

**1. General**

**1.1 Section Includes**

- 1.1.1 This section specifies the requirements for the supply and placement of topsoil, fertilizer, lime and the appropriate finished grading, and the application of seed and mulch for permanent cover and landscaping.

**1.2 Related Sections**

- 1.2.1 Section 01 33 00 – Submittal Procedures.
- 1.2.2 Section 01 74 11 – Cleaning.
- 1.2.3 Section 31 00 00 – Earthwork and Related Work.
- 1.2.4 Section 32 91 19 – Topsoil Placement and Grading.

**1.3 References**

Not applicable.

**1.4 Submittals**

1.4.1 Product Data:

- Submit product data in accordance with Section 01 33 00 – Submittal Procedures.
- Provide product data for:
  - ♦ Seed.
  - ♦ Fertilizer.
  - ♦ Obtain approval of all samples by the Departmental Representative prior to use on the project.

**1.5 Quality Assurance**

- 1.5.1 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
- 1.5.2 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

**1.6 Scheduling**

- 1.6.1 Schedule hydraulic seeding to coincide with the preparation of the soil surface.
- 1.6.2 Hydraulic seeding placed in the Fall will not be accepted until the following Spring.

**1.7 Waste Management and Disposal**

1.7.1 Separate and recycle waste materials.

1.7.2 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.

**1.8 Delivery and Storage**

1.8.1 Deliver and store grass seed in original containers showing:

- Analysis of seed mix.
- Percentage of pure seed.
- Year of production.
- Net mass.
- Date when tagged and location.
- Percentage germination.
- Name and address of distributor.

**2. Products**

**2.1 Materials**

2.1.1 Topsoil materials in accordance with Section 32 91 19.

2.1.2 Fertilizer shall be 6-12-12 grade, uniform in composition, free flowing and suitable for application with approved equipment to the site in bags or other convenient containers, each fully labelled, conforming to the applicable local government laws, and bearing the name, trademark or trade name and warranty of the manufacturer.

2.1.3 Lime shall be ground limestone containing not less than 85% of total carbonates and shall be ground to such fineness that at least 50% will pass through a 100 mesh sieve and at least 90% will pass through a 20 mesh sieve. Coarser materials will be acceptable provided the specified rates of application are increased proportionally on the basis of quantities passing the 100 mesh sieve, but no additional payment will be made for the increased quantity used.

2.1.4 Grass seed: Certified Canada Grade No. 1 to Government of Canada, Seed Regulations and having a minimum germination of 75% and a minimum purity of 97%.

2.1.5 Water, free of impurities that would inhibit germination.

**2.2 Grass Seed Mixture**

2.2.1 The grass seed mixture shall comprise:

- 50% Creeping Red Fescue.
- 30% Kentucky Bluegrass.
- 15% Colonial Bent.
- 5% Dwarf Timothy.

2.2.2 The Contractor may provide an alternate mix design provided it is prepared by a qualified agricultural expert.

### **3. Execution**

#### **3.1 Topsoil**

3.1.1 The topsoil shall be uniformly distributed on the designated areas and evenly spread to an average thickness of 150 mm. The spreading shall be performed in such a manner that planting can proceed requiring little additional soil preparation or tillage. Irregularities in the surface resulting from top soiling or other operations shall be corrected so as to prevent the formation of depressions where water will be standing. Topsoil shall not be placed where the sub-grade is frozen, excessively wet, extremely dry or in a condition otherwise detrimental to the proposed planting or to proper grading.

3.1.2 After the topsoil has been spread and graded as required, the surface shall be cleared of stone, stumps or other objects larger than 50 mm in thickness or diameter, and or root, brush, wire or other objects that might be a hindrance to planting or maintenance operations.

#### **3.2 Application of Fertilizer**

3.2.1 Fertilizer shall be distributed uniformly at a rate of 1125 kg/ha over the area indicated on the drawings to be seeded, and shall be incorporated into the soil to a depth of at least 100 mm by disking, harrowing, or other acceptable methods. The incorporation of fertilizer may be a part of the tillage operation specified in other parts of this section. Distribution by means of an approved seed drill equipped to sow seeds and distribute fertilizer at the same time will be acceptable.

#### **3.3 Application of Lime**

3.3.1 Immediately following the incorporation of the fertilizer, lime shall be distributed at a rate of 1125 kg/ha and shall be incorporated into the soil to a depth of at least 25 mm by disking, harrowing or other acceptable methods.

#### **3.4 Preparation of Surfaces**

3.4.1 Undulation or irregularities in the surface resulting from tillage, fertilizing, liming or other operations shall be levelled before seeding operations are begun. The grassed area when completed and settled shall be on such a grade necessary to facilitate drainage.

### **3.5 Application of Seed**

- 3.5.1 Sow seed during calm weather (winds less than 10 km/h) using equipment suitable for areas involved to the approval of the Departmental Representative. Seed shall be applied at a rate of 175 kg/ha.
- 3.5.2 Sow half of the required amount of seeds in one direction and the remainder at right angles to the original application. Incorporate the seed into the soil to a minimum depth of 5 mm simultaneously or within one hour after seeding operation. Mix carefully with light chain harrow or wire rakes and roll immediately afterward with water ballast type lawn or agricultural type roller.
- 3.5.3 Water with a fine spray, avoiding washing out of the seed. Apply enough water to ensure penetration of minimum 50 mm.
- 3.5.4 Add erosion control agent, into seed applicator and mix thoroughly to complete the seeding slurry when indicated in the contract documents.

