

SECTION 329200

SURFACE PREPARATION AND SEEDING

PART 1 GENERAL

1.01 DESCRIPTION

- A. The Work required under this Section consists of all placements of topsoil, fine grading, raking, disking and preparation of seedbeds, placement of soil amendments, mulch, seed and/or nursery sod for permanent seeding and related items necessary to repair or replace damaged turf on all surfaces disturbed during the performance of the Work except for those areas to receive rip rap armament.

1.02 QUALITY ASSURANCE

- A. Inspection: Furnish tagged seed materials or sod certification to the site for approval by Owner.
- B. Furnish seed materials certified by State or Federal Department of Agriculture to be free from hazardous insects or apparent disease.

1.03 SUBMITTALS

- A. Certificate of inspection of seed, lime, fertilizer and other plant materials by State or Federal authorities.

1.04 PRODUCT HANDLING, DELIVER AND STORAGE

- A. Delivery
 - 1. Deliver fertilizer to site in original unopened containers bearing manufacturer's guaranteed chemical analysis, name, trade name, trademark, and conformance with State Laws.
 - 2. Notify Owner of delivery schedule in advance so material may be inspected upon arrival at job site.
 - 3. Remove unacceptable material immediately from job site.

PART 2 PRODUCTS

2.01 TOPSOIL

- A. Obtained on-site or brought in from an off-site source for lawn operations shall be:
 - 1. Fertile, friable, natural loam containing a liberal amount of humus.
 - 2. Free of admixtures and subsoil.
 - 3. Free of Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.
 - 4. Free of stone, larger than 1 inch in diameter, sticks and other extraneous matter.
 - 5. Shall not be used for planting operations while in a frozen or muddy condition.
 - 6. Free of pest, pest larvae, and matter toxic to plant.

2.02 SOIL CONDITIONERS

- A. Fertilizer
 - 1. Conform to State fertilizer laws. Granular or pelleted in form and furnished in the manufacturer's labeled bags.
 - 2. Available nutrients, percent by total weight:

Sod	Turf-type Tall Fescue Sod
Turf Fertilizer	Granular, non-burning product composed of not less than 50% organic slow acting, guaranteed analysis professional fertilizer. Type A: Starter Fertilizer containing 20% nitrogen, 26% phosphorus and 6% potash by weight or similar approved composition.

	Type B: Top dressing fertilizer containing 31% nitrogen, 3% phosphorus and 10% potash by weight or similar approved composition.
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B. Mulch

1. Threshed straw of cereal grain such as oats, wheat, barley, rye, or similar species.
2. Materials that contain objectionable weed seeds or other species that might be detrimental to the plant being established will not be acceptable.

C. Water

1. Free of substances harmful to growth of plants.

D. Lime

1. Agricultural limestone, natural dolomitic limestone containing not less than 85% of total carbonates with a minimum of 40% magnesium carbonates, ground so that not less than 25% passes a 100-mesh sieve. Calcareous limestone shall contain not less than 50% calcium oxide, and dolomitic limestone shall not contain less than 40% magnesium oxide.
2. Lime shall be tilled to a depth of at least 2" by plowing, disking, harrowing or other approved operation until the soil achieves a pH of 6.2 to 7.4.
3. Contractor shall be responsible for having samples tested for pH and provided to Owner prior to placing and distributing lime.

2.03 PERMANENT SEED

A. New grass on the sides facing SE8th Street and Gum Street should match the existing grass closely.

B. Mixture by Weight per Acre

Kentucky Blue Grass	12.5 lbs.
Tall Fescue (Kentucky 31) or approved equal	87.5lbs.
Red Top	4 lbs
White Clover	6 lbs.

Domestic Perennial Rye Grass

15 lbs.
125 lbs.

- B. The above choices are subject to availability. Any substitutions to the above selections shall not be made without first consulting with the Owner.
- C. Pure Live Seed
 - 1. The following shall be used to determine the amount of commercial seed required to provide in each kind of seed the specified quantity of pure live seed.

$$\frac{\text{Pure Live Seed} \times 100 \times 100}{\text{Purity} \times \text{Germination}} = \text{Pounds Commercial Seed Required}$$

2.05 SOD

- A. Sod shall be fibrous nursery grade with Kentucky bluegrass, fescue or other approved grass plants that are living, well rooted and growing suitable for the environment and climate for the location it is to be planted at and be obtained from a nursery.
- B. Sod shall be cut to a height of 2 to 3 inches. Edges shall be cut cleanly, to a minimum thickness of $\frac{3}{4}$ inches or more. Sod strips shall be of uniform width of no less than 16 inches and no less than 2 foot in length.

Part 3 EXECUTION

3.01 INSPECTION

- A. Examine areas to receive soil preparation to assure work of other trades has been completed.
- B. Do not proceed with soil preparation until unsatisfactory conditions are corrected.
- C. All areas disturbed during construction and/or areas shown on the Drawings shall be reseeded.

3.02 INSTALLATION

- A. Replace Topsoil

1. All areas behind aggregate shoulders, ditches and general lawn areas shall be covered with a minimum of 4" of topsoil.

