



CONSTRUCTION SPECIFICATION FOR SEED AND COVER

TABLE OF CONTENTS

| | |
|---------------|---|
| 804.01 | SCOPE |
| 804.02 | REFERENCES |
| 804.03 | DEFINITIONS |
| 804.04 | DESIGN AND SUBMISSION REQUIREMENTS |
| 804.05 | MATERIALS |
| 804.06 | EQUIPMENT |
| 804.07 | CONSTRUCTION |
| 804.08 | QUALITY ASSURANCE |
| 804.09 | MEASUREMENT FOR PAYMENT |
| 804.10 | BASIS OF PAYMENT |

APPENDICES

| | |
|--------------|-------------------|
| 804-A | Commentary |
|--------------|-------------------|

804.01 SCOPE

This specification covers the requirements for seeding alone or seeding with either rolled or hydraulically applied erosion control products.

804.01.01 Specification Significance and Use

This specification is written as a provincial-oriented specification. Provincial-oriented specifications are developed to reflect the administration, testing, and payment policies, procedures, and practices of the Ontario Ministry of Transportation.

Use of this specification or any other specification shall be according to the Contract Documents.

804.01.02 Appendices Significance and Use

Appendices are not for use in provincial contracts as they are developed for municipal use, and then, only when invoked by the Owner.

Appendices are developed for the Owner's use only.

Inclusion of an appendix as part of the Contract Documents is solely at the discretion of the Owner. Appendices are not a mandatory part of this specification and only become part of the Contract Documents as the Owner invokes them.

Invoking a particular appendix does not obligate an Owner to use all available appendices. Only invoked appendices form part of the Contract Documents.

The decision to use any appendix is determined by an Owner after considering their contract requirements and their administrative, payment, and testing procedures, policies, and practices. Depending on these considerations, an Owner may not wish to invoke some or any of the available appendices.

804.02 REFERENCES

When the Contract Documents indicate that provincial-oriented specifications are to be used and there is a provincial-oriented specification of the same number as those listed below, references within this specification to an OPSS shall be deemed to mean OPSS.PROV, unless use of a municipal-oriented specification is specified in the Contract Documents. When there is not a corresponding provincial-oriented specification, the references below shall be considered to be to the OPSS listed, unless use of a municipal-oriented specification is specified in the Contract Documents.

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

Ontario Ministry of Transportation Publication

Seeding and Cover Quality Assurance Visual Inspection Field Guide

Canadian and Provincial Statutes

Canada Seeds Act (R.S., 1985, c. S-8)
Ontario Water Resources Act

804.03 DEFINITIONS

For the purpose of this specification, the following definitions apply:

Cover means any approved or specified material such as rolled erosion control products, (i.e., blankets) or hydraulically applied erosion control products (i.e., hydraulic mulch, bonded fibre matrix, fibre reinforced matrix).

Seeded Earth Area means the prepared earth area that has received the applied seed and fertilizer.

Uniform, Cohesive Mat means an application of cover that is unvarying in consistency and when all of the cover material particles are consolidated and adhere together to produce a solid layer that protects the seeded earth area from heat and adverse environmental conditions, yet allows moisture to percolate into the underlying soil.

Waterbody means any permanent or intermittent, natural or constructed body of water including lakes, ponds, wetlands and watercourses, but does not include sewage works as defined in the Ontario Water Resources Act.

804.04 DESIGN AND SUBMISSION REQUIREMENTS

804.04.01 Submission Requirements

A legible, valid Certificate of Seed Analysis from a seed testing laboratory approved by the Canadian Food Inspection Agency for all single seed species and all seed mixtures to be used on the Contract shall be submitted to the Contract Administrator for review a minimum of 24 hours prior to any seeding operations.

804.05 MATERIALS

804.05.01 Seed

804.05.01.01 Certificate of Seed Analysis

The Certificate of Seed Analysis shall identify the seed supplier's lot designation numbers.

Test results from the Certificate of Seed Analysis shall show the germination and purity for each seed species of the mix, as well as the seed mix composition expressed as a percentage of each seed species by mass for each seed mix specified in the Contract Documents. Test results shall comply with the values shown in Table 1 for the various seed mixes.

804.05.01.02 Seed Packaging, Labeling, and Storage

All seed and seed mixes shall be in the original factory sealed package with the original legible label securely attached.

Labeling shall be in accordance with the requirements of the Canada Seeds Act and Regulations. Each package shall be labeled to show:

- a) The name and address of the seed supplier.
- b) The name of the seed mix and the various individual seed species that comprise the seed mix and the percentage by mass of each.
- c) The grade of the seed or seed mix.
- d) The supplier's lot designation number corresponding to the Certificate of Seed Analysis.
- e) Mass in kilograms of the seed mix.
- f) The inoculant type, strain, and expiry date.

All seed and inoculant shall be stored in cool, dry locations until use. Inoculant is only required for seed mixes containing Crown Vetch or Birdsfoot Trefoil.

804.05.01.03 Permanent Seed Mixes

Permanent seed mixes shall be as specified in the Contract Documents and as shown in Table 1.

804.05.02 Annual Nurse Crop Seed

Nurse crop seed shall be either Fall Rye Grain or Winter Wheat Grain, unless otherwise approved by the Contract Administrator.

804.05.03 Fertilizer

Fertilizer shall be supplied in original factory sealed bags bearing the manufacturer's original label indicating mass and analysis. All fertilizer shall be in granular form being dry, free flowing, free from lumps, and with an analysis shown in Table 2.

804.05.04 Cover

804.05.04.01 Mulch

Mulch shall be either a mixture of straw mulch and straw mulch tackifier or hydraulic mulch.

804.05.04.02 Straw Mulch

Straw mulch shall be oat or wheat straw. Straw shall be supplied in bales, dry, and free of weeds and other foreign materials.

804.05.04.03 Straw Mulch Tackifiers

Organic straw mulch tackifiers may include wood and fibre paper mulch or guar and starch based tackifiers. Asphalt based tackifiers shall not be used.

804.05.04.04 Hydraulic Mulch

Hydraulic mulch shall consist of shredded wood or paper fibres or both, water or a stabilizing emulsion or both.

Stabilizing emulsions shall consist of an organic tackifier or an inorganic polymer. Common stabilizing emulsions include guar gum, psyllium, or polyacrylamide or all three.

Hydraulic mulch shall be capable of dispersing rapidly in water to form a homogeneous slurry and remain in such a state when agitated or mixed with other specified materials. When applied, hydraulic mulch shall form a uniform, cohesive mat. Hydraulic mulch shall not inhibit growth or germination of the seed mix. Hydraulic mulch shall be dry, free of weeds and other foreign materials, and shall be supplied in factory sealed packages bearing the manufacturer's label indicating the product name and mass.

804.05.04.05 Matrix

Matrix shall be Bonded Fibre Matrix (BFM) or Fibre Reinforced Matrix (FRM).

804.05.04.06 Bonded Fibre Matrix (BFM) and Fibre Reinforced Matrix (FRM)

BFM shall consist of thermally refined wood fibers and 10% by weight cross-linked hydro-colloidal tackifiers. BFM shall be 100% biodegradable. The curing period for BFM shall be not more than 48 hours.

FRM shall consist of thermally refined wood fibers, 10% by weight cross-linked hydro-colloidal tackifiers, and 5% by weight crimped man-made fibers. FRM shall be 100% biodegradable. FRM shall not have a curing period.

BFM and FRM shall be hydraulically applied and after application be capable of adhering to the soil. In a dry state, BFM and FRM shall be comprised of not less than 70% by weight of long stranded wood fibres held together by organic or mineral bonding agents or both. The hydrated BFM or FRM shall form a viscous material that when applied and dried creates a high strength, porous, and erosion-resistant uniform, cohesive mat. The bonding agent shall not dissolve or disperse upon re-wetting. BFM and FRM shall not inhibit the germination or growth of plant material.

804.05.04.07 Erosion Control Blanket (ECB)

ECB shall be of a consistent thickness with a 100% biodegradable even fibre distribution. The ECB shall be covered on top with a biodegradable and photodegradable plastic mesh or may be sewn together with cotton thread. ECB shall be supplied in a dry rolled mat protected with an outer waterproof wrap bearing the manufacturer's original label indicating product name and application instructions.

