



Part 1 General

1.1 DESCRIPTION OF WORK

- .1 This work shall include the supply of all materials. Seeding shall include the preparation of the seed bed and the supply and placement of grass seed.

Part 2 Products

2.1 MATERIAL

- .1 GRASS SEED
Grass seed shall meet Common No. 1 Seed Specification with a Certificate of analysis. The certificate is to be issued by an accredited seed laboratory. The seed mix required shall as defined in this section or defined in the Special Provisions.
- .2 Mixes shall be appropriate for the intended application on embankments, slopes, ditches, waterways, or private property. Blend shall be suitable with distinction for:
 - .1 Flat and gentle sloped areas including soils that are stable and not vulnerable to erosion.
 - .2 Steep and erodible slopes, includes soils that are unstable and vulnerable to erosion.
 - .3 Water edges and flood prone areas.
- .3 Seed mixes designed for projects requiring one cut per season are to be determined based on the Manitoba Infrastructure recommended seed mixes as laid out in Table 1 below.
- .4 Seed mixes designed for mowing on a regular basis shall provide quick growing cover and soil erosion control protection. Seed mix shall consist of a low maintenance mix of 40% Creeping Red Fescue, 20% Hard Fescue, 25% Chewings Fescue, 10% Perennial Rye Grass and 5% Sheep Fescue. Seeding rate is 150 lbs per acre.
- .5 NATIVE SEED MIXES
 - .1 Use a native seed mixture for areas next to annual cropland, native pastures, or native grasslands.

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- .2 **Directions:** Select Zone from map. Create seed mix by selecting 4 or 5 species from the Dry Areas list, 1 species from the Wet Areas list, and 1 of the Nitrogen-Fixers. The mix should ideally result in a plant community that consists of 90-95% dry/wet species and 5-10% nitrogen-fixer species. Manufacturer to supply kg/ha seeding rate.

TABLE 1

Native Seed Mix by Zone	Dry Areas (Select 4-5)	Wet Areas (Select 1)	Nitrogen-Fixer (Select 1)
Tall Grass/Interlake Prairie Zone	Canada Wild Rye	Marsh Reed Grass	Purple Prairie Clover
	June Grass	Northern Reed Grass	White Prairie Clover
	Big Bluestem	Slough Grass	Canada Milkvetch
	Little Bluestem	Tufted Hair Grass	
	Awned Wheatgrass	Prairie Cord Grass	
	Indian Grass		
Mixed Grass Prairie Zone	Blue Gramma	Marsh Reed Grass	Purple Prairie Clover
	Canada Wild Rye	Northern Reed Grass	White Prairie Clover
	June Grass	Slough Grass	Canada Milkvetch
	Big Bluestem	Prairie Cord Grass	
	Little Bluestem		
	Awned Wheatgrass		
	Slender Wheatgrass		
Fescue Prairie Zone	Big Bluestem	Marsh Reed Grass	Purple Prairie Clover
	Little Bluestem	Northern Reed Grass	White Prairie Clover
	Awned Wheatgrass	Slough Grass	Canada Milkvetch
	Canada Wild Rye		
	June Grass		
	Rocky Mountain Fescue		
	Northern Wheatgrass		
Boreal Zone	Hair Grass	Tufted Hair Grass	Canada Milkvetch
	June Grass	Fowl Bluegrass	
	Nodding Brome	Slough Grass	
	Rocky Mountain Fescue		
	Canada Wild Rye		
	Hairy Wild Rye		
	Northern Wheatgrass		
	White-grained Mountain Rice Grass		
	Slender Wheatgrass		

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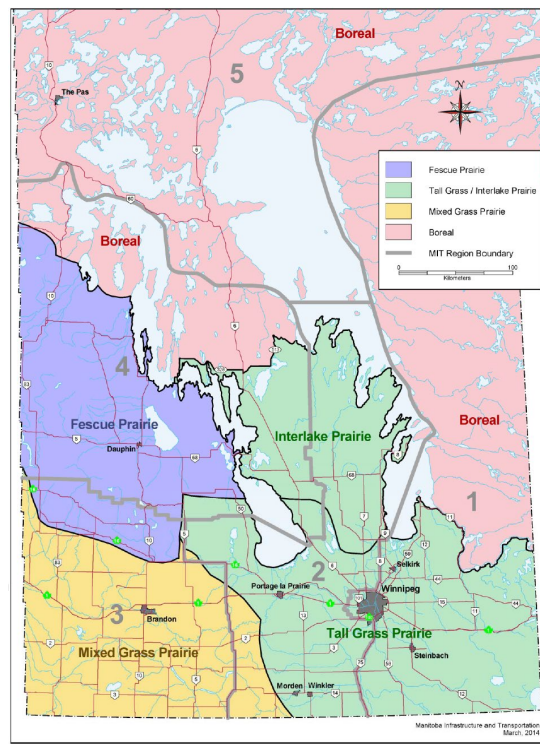
.6 TAME SEED MIXES

- .1 Use an agronomic or tame seed mixture for areas next to tame pastureland or hayfields, or areas with heavy weed infestations. Non-native species can be used if they do not spread invasively.
- .2 Cover crops can be used for temporary erosion control while waiting for native or tame grasses to establish.