B. Tillage

1. After the areas required to be seeded have been brought up to final grade, the surface shall be tilled to a depth of at least 4" by plowing, disking, harrowing or other approved operations until the condition of the soil is acceptable.
2. Add limestone at the rate of 3,000 pounds per acre to bring pH in the range between 6.2 to 7.4.
3. Apply fertilizer at 600 lbs. per acre.
4. Till limestone and fertilizer into the upper two inches of the soil by raking or harrowing.
5. Perform the work only during the period when, in the opinion of the Owner, beneficial results are likely to be obtained.

3.03 CLEANUP AND PREPARATION FOR SEEDING

- A. Remove debris, rock greater than 1 inch diameter, and excess materials from surface to receive seeding.

3.04 APPLICATION OF SEED

- A. Seed shall be drilled in or mixed with water but shall not be covered more than 1/2". The mixture may be sprayed over the area to be seeded by hydro-seeder. If seed is applied with a mechanical seeder, the seed shall be placed in two applications at approximately 1/2 the total rate per application, with the second application being made at approximately 90 degrees to the first application.
- B. Apply seed mixture at 125lbs./acre.
- C. Spread mulch uniformly at 1½ ton per acre. Mulch material shall be punched into the soil that it is partially covered.

3.05 TURF ESTABLISHMENT – PERMANENT SEEDING

- A. Watering: The owner (Evansville Fire Department) will keep soil moist during seed germination period as by written watering instructions of the contractor.
- B. Replant and Repair: Reseed and mulch spots having less than 250 plants per square foot uniformly distributed and where no gaps larger than 4-inches in diameter occur anywhere in the turf area.

3.06 TURF ESTABLISHMENT-SOD

- A. Apply fertilizer at 400 lbs. to 450 lbs. per acre for areas to receive sod.
- B. Sod strips shall be laid in longitudinal direction and fitted to the surrounding grade and fixed objects. The sod strips shall be butted together closely to avoid open joints. Overlapping of joints is prohibited.
- C. After laying sod, water initially and roll to insure contact with underlying soil.
- D. Sod placed in swales with grades steeper than 1% and on slopes 3:1 and steeper shall be pegged, spaced not over 2 feet apart in each strip.
- E. Watering: Contractor will keep soil moist and sod watered during growing season at least once per day of the first week, once every second day of the second week, once every third day of the third week, and once a week thereafter.
- F. Replant and Repair: Replace sod having less than 250 plants per square foot uniformly distributed and where no gaps larger than 4-inches in diameter occur anywhere in the turf area..

3.07 CLEANUP

- A. Remove trash and excess materials from project site.

3.08 MAINTENANCE

- A. The Contractor shall repair any erosion, reseed and re-fertilize any bare and eroded areas until a good stand of grass is achieved.

- B. Maintain for 12 months from date of Substantial Completion. Coordinate activities for extended maintenance period with the Owner.
- C. Provide a uniform stand of turf by watering, mowing, and maintaining turf areas until written acceptance from Owner. Reseed areas with turf-type tall fescue seed mix to match sod, if required.
- D. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
- E. Owner to provide watering and keep a watering log. Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawn uniformly moist to a depth of 100 mm (4 inches).
 - 1. Schedule watering to prevent wilting. Avoid puddling, erosion, and displacement of seed or mulch by watering operations. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
 - 2. Water lawn at a minimum rate of 25 mm (1 inch) per week.
 - 3. Owner shall be responsible for watering equipment.
- F. Owner to mow lawn as soon as top growth is tall enough to cut. Owner to coordinate with contractor when it is feasible to check for growth and coverage progress. Owner to keep a mowing log. 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 mowing. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowing to maintain the following grass height.
 - 1. Mow grass 65 to 90 mm (2-1/2 to 3-1/2 inches) high.
- G. Lawn Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
- H. Use fertilizer that will provide actual nitrogen of at least 0.45 kg/92.9 sq. m (1 lb / 1000 sq. ft.) to lawn area.

- I. Applications of herbicides for weed control in accordance with manufacturer's instructions and with the Owner's full knowledge and permission. Supply Owner immediately with labels for products used. Remedy damage from use of herbicides.
- J. Application of insecticides for weed control in accordance with manufacturer's instructions and with the Owner's full knowledge and permission. Supply Owner immediately with labels for products used. Remedy damage from use of insecticides.
- K. Applications of fungicides for disease control in accordance with manufacturer's instructions and with the Owner's full knowledge and permission. Supply Owner immediately with labels for products used. Remedy damage from use of fungicides.
- L. Schedule:

Late February: Apply approved Type B fertilizer in mix ratio of 20-5-10 or 12-4-18 at rate of $\frac{3}{4}$ lb. of actual nitrogen / 1000 SF.

Mid-Late March: Apply crabgrass preventer and broadleaf weedkiller. Meet local ordinance requirements for public notification.

Late May: Apply second application of crabgrass preventer and/or broadleaf weedkiller 6-8 weeks after first application.

July-September: Maintain watering as needed, but only in early morning to keep diseases under control. Monitor and control for fungus (brown patch) or other disease and insects.

Mid-September- Mid-October: Overseed at rate of 4-6 lbs. / 1000 SP, if needed.

END OF SECTION