804.05.05 Erosion Control Blanket (ECB) Staples

ECB staples shall be u-shaped, constructed of wire with a diameter of at least 2.5 mm with legs at least 150 mm long and 25 mm apart.

804.05.06 Water

Water shall be free of any contaminants or impurities that would adversely affect the germination and growth of vegetation.

804.06 EQUIPMENT

804.06.01 Hydraulic Seeder and Mulcher

The hydraulic seeder and mulcher shall be capable of mixing the materials into homogeneous slurry and maintaining the slurry in a homogeneous state until it is applied. The discharge pumps and gun nozzles shall be capable of applying the materials uniformly over the specified area. A hose extension for the hydraulic seeder and mulcher shall be on site and available for use for areas outside of the range of the gun nozzle.

804.06.02 Straw Mulch Blower

The straw mulch blower shall be capable of separating straw from the bales without chopping it into short lengths and applying the straw mulch in a uniform, cohesive mat.

When tackifiers are used, the straw mulch blower shall be capable of applying straw mulch and tackifiers simultaneously. The straw mulch blower shall be equipped with a minimum of two nozzles located inside the end of the blower pipe to coat the straw with the tackifier. Crimping may also be used to secure the straw mulch.

804.07 CONSTRUCTION

804.07.01 Operational Constraints

The seeding operation shall not commence until the Contract Administrator has approved the surface preparation and the layout of seed mix locations and cover types.

Seed only and seed and cover applications or re-applications shall not be carried out under adverse weather conditions such as high wind or heavy rain or when field conditions are not conducive to seed germination such as frozen soil or soil covered with snow, ice, or standing water.

Seeded earth areas shall be maintained and erosion controlled until final acceptance of the seed and cover.

Seed or cover shall not come in contact with the foliage of any trees, shrubs, or other vegetation, except as specified in the Seeding subsection. Seed or cover shall not come in contact with waterbodies.

BFM or FRM shall be installed by personnel certified and trained by the manufacturer in the proper mixing and installation of the product. BFM shall not be applied when rainfall is expected within 48 hours, during rainfall, or within 12 hours after rainfall.

804.07.02 Surface Preparation for Seeding

The surface to be seeded shall be prepared not more than 5 Days prior to the seeding operation.

At the time of seeding, all surface areas designated for seeding shall have a fine-graded uniform surface and shall exhibit no evidence of erosion. The surface shall be uniformly cultivated to a minimum depth of 50 mm and shall not have surface stones greater than 25 mm in diameter, foreign material, and weeds.

804.07.03 Layout

The locations and limits of the seed mixes and cover types specified in the Contract Documents shall be staked out on the ground surface.

804.07.04 Seeding

804.07.04.01 Application Rates for Seed, Fertilizer, and Water

Application rates for primary seed, nurse crop seed, and fertilizer shall be as shown in Table 2.

804.07.04.02 Seed and Fertilizer Application

Seed and fertilizer shall be applied prior to the application of cover.

Seed, fertilizer, and water shall be thoroughly mixed in the hydraulic seeder and mulcher into a homogeneous water slurry. The water slurry shall be applied to the prepared earth areas by the nozzle sprayer or extension hose.

The seeding equipment shall be calibrated to provide the coverage shown in Table 2. There shall be a uniform dispersal of the mixed material over the entire area designated for seeding. The spray shall not dislodge soil or cause erosion.

Seed and fertilizer may be applied separately by a cyclone spreader.

Seeding shall overlap the adjoining ground cover by 300 mm.

804.07.05 Cover Application

Mulch, ECB, and matrix cover materials shall be applied at the locations specified in the Contract Documents as a separate operation immediately following the application of seed and fertilizer.

The hydraulic seeder and mulcher shall be properly calibrated to provide the coverage as specified for each of the hydraulically applied cover materials.

804.07.05.01 Straw Mulch Application

Straw mulch shall be applied to form a uniform, cohesive mat over 100% of the seeded earth area. The straw mulch shall be applied to a minimum depth of 25 mm and a maximum depth of 50 mm measured at the time of application.

804.07.05.02 Hydraulic Mulch Application

Hydraulic mulch shall be applied at the rate of 2,000 kg of dry product per 10,000 m². Hydraulic mulch shall be thoroughly mixed with water into a homogeneous slurry.

