

**CITY OF FARGO SPECIFICATIONS
TURF ESTABLISHMENT**

**PART 1
DESCRIPTION OF WORK**

This work to be done under this section of the Specifications and the accompanying plans consists of establishing turf on boulevards, slopes, ditches, or other locations shown on the plans or as designated by the Engineer.

PART 2
MATERIAL

2.1. TOPSOIL

All topsoil shall meet the requirements specified in Section 2000 of these Specifications.

2.2. SEED

All seed shall be labeled in accordance with U. S. Department of Agriculture rules and regulations under the Federal Seed Act in effect on the date of the invitation to bids. Seed shall be furnished separately or in mixture in standard sealed containers. Damaged, wet, or moldy seed will not be accepted. All seed shall meet the minimum requirements for purity and germination. No purity or germination tolerance will be allowed. Weed seed shall not exceed 0.5% of the total mixture, and seed shall contain no noxious weed seed of the state from which seed is to be shipped.

Seed tags shall be provided with each bag of seed used on the project and shall be given to the Engineer. Seed certifications from seed supplier shall be provided upon request. Labels for seed shall contain the following:

1. Name and address of supplier
2. Lot number
3. Seed name and origin for each kind of seed
4. Percentages of purity and of germination for each kind of seed & percentage of weed seed content in the mixture.
5. Date of last test
6. Pounds of bulk seed for total mix in each bag

Seed mixtures shall conform to the following types:

A. Type A - Ditches and Side Slopes:

<u>Kind Of Seed</u>	<u>Percentage</u>		
	<u>by Weight</u>	<u>Purity</u>	<u>Germination</u>
Meadow Brome Grass	30%	85%	85%
Intermediate Wheatgrass	30%	90%	85%
Crested Wheatgrass	30%	90%	85%
Tetraploid Int. Perennial Ryegrass	10%	95%	85%

Rate of Seeding = 75 Pounds per Acre

Seed mixture shall contain one of the following companion crops at the specified application rate:

1. April 1 to June 15 seeding – 15 pounds/acre of Oats.
2. June 15 to August 15 seeding – 8 pounds/acre of Millet.
3. August 15 to December 1 seeding – 15 pounds/acre of Rye or Winter Wheat.

B. Type B - Parks, Boulevards, Private Property, Built-Up Areas:

<u>Kind Of Seed</u>	<u>Percentage</u>		
	<u>by Weight</u>	<u>Purity</u>	<u>Germination</u>
Kentucky Bluegrass	60%	90%	85%
Creeping Red Fescue	10%	90%	85%
Fine Leaf Perennial Ryegrass	30%	95%	90%

Percent by weight shall be plus or minus 5 % on all seed types.

Rate of Seeding = 220 Pounds Per Acre (5 Pounds Per 1,000 Sq. Ft.)

C. Type C - Other Applications:

See the Special Instructions for the seed mix design and application rate.

2.3. FERTILIZER

Fertilizer shall be a standard commercial grade product, free flowing and suitable for application with mechanical equipment, delivered in clean, sealed, moisture-proof & properly labeled containers bearing the name, trade name or trade mark and warranty of the producer. Fertilizers shall be recommended for grass, supplied separately or in mixtures. Fertilizer shall conform to all State and Federal regulations. All fertilizer shall contain slow release nitrogen in the form of inorganic chemicals amounting to at least 50% of the available nitrogen specified.

A. Type A & Type B Seeding:

Starter Fertilizer: Fertilizer shall be 12-24-12 at an application rate of 220 pounds per acre (5 pounds per 1,000 sq. Ft.).

Turf Fertilizer: Fertilizer shall be 24-24-4 at an application rate of 110 pounds per acre (2.5 pounds per 1,000 sq. Ft.).

B. Type C Seeding:

Fertilizer design and application rates will be as specified in the Special Instructions.

