

## **1 GENERAL**

### **1.01 MEASUREMENT PROCEDURES**

- .1 Preparation of sub-grade for placing of topsoil will be measured in square metres of area prepared.
- .2 Topsoil stripping will be measured by Departmental Representative in cubic metres of stockpiled topsoil and volume will be determined by average end area method].
- .3 Measure placing of topsoil in cubic metres removed from stockpile.
  - .1 Stockpiles will be measured by Departmental Representative and volume of topsoil removed calculated by average end area method.
- .4 Measure supply and application of soil amendments, including fertilizer, in standard commercial units of weight/volume as determined by Departmental Representative.
- .5 Measure finish grading in hectares from actual surface measurements as determined by Departmental Representative.

### **1.02 PAYMENT**

- .1 Testing of topsoil: Departmental Representative will pay for cost of tests as specified in Section 01 29 83 - Payment Procedures for Testing Laboratory Services.

### **1.03 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.

### **1.04 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.
  - .3 Product must 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 contaminants.
  - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category (A) (B).

## **1.05 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .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.

## **2 PRODUCTS**

### **2.01 TOPSOIL**

- .1 Topsoil for seeded areas: mixture of particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
  - .1 Soil texture based on The Canadian System of Soil Classification, to consist of 20 to 70 % sand, minimum 7 % clay, and contain 2 to 10 % organic matter by weight.
  - .2 Contain no toxic elements or growth inhibiting materials.
  - .3 Finished surface free from:
    - .1 Debris and stones over 50 mm diameter.
    - .2 Course vegetative material, 10 mm diameter and 100 mm length, occupying more than 2% of soil volume.
  - .4 Consistence: friable when moist.

### **2.02 SOIL AMENDMENTS**

- .1 Fertilizer:
  - .1 Fertility: major soil nutrients present in following amounts:
  - .2 Nitrogen (N): 20 to 40 micrograms of available N per gram of topsoil.
  - .3 Phosphorus (P): 40 to 50 micrograms of phosphate per gram of topsoil.
  - .4 Potassium (K): 75 to 110 micrograms of potassium per gram of topsoil.
  - .5 Calcium, magnesium, sulfur and micro-nutrients present in balanced ratios to support germination and/or establishment of intended vegetation.
  - .6 Ph value: 6.5 to 8.0.
- .2 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.

### **2.03 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.
- .3 Soil testing by recognized testing facility for PH, P and K, and organic matter.
- .4 Testing of topsoil will be carried out by testing laboratory designated by Departmental Representative.
  - .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

### **3 EXECUTION**

#### **3.01 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 and walkways, 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 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

#### **3.02 STRIPPING OF TOPSOIL**

- .1 Begin topsoil stripping of areas as indicated after area has been cleared of grasses and removed from site.
- .2 Strip topsoil to depths as required.
  - .1 Avoid mixing topsoil with subsoil where textural quality will be moved outside acceptable range of intended application.
- .3 Stockpile in locations as directed by Departmental Representative.
  - .1 Stockpile height not to exceed 2 m.
- .4 Disposal of unused topsoil is to be in an environmentally responsible manner but not used as landfill.
- .5 Protect stockpiles from contamination and compaction.

#### **3.03 PREPARATION OF EXISTING GRADE**

- .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 Cultivate entire area which is to receive topsoil to minimum depth of 100 mm.
  - .1 Cross cultivate those areas where equipment used for hauling and spreading has compacted soil.

### **3.04 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 For sodded areas keep topsoil 15 mm below finished grade.
- .4 Spread topsoil [as indicated] to following minimum depths after settlement.
  - .1 135 mm for sodded areas.
- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

### **3.05 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 footprinting.

### **3.06 ACCEPTANCE**

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

### **3.07 SURPLUS MATERIAL**

- .1 Dispose of materials except topsoil not required where directed by Departmental Representative off site.

**3.08 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

**END OF SECTION**