

**Construction Specification for
Direct Seeding**

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TS 5.20.10
TS 5.20.10.01

BASIS OF PAYMENT 9
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

| Scientific name | Common name |
|--------------------------|--------------------------|
| 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

| Scientific name | Common name |
|----------------------------|-------------------------|
| 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 m² 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.

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- 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 (m²).

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.