2.4. MULCH

A. *MULCHING – TYPE 1 (HYDRO MULCH)*

Hydro mulch shall be virgin wood fiber mulch for use in hydraulic planting, cooked cellulose fiber which shall have the property of dispersing readily in water and shall have no toxic effect when combined with seed or other materials. The mulch shall be treated with a tackifier to enhance mulch placement and adherence to the soil. A green colored dye which is non toxic to plant growth shall be used. Wood cellulose fiber shall be packaged in new, labeled containers, shall have an equilibrium air-dried moisture content of 12% plus or minus 3% at time of manufacture, and shall have a pH range of 3.5 to 5.0. No sawdust or byproduct mulch will be allowed. The homogenous slurry or mixture shall be capable of application with power spray equipment. Hydromulch shall be applied at a rate of 2,000 pounds per acre (45 pounds per 1,000 sq. Ft.).

B. *MULCHING – TYPE 2 (STRAW MULCH)*

Material for straw mulching shall be threshed stalks of native oats, wheat, barley or rye, and shall be weed free to prevent the introduction of noxious weeds as defined by the North Dakota Department of Agriculture. At least 50% of the mulch by weight shall be 10 inches or more in length. Musty, moldy, caked or otherwise low quality straw is not acceptable. Dry mulching material that breaks and does not bend is not acceptable. Hay or chopped cornstalks are not acceptable. Application rate is 2 tons per acre (90 pounds per 1,000 sq. Ft.).

2.5. WEED CONTROL

- A. Type A – Non-Selective Herbicide: Round-up, glyphosate or approved equal,
- B. Type B – Selective Herbicide: Trimec, 2,4-D or approved equal.

PART 3
CONSTRUCTION

3.1. PREPARATION OF AREAS TO BE SEEDED

Prior to or during grading and tillage operations, the ground surface shall be raked and cleared of all stumps, brush, sticks, roots, stones larger than 1/2 inch in diameter, concrete chunks, rebar, wire or other material that may hinder seeding and maintenance operations. Any accumulated material shall be disposed of by the Contractor at no additional cost to the City.

If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer, the Contractor shall repair such damage. This may include filling gullies, smoothing irregularities, and repairing other incidental damage.

Areas that may be weedy, un-worked, or packed hard, shall first have any grass and weeds cut & disposed. The seed bed shall be disked or cultivated to a minimum depth of 3". A harrow or cultipack shall be used so that the bed is firm and the seed can be placed at the proper depth. The seed bed shall be smooth and firm, and all lumps or clods exposed shall be broken up to an inch in diameter or less.

3.2. TOPSOIL PLACEMENT

Topsoil placement shall be in accordance with Section 2000 of these Specifications.

3.3 FERTILIZING

Starter Fertilizer: Either immediately prior to or after seeding, Starter Fertilizer conforming to the above requirements shall be applied at the rate specified above and raked into the soil.

Turf Fertilizer: When the grass has been evenly established to a height of 2", or eight weeks after the Starter Fertilizer application, whichever occurs sooner, Turf Fertilizer conforming to the above requirements shall be applied at the rate specified above. Contractor shall water the turf immediately after application of Turf Fertilizer.

3.4. PLANTING SEED

Prior to planting of the seed, fertilizer shall be applied at the specified rate & shall be incorporated into the soil to a minimum depth of two inches. All seeding shall be done when the ground is open, not frozen or covered with snow, except as otherwise directed in writing by the Engineer. Seed shall be mechanically sown using approved equipment. Application rates shall be checked periodically using approved methods. When drill seeding, provisions shall be made to assure overlap. If inspection shows strips have been missed or skipped, these areas will be reseeded at no additional cost. When delays in operation or unfavorable weather conditions indicate that seeding will not have satisfactory results, the Engineer will stop the work.

Only in areas where drill seeding equipment is unable to perform the work required, broadcast seeding shall be allowed at a 20% increase in application rate. Mechanical spreaders, landscape seeders, fertilizer spreaders, or other mechanical spreading equipment may be used. The area shall be raked or dragged after seed placement to the satisfaction of the Engineer prior to placement of mulch.

A. *BROADCAST SEEDING*

Seed shall be broadcast by approved sowing equipment or by hand for small areas or on extreme slopes. Seed shall be uniformly distributed with half the seed being sown with the sower moving in one direction, and the remaining half-sown at right angles to the first sowing. Seed shall be covered to an average depth of 1/2 inch by a harrow or approved device. Broadcast seeding will not be allowed in windy conditions.

