

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 This section specifies topsoil, topsoil amendments, the stripping of topsoil, the preparation of existing grades, the placement of topsoil, and finish grading.
- 1.2 RELATED SECTIONS .1 Section 01 35 44 - Environmental Protection  
.2 Section 32 92 22 - Hydraulic Seeding  
.3 Section 32 98 00 - Reinstatement
- 1.3 TESTING .1 All soil and sand used in this project shall be tested for compliance with texture specification by a laboratory designated by the Departmental Representative. Soil sampling, testing and analysis to be in accordance with Provincial regulations and standards. Contractor will arrange and pay for cost of tests.
- 1.4 WASTE MANAGEMENT AND DISPOSAL .1 Separate and recycle waste materials.  
.2 Divert unused soil amendments from landfill to a Provincially approved hazardous material collections site.  
.3 Do not dispose of unused soil amendments into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

- 2.1 TOPSOIL .1 Topsoil for this project to consist of topsoil stripped from site and imported topsoil to be supplied by the Contractor.  
.2 Topsoil: mixture of mineral particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth, free of debris, weeds, foreign objects, toxic materials and stones and roots greater than 20 mm length.
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2.1 TOPSOIL  
(Cont'd)

- .3 Soil texture: sandy loam, based on The Canadian System of Soil Classification, to the following particle distribution and gradation:

<u>Particle Type</u>	<u>Distribution by volume</u>	<u>Acceptable Range</u>
very coarse sand	10%	10% or less
coarse & medium sand	45%	42-47%
fine sand	15%	13-17%
very fine sand	10%	8-12%
clay	20%	18-23%

<u>Particle Type</u>	<u>Gradation</u>
very coarse sand	2.0-1.0 mm
coarse sand	1.0-0.5 mm
medium sand	0.5-0.25 mm
fine sand	0.25-0.15 mm
very fine sand	0.15-0.106 mm
clay	less than 0.06 mm

- .4 Organic matter: 4-20% by dry weight volume, well decomposed and stable. Organic material measuring 20 mm will not exceed 2% by volume.
- .5 pH range: 6.0-7.0
- .6 Consistency: friable when moist.
- .7 Fertility: major soil nutrients present in following ratios:  
.1 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil  
.2 Phosphorus (P): 10 to 20 micrograms of phosphate per gram of topsoil.  
.3 Potassium (K): 80 to 120 micrograms of potash per gram of topsoil.  
.4 Calcium, magnesium, sulphur and/or establishment of intended vegetation.

2.2 SOURCE QUALITY  
CONTROL

- .1 Advise Departmental Representative of sources of topsoil to be utilized with sufficient lead time for testing.
- .2 Contractor is responsible for amendments to supply topsoil as specified.

PART 3 - EXECUTION

- 3.1 STRIPPING OF TOPSOIL
- .1 Commence topsoil stripping of areas after all wood, brush and grasses have been removed from site.
  - .2 Strip and pulverize topsoil to depths as indicated. Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
  - .3 Stockpile in locations as directed by Department Representative. Stockpile height not to exceed 2 m.
  - .4 Unused topsoil is to remain on site.
  - .5 Protect stockpiles from contamination and compaction.
- 3.2 PREPARATION OF EXISTING GRADE
- .1 Verify that grades are correct. If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Department Representative.
  - .2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.
  - .3 Remove debris, roots, branches, stones in excess of 25 mm diameter and other deleterious materials. Remove soil contaminated with calcium chloride, toxic materials and petroleum products. Remove debris which protrudes more than 75 mm above surface. Dispose of removed material off site.
  - .4 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm. Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.
- 3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL
- .1 Place topsoil after Departmental Representative has accepted subgrade.
  - .2 Spread topsoil in uniform layers not exceeding 150 mm.
  - .3 Spread topsoil/planting soil to following minimum depths after settlement.
    - .1 150 mm for seeded areas.
    - .2 500 mm for shrub beds.

