PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Materials and installation of topsoil for the LTWMF and PGWMF sites.

1.2 MEASUREMENT AND PAYMENT

.1 Measure rototilling, supplying, placing and spreading topsoil, and grading in square metres as determined from actual surface area covered and depth of topsoil specified.

.2 Measure supplying and placing topsoil for tree pits per tree.

.3 Measure unit price per sample for laboratory analysis.

1.3 REFERENCES

.1 Agriculture and Agri-Food Canada
  .1 The Canadian System of Soil Classification, Third Edition, 1998.

.2 Canadian Council of Ministers of the Environment
  .1 PN1340-2005, Guidelines for Compost Quality.

.3 Canadian Nursery Landscape Association (CNLA)
  .1 Canadian Standards for Nursery Stock, 8th Edition, 2006.

.4 MOE & CCME Soil Quality Guideline/Criteria, Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the EPA (2011).

1.4 DEFINITIONS

.1 Compost:
  .1 Mixture of soil and decomposing organic matter used as fertilizer, mulch, or soil conditioner.
  .2 Compost is processed organic matter containing 40% or more organic matter as determined by Walkley-Black or Loss On Ignition (LOI) test.

.2 Product shall be sufficiently decomposed (i.e. stable) so that any further decomposition does not adversely affect plant growth (C:N ratio below (25) (50)), and contain no toxic or growth inhibiting contaminates.

1.5 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

.2 Quality control submittals:
- .1 Soil testing: submit certified test reports showing compliance with specified performance characteristics and physical properties as described in PART 2 - SOURCE QUALITY CONTROL.
- .2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 QUALITY ASSURANCE

.1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements in accordance with Section 01 32 16.

PART 2 - PRODUCTS

2.1 TOPSOIL

.1 Use existing topsoil from the stockpiles generated during the topsoil stripping operation.

2.2 SOIL AMENDMENTS

.1 Fertilizer:
- .1 Allow for N16-P32-K6 at 275 lbs/ac.
- .2 Allow for MG at 50 lbs/ac.
- .3 pH value: 6.5 to 8.0.

.2 Compost: Compost to meet Canadian Council of Ministers for the Environment Guidelines (CCME compliant).

.3 Sand: washed coarse silica sand, medium to course textured.

.4 Limestone:
- .1 Ground agricultural limestone.
- .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.

.5 Fertilizer: industry accepted standard medium containing nitrogen, phosphorous, potassium and other micro-nutrients suitable to specific plant species or application or defined by soil test.

2.3 SOURCE QUALITY CONTROL

.1 Contractor is responsible for supplying and mixing the fertilizer amendments to meet the requirements of Clause 2.2 and in accordance with recommendations from the Soil Tests. The operation to amend the existing topsoil with fertilizer will be monitored by the Departmental Representative on site. Departmental Representative may undertake at their sole discretion QA sampling and anlaysis at the owner's cost.

.2 Soil testing by accredited testing facility for PH, P and K, and organic matter.

.1 Provide 1 test per 5,000 m^3 of existing topsoil. Provide the test results to the Departmental Representative and provide the recommended amendments, received from the Soil Testing Laboratory.

.2 Include a chemical analysis for each test to ensure that there are no toxic elements or growth inhibiting materials.

.3 Contractor is responsible for retaining an accredited soil testing laboratory, as published by the Ministry of Agriculture, Food and Rural Affairs. The purpose of the testing is to confirm the fertilizer amendments required based on the characteristics of the existing topsoil.

.1 Contractor is responsible for QC, ensuring that the recommended amendments from the soil tests have been incorporated. The Contractor will be responsible for completing and paying for additional testing if the tests indicate that the amendments have not been applied at the recommended rates.

PART 3 - EXECUTION

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL

.1 Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, according to requirements of authorities having jurisdiction.

.2 Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.

3.1 TEMPORARY EROSION AND SEDIMENTATION CONTROL (Cont'd)

.3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

3.2 STRIPPING OF TOPSOIL

.1 Refer to Section 31 14 13.

3.3 PREPARATION OF SUBGRADE

.1 Verify that grades are correct.
- .1 If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.

.2 Grade soil, eliminating uneven areas and low spots, ensuring positive drainage.

.3 Remove debris, roots, branches, stones in excess of 50 mm diameter and other deleterious materials.
- .1 Remove soil contaminated with calcium chloride, toxic materials and petroleum products.
- .2 Remove debris which protrudes more than 75 mm above surface.
- .3 Dispose of removed material off site.

.4 Rototill all areas which are to receive topsoil, seed sod and plant material to a minimum depth of 300 mm.
- .1 Rototill these areas in both directions to provide a continuous loose subgrade layer. Do not place topsoil until the subgrade layer has been accepted by the Departmental Representative. Placing topsoil on a compacted subgrade will be rejected.

3.4 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 To provide a smooth surface, use a tractor mounted screen or similar equipment to remove stones over 50 mm diameter and course vegetative material, 10 mm x 100 mm length, occupying more than 2% of soil volume.

3.4 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL (Cont'd)

.4 For sodded areas keep topsoil 15 mm below finished grade.

.5 Spread topsoil to the following minimum depths after settlement.
- .1 150 mm deep for seeded areas.
- .2 150 mm deep for sodded areas.
- .3 1000 mm deep for tree pits. Excavate and provide 6.0 m^3 of topsoil per tree pit.

.6 Manually spread topsoil around trees, shrubs and obstacles.

3.5 SOIL AMENDMENTS

.1 Thoroughly mix the recommended soil amendments, recommended in the Soil Testing Report into the full specified depth of the topsoil.

3.6 FINISH GRADING

.1 Grade to eliminate rough spots and low areas and ensure positive drainage.
- .1 Prepare loose friable bed by means of cultivation and subsequent raking.

.2 Consolidate topsoil to required bulk density using equipment approved by Departmental Representative.
- .1 Leave surfaces smooth, uniform and firm against deep foot printing.

3.7 ACCEPTANCE

.1 Departmental Representative will inspect topsoil in place and determine acceptance of material, depth of topsoil and finish grading.

3.8 SURPLUS MATERIAL

.1 Dispose of materials that are not required off site. Retain excess topsoil on site.

3.9 CLEANING

.1 Proceed in accordance with Section 01 74 11.

.2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION