

ITEM 804

SODDING AND SEEDING

PART 1 GENERAL

1.01 This item shall govern for the furnishing and planting of Bermuda, or other acceptable grass sod on the areas designated on the plans or as directed by the Landscape Architect. All planting shall be completed as soon as practical to avoid erosion of topsoil and graded areas in advance of acceptance of the work.

1.02 **SECTION INCLUDES:**

The Contractor shall furnish all labor, materials, equipment and incidentals as shown and specified to provide sodded and seeded lawn areas as shown on plans.

- A. Soil shall be prepared to receive sod or seed.
- B. Sodding indicated areas.
- C. Hydromulch
- D. Sowing of seeds over indicated areas.
- E. Maintenance requirements.

1.03 **RELATED SECTIONS:**

Section 102:	Obliterating Abandoned Streets
Section 107:	Embankment

1.04 **QUALITY ASSURANCE:**

- A. The Contractor shall comply with Division 2 "Site Work".
- B. The Contractor shall comply with the Texas Seed Law including the labeling requirements for showing purity, germination, name and type of seed.
- C. Statement about Sod.

1.05 **SUBMITTALS:**

- A. The Contractor shall submit labeling showing purity, germination, name and type of seed.

1.06 **DELIVERY, STORAGE AND HANDLING:**

The Contractor shall cut, deliver and install sod within a twenty four (24) hour period.

- A. The Contractor shall not harvest or transport sod when moisture content may adversely affect sod survival.
- B. The Contractor shall protect sod from sun, wind and dehydration prior to installation.
- C. The Contractor shall not tear, stretch or drop sod during handling and installation.

1.07 **PROJECT CONDITIONS:**

- A. Work Notification: The Contractor shall notify the Landscape Architect seven (7) working days prior to start of sodding operations.
- B. The Contractor shall protect existing utilities, paving, walks and other facilities from damage caused by sodding or seeding operations.
- C. The Contractor shall perform sodding or seeding work only after planting and other work affecting ground surface has been completed.
- D. The Contractor shall restrict traffic from lawn areas until grass is established. Erect signs and barriers as required.
- E. The Contractor shall provide hose and lawn watering equipment as required.

1.08 WARRANTY:

The Contractor shall provide a uniform stand of grass by watering, mowing and maintaining lawn areas until final acceptance. The Contractor shall resod or reseed areas, with specified materials, which fail to provide a uniform stand of grass until all affected areas are accepted by the Client Representative. Areas seeded with native grasses shall be watered and maintained until final acceptance.

PART 2 PRODUCTS

2.01 MATERIALS – SOD

- A. Sod areas provided as called for on plans and shall be healthy living grass with adhering soil of uniform thickness obtained from approved sources where the sod is heavy and thickly matted. The presence of nut grass (Cyperus rotundus), Bermuda grass, Buffalo Grass or other objectionable grass or weeds or other material which might be detrimental to the development of turf will be cause for rejection of sod.

ACCEPTABLE GRASS

1. Prairie Buffalo Grass – Buchloe Dactyloides “Prairie”
2. 609 Buffalo Grass - Buchloe Dactyloides “609”
3. Bermuda Grass – Cynodon Dactylon “Tifway 419”
4. Raleigh St. Augustine

- B. Existing sod areas damaged by construction prior to receiving replacement sod and hydromulch shall be thoroughly disc harrowed to a depth of at least four (4) inches then smoothed with a light drag to establish seed bed conditions. Harrow operations will be carried out when the soil is in a light moist condition. Not too wet or too dry so that the harrowed soil will not be overly lumpy in a poor seed bed.
- C. The Contractor shall provide well-rooted, healthy sod, free of diseases, nematodes and soil borne insects. Provide sod uniform in color, leaf texture, density and free of weeds, undesirable grasses, stones, roots, thatch and extraneous material; viable and capable of growth and development when planted.

The Contractor shall furnish sod machine stripped in square pads or strips not more than 3'-0" long; uniformly 1" to 1-1/2" thick with clean cut edges. Mow sod before stripping.