- 3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL  
(Cont'd) .4 Manually spread topsoil/planting soil around trees, shrubs and obstacles.
- 3.4 SOIL AMENDMENTS .1 For planting beds and turf areas: apply and thoroughly mix soil amendments into full specified depth of topsoil at following rates recommended by soil analyses.
- 3.5 FINISH GRADING .1 Grade to eliminate rough spots and low areas and ensure positive drainage. Prepare loose friable bed by means of cultivation and subsequent raking.
- .2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative. Leave surfaces smooth, uniform and firm against deep footprinting.
- 3.6 ACCEPTANCE .1 Departmental Representative will inspect and test topsoil in place and determine acceptance of material, depth of topsoil and finish grading.
- 3.7 SURPLUS MATERIAL.1 Dispose of surplus materials off site.
- 3.8 CLEANING .1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 This Section specifies seed, mulch, slurry preparation and application, and maintenance for hydraulic seeding.
- 1.2 RELATED SECTIONS .1 Section 01 35 44 - Environmental Protection  
.2 Section 32 91 21 - Topsoil and Finish Grading  
.3 Section 32 98 00 - Reinstatement
- 1.3 SUBMITTALS .1 Upon request, provide product data for:  
.1 Seed.  
.2 Mulch.  
.3 Tackifier.  
.4 Fertilizer.
- 1.4 SCHEDULING .1 Schedule hydraulic seeding to coincide with preparation of soil surface.  
.2 Schedule hydraulic seeding to be completed not later than September 30 without written approved from Departmental Representative.
- 1.5 WASTE MANAGEMENT AND DISPOSAL .1 Separate and recycle waste materials.  
.2 Divert unused fertilizer from landfill to Provincially approved hazardous material site.  
.3 Do not dispose of unused fertilizer into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.
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PART 2 - PRODUCTS

- 2.1 SEED .1 "Canada pedigreed grade" in accordance with Government of Canada Seeds Act and Regulations.
- .2 Mixture composition:
- .1 60% Creeping Red Fescue
- .2 20% Hard Fescue
- .3 10% Perennial Rye
- .4 10% White Clover
- 2.2 MULCH .1 Specially manufactured for use in hydraulic seeding equipment, non-toxic, water activated, green colouring, free of germination and growth inhibiting factors with following properties:
- .1 Made from wood cellulose fibre.
- .2 Organic matter content: 95% plus or minus 0.5%.
- .3 Value of pH: 6.0.
- .4 Potential water absorption: 900%.
- 2.3 TACKIFIER .1 Water soluble vegetable carbohydrate powder.
- 2.4 WATER .1 Free of impurities that would inhibit germination and growth.
- 2.5 FERTILIZER .1 To Canada "Fertilizers Act" and "Fertilizers Regulations". Complete synthetic, slow release with 35% of nitrogen content in water-insoluble form.
- 2.6 INOCULANTS .1 Inoculant containers to be tagged with expiry date.
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PART 3 - EXECUTION