The hydraulic mulch slurry shall be applied to the seeded earth areas by nozzle sprayer or extension hose. The mixed material shall be evenly dispersed over the entire seeded earth area to form a uniform, cohesive mat. The spray shall not dislodge soil or cause erosion.

804.07.05.03 Bonded Fibre Matrix (BFM) or Fibre Reinforced Matrix (FRM) Application

BFM or FRM shall be applied at a minimum rate of 3,700 kg of dry product per 10,000 m². BFM and FRM shall be thoroughly mixed with water in a hydraulic seeder and mulcher at a rate of 20-30 kg of dry product to 500-600 litres of water to form a homogeneous slurry.

The BFM and FRM slurry shall be applied to the seeded earth areas by nozzle sprayer or extension hose. The BFM and FRM slurry shall be evenly dispersed in successive applications from different directions over the seeded earth area to form a uniform, cohesive mat. The spray shall not dislodge soil or cause erosion.

804.07.05.04 Erosion Control Blanket (ECB) Application

ECB shall be placed and stapled into position according to the manufacturer's installation instructions over the entire designated surface area. Blankets shall be installed in direct contact with the ground surface to form a uniform, cohesive mat over the seeded earth area. The ECB shall be anchored to the soil and tenting of the ECB shall not occur.

On slopes, the uppermost edge of the ECB shall be extended 1 metre beyond the crest of the slope and anchored. When extension beyond the crest of the slope is not possible, the ECB shall be anchored in a 150 mm wide by 150 mm deep trench excavation at the top of the slope. The trench shall be backfilled with the excavated native material and compacted.

804.07.06 Cleanup

When seed and cover materials are applied to the foliage of trees, shrubs, other susceptible plant material, or waterbodies, the seed and cover materials shall be immediately removed from the trees, shrubs, plant material, and waterbodies and the trees, shrubs, and plant material washed with clean water.

When seed and cover materials are applied to areas or objects other than those designated, the seed and cover materials shall be removed from the areas and objects.

804.07.07 Protection of Waterbodies and Waterbody Banks

Protection of waterbodies and waterbody banks shall be as specified in the Contract Documents.

804.07.08 Management of Excess Material

Management of excess material shall be as specified in the Contract Documents.

804.08 **QUALITY ASSURANCE**

804.08.01 **Performance Measure**

All seeded areas shall be inspected by the Contract Administrator using the Seeding and Cover Quality Assurance Visual Inspection Field Guide (SCQAVIFG) to ensure compliance with this specification at 30, 60, and 90-Day periods following the seed and cover operation.

At the 30-Day inspection within the seeded area:

- a) The applied cover shall be visually intact and shall form a uniform, cohesive mat.
- b) Germination of the nurse crop shall be visually evident.

At the 60-Day inspection within the seeded area:

- a) The nurse crop shall be evident at mature height in an evenly dispersed, uniform cover.
- b) Germination of the specified permanent seed species shall be visually evident in an evenly dispersed uniform cover.
- c) There shall not be significant bare areas, both in terms of quantity and size.
- d) Non-seeded, non-specified vegetation shall not exceed 20% of the seeded earth area.

At the 90-Day inspection within the seeded area:

- a) The specified permanent seed species shall be at an average height of 50 mm in an evenly dispersed, uniform cover.
- b) There shall not be significant bare areas, both in terms of quantity and size.
- c) Non-seeded, non-specified vegetation shall not exceed 20% of the seeded earth area.

Inspections shall not be made during the winter dormant period or when site conditions prohibit a visual field inspection. The timing intervals between inspections shall be suspended during the winter dormant period shown in Table 3.

804.08.02 **Failure to Meet Performance Measure**

If the completed work does not meet the performance measures of the 30-Day inspection, the Contract Administrator shall document the failed areas, notify the Contractor of those areas, and re-inspect at the 60-Day inspection.

If the completed work does not meet the performance measures of the 60-Day inspection, the Contract Administrator shall notify the Contractor in writing of the failed areas. The Contractor shall re-apply the specified material in accordance with this specification within 14 Days of receiving the notification. The Contract Administrator shall re-inspect the seeded area at the 90-Day inspection.