2.02 MATERIALS - SEEDING:

- A. Seeded areas of Canada Wild Rye provided as called for on plans shall be healthy living grass with adhering soil of uniform thickness obtained from approved sources where the sod is heavy and thickly matted. The presence of nut grass (*Cyperus rotundus*), Bermuda grass or other objectionable grass or weeds or other material which might be detrimental to the development of turf will be cause for rejection of sod.
- B. Seeded areas of Lometa Indiangrass, Premier Sideoats grama, Green spangletop, Buffalo Grass, Little Bluestem, Blue grama grass, Elymus Canadensis provided as called for on plans shall be healthy living grass with adhering soil of uniform thickness obtained from approved sources where the sod is heavy and thickly matted. The presence of nut grass (*Cyperus rotundus*), Bermuda grass or other objectionable grass or weeds or other material, which might be detrimental to the development of turf, will be cause for rejection of sod.
- C. Seed:

Seed furnished shall be of the previous season's crop for the date of the project. Each variety of seed shall be furnished and delivered in separate bags or containers. A sample of each variety shall be furnished for analysis and testing when directed by the Landscape Architect. The seed planted shall be of the type specified below and shall equal or exceed the following percentages for purity and germination or an equivalent amount pure live seed. Native Wildflower Seed and Native Grass Seed shall be Drill Seeded.

Native American Seed
N. 16th St.
Junction, Texas 76849
www.seedsources.com

NATIVE GRASS SEED AS FOLLOWS:

- ALT 1. Native Sun Turf 3.2 lbs/1000 feet
- ALT 2. Bermuda

ALT 3. Description	APPLICATION RATES	
	Lbs/1000 feet	Kg/100 meter
Lometa Indiangrass	0.1	0.05
PremierSideoats grama	0.2	0.10
Green spangletop	0.1	0.05
Buffalo Grass	0.2	0.10
Little Bluestem	0.2	0.10
Blue grama grass	0.2	0.10
Elymus Canadensis	0.3	0.15

- D. Existing sod areas damaged by construction, prior to receiving replacement seeding should be thoroughly disc harrowed to a depth of at least four (4) inches then smoothed with a light drag to establish seed bed conditions. Harrow operations will be carried out when the soil is in a light moist condition. Not too wet or too dry so that the harrowed soil will not be overly lumpy in a poor seed bed.
- E. Fertilizers:

Fertilizers shall be Carefree, Vertagreen, or Landscape Architect approved equal, organic fertilizer containing the following minimum percentages of available plant food by weight: 20-10-10 or 16-8-8 Nitrogen-Phosphorus. Mixed Nitrogen, not less than 50% from organic source. Inorganic chemical nitrogen shall not be derived from the sodium form of nitrate or from the ammonia nitrate, It shall be delivered to the site in unopened

containers, each bearing the manufacturer's guaranteed analysis. Any fertilizer which becomes caked or otherwise damaged, making it unsuitable for use, will not be accepted.

In the event it is necessary to substitute a fertilizer of a different analysis, it shall be a palliated or granulated fertilizer with a lower concentration, but the total amount of nutrients furnished and applied per acre shall equal or exceed that specified for each nutrient.

F. Water:

Water will be free of substances harmful to sod growth. Hoses or other methods of transportation shall be furnished by the Contractor.

G. Herbicide:

Herbicide used shall be an easy to apply, effective in a short term, chemical agent to inhibit or destroy weed growth, while harmless to seed and grass being implanted.

Herbicide shall be consistent with use over aquifer.

2.03 MATERIALS – HYDRO MULCHING:

- A. Wood Cellulose Fiber Mulch: Wood cellulose fiber mulch shall be natural cellulose fiber mulch produced from grinding clean, whole wood chips, or fiber produced from ground newsprint with a labeled ash content not to exceed 7%. The mulch shall be designed for use in conventional mechanical planting, hydraulic planting of seed or hydraulic mulching of grass seed, either alone or with fertilizer and other additives. The mulch shall be such that when applied, the material shall form a strong, moisture-retaining mat without the need of an asphalt binder.

The mulch material will also be dyed with a green color to assist in determining coverage and to provide an immediate pleasing appearance. The wood cellulose fiber is also required to be dispersed rapidly in water to form a homogeneous slurry and remain in such state when agitated in the hydraulic mulching unit with the specific materials.

- B. Fertilizer: Fertilizer shall have a chemical analysis of 15-15-15 with micro-nutrients and shall be water soluble. (The figures in the analysis represent the percent of nitrogen, phosphoric acid and potash nutrients respectively.) Fifty percent or greater of the Nitrogen required shall be in the form of Nitrate Nitrogen (NO₃). The remaining Nitrogen required may be in the form urea Nitrogen (CO(NH₂)₂).

In the event it is necessary to substitute a fertilizer of a different analysis, it shall be pelleted or granulated fertilizer with a lower concentration, but the total amount of nutrients furnished and applied per acre shall equal or exceed that specified for each nutrient.

The fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected.

- C. Tactifier and binder. Natural vegetable gum containing gelling and hardening agents that when mixed with water and properly cured, shall form an insoluble network.

