly and thoroughly mixed into the top 4” of topsoil by discing, rototilling, or other approved method.

3.06 FINISHING GRADING

- A. Fine grade the topsoil to match the previous grades without causing ponding.
- A. Finish grade where sod is to be installed will be provided by others to within 0.05-foot of final grade. Contractor installing sod to only provide final soil preparation prior to installation of sod.

3.07 SEEDING

- A. Seed shall be broadcast by means of an approved mechanical spreader, to give uniform application at the following rates:
 - 1. Rate: 10 lbs/1,000 square foot.
- B. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
 - 1. Do not use wet seed or seed that is moldy or otherwise damaged.
 - 2. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucer.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Immediately protect all seeded areas with single-sided straw blankets installed and stapled according to manufacturer's written instructions.
- E. Provide a city approved door hanger to each property restored. The door hanger shall have the City of Lakewood logo and shall read:
 - 1. Your lawn area has been seeded and fertilized today and protected with a temporary straw blanket.
 - 2. Please do not walk on the seeded areas nor place any objects upon the areas.
 - 3. Please do not mow the area until the straw blanket has been removed.
 - 4. In order to establish quicker growth, daily watering is required for 15 minutes with a sprinkler if rain is not forecasted. Weather depending, the Contractor will water the areas with 4 watering applications over the next 14 days.
 - 5. The Contractor will remove the straw blanket upon vegetative growth achieved.

3.08 SODDING

- A. Harvest, deliver, store, and lay sod within 12 hours of harvesting. Do not lay sod if dormant or if ground is frozen or muddy.
- B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to soil or sod during installation. Tamp and roll lightly to ensure contact with soil, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.
 - 1. Lay sod across slopes exceeding 1:3.
 - 2. Anchor sod on slopes exceeding 1:6 with steel staples spaced as recommended by sod manufacturer but not less than two anchors per sod strip to prevent slippage.
- C. Saturate sod with fine water spray within two hours of planting. During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below sod.
- D. No heavy equipment to be allowed on the amended soil during installation of sod. All equipment for sodding and maintenance should be either track type or utilize high flotation turf type tires.

3.09 LAWN MAINTENANCE

- A. Initial maintenance of installed and accepted lawn plantings will be performed by the Landscape Contractor.
- B. Begin maintenance immediately after each area is seeded or sodded and continue until acceptable turf is established but for not less than the following periods:
 - 1. Seeded Lawns: 90 days from date upon completion of seeding operations.
 - a. When full maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.
 - 2. Sodded Lawns: 30 days from date of Substantial Completion.
 - 3. Maintain lawns until completion and acceptance of the entire project.
- C. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and re-mulch to produce a uniformly smooth lawn.
 - 1. Replant bare areas with same materials specified for lawns.
 - 2. When seedlings have reached a height of approximately 2", apply an additional 1/2 lb. actual nitrogen in the water soluble form of ammonium nitrate per 1000 sq. ft. A fertilizer with a 2:1:2 or 3:1:2 or similar ratio will be acceptable for this application.
 - 3. In areas where straw blankets have been disturbed by wind or maintenance operations, add new blankets. Anchor as required to prevent displacement.
- D. Initial Watering for seeded and sodded areas: Provide means necessary to water the newly planted seed. Thoroughly water all permanent seeded areas after the seed has germinated. Apply a total rate of 300 gallons of

water per 1,000 SF in at least 4 applications spread out over 14 days before 10 AM for each application. Watering methods shall not wash out seed or damage straw blankets. If rainfall of one-half inch or greater has occurred an application may be delayed.

- E. Continue to provide watering until 98% vegetation is achieved. See Section 3.12.
- F. Remove Straw blankets and pins and rake remaining straw as soon as top growth is tall enough to cut. Mow the grass upon removal of the straw blankets. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent 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:
 - 1. Mow grass 2.5 to 3 inches high.
- G. Lawn Post-fertilization: Apply fertilizer after initial mowing and when grass is dry.
 - 1. Use fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.
- G. If infestation of weeds or crabgrass develops, treat infestation by hand weeding or herbicidal control. Furnish and install weed chemical control as recommended by manufacturer. Herbicidal controls, including renovation before seeding or sodding operations, shall be acceptable to the Associate.