B. *DRILL SEEDING*

Drill seeding shall be done with grass drills not more than 6 inches apart and shall be sown uniformly over the designated area. Seed shall be sown to an average depth of 1/2 inch.

C. *HYDROSEEDING*

Hydroseeding will be allowed only when specified. The seed, water and mulch (if specified) shall be combined and kept under constant agitation so that a slurry of seed, mulch (if required) and fertilizer and water can be applied hydraulically to the areas to be seed. The equipment used will provide sufficient agitation to insure a uniform mixture of the ingredients throughout the application of each given quantity of slurry mixture.

Uniform coverage and seeding ratios shall be obtained and spot checks of seed distribution may be made by random placing of paper plates on areas to be seeded. After seeding, comparison of actual count of seed on the plates will verify the uniformity and application rate of the seeding distribution. Hydroseeding will not be allowed after September 15th.

3.5. SEEDING SEASONS

All seedbed preparation and seeding shall be done between the dates of April 15th and July 1st or between the dates of August 15th and September 15th or the contract deadline, whichever occurs first.

Any planting done between the dates of July 1st and August 15th will be allowed only with prior written permission of the Engineer and will be at the Contractor's own risk. The addition of 10 pounds of oats per acre to the specified amount of seed shall be added at no additional cost to the city. If the seeding fails to produce a uniform growth the seeding shall be repeated until the required growth is achieved.

Dormant fall seeding will be allowed with approval from the Engineer. Typical times of dormant seeding are from late October to early November with the soil in a cool condition. No seed shall be sown on frozen ground.

3.6. MULCHING

A. MULCHING – TYPE 1 (HYDRO MULCH)

Hydro mulch shall be uniformly applied to cover the entire seedbed area up to 95%. The mulch shall permit the percolation of water to the underlying soil.

Mix specified fiber mulch with fiber-mulch manufacturer's recommended tackifier in water using equipment specifically designed for hydromulch application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

Hydraulic seeding equipment shall be capable of maintaining a continuous agitation so that a homogeneous mixture can be applied through a spray nozzle. The pump shall be capable of producing sufficient pressure to maintain a continuous, non-fluctuating spray

capable of reaching the extremities of the seeding area with the pump unit located on the roadbed and applying the slurry under pressure to the designated area. Sufficient hose shall be provided to reach areas not practical to seed from the nozzle unit situated on the roadbed.

The Contractor, at his own expense, shall clean all fixtures, buildings, sidewalks and other areas that may receive unwanted mulch spray.

B. MULCHING – TYPE 2 (STRAW MULCH)

Mulch shall be placed within 24 hours after the seeding has been completed. Mulching shall not be performed during periods of high winds. Mulch shall be applied uniformly over the seeded area by a mechanical blower that minimizes cutting or breaking of the material. Bales shall be broken up and loosened as they are fed into the blower to avoid placement of matted or unbroken lumps. The mulch shall be anchored by punching with a mulch tiller that anchors the mulch approximately 3 inches into the soil while leaving approximately 10% of the soil surface exposed. Excessive cover not anchored into the soil shall be removed by the Contractor at his own expense. Rutting of slopes during mulching process shall be immediately repaired by the Contractor.

3.7. WEED CONTROL

3.7.1. Regulations

A. General

Herbicide applications will be performed according to federal, state, and local regulations. Herbicide products shall be used consistent with their labeling. Herbicide applications will be pursued as a vegetation management tool when needed. All herbicide products, mixes and applications must be approved by the Engineer. Applicators must use extreme caution when applying herbicides near water, adjacent properties with crops that might be damaged, or other landscaped areas.

B. Herbicide Applications

The Contractor making the application is responsible for the purchase, storage, record keeping and disposal of herbicides. Herbicides will only be applied by qualified applicators, following herbicide labels and manufacturers recommendation for application rates. A qualified applicator is an individual who has been trained regarding the product and application method, and meets any federal, state, and local laws and regulations. This individual is required to hold a certified applicators license, or be under the direct supervision of a certified applicator. Supervisors of qualified applicators are required to hold a certified applicators license in the state of North Dakota.