- D. Water: Water will be free of substances harmful to sod growth. Hoses or other methods of transportation shall be furnished by the Contractor.

- E. Herbicide: Herbicide used shall be an easy to apply, effective in a short term, chemical agent to inhibit or destroy weed growth, while harmless to seed and grass being implanted.

Herbicide shall be consistent with use over aquifer.

PART 3 CONSTRUCTION:

3.01 INSPECTION:

The Contractor shall examine finished surfaces, grades, topsoil quality and depth. Do not start sodding work or Drill Seeding until unsatisfactory conditions are corrected.

A. PREPARATION:

Security of stored materials will be the sole responsibility of the Contractor at no additional expense to the Owner.

It is the Contractor's responsibility to verify the location of all utility lines, electric cables, sprinkling systems and conduits so that the proper precautions must be taken not to disturb or damage any subsurface improvements. Should obstructions be found, the Contractor will promptly notify the Inspector. Any damage caused by the Contractor shall be repaired by himself at no cost to the Owner. Any such repairs shall be subject to approval by the Inspector.

- B. The Contractor shall limit preparation to areas which will be immediately sodded or seeded.
- C. The Contractor shall loosen topsoil of lawn areas to minimum depth of 4". Remove stones over 1" in any dimension and sticks, roots, rubbish and extraneous matter.
- D. The Contractor shall grade lawn areas to smooth, free draining and even surface with a loose, uniformly fine texture. Roll in 2 directions, the second shall be done at right angles to the first, and rake; remove ridges and fill depressions as required to drain.
- E. The Contractor shall dampen dry soil prior to sodding, seeding or hydromulching.
- F. The Contractor shall restore prepared areas to specified condition if eroded, settled, or otherwise disturbed after fine grading and prior to sodding or seeding.

3.02 INSTALLATION:

A. Solid Sod

1. Sod shall be thoroughly watered immediately after planting and subsequently at such intervals to promote growth or as directed by the Inspector.
2. The fertilizer shall be applied uniformly over the sodded areas and in the manner directed. The fertilizer shall be dry and in good physical condition. Fertilizer that is powdered or caked will be rejected. Distribution of fertilizer for the particular item of work shall meet the approval of the Inspector. Unless otherwise indicated on the plans, fertilizer shall be applied uniformly at the average rate of 300 pounds per acre (0.03 kilograms per square meter) for all types of sod.
3. All planting shall be done between the average date of the last freeze in the spring and six weeks prior to the average date for the first freeze in the fall according to the US Weather Bureau for the area.

4. Where applicable, the shoulders, slopes, and ditches shall be smoothed after planting has been completed and shaped to conform to the cross-section previously provided and existing at the time sodding operations were begun. Any excess dirt from the planting operation shall be spread uniformly over adjacent areas or disposed of as directed by the Inspector so that the completed surfaces will present a sightly appearance.
5. At locations shown on plans or where directed by the Inspector, sod blocks shall be carefully placed on the prepared areas. The fertilizer shall then be applied and thoroughly watered. When sufficiently dry, the sodded area shall be rolled or tamped to form a thoroughly compacted, solid mat. Any voids left in the block shall be filled with additional sod and tamped.
6. It is the intent of this specification that all sodding be placed and watered twice a week, unless intervening rains make watering unnecessary. Watering shall be required for at least thirty (30) days after planting to establish growth or until acceptance of the work by the City. If the season is inappropriate, the Inspector may require that the sodding operations be advanced or retarded as may seem advisable. All areas shall be covered with live sod before final acceptance. Any blocks which show no sign of life shall be replaced with live sod before the work shall be measured for payment.
7. Where rolling is specified by following sub-articles, the roller shall be a light corrugated drum roller.

Residential area or commercial area:

Wood Cellulose Fiber Mulch – 2000 lb./acre

Fertilizer – 400 lb./acre

Bermuda – 1.5lb./1000 sq. ft.

Annual Rye grass (Oct. – March 15) – 20 lbs. Per 1000 sq. ft.

Water and binder to be added according to manufacturer's recommendations.