3.10 OBSERVATION AND ACCEPTANCE

- A. Beneficial Occupancy: the acknowledgement by the City Representative that the landscape work defined by plans and specifications is substantially complete. The City Representative shall provide the Contractor with a written punch list indicating items to be corrected or completed by the contractor within a two-week period from notification:
 - 1. Site review is requested by the Contractor when he/she believes that the landscape installation meets all the requirements of the plans and specifications.
- B. Final Acceptance: the date of final acceptance shall be when the City Representative verifies that all the items on the punch list have been completed and / or corrected by the Contractor.
 - 1. Warranty does not commence until acceptance by the Owner.

3.11 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

- B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.12 SATISFACTORY LAWNS

- A. Turf installations shall meet the following criteria as determined by the City Representative:
1. Seeded Lawns: Warranty growth and coverage of turf to the effect that a minimum of 98 percent of the area seeded shall be covered with specified planting at Final Acceptance with no bare spots greater than 3 square inches with such areas not comprising more than two percent of the total seeded lawn area.
 2. Satisfactory Sodded Lawns: At end of maintenance period, a healthy, well-rooted, even colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
 3. Unacceptable areas are all areas not showing proper catch, pests, and/or weed infestation at the end of the maintenance period and shall be re-seeded or re-sodded in accordance with these specifications.
- B. Use specified materials to reestablish turf that is deemed unsatisfactory and continue maintenance until turf is satisfactory.

3.13 CLEANUP AND PROTECTION

- A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.
- B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property and/or Right of Way.
- C. 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.
- D. Remove and dispose of straw blankets (and resulting straw) and pins after grass establishment period.

3.14 WATERING

- A. Water shall be obtained from fire hydrants **only with the expressed permission** of the Lakewood Division of Water (529-6820). **A permit is required (at no cost) to access the hydrants.** The Contractor must supply an adapter with a shut-off valve to convert from the Cleveland Standard threads on the Lakewood hydrants. **ONLY** the correct hydrant key shall be used. **THE HYDRANT SHALL BE OPERATED SLOWLY WHILE OPENING AND CLOSING!** Rapid hydrant operation will cause watermain breaks **THE REPAIR OF WHICH WILL BE THE CONTRACTOR'S TOTAL FINANCIAL RESPONSIBILITY.** The

City advises the Contractor to utilize his own water supply equipment, such as tank trucks, and to avoid using the hydrants.

3.15 SEED MIXTURES SCHEDULES

A. Sod and Seed Mixtures: Provide certified grass-seed blends or mixes as follows and per ODOT Item No. 659.09 "High Quality":

Name	Weight per Area lb/1,000 SF
Annual Ryegrass (<i>Lolium multiflorum</i>)	2
Perennial Ryegrass, turf type (<i>Lolium perenne</i>)	2
Creeping Red Fescue (<i>Festuca rubra</i>)	3
Kentucky Bluegrass 85/80 (<i>Poa pratensis</i>)	3

Noxious weeds and weed seed are prohibited.

PART 4 – PAYMENT

4.1 METHOD OF MEASUREMENT

A. The City of Lakewood will measure and pay for landscape repair (grass seed or sod) by the actual square yards installed. Payment for these items will be considered payment in full for all excavation, rockhounding, grading, topsoil, grass seed, straw blankets, pesticides, watering any additional repairs & follow-up fertilization and any other items necessary to ensure a complete landscape repair and established growth free of weeds and pests.

4.2 BASIS OF PAYMENT

A. The City will pay for accepted quantities at the contract prices as follows.

<u>Description</u>	<u>Unit</u>
Landscape Repair, Grass Seed	S.Y.
Landscape Repair, Sod	S.Y.

If a payment item for this work is not listed on the bid form then the work is incidental to the contract and is intended for site restoration required from the Contractor work disturbing landscaped areas.

END OF SECTION LS 659