- 3.1 WORKMANSHIP
- .1 Do not spray onto structures, signs, guide rails, fences, plant material, utilities and other than surfaces intended.
  - .2 Clean-up immediately, any material sprayed where not intended, to satisfaction of Departmental Representative.
  - .3 Do not perform work under adverse field conditions such as wind speeds over 10 km/h, frozen ground or ground covered with snow, ice or standing water.
  - .4 Protect seeded areas from trespass until plants are established.
- 3.2 PREPARATION OF SURFACES
- .1 Fine grade areas to be seeded free of humps and hollows. Ensure areas are free of deleterious and refuse materials.
  - .2 Ensure areas to be seeded are moist to depth of 150 mm before seeding.
  - .3 Obtain Departmental Representative's approval of grade and topsoil depth before starting to seed.
- 3.3 FERTILIZING PROGRAM
- .1 Fertilize prior to fine grading incorporating fertilizer equally distributed in accordance with the following program.
  - .2 Following germination, all seeded areas to receive an application of fertilizer at rate specified by fertilizer manufacturer after one cut.
  - .3 Apply additional soil supplements as determined necessary by soils analysis conducted during establishment period.
- 3.4 PREPARATION OF SLURRY
- .1 Measure quantities of materials by weight or weight-calibrated volume measurement.
  - .2 Charge required water into seeder. Add material into hydraulic seeder under agitation. Pulverize mulch and charge slowly into seeder.
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- 3.4 PREPARATION OF SLURRY (Cont'd)
- .3 After all materials are in the seeder and well mixed, charge tackifier into seeder and mix thoroughly to complete slurry
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- 3.5 SLURRY APPLICATION
- .1 Hydraulic seeding equipment:
- .1 Slurry tank.
  - .2 Agitation system for slurry to be capable of operating during charging of tank and during seeding, consisting of recirculation of slurry and/or mechanical agitation method.
  - .3 Capable of seeding by 50 m hand operated hoses and appropriate nozzles.
  - .4 Slurry mixture applied per 100 square metres.
    - .1 Seed: Grass mixture 2.0 kg.
    - .2 Mulch: 10 kg.
    - .3 Tackifier: as recommended by manufacturer.
    - .4 Water: Minimum 100 litres.
    - .5 Fertilizer: not less than 1,650 kg of phosphorous
- .2 Apply slurry uniformly, at optimum angle of application for adherence to surfaces and germination of seed.
- .3 Using correct nozzle for application.
- .4 Using hoses for surfaces difficult to reach and to control application.
- .5 Blend application 300 mm into adjacent grass areas or sodded areas to form uniform surfaces.
- .6 Re-apply where application is not uniform.
- .7 Remove slurry from items and areas not designated to be sprayed.
- .8 Protect seeded areas from trespass.
- .9 Remove protection devices as directed by Departmental Representative.
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- 3.6 MAINTENANCE DURING ESTABLISHMENT PERIOD
- .1 Perform following operations from time of seed application until acceptance by Departmental Representative.
- .2 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.
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- 3.6 MAINTENANCE .3 Mow grass once whenever it reaches height of 90 mm.  
DURING ESTABLISHMENT Remove clippings which will smother grass.  
PERIOD  
(Cont'd) .4 Fertilize seeded areas after first cutting in  
accordance with fertilizing program. Spread half of  
required amount of fertilizer in one direction and  
remainder at right angles; water in well.
- .5 Control weeds by mechanical or chemical means  
utilizing integrated pest management practices  
approved by the Departmental Representative.
- .6 Water seeded area to maintain optimum soil moisture  
level for germination and continued growth of grass.  
Control watering to prevent washouts.
- 3.7 ACCEPTANCE .1 Seeded areas will be accepted by Departmental  
Representative provided that:  
.1 Plants are uniformly established. Seeded areas  
are free of rutted, eroded, bare or dead spots.  
.2 Areas have been mown at least twice.  
.3 Areas have been fertilized.
- .2 Areas seeded in fall will achieve final acceptance  
in following spring, one month after start of growing  
season provided acceptance conditions are fulfilled.
- 3.8 MAINTENANCE .1 Perform following operations from time of acceptance  
DURING until end of warranty period.  
WARRANTY PERIOD .2 Repair and reseed dead or bare spots to satisfaction  
of Departmental Representative.
- .3 Fertilize seeded areas in accordance with  
fertilizing program. Spread half of required amount  
of fertilizer in one direction and remainder at right  
angles and water in well.
- 3.9 CLEANING .1 Upon completion of installation, remove surplus  
materials, rubbish, tools and equipment barriers.

PART 1 - GENERAL

- 1.1 WORK INCLUDED .1 The work to be done under this Section consists of furnishing all materials, labour, tools and equipment and performing all operations necessary for the complete reinstatement of surfaces and structures disturbed by work of this Contract.
- .2 Repair damage or disturbance to surfaces, properties and structures, within limits of the Site or elsewhere on other properties occupied, traversed or otherwise used by the Contractor during the Contract period to the condition that existed before work began, at no additional cost to the Contract.
- 1.2 RELATED WORK .1 Cast-in-Place Concrete: Section 03 30 0.0
- .2 Excavating, Trenching and Backfilling: Section 31 23 10.
- .3 Topsoil placement: Section 32 91 21.
- .4 Hydraulic Seeding: Section 32 92 22.
- 1.3 REFERENCES .1 PEI Department of Transportation, Infrastructure and Energy Standard Specifications, latest edition.
- 1.4 MAINTENANCE .1 Contractor shall take care and maintain all reinstated areas until final acceptance of the work.
- .2 Repair damaged areas to the approval of the Departmental Representative.
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PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Granular material: in accordance with the requirements by PEI DOTIE Class A material.
- .2 Concrete material: as specified by Section 03 30 00.
- .3 Grass surface materials: as specified in Sections 32 91 21.

PART 3 - EXECUTION

- 3.1 GENERAL .1 Maintain surfaces to be reinstated level with adjoining existing surfaces gravel until final reinstatement.
- 3.2 GRANULAR SURFACES .1 Reinstated granular surfaces by placing 150 mm compacted thickness of Class A granular at an elevation such that gravel surface is smooth and even with adjacent surfaces.
- .2 Place and compact gravel for surfaces in accordance with the requirements of PEI Department of Transportation, Infrastructure and Energy Standard Specifications.
- 3.3 GRASS SURFACES .1 Hydraulic seeding: to Section 32 92 22. Fine grade areas to be reinstated to smooth surface. Grade to allow for topsoil and seed to be placed so finish grade is smooth and even with existing surfaces.