

ALBERTA INFRASTRUCTURE AND TRANSPORTATION DESIGN BULLETIN No. 25 – revised 2005-10-26

GRASS SEED MIXTURES USED ON HIGHWAY AND BRIDGE PROJECTS

Summary

This design bulletin is issued as an addendum to Alberta Transportation's 2002 Engineering Consultant Guidelines Volume 1 - Design and Tender.

For all projects that have a "Seeding" component larger than 1 hectare, as part of the design and tender process, Consultants shall conduct a vegetation assessment of the existing right-of-way. Based on the results of the assessment, the Consultant will be able to specify the appropriate grass seed mix and the appropriate fertilizer (if required) in the tender package using the attached special provision template SPG_039.

Background

In the Winter of 2003/04, Transportation's Environmental Issues Committee undertook a review of the grass seed mixtures used on highway and bridge projects. Highwood Environmental Consultants was hired to review the existing processes and to provide recommendations.

The recommendations include the following:

- The Province has been divided into six seed zones (see attached map);
- In areas where adjacent land has native plant communities, the disturbed areas shall be seeded using one of the six specified native seed mix varieties (see attached seed mixes), or a different native seed mixture recommended by the Consultant to address site-specific conditions;
- In areas where adjacent land is seeded to agronomic species (e.g. forage crops), the disturbed areas shall be seeded using one of the two specified agronomic seed mix varieties (see attached seed mixes), or an appropriate alternative seed mixture that is suitable to the site and the anticipated land use (e.g. the possibility of the land being used for grazing);
- In locations where native seed mix varieties are specified, fertilizer shall not be used;
- In locations where agronomic seed mixes are specified, fertilizer may be required. The fertilizer composition and application rate must be determined through project-specific soil analysis.

Implementation of Bulletin

Effective immediately, for all Alberta Infrastructure and Transportation projects involving highway or bridge construction or rehabilitation Work, where the disturbed area will be greater than 1 hectare and where "Seeding" is either specified or is considered incidental to the Work; the Consultant will be required to perform the following additional tasks as part of the design and tender package preparation Work:

- The Consultant shall perform a vegetation assessment of the right-of-way and adjacent properties to determine the presence of native plant communities, and to determine the limits for reseeding with either native seed mixture or agronomic seed mixtures.
- In those areas where reseeding with agronomic seed mixtures is appropriate, the Consultant shall perform topsoil analysis on the basis of a minimum of one sample per kilometer, and where there are distinctive soil type changes. Where topsoil samples have similar consistency along an uninterrupted length of the project, the individual samples shall be blended together. For the purpose of this bulletin, an uninterrupted length is defined as a portion of the right-of-way with consistent soil types, and no geographical obstacles such as watercourses or major intersections. Each remaining topsoil sample (individual and/or blended) shall be tested to determine the appropriate fertilizer composition and application rate.

Based on the results of the vegetation assessment and the topsoil analysis, the Consultant will develop a seeding and fertilizing plan for the project. The seeding and fertilizing plan will be incorporated into the tender documents using the attached Special Provision Template.

