

## **1 GENERAL**

### **1.01 RELATED WORK**

- .1 Excavation, Trenching & Backfilling - Section 31 23 10.

### **1.02 REFERENCES**

- .1 ASTM D698-12e1, Test Methods for Moisture Density Relations of Soils and Soil Aggregate Mixtures Using 2.49 kg Rammer and 304.8 mm Drop.

## **2 PRODUCTS**

### **2.01 MATERIALS**

- .1 Granular Base: to meet PEI DOTIE Class A and the requirements set forth in Section 31 23 10.

## **3 EXECUTION**

### **3.01 INSPECTION OF UNDERLYING SUB-BASE**

- .1 Place granular base after surface is inspected and approved by Department Representative.
- .2 Underlying material to be compacted to 100% of Standard Proctor Density to ASTM D698

### **3.02 PLACING**

- .1 In areas using granular Class A base, place granular material to compact thickness as indicated.
- .2 Do not place frozen material.
- .3 Place material only on clean unfrozen surface, properly shaped and compacted and free from snow and ice.
- .4 Shape each layer to smooth contour and compact to specified density before succeeding layer is placed.
- .5 Remove and replace that portion of layer in which material becomes segregated during spreading.
- .6 Place and compact shouldering to specified cross slope in reconstruction areas.

### **3.03 COMPACTION EQUIPMENT**

- .1 Vibratory compaction equipment must be used and capable of obtaining required densities on aggregates on project.

### **3.04 COMPACTING**

- .1 Compact granular base to density not less than 100% corrected maximum dry density.
- .2 Shape and roll alternately to obtain smooth, even and uniformly compacted base.
- .3 Apply water as necessary during compacting to obtain specified density. If aggregate is excessively moist, aerate by scarifying with suitable equipment until moisture content is corrected.
- .4 In areas not accessible to rolling equipment, compact to specified density with vibratory mechanical tampers approved by Departmental Representative.
- .5 Density will be determined according to ASTM D698.

### **3.05 FINISH**

- .1 Shape and compact entire road base to within 12mm of design elevations but not uniformly high or low. After re-placement of the millings and placement of the granular base provide a table of cross section elevations at 20 meter grid showing the design and as constructed elevations, demonstrating that the specified tolerance has been achieved and that the road is not uniformly high or low.
- .2 Correct surface irregularities by loosening and adding or removing material until surface is within specified tolerance.
- .3 Shape shouldering cross slope in accordance with the Project Drawings.

### **3.06 MAINTENANCE**

- .1 Maintain finished base in condition conforming to this section until succeeding material is applied or until acceptance by Departmental Representative.

**END OF SECTION**

## **1 GENERAL**

### **1.01 RELATED SECTIONS**

- .1 Excavating, Trenching and Backfilling: Section 31 23 10

### **1.02 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.

## **2 PRODUCTS**

### **2.01 TOPSOIL**

- .1 Topsoil for sodded areas: mixture of particulates, microorganisms 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 Consistency: friable when moist.

## **3 EXECUTION**

### **3.01 PREPARATION OF EXISTING GRADE**

- .1 Verify grades are correct. 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, maintaining 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.

### **3.02 PLACING AND SPREADING OF TOPSOIL/PLANTING SOIL**

- .1 Topsoil is to be placed on all areas disturbed by construction activities, outside of building and road area.
- .2 Place topsoil after the Departmental Representative has accepted subgrade.
- .3 Spread topsoil in uniform layers not exceeding 100 mm.
- .4 For sodded areas keep topsoil 15 mm below finished grade.
- .5 Spread topsoil as indicated.
- .6 Manually spread topsoil around trees, shrubs and obstacles.

### **3.03 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 the Departmental Representative.
  - .1 Leave surfaces smooth, uniform and firm against deep foot printing.

### **3.04 ACCEPTANCE**

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

**END OF SECTION**

## **1 GENERAL**

### **1.01 QUALITY ASSURANCE**

- .1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- .2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

### **1.02 SCHEDULING**

- .1 Schedule sodding to coincide with preparation of soil surface.