### **3.6 Hydro-Seeding**

- 3.6.1 Before Hydro-seeding the surface shall be raked smooth to provide uniform slopes. Topsoil with a uniform organic content will be placed to a thickness of 150 mm, and raked smooth to conform to the prepared slopes.
- 3.6.2 Lime shall be added to the topsoil at a rate of 1125 kg/ha. The lime may be placed up to three (3) weeks ahead of the placement of hydro-seeding.
- 3.6.3 Areas to be treated with hydro-seeding shall be designated by the Departmental Representative in the field. Operations will not commence until the Contractor has the approval of the Departmental Representative.
- 3.6.4 Two operations shall be employed in the hydro-seeding of designated areas:
- The first operation shall consist of the distribution of slurry composed of grass seed, fertilizer, lime and binder. The rate of application of these ingredients shall be as follows:
    - ♦ Grass seed mixture 150 kg/ha.
    - ♦ Fertilizer 600 kg/ha.
    - ♦ Binder 20 kg/ha.
    - ♦ 75% straw, 15% cotton, 10% cellulose.
  - The second operation shall consist of the distribution of slurry composed of mulch, plus binder. The rate of application of these ingredients shall be as follows:
    - ♦ Mulch 2250 kg/ha.
    - ♦ Binder 25 kg/ha.

- ♦ 45% straw, 45% cotton, 10% cellulose.

- 3.6.5 The Contractor shall measure the quantities of each of the materials to be charged into the seed applicator, either by mass or by a system of mass calibrated volume measurements approved by the Departmental Representative. The Contractor shall provide all equipment required for this purpose.
- 3.6.6 Both operations require that the ingredients be thoroughly mixed with water in a hydro-seeding tank. The mix must be continuously agitated during the hydro-seeding operation to ensure that homogeneous slurry is produced.
- 3.6.7 The distribution of the slurry shall be by means of an approved hydro-seed applicator and shall be applied uniformly and in such a manner as to prevent puddling and movement of the soil surface.
- 3.6.8 Work shall proceed only in calm weather and on ground free of frost, snow, ice or standing water and when, in the opinion of the Departmental Representative, weather and seasonal conditions are suitable. Hydro-seeding shall not be carried out during periods of rainfall.

### **3.7 Maintenance**

- 3.7.1 Ensure maintenance equipment is approved by the Departmental Representative.
- 3.7.2 Keep soil moist during germination period and adequately water grassed areas until accepted by the Departmental Representative. The Contractor shall supply his own source of water until an alternative supply has been approved for use by the Departmental Representative.
- 3.7.3 Apply water to ensure moisture penetration of 75 to 100 mm. Control watering to prevent wash-outs.

### **3.8 Protection and Repair**

- 3.8.1 The areas shall be protected against traffic or other use by erecting barricades immediately after seeding is completed and placing warning signs of an approved type on the various areas.
- 3.8.2 If at any time before completion and acceptance of the entire work covered by this contract any portion of the surface becomes gullied or otherwise damaged following seeding, or the seedings have been winter-killed or otherwise destroyed the affected portion shall be repaired to re-establish the condition and grade of the soil prior to seeding and shall be re-seeded as specified in previous sections.

### **3.9 Acceptance**

- 3.9.1 The contractor shall be required to provide maintenance throughout the seeded areas for a period of one continuous growing season. That is, any areas seeded in one

- calendar year shall not receive final acceptance until the expiration of the growing season in the following calendar year.
- 3.9.2 For the purposes of this document the growing season shall be deemed to expire on October 31<sup>st</sup> annually.
- 3.9.3 Maintenance shall be deemed to include:
- The repair of areas affected by erosion.
  - The reinstatement of bare areas.
  - The reinstatement of any areas affected by winter kill.
- 3.9.4 Maintenance shall not be deemed to include the provision of mowing services to the seeded areas.
- 3.9.5 Areas will be accepted by the Departmental Representative provided that:
- Seeded areas are properly established.
  - Turf is free of eroded, bare or dead spots and 98% free of weeds.
  - No surface soil is visible when grass has been cut to a height of 40 mm.

#### **4. Measurement and Basis for Payment**

##### **4.1 Measurement for Payment**

- 4.1.1 Measurement for hydraulic seeding shall be the area actually hydro-seeded, from within the limits established by the Departmental Representative, and measured in square metres, rounded to the nearest whole number.
- 4.1.2 Preparation of the sub-grade for the placement of topsoil will not be measured for payment.
- 4.1.3 Placement of topsoil will be measured in square metres to the thickness specified in the Contract Documents and as per Specification Section 32 91 19.
- 4.1.4 Supply and application of agricultural limestone will be measured in square metres of area treated.
- 4.1.5 Supply and application of fertilizer will be measured in square metres of area treated.

##### **4.2 Basis for Payment**

- 4.2.1 All cost associated with work in this section shall be deemed to be included in the appropriate units and lump sum prices quoted in the Schedule of Quantities and Prices.