B. Hydromulch

1. The contractor shall notify the Inspector not less than 48 hours in advance of any seeding operation and shall not begin the work until areas prepared or designated for seeding have been approved.
2. Before placement of hydro mulch, all areas shall be cultivated to a depth of 3 inches (76 mm) unless otherwise specified or ordered by the City Inspector. Cultivation of the soil may be done by disc, spring tooth harrow, rototiler, or similar equipment. This operation shall be done at right angles to the natural flow of water on the slopes.
3. The area shall then be rolled in two directions; the second shall be done at right angles to the first rolling.
4. Rake the area to make it smooth and olive. Add soil where necessary or as directed by the Inspector.
5. The finished grade shall be 1 inch (25mm) below all curbs, sidewalks, and/or other appurtenances.
6. Apply fertilizer at the rate and mixture specified. The fertilizer shall be applied by an approved hand or mechanical method.
7. Roll the area in one direction.
8. Slurry to be sprayed evenly in two intersecting directions with a hydraulic seeder.
9. Erect a barrier of staked and strings, and post warning signs where necessary, or as directed by the Inspector.
10. Apply water as required to keep the mulch damp at all times throughout germination and initial growth period as determined by the Inspector.
11. Upon completion, all excess material shall be removed and disposed of off the project site at contractor's expense.
12. Slurry: The slurry will be mixed and spread uniformly over the area at the following rate:

C. Drill Seed

Method of application for Wildflower Seed will be by drill seeding.

D. Hand Sown Seed

1. The Contractor shall notify the Inspector not less than 48 hours in advance of any seeding operation and shall not begin the work until areas prepared or designated for seeding have been approved.
2. Existing topsoil that shall be stockpiled shall be reapplied and shall be prepared as called for in 3.02 Preparation in this specification.
3. Grass Seed shall be mixed with sand and applied evenly over entire areas shown on plans and then lightly raked so that the seed is covered by about an eighth (1/8) of an inch of topsoil. Straw mat shall be placed over top of seed bed and installed as per Civil Engineer's plans and specifications.

3.04 **MAINTENANCE:**

A. The Contractor shall maintain sodded, seeded or Hydromulched lawns until completion and acceptance of the entire project.

B. The contractor shall maintain hand sown lawn areas, including watering, spot weeding, mowing, application of herbicides, fungicides, insecticides and resodding until a full, uniform stand of grass free of weed, undesirable grass species, disease and insects is achieved and accepted by the Landscape Architect.

1. The Contractor shall water sod hydromulch and hand sown areas thoroughly every 2 to 3 days, as required to establish proper rooting and growth.
2. The Contractor shall repair, rework and resod all areas that have washed out or are eroded. Replace undesirable or dead areas with new sod or apply hydromulch.
3. The Contractor shall mow lawn areas as soon as lawn top growth reaches a 3" height. Cut back to 2" height. Repeat mowing as required to maintain specified height. Not more than 40% of grass leaf shall be removed at any single mowing.

C. Guarantee and lawn established period

The guarantee and lawn established period shall begin immediately after the completion to the planting and shall start with the Provisional Acceptance and end with the Final Acceptance.

1. Provisional Acceptance

Upon completion of sodding, hydromulching and hand sowing and written request of Contractor, the Engineer will inspect all the work for provisional acceptance.

2. Guarantee period

The guarantee period shall begin upon completion of the provisional acceptance. All plant materials shall be guaranteed by the Contractor for a period of thirty (30) days from the date of provisional acceptance, to be in good, healthy, and nourished condition. The exceptions are damages resulting from neglect by the Owner, abuse or damage by others, or unusual phenomena or incidents which are beyond the Contractor's control.

During the lawn establishment period, it shall be the Contractor's responsibility to ensure the continuing healthy growth. This care shall include labor, water and material necessary to keep the project in a presentable condition, including but not limited to removal of litter, mowing, trimming, removal of grass clippings, edging, fertilization, insecticide and fungicide applications, weed control, and repair and reseeding any and all damaged areas.

Water application shall be accomplished each week from March through October. An even application of one (1) inch minimum of water shall be required over all lawn areas per week. The rate and frequency of water application may be changed as directed by the Inspector, depending on weather and soil conditions.

3. Replacement

The Contractor shall replace, without cost to the Owner, and as soon as weather conditions permit, all dead grassed areas not in a vigorous, thriving condition, as determined by the Landscape Architect during and at the end of the guarantee period.

4. Final inspection and acceptance

At the end of the guarantee period and upon written request of the Contractor, the Engineer will inspect all guaranteed work for final acceptance. The written request shall be submitted to the Owner ten (10) days prior to the anticipated date of inspection.

Acceptance of seeded lawns as herein specified shall be based on a uniform stand of grass and a uniform grade at the time of final inspection. Areas of 2 square feet or more that are bare or have a poor stand of grass and areas not having a uniform grade for any cause before final inspection shall be regraded and resodded or reseeded as specified at the Contractor's expense.

END OF SECTION