## **2 PRODUCTS**

### **2.01 SOD**

- .1 Number One Grade Turfgrass Nursery Sod: grass that has been seeded and cultivated in nursery sod fields as a turfgrass sod. At the time of sale, it should be in healthy condition. Sod this quality may contain up to one (1) broadleaf weeds per 40 square metres and up to 1% native grasses. Sod should be of sufficient shoot density that no surface soil will be visible from a standing position when mowed to a height of 4 cm. The mowing height range should be 3 to 7 cm, The thickness of the soil portion of the sod should not exceed 15 mm. Thickness of the soil portion of the sod may vary with field and environmental conditions at time of harvest but should not exceed 1.5 cm. Note that the soil portion is generally composed of at least 50% volume of grass roots.

### **2.02 FERTILIZER**

- .1 Complete commercial specially blended for promoting root development of newly seeded or sodded areas.
- .2 Formulation ratio: 80% SCU for spring & early fall planting, 100% SCU for fall planting (6-24-6).

### **3 EXECUTION**

#### **3.01 PLACEMENT**

- .1 Place sod over all areas disturbed by construction activities, outside of building and road area.
- .2 Time Limitations: Turfgrass sod to be harvested, delivered and installed/transplanted within a period of 24 hours, unless a suitable preservation method is approved prior to delivery. Turfgrass sod not transplanted within this period must be inspected and approved by the Departmental Representative prior to its installation.
- .3 Place sod in rows perpendicular to the slope, smooth and even with adjoining areas, and with joints staggered. Sections to be butted closely without overlapping or gaps between sections. Cut out irregular or thin sections. If necessary, cut out existing lawn or adjoining areas to accommodate sod. Do not place sod over existing grass or lawn.
- .4 Roll sod with a roller having a mass of 50 kg/m of width. Repeated rolling to correct irregularities in grade is not permitted.
- .5 Water sod within 4 hours of placing to obtain moisture penetration through sod into top 100 mm of topsoil. Continue watering regimen until project work is substantially complete.
- .6 For slopes steeper than three (3) horizontal to one (1) vertical, stake sod in place with wooden stakes.
- .7 Sodded areas will be accepted upon completion of third mowing provided that growth is properly established, and the area is free of bare and dead spots and without weeds. Areas sodded in the fall will be accepted the following spring, one month after start of growing season, providing that acceptance conditions are fulfilled.

#### **3.02 MAINTENANCE**

- .1 Furnish all labor, material and equipment required to complete the work described herein, in strict accordance with the drawings and/or terms of the contract.
- .2 Watering: supply adequate water to the site. The single-most important factor in the successful rooting of newly installed turfgrass sod is adequate, regular watering. Watering should begin immediately after installation. The amount of water

required will vary depending upon season, weather, temperature, wind, slope and turfgrass variety. The general contractor shall designate the party responsible to ensure adequate water supply and application.

- .1 First Week: provide all labor and arrange for all watering necessary for rooting of the turfgrass sod. Keep soil on sod pads moist at all times. In the absence of adequate rainfall, water daily or as often as necessary during the first week and in sufficient quantities to maintain moist soil to a depth of at least 4 inches (100 mm). Watering should be done during the heat of the day to prevent wilting.
- .2 Second and Subsequent Weeks: water the turfgrass sod as required to maintain adequate moisture in the upper 4 inches (100 mm) of soil, necessary for the promotion of deep root growth.
- .3 Mowing: do not attempt the first mowing until the turfgrass sod is firmly rooted and securely in place. Do not remove more than 30 percent of the grass leaf by the initial or subsequent mowings. Take care to maintain cutting blades in a sharp condition.
- .4 Fertilize areas as follows:

Month	Day	Day	Rate	Ratio
01	01	15	500 kg/ha	3:0:0
02	01	15	687 kg/ha	3:1:3
03	01	15	500 kg/ha	1:2:3

Continue at Month 03 rate and ratio until end of project
- .5 Continue maintenance until project is complete and sod is accepted per 3.01.7 by the Departmental Representative.
- .6 A deficiency holdback equal to twice the value of the sodding will be withheld until the sod is accepted.

### 3.03 WARRANTY

- .1 During the project warranty period re-sod bare and dead spots to the satisfaction of the Departmental Representative.

END OF SECTION