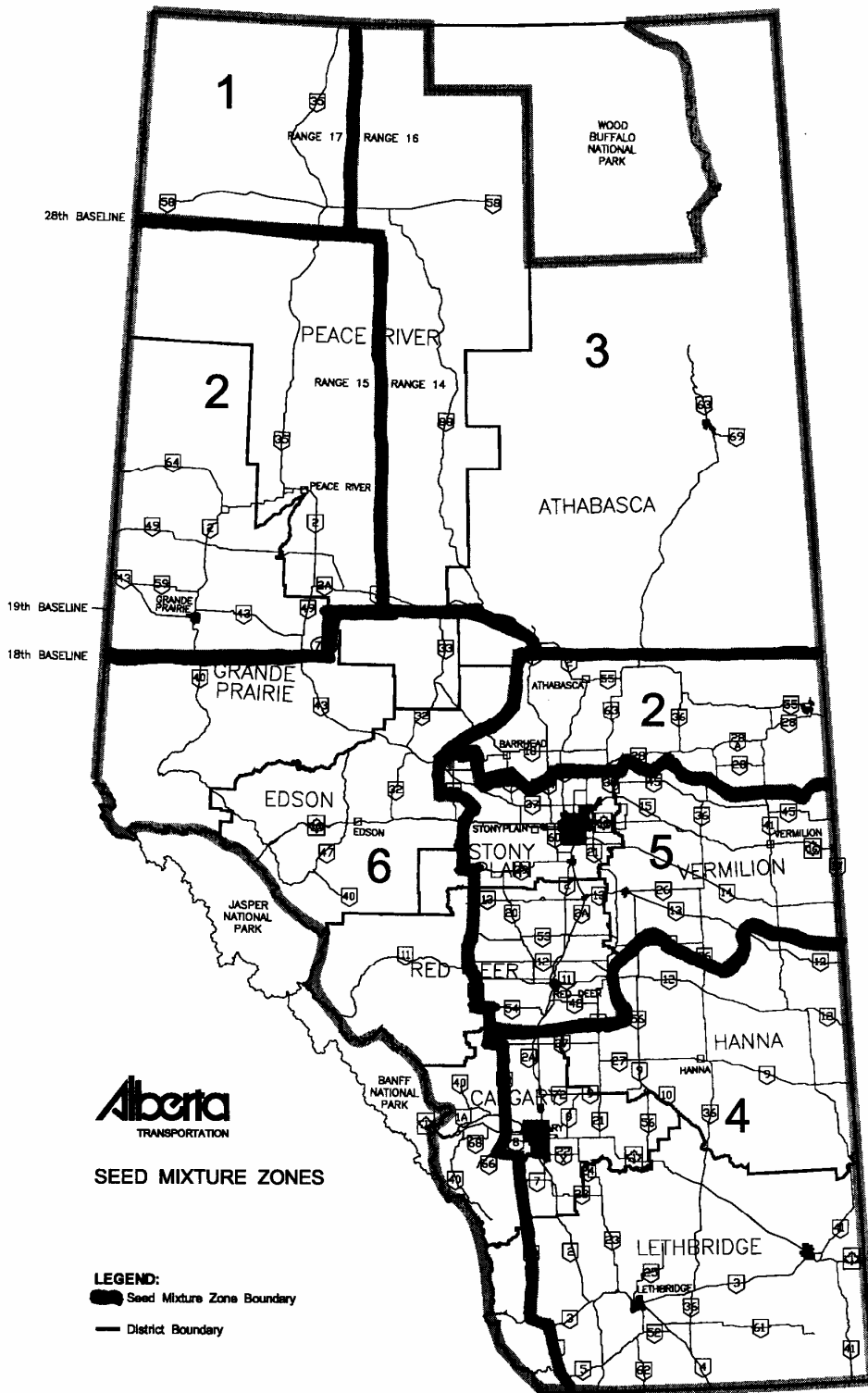
In the event there are distinctive topsoil types within the project limits, the Consultant shall include a special provision in the tender document that requires the Contractor to place distinctive soil types in separate stockpiles, and shall avoid intermixing of the soil types when replacing the topsoil following completion of the grading work.

It is anticipated that much of the work associated with the vegetation assessment and topsoil analysis can be accomplished with minimal additional effort, by combining these new tasks with existing Consultant responsibilities including: topsoil assessments (see Construction Bulletin No. 11), and the identification of noxious weeds within the right-of-way.

Contacts

Any questions with regard to this Design Bulletin should be directed to Alberta Infrastructure and Transportation's Professional Services Section (Attention: Greg Plewis, Specifications and Tendering Specialist (780) 427-7393.)

SEED MIXTURE ZONES



BASE MAPPING PROVIDED BY PROGRAM MANAGEMENT BRANCH, HIGHWAY GEOMATICS SECTION
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SEEDMIXZONE.DWG

RECOMMENDED NATIVE SEED MIXES

Seed Mix Zone	Recommended Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
1 Wetland Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	40%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	15%
	Tufted Hairgrass	Deschampsia cespitosa	15%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Rocky Mountain Fescue	Festuca saximontana	10%
	Fowl Bluegrass	Poa palustris	10%
2 Dry Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	35%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	20%
	Northern Wheat Grass	Agropyron dasystachyum	15%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Rocky Mountain Fescue	Festuca saximontana	10%
	Fowl Bluegrass	Poa palustris	10%
3 Central Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	35%
	Rocky Mountain Fescue	Festuca saximontana	20%
	Tickle Grass	Agrostis scabra	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	10%
	Canada Wildrye	Elymus canadensis	10%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Fowl Bluegrass	Poa palustris	5%
4 Mixedgrass and Dry Mixedgrass	Slender Wheat Grass	Agropyron trachycaulum	30%
	Canada Wildrye	Elymus canadensis	15%
	Mountain Brome	Bromus carinatus	15%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Western Wheat Grass	Agropyron smithii	5%
	Indian Rice Grass	Orzyopsis hymenoides	5%
	Alkali Grass	Puccinellia distans	10%
	Needle and Thread Grass	Stipa comata	10%
5 Central Parkland	Slender Wheat Grass	Agropyron trachycaulum	25%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	15%
	Green Needle Grass	Stipa viridula	15%
	Canada Wildrye	Elymus canadensis	10%
	Indian Rice Grass	Orzyopsis hymenoides	10%
	Nuttall's Alkali Grass	Puccinellia nuttalliana	10%
	Western Wheat Grass	Agropyron smithii	5%
6 Lower Foothills	Slender Wheat Grass	Agropyron trachycaulum	30%
	Smooth Wildrye	Elymus glaucus	20%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Tickle Grass	Agrostis scabra	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	10%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Foothills Rough Fescue	Festuca campestris	10%

⁽¹⁾ Fringed Brome shall be coated.