TABLE 2

Tame Seed Mixes	Choose Any Combination Of:
Tame Mix	Intermediate Wheatgrass
	Tall Wheatgrass
	Russian Wild Rye
	Sheep Fescue
	Timothy
	Any introduced species recommended by your supplier, as long as it is not on the Do Not Plant List
Cover Crops	Common Oats

FIGURE 1 (Zone Map)



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Part 3 Execution

3.1 TIMING

- .1 All seeding performed by the Contractor shall be completed before October 31st during the same year of completion of construction. All seeding performed by the contractor shall result in adequate growth being established before the end of project warranty.

3.2 PROCEDURE

- .1 Preparation of the seedbed shall be accomplished by disking and harrowing the ground. With prior approval from the Engineer the Contractor may use other methods to level and prepare the seedbed.
- .2 Methods of Seeding
 - .1 Seed Drill - Grass seed shall be placed in soil by the use of a seed drill within a consistent depth range of 6mm to 19mm.
 - .2 Broadcasting - Grass seed shall not be placed by broadcasting unless directed by the Engineer. If the seed is placed by broadcasting, a harrowing pass over the area is required before and after seed placement.
 - .3 Hydroseeding – Mulch shall be dry, free of weeds and all foreign matter, be a wood cellulose fibre product free of germination or growth-inhibiting ingredients and shall form, after application a blotter-like ground cover which will allow absorption and percolation of water. Hydroseeding shall be applied in a slurry containing a tackifier at a rate directed by the manufacturer. The water used for hydroseeding shall be free of any impurities, which would inhibit germination or otherwise adversely affect growth.
- .3 Packing, rolling or harrowing after seed placement shall not be allowed unless directed by the Engineer.
- .4 Fertilizer shall not be applied unless directed by the Engineer. If fertilizer is required the application shall be done as a separate operation.
- .5 A companion crop shall not be used unless directed by the Engineer. If a companion crop is required it shall be as per supplier recommendation.
- .6 Erosion control blanket, when deemed necessary by the Engineer, shall be in accordance with section 02 20 10, Construction of Waterways.

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3.3 RATE OF APPLICATION

- .1 Grass seed shall be placed at a rate as determined by the seed mix chosen and conditions of the area being applied as recommended by the manufacturer. Actual rate depends on top soil depth, fertility, moisture and time of year. The lower rate can be used early in the season with good top soil and moisture conditions. Use the higher rate for later in the season and conditions that are less than ideal.
- .2 It shall be the Contractor's responsibility to provide the seed mix certification along with the pure live seed rate, which is provided by the seed supplier.
- .3 It shall be the Contractor's responsibility to set the seed drill to achieve the required rate of application.
- .4 It is the Contractor's responsibility to broadcast seed or hydroseed at the required rate of application recommended by the supplier.
- .5 If fertilizer application is directed by the Engineer, it shall be the Contractor's responsibility to obtain the recommended rate of fertilizer and apply at the same recommended rate.

3.4 SEEDING REQUIREMENTS

- .1 Pipeline Projects
 - .1 Seeding is required along Provincial Trunk Highways and Provincial Roads in the ditches and inside slopes in areas affected by construction.
 - .2 Seeding is required on the inside slopes of all drains and grassed waterways in areas affected by construction.
 - .3 Seeding is required in urban areas as required by Engineer.
 - .4 The minimum width of seeding shall be not less than the width of the area affected by construction.
- .2 Earthworks Projects
 - .1 Seeding is required on all berms, drainage ditches, slopes or other disturbed areas susceptible to erosion affected by the construction of lagoons, retention ponds, access roads or other similar earthworks projects.
- .3 Building Projects
 - .1 Seeding is required on all disturbed areas affected by the construction of buildings, reservoirs or other building projects as required by the Engineer.

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3.5 MAINTENANCE

- .1 The Contractor shall maintain the seeded areas until the end of the project warranty. Any seeded areas that do not show evidence of the establishment of a grass cover shall be repaired, reseeded and maintained.
- .2 Maintenance shall include upkeep, soil replacement and repair of damaged areas. Damaged areas include erosion of soil due to wind or water.

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