

1.0 GENERAL

1.1 REFERENCES

- .1 Provide hydroseeding in accordance with the following standards (latest revision) except where specified otherwise.
- .2 Government of Canada
 - .1 Seeds Act and Seeds Regulations
 - .2 Fertilizers Act and Fertilizers Regulations
- .3 Government of Alberta
 - .1 Weed Control Act and Weed Regulation.

1.2 SUBMITTALS

- .1 Provide the following submittals.
- .2 The following test results at least 15 days prior to the delivery of seeds to the Site.
 - .1 Certificate of Analysis for each lot of seeds to be supplied with test results showing:
 - .1 germination rate, or when native seeds are specified and are not a part of the seed tables, the Tetrazolium results, and
 - .2 purity.
 - .2 Seed mix composition expressed as a percentage of each seed species by dry mass for each seed mix specified.
- .3 Calibration certificate for the hydroseeding equipment.

1.3 QUALITY CONTROL

- .1 Retain a Registered Seed Laboratory to conduct specified seed testing.
- .2 Calibrate hydroseeding equipment at least 30 days prior to starting seeding operations.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Provide seed in standard containers clearly labelled with the following information:
 - .1 Name and address of manufacturer and supplier.
 - .2 Lot number.
 - .3 Net mass.
 - .4 Mixture Composition: Names and percentages of individual seed species.

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- .2 Protect seed from direct sunlight, moisture, mould, and other detrimental conditions, while in transit and storage.
- .3 Provide fertilizer in standard containers clearly labelled with the following information:
 - .1 Supplier's name and address.
 - .2 Specified composition.
 - .3 Net mass.

2.0 PRODUCTS

2.1 MATERIALS

- .1 Provide materials in accordance with the following.
- .2 Seed Mix Composition:
 - .1 Common No. 1 Grade seeds in accordance with the Government of Canada Seeds Act and Seeds Regulations. Supply seed mixed by a conditioner and bulk storage facility approved by the authority responsible for Canada Seeds Act & Regulations.
 - .2 Seeds and seed mixtures subjected to moisture, mould, and detrimental conditions will not be accepted by the Minister.
 - .3 Agronomic Composition: Seed Mix Composition per Zone [4] [] as shown in the following schedule titled Agronomic Seed Mix.

Agronomic Seed Mix

Common Name	Latin Name	Seed Mix – Percentage by Dry Weight	
		Zone 1, 2, 3, 6	Zone 4, 5
Pubescent Wheat Grass	<i>Agropyron trichophorum</i>	40%	32%
Dahurian Wildrye	<i>Elymus dahuricus</i>	22%	30%
Sheep Fescue	<i>Festuca ovina</i>	30%	30%
Perennial Ryegrass	<i>Lolium perenne</i>	8%	-
Cereal Rye	<i>Secale cereale</i>	-	8%

- .4 Cover Crop: Add agronomic seed Common No. 1 Grade to the Seed Mix Composition specified in the schedule titled Agronomic Seed Mix. Add cover crop seed using a seed variety selected by the Contractor, when seeding is performed after September 15 of any year, or a later date if acceptable to the Minister.

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- .5 Native Composition: Seed Mix Composition per Zone [4] [] as shown in the following schedule titled Native Seed Mix:

Seed Mix Zone	Native Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
4 Mixedgrass and Dry Mixedgrass	Slender Wheat Grass	<i>Agropyron trachycaulum</i>	30%
	Canada Wildrye	<i>Elymus canadensis</i>	15%
	Mountain Brome	<i>Bromus carinatus</i>	15%
	Northern Wheat Grass	<i>Agropyron dasystachyum</i>	10%
	Western Wheat Grass	<i>Agropyron smithii</i>	5%
	Indian Rice Grass	<i>Orzyopsis hymenoides</i>	5%
	Alkali Grass	<i>Puccinellia distans</i>	10%
	Needle and Thread Grass	<i>Stipa comata</i>	10%

- .6 Ensure seed mixture is free of any weed seeds listed as “Prohibited Noxious” or “Noxious” under the Weed Control Act and seeds of other species that will interfere with the growth of the specified seed mixture.
- .3 Fertilizers:
- .1 Do not apply fertilizers where native seed mixes are applied.
- .2 In accordance with the Canada Fertilizers Act and Fertilizers Regulations.
- .3 Compatible with the seed mix composition and soil conditions.
- .4 Composition:
 Nitrogen [16] []
 Phosphates [20] []
 Potash [0] []
- .4 Water: Free of impurities that would inhibit or adversely affect germination and growth of the seed.
- .5 Hydro-mulch: Wood or wood cellulose fibre mulch, 100% biodegradable, compatible with the environment, free of growth and germination inhibiting factors, free of weeds, and free of other deleterious matter.
- .6 Tackifier: A polymer or resin tackifier, for use with the mulch, capable of joining the mulch particles together and securing the mulch to the ground.
- .7 Do not use hydro-mulch and tackifier which forms an impervious seal that prevents moisture from reaching the underlying soil.
- .8 Equipment: Hydraulic seeding equipment including slurry tank, agitation system, pumps, hoses, and nozzles.