If the completed work does not meet the performance measures of the 90-Day inspection, the Contract Administrator shall notify the Contractor in writing of the failed areas. The Contractor shall re-apply the specified material in accordance with this specification within 14 Days of receiving the notification. The Contract Administrator shall re-inspect the seeded area 30 Days after re-application of material.

Inspections and re-application of material shall continue, as outlined in the 90-Day inspection clause above, until the seeded area has been accepted.

All replaced seed and cover shall be subject to the Quality Assurance section of this specification.

804.08.03 Referee Evaluation

Referee evaluation shall only apply to the germination and growth of the permanent seed mix species.

Disputes arising from the performance measure evaluation shall be settled through referee testing using an actual live seedling count of the specified permanent seed mix species within the seeded earth area.

An independent consultant with experience in herbaceous plant identification shall perform the referee evaluation. Both parties shall agree on the selection of the independent consultant and both parties shall be bound by the consultant's evaluation.

The actual count shall be based on minimum germination requirements and minimum levels of acceptability to meet industry standards and federal legislation governing the testing, inspection, quality, and sale of seed.

To determine the number of seeds per unit of weight, published standard industry lists shall be referenced. When these lists show a range in the number of seeds per unit of weight, the mid-range number shall be used. When there is a difference in the estimated number of seeds by weight from one industry standard list to another, the lower figure shall be used.

To determine the germination rate for each seed species, the number of seeds per unit of weight is factored by the minimum germination rate of 70% in accordance with the Canada Seeds Act. A further 25% reduction is allowed to account for variation in seeding application, seedbed quality, seedbed preparation, and area cover.

The Contractor and the Owner may agree to use a simplified analysis, when instead of counting each seedling of each individual seeded perennial species of the mix, only the total number of seedlings of the mix is counted. If the parties cannot agree to the simplified analysis, the default method is a seedling count of each seeded perennial species.

The field inspection to determine the number of live plant seedlings should only be performed after the 90-Day inspection and when the seedlings reach an identifiable and measurable size.

The sampling procedure should be randomized over an area that both parties agree is representative of the seeded Contract. The selection and evaluation process is as follows:

- a) Select a representative area from the average seeded areas, eliminating the thinnest and thickest growth areas from the analysis.
- b) Measure its length and width. Use a random numbers table to generate five sets of X and Y axis coordinates from the area.
- c) Each axis coordinate is a sampling point. A sampling plot, or quadrat, is set out in a 200 x 1,000 mm plot with the axis coordinate becoming the lower right-hand corner of each quadrat.
- d) Each quadrant is divided into 20 sub-sampling units, each being 100 x 100 mm.
- e) The sub-sampling units are numbered from 1 to 20.
- f) Using a random numbers table, two of the twenty sub-sampling units are randomly selected.
- g) Live seedlings of each individual seeded perennial species of the mix are counted in the selected sub-sampling units to determine actual plant densities.

- h) An average seedling density per seeded perennial species, expressed as the number of seedlings per square metre is generated for each sampling plot or quadrat, based on the data from the two selected sub-sampling units.
- i) The procedure is repeated for the four other sampling points.
- j) The average number of seedlings per square metre for each of the seeded perennial species generated from the five sampling points is evaluated against the minimum industry standard benchmark for the seeded mix.

If the results of the referee evaluation prove that the seed and cover is unacceptable in meeting the minimum industry standard for germination, the Contractor shall then re-apply seed and cover in accordance with this specification to all areas under dispute. In addition, the Contractor shall be responsible for all costs associated with the referee evaluation process.

If the results of the referee evaluation prove that the seed and cover is acceptable in meeting the minimum industry standard for germination, the Owner shall then be responsible for all costs associated with the referee evaluation process.

804.09 MEASUREMENT FOR PAYMENT

804.09.01 Actual Measurement

804.09.01.01 Seed

Seed measurement shall be in square metres following the contours of the ground without any allowance for overlap.

804.09.01.02 Seed and Mulch

Seed and mulch measurement shall be in square metres following the contours of the ground without any allowance for overlap.

804.09.01.03 Seed and Erosion Control Blanket

Seed and erosion control blanket measurement shall be in square metres following the contours of the ground without any allowance for overlap.

