

PART 1 - GENERAL**1.1 Related Sections**

- .1 Section 01 33 00 - Submittal Procedures
- .2 Section 01 74 21 - Construction/Demolition Waste Management and Disposal
- .3 Section 32 93 43.01 - Tree Pruning

1.2 References

- .1 Department of Justice Canada
 - .1 Fertilizers Act R.S. 1985, c. F-10.
 - .2 Fertilizers Regulations C.R.C., c. 666.

1.3 Submittals

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit monthly written reports on maintenance during warranty period, to Departmental Representative identifying:
 - .1 Maintenance work carried out.
 - .2 Development and condition of plant material.
 - .3 Preventative or corrective measures required which are outside Contractor's responsibility.

1.4 Scheduling

- .1 Obtain approval from Departmental Representative of schedule indicating beginning of Work.

1.5 Maintenance during Warranty Period

- .1 From time of acceptance by Departmental Representative to end of warranty period, perform following maintenance operations.
 - .1 Water to maintain soil moisture conditions for optimum growth and health of plant material without causing erosion.
 - .2 Apply fertilizer in early spring at manufacturer's suggested rate.
 - .3 Remove dead, broken or hazardous branches from plant material.

PART 2 - PRODUCTS**2.1 Materials**

- .1 Fertilizer:
 - .1 To Canada Fertilizer Act and Fertilizers Regulations.
 - .2 Complete, commercial, slow release with 35 % of nitrogen content in water-insoluble form.
- .2 Anti-desiccant: commercial, wax-like emulsion.
- .3 Wood framing: Construction grade No. 2 dimensional wood as indicated.
- .4 Plastic Snow Fencing: 1.2 m ht -to the approval of the Departmental Representative.
- .5 Water: potable - free from impurities that inhibit growth.

PART 3 - EXECUTION**3.1 Identification and Protection**

- .1 Identify plants and limits of root systems to be preserved as approved by Departmental Representative.
- .2 Protect plant and root systems from damage, compaction and contamination resulting from construction as approved by Departmental Representative.

3.2 Tree Protection Fencing

- .1 Prior to any site work, erect protection fencing in location shown on drawings.
 - .1 Construct and install wood frame as indicated. Fasten to ground by staking. Posts and braces to be installed to dimensional spacing as indicated.
 - .2 Attach fencing to bottom, top, cross rails and posts with wire or staples.
 - .3 Pull fencing tight across framing, continue fastening fence material at each framing section, until entire area is enclosed.
 - .4 Maintain fencing in a neat and complete manner for duration of construction.

3.3 Watering

- .1 During the construction period, in June, July, August, September, water existing trees within protected areas per below;
 - .1 Apply water to surface bi-weekly, soaking area 1.5 times the diameter of the dripline of each tree.

3.4 Pruning

- .1 Prune in accordance with Section 32 93 43.01 - Tree Pruning.
- .2 Prune crown to compensate for root loss while maintaining general form and character of plant.

3.5 General

- .1 Do not store material or equipment within tree drip line.
- .2 Remove protection fencing just prior to final landscaping operations on the approval of the Departmental Representative.

3.6 Anti-Desiccant

- .1 Apply anti-desiccant to foliage of trees that have had roots pruned when applicable and as directed by Departmental Representative.

3.7 Lowering Grade Around Existing Tree

- .1 Begin Work in accordance with schedule approved by Departmental Representative.
- .2 Cut slope not less than 500 mm from tree trunk to new grade level.
- .3 Excavate to depths as indicated. Protect from damage root zone which is to remain.
- .4 When severing roots at excavation level, cut roots with sharp tools.
- .5 Cultivate excavated surface manually to 15 mm depth.
- .6 Prepare homogeneous soil mixture consisting by volume of:
 - .1 60 % excavated soil cleaned of roots, plant matter, stones, debris.

- .2 25 % coarse, clean sterile sand.
- .3 15 % organic matter.
- .4 Grade 2:12:8 fertilizer at rate of 1.5 kg/m³.
- .7 Place soil mixture over area of excavation to finished grade level. Compact to 85 % Standard Proctor Density.
- .8 Water entire root zone to optimum soil moisture level.

3.8 Replacement of Damaged Existing Trees to Remain

- .1 Contractor responsible for any damage incurred to existing trees to remain during construction.
- .2 Contractor must replace any damaged trees with new tree plantings to approval of Departmental Representative.
- .3 Species, quantity and size will be specified by Departmental Representative.

END OF SECTION

PART 1 - GENERAL**1.1 Related Sections**

- .1 Section 01 74 21 – Construction/Demolition Waste Management and Disposal

1.2 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.

PART 2 - PRODUCTS**2.1 Imported Topsoil**

- .1 Topsoil for sodded and seeded areas: mixture of particulates, micro organisms and organic matter which provides suitable medium for supporting intended plant growth.
 - .1 Soil texture Sandy Loam, based on The Canadian System of Soil Classification, to consist of 50-60 % sand, 25-30 % silt, 8-12 % clay and contain 5-10 % 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.