C. Herbicide Reports

All herbicide applications will be reported to the Engineer using the Contractor's herbicide report. Reports will be submitted to the Engineer on a weekly basis. It is the herbicide Contractor's responsibility to maintain reports for review by the State Department of Agriculture.

3.7.2. Application

A. Type A – Non-Selective Herbicide

Shall be uniformly applied at the rate as labeled by the manufacturer prior to soil preparation to reduce organic materials, to areas requested and designated by the Engineer to control unwanted vegetation.

B. Type B – Selective Herbicide

Shall be uniformly applied at the rate as labeled by the manufacturer after seed germination during turf establishment to reduce broad leaf weeds to areas requested and designated by the Engineer to control unwanted vegetation.

3.8. CLEANUP

All areas shall be cleaned of debris that may hinder maintenance operations and all paved areas over which hauling operations were conducted shall be cleaned of soil or other material that may have been brought upon the surface.

3.9. MAINTENANCE & PROTECTION OF SEEDED AREA

The Contractor shall protect all seeded areas from traffic by placing warning signs or erecting barricades immediately after seeding is complete. Any damage that may occur prior to final acceptance by the Engineer shall be repaired to re-establish the conditions or grade of the soil prior to the damage and shall then be re-planted by the Contractor at no additional cost.

The Contractor shall repair erosion-damaged areas. Damaged areas shall be re-graded, seeded & mulched.

The Contractor shall control growth of weeds by applying herbicides in accordance with the manufacturer's instructions. Mowing shall be done by the Contractor at no cost to the city prior to final acceptance of seeding.

3.10. WATERING OF SEEDED AREA

Immediately upon completion of the seeding and mulching, the seeded areas shall be given sufficient watering to moisten the seedbed to a depth of 2 inches. Water shall be applied in a manner that provides uniform coverage and prevents erosion and damage to the final surface. The Contractor shall provide daily watering for the first five days and sufficient water to maintain surface moisture in the top 2 inches of the soil until such time as the grass (not cover crop) has been evenly established to a height of 2". After the Engineer determines the terms of the contract have been met with regard to watering, the Contractor shall notify adjacent residents/property owners of the transfer of watering responsibility, using Form G7 which is provided on the City's website.

PART 4
GUARANTEE, MEASUREMENT & PAYMENT

4.1. GUARANTEE

The guarantee shall cover the contract as to workmanship and material for a period of nine (9) months from the date of final acceptance and payment.

4.2. MEASUREMENT

Measurement will be done once to determine both seeding and mulching quantities by measuring the areas seeded. Overspray or over-application of mulch beyond seeded areas will not be paid. Refer to the bid sheet for the unit of measurement.

4.3. PAYMENT

4.3.1. SEEDING

Seeding will be paid for at the contract unit price, and shall be full compensation for preparing the earth bed, furnishing and applying both applications of fertilizer, furnishing and placing the seed, watering of the seedbed, and all labor, equipment, tools and incidentals necessary to complete the work in accordance with these Specifications.

50% of the seeding quantity will be paid at the completion of seeding. The remaining 50% will be paid when grass has been evenly established to a height of 2".

Contractors shall notify the Engineer prior to all seeding and/or fertilizer applications so an Engineer's representative may be present to collect seed tags and/or verify application rates. Failure to do so may result in reduced or non-payment for the work.

4.3.2. MULCH

All labor, equipment, tools, and incidentals necessary to place the mulch shall be included in the appropriate contract unit price.

A. *MULCHING – TYPE 1 (HYDRO MULCH)*

When hydro seeding with mulch is specified, the cost of the mulch shall be included in the contract unit price for hydro seeding. If hydro mulching is a separate bid item it will be paid for at the contract unit price.

B. *MULCHING – TYPE 2 (STRAW MULCH)*

Straw mulch when specified will be paid for at the contract unit price for the area covered by the mulch.

4.3.3. *WEED CONTROL (TYPE A & TYPE B)*

All labor, material, equipment, tools, and incidentals necessary to apply herbicides shall be included in the appropriate contract unit price.

4.3.4. *OTHER COSTS*

All other costs for work necessary to properly complete the work specified herein shall not be bid items; the costs shall be charged to other items unless a bid item is specifically included on the bid sheet.