804.09.01.04 Seed and Matrix

Seed and matrix measurement shall be in square metres following the contours of the ground without any allowance for overlap.

804.09.02 Plan Quantity Measurement

When measurement is by Plan Quantity, such measurement shall be based on the units shown in the clauses under Actual Measurement.

804.10

BASIS OF PAYMENT

804.10.01

Seed - Item

Seed and Mulch - Item

Seed and Erosion Control Blanket - Item

Seed and Matrix - Item

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

TABLE 1
Permanent Seed Mixes and Seed Certificate Analysis Values

| Permanent Seed Mix | Grade Name | Minimum Seed Germination % | Minimum Seed Purity % | Maximum Weed Seed % | Seed Mix % | Seed Species Composition % |
|--|--|-----------------------------------|------------------------------|----------------------------|-------------------|-----------------------------------|
| Standard Roadside Mix | Canada #1 Lawn Grass Seed Mixture | 70 | 85 | 0.5 | | |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 52 | 45 to 60 |
| Kentucky Bluegrass: <i>Poa pratensis</i> | | | | | 10 | 5 to 15 |
| Perennial Ryegrass: <i>Lolium perenne</i> | | | | | 35 | 30 to 40 |
| White Clover: <i>Trifolium repens</i> | | | | | 3 | 2 to 7 |
| Crown Vetch Mix | Common #1 Ground Cover | 70 | N/A | 0.5 | | |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 66 | 62 to 70 |
| Crown Vetch: <i>Coronilla varia</i> inoculated seed | | | | | 34 | 30 to 38 |
| Birdsfoot Trefoil Mix | Common #1 Forage Mixture | 75 | N/A | 0.5 | | |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 66 | 62 to 70 |
| Birdsfoot Trefoil: <i>Lotus corniculatus</i> inoculated seed | | | | | 34 | 30 to 38 |
| Salt Tolerant Mix | Canada #1 Ground Cover | 70 | 85 | 0.5 | | |
| Tall Fescue: <i>Festuca arundinacea</i> | | | | | 25 | 20 to 30 |
| Fults Alkali Grass: <i>Puccinellia distans</i> | | | | | 20 | 15 to 25 |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 25 | 15 to 30 |
| Perennial Ryegrass: <i>Lolium perenne</i> | | | | | 20 | 15 to 25 |
| Hard Fescue: <i>Festuca trachyphylla</i> | | | | | 10 | 5 to 15 |

Continues on Next Page

| Permanent Seed Mix | Grade Name | Minimum Seed Germination % | Minimum Seed Purity % | Maximum Weed Seed % | Seed Mix % | Seed Species Composition % |
|--|-------------------------------|-----------------------------------|------------------------------|----------------------------|-------------------|-----------------------------------|
| Lowland Mix | Canada #1 Ground Cover | 70 | N/A | 0.5 | | |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 35 | 30 to 40 |
| Brome Grass: <i>Bromus nerres</i> | | | | | 25 | 20 to 30 |
| Kentucky Bluegrass: <i>Poa pratensis</i> | | | | | 10 | 5 to 15 |
| Birdsfoot Trefoil: <i>Lotus corniculatus</i> inoculated seed | | | | | 5 | 3 to 7 |
| White Clover: <i>Trifolium repens</i> | | | | | 5 | 3 to 7 |
| Perennial Ryegrass: <i>Lolium perenne</i> | | | | | 20 | 15 to 25 |
| <hr/> | | | | | | |
| Acidic Soil Mix | Canada #1 Ground Cover | 70 | N/A | 0.5 | | |
| Birdsfoot Trefoil: <i>Lotus corniculatus</i> inoculated seed | | | | | 30 | 25 to 40 |
| Red Top: <i>Agrostis gigantea</i> | | | | | 10 | 5 to 15 |
| Tall Fescue: <i>Festuca arundinacea</i> | | | | | 15 | 10 to 20 |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 30 | 25 to 35 |
| Hard Fescue: <i>Festuca trachyphylla</i> | | | | | 5 | 3 to 7 |
| Alsike Clover: <i>Trifolium hybridum</i> | | | | | 5 | 3 to 7 |
| Red Clover: <i>Trifolium pratense</i> | | | | | 5 | 3 to 7 |

