

## Construction Specification for Direct Seeding

### Table of Contents

<b>TS 5.20.01</b>	<b>SCOPE .....</b>	<b>3</b>
<b>TS 5.20.02</b>	<b>REFERENCES .....</b>	<b>3</b>
<b>TS 5.20.03</b>	<b>DEFINITIONS – Not Used.....</b>	<b>3</b>
<b>TS 5.20.04</b>	<b>DESIGN AND SUBMISSION REQUIREMENTS.....</b>	<b>3</b>
<b>TS 5.20.05</b>	<b>MATERIALS.....</b>	<b>3</b>
TS 5.20.05.01	Growing Medium.....	3
TS 5.20.05.02	Seed .....	3
TS 5.20.05.02.01	Seed Mix for Upland Meadows .....	3
TS 5.20.05.02.02	Seed Mix for Steep Valley Slopes .....	4
TS 5.20.05.02.03	Seed Mix for Wildflower and Grass .....	4
TS 5.20.05.02.04	Seed Mix for Wild Flowers .....	6
TS 5.20.05.02.05	Seed Mix for Grass in Droughty Boulevards.....	6
TS 5.20.05.03	Water .....	6
TS 5.20.05.04	Hydromulch .....	6
TS 5.20.05.05	Asphalt Emulsion.....	6
TS 5.20.05.06	Mulch Blanket .....	7
TS 5.20.05.07	Fertilizer.....	7
<b>TS 5.20.06</b>	<b>EQUIPMENT – Not Used .....</b>	<b>7</b>
<b>TS 5.20.07</b>	<b>CONSTRUCTION .....</b>	<b>7</b>
TS 5.20.07.01	Workmanship.....	7
TS 5.20.07.02	Delivery and Storage .....	7
TS 5.20.07.03	Surface Preparation.....	7
TS 5.20.07.04	Application of Lime.....	7
TS 5.20.07.05	Seeding .....	7
TS 5.20.07.06	Cleanup.....	8
TS 5.20.07.07	Protection After Completion.....	8
TS 5.20.07.08	Maintenance.....	8
<b>TS 5.20.08</b>	<b>QUALITY ASSURANCE.....</b>	<b>9</b>
TS 5.20.08.01	Final Acceptance .....	9
<b>TS 5.20.09</b>	<b>MEASUREMENT FOR PAYMENT .....</b>	<b>9</b>
TS 5.20.09.01	Direct Seeding .....	9

---

<b>TS 5.20.10</b>	<b>BASIS OF PAYMENT .....</b>	<b>9</b>
TS 5.20.10.01	Direct Seeding – Item .....	9

---

## **TS 5.20.01                    SCOPE**

This specification covers the requirements for direct seeding.

## **TS 5.20.02                    REFERENCES**

This specification refers to the following standards, specifications or publications:

### **City of Toronto Standard Specifications**

TS 5.10                    Construction Specification for Growing Medium

## **TS 5.20.03                    DEFINITIONS – Not Used**

## **TS 5.20.04                    DESIGN AND SUBMISSION REQUIREMENTS**

Seeding shall be conducted by qualified contractors with over three years of experience in direct seeding and hydromulching. Qualifications including description of previous work and recommendations from owners of previous work performed by the seeding contractors are to be submitted to the Contract Administrator prior to commencing the work under this section.

Confirm optimum seed mix option, with the Contract Administrator, in writing before commencing the work in this section.

## **TS 5.20.05                    MATERIALS**

### **TS 5.20.05.01                Growing Medium**

All growing medium/topsoil shall be according to TS 5.10.

### **TS 5.20.05.02                Seed**

Seed shall meet the requirements of the *Seeds Act* for Canada, No. 1 Seed, and shall be guaranteed to be of this quality by the supplier. All quantity percentages indicate seed volume only. Seed mix options are listed below.

#### **TS 5.20.05.02.01          *Seed Mix for Upland Meadows***

- a) Nurse crop of oats or barley
- b) Nature's Upland Meadow Seed mixture as supplied by PICKSEED or approved equal containing the following species by percentage of volume:

**Table 1: Seed mixture for upland meadows**

Percentage of volume	Common name
15	Algonquin Alfalfa
5	Florex Red Clover
5	White Clover
10	Birdsfoot Trefoil
10	Sweet Clover
15	Creeping Red Fescue
8	Meadow Fescue
7	Tournament Hard Fescue
5	Highland Colonial Bentgrass
10	Nugget Kentucky Bluegrass
10	Fiesta Perennial Ryegrass