2.2 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 Peatmoss:
 - .1 Derived from partially decomposed species of Sphagnum Mosses.
 - .2 Elastic and homogeneous, brown in colour.
 - .3 Free of wood and deleterious material which could prohibit growth.
 - .4 Shredded particle minimum size: 5 mm.
- .3 Sand: washed coarse silica sand, medium to course textured.

- .4 Compost: A mixture of soil and decomposing organic matter used as a fertilizer, mulch, or soil conditioner. Compost is processed organic matter containing 40% or more organic matter as determined by the Walkley-Black or LOI test. 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. Composed bio-solids must meet the requirements of the Guidelines for Compost Quality, Category (A) (B) produced by the Canadian Council of the Ministers of the Environment (CCME), January 1996.
- .5 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.
- .6 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 Advise Departmental Representative of sources of topsoil and manufactured 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. Soil sampling, testing and analysis to be in accordance with Provincial standards. Departmental Representative will pay for cost of tests as specified in Section 01 29 83 - Payment Procedures: Testing Laboratory Services.

PART 3 - EXECUTION

3.1 Preparation of Existing Grade

- .1 Verify that 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, ensuring positive drainage.
- .3 Remove debris, vegetation, roots, branches, stones in excess of 50 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.

3.2 Placing and Spreading of Topsoil/Planting Soil

- .1 Place topsoil after Departmental Representative has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 100 mm.

- .3 Spread topsoil to following minimum depths after settlement.
 - .1 100 mm for seeded areas.

- .4 Manually spread topsoil around trees, shrubs and obstacles.

3.3 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 foot printing.

3.4 Acceptance

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

3.5 Surplus Material

- .1 Dispose of materials except topsoil not required off site.

3.6 Cleaning

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

END OF SECTION

PART 1 - GENERAL**1.1 Related Sections**

- .1 Section 32 91 19.13 - Topsoil Placement and Finish Grading.

1.2 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.
 - .1 Turfgrass Water Conservation Alliance certification as Drought Tolerant is required for the turf grass seed mix.
 - .2 Provide certification to the Departmental Representative for approval prior to supplying sod to the site.

1.3 Scheduling

- .1 Schedule sod laying to coincide with preparation of soil surface.
- .2 Schedule sod installation when frost is not present in ground.

1.4 Waste Management and Disposal

- .1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal
- .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by Departmental Representative.
- .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.

PART 2 - PRODUCTS**2.1 Materials**

- .1 Number One Turf Grass Nursery Sod: sod that has been especially sown and cultivated in nursery fields as turf grass crop.
 - .1 Turf Grass Nursery Sod:
 - .1 Number One Kentucky Bluegrass-Fescue –Clover Sod - Fescue Sod: Nursery Sod grown solely from seed mixture of cultivars of Kentucky Bluegrass and Chewing Fescue or Creeping Red Fescue, containing not less than 40% Kentucky Bluegrass cultivars, and 30% Chewing Fescue or Creeping Red Fescue cultivars, and not more than 3% White Dutch Clover.
 - .1 The sod is to be a blend that is drought tolerant. The blend of seeds must contain at least 60% of the total seed as cultivars that qualify as "Drought Tolerant" as certified by the Turfgrass Water Conservation Alliance.

- .2 Turf Grass Nursery Sod quality:
 - .1 Not more than 2 broadleaf weeds or 10 other weeds per 40 square metres.
 - .2 Density of sod sufficient so that no soil is visible from height of 1500 mm when mown to height of 50 mm.
 - .3 Mowing height limit: 35 to 65 mm.
 - .4 Soil portion of sod: 6 to 15 mm in thickness.
- .2 Water:
 - .1 As supplied by at site.
- .3 Fertilizer:
 - .1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
 - .2 Complete, synthetic, slow release with 65 % of nitrogen content in water-insoluble form.

2.2 Source Quality Control

- .1 Obtain approval from Departmental Representative of sod at source.
- .2 When proposed source of sod is approved, use no other source without written authorization from Departmental Representative.

PART 3 - EXECUTION

3.1 Preparation

- .1 Verify that grades are correct and prepared in accordance with Section 32 91 19.13 - Topsoil Placement and Finish Grading. If discrepancies occur, notify Departmental Representative and do not commence work until instructed by Departmental Representative.
- .2 Do not perform work under adverse field conditions such as frozen soil, excessively wet soil or soil covered with snow, ice, or standing water.
- .3 Fine grade surface free of humps and hollows to smooth, even grade, to contours and elevations indicated, to tolerance of plus or minus 8 mm, for Turf Grass Nursery Sod and plus or minus 15 mm for Commercial Grade Turf Grass Nursery, surface to drain naturally.
- .4 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site in location as directed by Departmental Representative

3.2 Sod Placement

- .1 Lay sod within 24 hours of being lifted if air temperature exceeds 20 degrees C.
- .2 Lay sod sections in rows, joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.
- .3 Roll sod as directed by Departmental Representative. Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

3.3 Fertilizing Program

- .1 Provide an appropriate fertilizer program and schedule for approval by the Departmental Representative. Fertilize during establishment and warranty periods to the program as approved.