Continues on Next Page

| Permanent Seed Mix | Grade Name | Minimum Seed Germination % | Minimum Seed Purity % | Maximum Weed Seed % | Seed Mix % | Seed Species Composition % |
|--|-------------------------------|-----------------------------------|------------------------------|----------------------------|-------------------|-----------------------------------|
| Old Field Mix | Canada #1 Ground Cover | 70 | N/A | 0.5 | | |
| Flat-topped Aster: <i>Aster umbellatus</i> | | | | | 37 | 35 to 40 |
| New England Aster: <i>Aster novaeangliae</i> | | | | | 17 | 10 to 20 |
| Purple-stemmed Aster: <i>Aster punicens</i> | | | | | 16 | 10 to 20 |
| Canada Goldenrod: <i>Solidago Canadensis</i> | | | | | 12 | 10 to 15 |
| Panicled Aster: <i>Aster simplex/lanceolatus</i> | | | | | 8 | 6 to 10 |
| Heath Aster : <i>Aster ericoides</i> or Frost Aster: <i>Aster pilosus</i> | | | | | 5 | 3 to 7 |
| Grass-leaved Goldenrod: <i>Solidago memorialis</i> | | | | | 5 | 3 to 7 |
| Northern Ontario Mix | Canada #1 Ground Cover | 70 | N/A | 0.5 | | |
| Red Top: <i>Agrostis gigantean</i> | | | | | 3 | 1 to 5 |
| Canada Bluegrass: <i>Poa compressa</i> | | | | | 7 | 5 to 15 |
| Creeping Red Fescue: <i>Festuca rubra</i> | | | | | 40 | 35 to 45 |
| Birdsfoot Trefoil: <i>Lotus corniculatus</i> inoculated seed | | | | | 5 | 2 to 8 |
| Alsike Clover: <i>Trifolium hybridum</i> | | | | | 3 | 1 to 5 |
| White Clover: <i>Trifolium repens</i> | | | | | 2 | 1 to 5 |
| Perennial Rye Grass: <i>Lolium perenne</i> | | | | | 30 | 25 to 35 |
| Meadow Fescue: <i>Festuca pratensis</i> | | | | | 10 | 5 to 15 |

TABLE 2
Application Rates for Seed and Fertilizer

| Permanent Seed Mixes | Permanent Seed Mix Rate kg/10,000 m ² | Fertilizer Rate minimum 200 kg/ha | | | Nurse Crop Rate kg/10,000 m ² |
|-----------------------|---|-----------------------------------|--------|--------|---|
| | | 8-32-16 | 0-46-0 | 0-0-60 | |
| Standard Roadside Mix | 170 | 365 | | | 60 |
| Crown Vetch Mix | 140 | 365 | 260 | | 60 |
| Birdsfoot Trefoil Mix | 140 | 365 | 260 | | 60 |
| Salt Tolerant Mix | 170 | 350 | | | 60 |
| Lowland Mix | 170 | 350 | | | 60 |
| Acidic Soil Mix | 170 | 350 | 220 | 220 | 60 |
| Old Field Mix | 140 | 350 | | | 60 |
| Northern Ontario Mix | 170 | 365 | | | 60 |

TABLE 3
Winter Dormant Period

| SOUTHWESTERN ONTARIO | SOUTHERN ONTARIO | NORTHERN ONTARIO |
|---|--|--|
| That area of Ontario south of a line joining Grand Bend and Clarkson. | That area of Ontario between the northern and southern boundaries of Southwestern Ontario and Northern Ontario respectively. | That area of Ontario north of a line joining Waubauskene, Severn Bridge, Bancroft, and Ottawa. |
| November 15 to April 15 inclusive | November 1 to April 30 inclusive | October 1 to June 1 inclusive |

**Appendix 804-A, November 2014
FOR USE WHILE DESIGNING MUNICIPAL CONTRACTS**

Note: This is a non-mandatory Commentary Appendix intended to provide information to a designer, during the design stage of a contract, on the use of the OPS specification in a municipal contract. This appendix does not form part of the standard specification. Actions and considerations discussed in this appendix are for information purposes only and do not supersede an Owner's design decisions and methodology.

Designer Action/Considerations

No information provided here.

Related Ontario Provincial Standard Drawings

No information provided here.