**TS 5.20.05.02.02      *Seed Mix for Steep Valley Slopes*****Table 2: Seed mixture for steep valley slopes**

Percentage of volume	Common name
25	Pickseed Perennial Rye – low grow
25	Pickseed Hard Fescue – Spartan
10	Yarrow
10	Arctic Poppy
20	Black-eyed Susan
10	Birdsfoot Trefoil with inoculant

**TS 5.20.05.02.03      *Seed Mix for Wildflower and Grass*****Table 3: 45% grass seed varieties**

Scientific name	Common name
Andropogon scoparium	Little Bluestem
Elmus canadensis	Prairie Wild Rye
Bouteloua curtipendula	Side Oats Grama
Festuca elatior	Meadow Fescue

**Table 4: 45% forb seed varieties**

<b>Scientific name</b>	<b>Common name</b>
Aster azureus	Sky Blue Aster
Aster laevis	Smooth Blue Aster
Aster ericoides	Heath Aster
Aster novae-angliae	New England Aster
Apocynum cannabinum	Indian Hemp
Echinacea purpurea	Purple Coneflower
Lespedeza capitata	Round-Headed Bush Clover
Ratibida pinnata	Gray-Headed Cornflower
Lupinus perennis	Perennial Lupine
Baptisia australis	Blue Wild indigo
Monarda fistulosa	Wild Bergamot
Monarda punctata	Spotted Horse Mint
Oenothera speciosa	White Evening Primrose
Oenothera fruticosa	Sundrops
Penstemon hirsutus	Hairy Penstemoa
Pycnanthemum virginianum	Mountain Mint
Liatris cylindracea	Dwarf Blazingstar
Liatris pycnostachia	Prairie Blazingstar
Verbina hastata	Blue Verbena
Verbina canadensis	Rose Verbena
Verbina rigida	Rigid Verbena

**Table 5: 10% annual seed varieties**

<b>Scientific name</b>	<b>Common name</b>
Coreopsis lanceolata	Lance-Leaved Coreopsis
Gaillardia aristata	Blanket Flower
Gaillardia pulchella	Indian Blanket
Oenothera biennis	Common Evening Primrose
Rubeckia hirta	Black-Eyed Susan
Chrysanthemum leucanthemum	Ox-Eye Daisy

---

**TS 5.20.05.02.04      *Seed Mix for Wild Flowers*****Table 6: Seed mixture for wild flowers**

Percentage of volume	Common name
5	Iceland Poppy
5	Yarrow
5	Black Eye Susan
5	Wild Bergamot
10	Prairie Blazing Star
10	Lance Leaf Coreopsis
10	Smooth Blue Aster
10	Blue Vervain
20	Lupine
20	Purple Coneflower

**TS 5.20.05.02.05      *Seed Mix for Grass in Droughty Boulevards***

Seed Mix is 100% Pickseed Futura Boulevard Mix or approved equal consisting of:

**Table 7: Seed mixture for grass in droughty boulevards**

Percentage of volume	Common name
40	Shortstop Tall Fescue
40	Mustang Tall Fescue
10	Bronco Kentucky Blue Grass
10	Low Gro Perennial Rye

**TS 5.20.05.03      *Water***

Water used for hydraulic mulching shall be free of any impurities which would inhibit germination or otherwise adversely affect growth.

**TS 5.20.05.04      *Hydromulch***

Oat or wheat mulch or an approved equivalent shall be used. All material must be dry and on being processed through a mulch blower shall form an evenly distributed mat.

**TS 5.20.05.05      *Asphalt Emulsion***

An asphalt emulsion is to be used as an adhesive with the mulching material and shall be a specifically refined petroleum asphalt which has been emulsified in water containing no petroleum solvents or any other components known to be toxic to plant life.

---

**TS 5.20.05.06                      Mulch Blanket**

Mulch blanket as manufactured by Erosion Control Blanket.com, Cookstown, ON 1-866-280-7327 may be used, or an approved equivalent.

**TS 5.20.05.07                      Fertilizer**

Fertilizer shall be commercially produced from an approved manufacturer, containing not less than 60 per cent urea formaldehyde with a 10-6-4 percentage by weight of nitrogen, phosphoric acid and potash, respectively.

**TS 5.20.06                              EQUIPMENT – Not Used**

**TS 5.20.07                              CONSTRUCTION**

**TS 5.20.07.01                      Workmanship**

Keep the site well drained and clean up any soil or debris spilled onto pavements immediately.

**TS 5.20.07.02                      Delivery and Storage**

Deliver seed, inoculant, fertilizer and lime in water proof bags to secured area on site. All containers shall be labeled and indicate weight, analysis and name of the manufacturer.

**TS 5.20.07.03                      Surface Preparation**

Place and prepare growing medium according to TS 5.10.