RECOMMENDED AGRONOMIC SEED MIXES

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

0.1 SEEDING

Unless otherwise directed by the Consultant, seeding shall be in accordance with the following:

From/To	Side	Grass Seed Mix (Native or Agronomic)	Fertilizer Composition	Fertilizer Application Rate

INSERTS: see zone map for locations

Zone 1 - Peace River District - north and west of High Level:

Seed Mix Zone	Native Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
1 Wetland Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	40%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	15%
	Tufted Hairgrass	Deschampsia cespitosa	15%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Rocky Mountain Fescue	Festuca saximontana	10%
	Fowl Bluegrass	Poa palustris	10%

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 1
Pubescent Wheat Grass	Agropyron trichophorum	40%
Dahurian Wildrye	Elymus dahuricus	22%
Sheep Fescue	Festuca ovina	30%
Perennial Ryegrass	Lolium perenne	8%

Zone 2 - Athabasca District (south of Athabasca) and Grande Prairie District

Seed Mix Zone	Recommended Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
2 Dry Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	35%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	20%
	Northern Wheat Grass	Agropyron dasystachyum	15%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Rocky Mountain Fescue	Festuca saximontana	10%
	Fowl Bluegrass	Poa palustris	10%

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 2
Pubescent Wheat Grass	Agropyron trichophorum	40%
Dahurian Wildrye	Elymus dahuricus	22%
Sheep Fescue	Festuca ovina	30%
Perennial Ryegrass	Lolium perenne	8%

Zone 3 - Athabasca District (north of Athabasca) and Hwy. Nos. 88, 750, 986

Seed Mix Zone	Recommended Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
3 Central Mixedwood	Slender Wheat Grass	Agropyron trachycaulum	35%
	Rocky Mountain Fescue	Festuca saximontana	20%
	Tickle Grass	Agrostis scabra	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	10%
	Canada Wildrye	Elymus canadensis	10%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Fowl Bluegrass	Poa palustris	5%

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 3
Pubescent Wheat Grass	Agropyron trichophorum	40%
Dahurian Wildrye	Elymus dahuricus	22%
Sheep Fescue	Festuca ovina	30%
Perennial Ryegrass	Lolium perenne	8%

Zone 4 - Lethbridge District (east of Hwy 22), Calgary District (east of Hwy 22), and Hanna District

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

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 4
Pubescent Wheat Grass	Agropyron trichophorum	32%
Dahurian Wildrye	Elymus dahuricus	30%
Sheep Fescue	Festuca ovina	30%
Cereal Rye	Secale cereale	8%

Zone 5 - Stony Plain, Vermillion, and Red Deer (east of Hwy 22) Districts:

Seed Mix Zone	Recommended Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
5 Central Parkland	Slender Wheat Grass	Agropyron trachycaulum	25%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	15%
	Green Needle Grass	Stipa viridula	15%
	Canada Wildrye	Elymus canadensis	10%
	Indian Rice Grass	Orzyopsis hymenoides	10%
	Nuttall's Alkali Grass	Puccinellia nuttalliana	10%
	Western Wheat Grass	Agropyron smithii	5%

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 5
Pubescent Wheat Grass	Agropyron trichophorum	32%
Dahurian Wildrye	Elymus dahuricus	30%
Sheep Fescue	Festuca ovina	30%
Cereal Rye	Secale cereale	8%

Zone 6 - Lethbridge, Calgary, and Red Deer Districts all located west of Hwy 22):

Seed Mix Zone	Recommended Seed Mix		Percentage by Dry Weight
	Common Name	Latin Name	
6 Lower Foothills	Slender Wheat Grass	Agropyron trachycaulum	30%
	Smooth Wildrye	Elymus glaucus	20%
	Northern Wheat Grass	Agropyron dasystachyum	10%
	Tickle Grass	Agrostis scabra	10%
	Fringed Brome ⁽¹⁾	Bromus ciliatus	10%
	Tufted Hairgrass	Deschampsia cespitosa	10%
	Foothills Rough Fescue	Festuca campestris	10%

¹ Fringed Brome seed shall be coated.

Agronomic Seed Mix		
Common Name	Latin Name	Seed Mix % by Dry Weight
		Zone 6
Pubescent Wheat Grass	Agropyron trichophorum	40%
Dahurian Wildrye	Elymus dahuricus	22%
Sheep Fescue	Festuca ovina	30%
Perennial Ryegrass	Lolium perenne	8%