3.4 Maintenance During Establishment Period

- .1 Perform following operations from time of installation until issuance of substantial completion certificate.
- .2 Water sodded areas in sufficient quantities and at frequency required to maintain optimum soil moisture condition to depth of 75 to 100 mm.
- .3 Cut grass to 60 mm when or prior to it reaching height of 80 mm. Remove clippings which will smother grassed areas as directed by Departmental Representative
- .4 Maintain sodded areas 95% weed free
- .5 Fertilize 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

3.5 Acceptance

- .1 Turf Grass Nursery Sod areas will be accepted by Departmental Representative provided that:
 - .1 Sodded areas are properly established and have completely rooted to the soil.
 - .2 Sod is free of bare and dead spots.
 - .3 No surface soil is visible from height of 1500 mm when grass has been cut to height of 60 mm.
 - .4 Sodded areas have been cut regularly at intervals that maintain the grass at 50 to 70 mm height from installation until accepted.
 - .5 The grass must have been mown at least 2 times prior to acceptance.
- .2 Areas sodded in fall will be accepted in following spring one month after start of growing season provided acceptance conditions are fulfilled.

3.6 Maintenance During Warranty Period

- .1 Warranty period begins from time of acceptance by Departmental Representative for a period of 1 year.
 - .1 Repair and re-sod dead or bare spots to satisfaction of Departmental Representative.
 - .2 Topdress and re-sod areas where settlement has occurred to satisfaction of Departmental Representative.

3.7 Cleaning

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

END OF SECTION

PART 1 - GENERAL**1.1 Related Sections**

- .1 Section 32 01 90.33 Tree and Shrub Preservation

1.2 References

- .1 Ontario Ministry of Agriculture, Food and Rural Affairs.
 - .1 Pruning Ornamentals #483.

1.3 Maintenance

- .1 Tool maintenance:
 - .1 Ensure that tools are clean and sharp throughout pruning operation. Do not use tools which crush or tear bark.
 - .2 Disinfect tools before each tree is pruned.
 - .3 On diseased plant material disinfect tools before each cut.

PART 2 - PRODUCTS**2.1 Disinfectant**

- .1 Ethyl alcohol.

PART 3 - EXECUTION**3.1 General**

- .1 Prune in accordance with Pruning Ornamentals #483, and as directed by Departmental Representative.
- .2 Notify immediately Departmental Representative conditions detrimental to health of plant material or operations.
- .3 Prune during plant dormant period or after leaves have matured. Avoid pruning during leaf formation, at time of leaf fall, or when seasonal temperature drops below minus 10° C.
- .4 Prune at appropriate time for each species.
- .5 Retain natural form and shape of plant species.
- .6 Do not:
 - .1 Flush cut branches.
 - .2 Crush or tear bark.
 - .3 Cut behind branch bark ridge.
 - .4 Damage branch collars.
 - .5 Damage branches to remain.

3.2 Pruning

- .1 Remove dead, dying, diseased and weak growth from plant material in order to promote healthy growth.
- .2 Remove live branches that:
 - .1 Interfere with healthy development and structural strength including branches crossed or rubbing

- more important branches.
 - .2 Are of weak structure including narrow crotches.
 - .3 Obstruct development of more important branches.
 - .4 Are broken.
- .3 Remove live branches to re-establish natural species form including:
 - .1 One or more developing leaders.
 - .2 Multiple growth due to previous topping.
 - .3 Branches extending outward from natural form.
 - .4 Undesirable sucker growth.
- .4 Remove loose branches, twigs and other debris lodged in tree.
- .5 For branches under 50 mm in diameter:
 - .1 Locate branch bark ridge and make cuts smooth and flush with outer edge of branch collar to ensure retention of branch collar. Cut target area to bottom of branch collar at angle equal to that formed by line opposite to branch bark ridge.
 - .2 Make cuts on dead branches smooth and flush with swollen callus collar. Do not injure or remove callus collar.
 - .3 Do not cut lead branches unless directed by Departmental Representative.
- .6 For branches greater than 50 mm in diameter:
 - .1 Make first cut on lower side of branch 300 mm from trunk, one third diameter of branch.
 - .2 Make second cut on upper side of branch 500 mm from trunk until branch falls off.
 - .3 Make final cut adjacent to and outside branch collar.
- .7 Ensure that trunk bark and branch collar are not damaged or torn during limb removal. Repair areas which are damaged, or remove damaged area back to next branch collar.
- .8 Remove additional growth designated by Departmental Representative.

3.3 Care of Wounds

- .1 Shape bark around wound to oblong configuration ensuring minimal increase in wound size. Retain peninsulas of existing live bark.

3.4 Clean-up

- .1 Collect, chip and dispose of pruned material daily and remove from site.

END OF SECTION