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3.0 EXECUTION

3.1 PREPARATION

- .1 Prepare areas for hydroseeding by Surface Tracking as specified in Section 002910 – Topsoil and Subsoil Placement.
- .2 Provide prepared surfaces that are free of frost and standing water.

3.2 NOTIFICATION OF COMMENCEMENT OF WORK

- .1 Notify the Minister at least 48 hours prior to any seeding work. Do not commence seeding operations until all areas designated for seeding have been prepared to the satisfaction of the Minister.
- .2 Do not commence seeding operations until the Minister has reviewed the Certificate of Seed Analysis and verified the specified seed mix composition supplied.

3.3 WEATHER CONDITIONS

- .1 Do not proceed with the work when, in the opinion of the Minister, weather conditions are unsuitable. The Minister will not allow work to proceed when wind conditions are such that material is being carried beyond the designated work areas or that the material is not being uniformly applied.

3.4 APPLICATION

- .1 Hydroseed the areas specified in the Contract Documents or as directed by the Minister.
- .2 Measure the quantities of seeding materials by weight.
- .3 Apply the following at the rates specified:
 - .1 Hydroseed mix composition at a rate of 75 kg/hectare.
 - .2 Hydro-mulch at a rate [of 1150 kg/hectare] [recommended by the manufacturer], and the tackifier at a rate recommended by the manufacturer.
 - .3 Fertilizer composition at a rate of [150] [] kg/hectare.
 - .4 Cover crop seed at a rate of 5 kg/hectare.
- .4 Apply the seeding materials during calm weather.
- .5 Add the seeding materials, using the proper sequence, into the hydraulic seeder under continuous agitation to produce a thoroughly mixed slurry.
- .6 Apply the slurry uniformly with non-fluctuating pump pressure, and at the optimum angle for adherence to surfaces and germination of seed.
- .7 Regulate the equipment to apply the fertilizer uniformly at the specified rate.
- .8 Where the seeding adjoins existing vegetation, overlap the slurry application at least 300 mm into adjacent vegetated areas.

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- .9 Do not seed on hardened, crusted or rutted soil.
- .10 Do not use seeding operations that causes soil displacement or erosion.
- .11 Protect seeded areas against erosion or damage as specified in Section 02930 – Soil Erosion Protection.

3.5 PROTECTION

- .1 Take care to prevent the contamination of structures, signs, guardrails, fences, utilities, and other installations from the seeding operations. Remove offending contamination using methods acceptable to the Minister.
- .2 Protect existing work, and the Work of the Contract, and repair any damage to such Work.

3.6 WATERING

- .1 Water the seeded areas after seeding to achieve germination and a uniform stand of grass. [The Minister will determine when watering will be required, and will provide the Contractor with at least 24 hours advance notice to commence watering seeded areas.] [Determine when watering will be required, provide the Minister with at least 24 hours advance notice, and obtain authorization from the Minister prior to proceeding.]
- .2 Apply water uniformly to seeded areas without causing displacement or erosion of the materials and soil.
- .3 Minimize travel on seeded surfaces.
- .4 Use watering equipment and techniques authorized by the Minister.
- .5 Watering of seeded areas will be valued in accordance with Section 00725 – General Conditions, clause 8.3 - Valuation of Changes in the Work.

3.7 RESEEDING

- .1 At locations that fail to show a uniform stand of grass for any reason during the calendar year following the year of initial seeding, repair the defective locations as determined by the Minister. A uniform stand of grass will be considered as grass that shows no deterioration or exposed soil greater than 1 square metre in size, and provides a minimum of 80 percent ground cover as determined by the Minister.
- .2 The Minister will inspect the seeded areas during the month of May of the calendar year following the year of initial seeding. Complete any required reseeding work prior to June 15 of that year. This date will be extended if, in the opinion of the Minister, the weather conditions prior to June 15 are not suitable for reseeding Work.
- .3 Meet all the requirements for initial seeding, including seeding method, seed compositions, [fertilizer composition], and application rates, Surface Tracking as applicable.
- .4 Contractor will not be required to reseed any area more than once.

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3.8 ADVERSE VEGETATION CONTROL

- .1 Control adverse vegetation as specified in Section 01392 – Environmental Management.

END OF SECTION