It is the Contractor's responsibility to assure that the seed content of the growing medium will not adversely affect the take or appearance of the new seeding. Prepare a stale seed bed by allowing the seeds in the growing medium to germinate and grow for a three-week period. Remove new growth by chemical or mechanical means. This will increase the success rate of the new seed by eliminating the visual presence of competitive plant material during the initial germination stages of the new seeding. Repeat this process before proceeding with the new seeding if necessary to eliminate competitive grass and forb crop and noxious weeds. Obtain Contract Administrators' approval of site and soil conditions which indicate elimination of other non-specified plant material before proceeding with seeding operations.

**TS 5.20.07.04                      Application of Lime**

Apply lime to bring the pH value of the soil within a level of 5.5 to 7.5.

Mix lime well into the top 50 mm layer of soil by means of a cultivator prior to fertilizer application.

**TS 5.20.07.05                      Seeding**

Prior to seeding application, scarify the surface with diamond harrow or by hand-raking to a depth of not greater than 20 mm.

Mix seed and fertilizer thoroughly and apply at the following rate:

- 
- Nurse Crop at 20 – 35 kg/ha
  - Upland Meadow Mixture at 40 – 50 kg/ha
  - Steep Valley Slopes Seed Mix at 50 kg/ha
  - Wildflower and Grass at 50 kg/ha

Fertilizer shall be of the type and quantity as indicated by soil analysis.

Apply only during calm weather and assure that enough moisture is available to ensure germination and growth.

Rake over soil by hand or mechanical means to assure seed is covered by soil.

Hydromulch application: Produce a uniform cover of hydromulch material applying 1700 kg /ha on level ground and 2200 kg/ha on slopes.

Mulch blanket alternative to hydromulch: Pin mulch blanket in place according to manufacturer's recommendations.

#### **TS 5.20.07.06 Cleanup**

Upon completion, all resulting debris is to be removed from the site.

#### **TS 5.20.07.07 Protection After Completion**

The Contractor is responsible for the protection of seeded areas until acceptance of work. Erect and maintain protective barriers and post signs. Remove protective barriers and post signs after acceptance.

Repair all damages resulting from erosion, improper protection or other causes.

#### **TS 5.20.07.08 Maintenance**

All seeded areas are to be maintained by the Contractor from completion of work until acceptance by the City. Maintenance of the seeded area is to consist of the following work by the Contractor:

- 1) Take all measures necessary to establish and maintain seeded areas in a healthy, vigorous growing condition, free of thin and bare patches and also free of noxious weeds.
- 2) If seeding occurs in spring or the summer months, the Contractor shall water the seeded areas three times a week for the first six weeks after installation and supply additional water as required at the unit price tendered. Apply water in sufficient quantities to ensure moisture penetration of 75 to 100 mm taking sufficient precautions to prevent washouts.
- 3) Fertilize seeded areas one month after seeding with an organic fertilizer. Spread evenly at a rate of 7.5 kg/100 m<sup>2</sup> and water thoroughly. Postpone fertilizing until next spring if application falls within a four-week period prior to the expected end of the growing season.
- 4) When applicable, the chop down the nurse crop just as it begins to seed.



- 
- 5) Use a flail mower or approved equivalent to cut the seeded material. Cut seeded areas when they have reached a height of 200 to 300 mm in the first growing season after installation. Do not cut again until once in the late fall.
  - 6) Re-seed all areas which show deterioration, or which are thin, bare or burned out and repair all damages resulting from erosion and washouts or any other causes during the maintenance period and before final acceptance.
  - 7) Selectively remove by cutting, all noxious weeds and unspecified plant material during every growing season during the maintenance period, before seed heads mature under the direction of the City.

## **TS 5.20.08                      QUALITY ASSURANCE**

### **TS 5.20.08.01                  Final Acceptance**

Seeded areas will be accepted by the Contract Administrator provided that:

- 1) The seed has properly established itself;
- 2) Seeded area is free of bare and dead spots;
- 3) Seeded area is without weeds; and
- 4) No surface soil is to be visible when material is at height of 100 mm.

Seeded areas will be accepted the following spring one month before the start of the growing season.

## **TS 5.20.09                      MEASUREMENT FOR PAYMENT**

### **TS 5.20.09.01                  Direct Seeding**

Measurement of acceptable seeding areas shall be by the area in square metres (m<sup>2</sup>).

## **TS 5.20.10                      BASIS OF PAYMENT**

### **TS 5.20.10.01                  Direct Seeding – Item**

Payment at the Contract Price for the above tender item shall be full compensation for all labour, Equipment and Material to do the work.

Payment shall include the soil preparation, application of seed and mulch, and maintenance to final acceptance.