

Part 1 General

1.1 REFERENCES

- .1 Agriculture and Agri-Food Canada
 - .1 The Canadian System of Soil Classification, Third Edition, 1998.
- .2 Current Canadian Council of Ministers of the Environment
 - .1 PN1340, Guidelines for Compost Quality.
- .3 Current Canadian Green Building Council (CaGBC)
 - .1 LEED Canada-NC Version 1.0, LEED (Leadership in Energy and Environmental Design): Green Building Rating System For New Construction and Major Renovations.

1.2 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), and contain no toxic or growth inhibiting contaminants.
 - .4 Composed bio-solids to: CCME Guidelines for Compost Quality, Category A.

1.3 SUBMITTALS

- .1 Provide submittals in accordance with Section E3.
- .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.

1.4 TESTING

- .1 All topsoil shall be tested for Nitrogen, Phosphate, Potash and minor element values, soluble salt contents, organic matter, atrazine and pH value in order to determine the amount and type of fertilizer or additives to be applied for specific areas.
- .2 Obtain approval of testing agency from the Contract Administrator.

1.5 QUALITY ASSURANCE

- .1 Pre-installation meetings: conduct pre-installation meeting to verify project requirements, installation instructions and warranty requirements.

Part 2 Products

2.1 TOPSOIL SOURCE

- .1 Use topsoil from stockpiled work (if applicable) carried out under Section E15.
- .2 Use additional imported topsoil if necessary. Advise Contract Administrator of topsoil source to be utilized with sufficient lead time for testing.
- .3 Topsoil shall be a screened, fertile, friable, natural loam containing not less than 4% organic matter for clay loams and not less than 2% organic matter for sandy loams to a maximum of 15%.
- .4 Topsoil shall be capable of sustaining vigorous plant growth, free of subsoil contamination, roots and stones over 30 mm in diameter and weeds, with a pH ranging from 6.5 to 7.0.

2.2 TOPSOIL QUALITY

- .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 totally free from:
 - .1 Stones, roots, debris, subsoil, clay lumps, weeds, weed seeds or other solid or deleterious materials.
 - .4 Consistency: friable when moist.

2.3 PLANTING MIXTURE

- .1 Planting mixture for tree pits shall be 6 parts topsoil, 2 part well-rotted manure, 1 part peat moss, and 0.75 kg superphosphate.

2.4 SOIL AMENDMENTS

- .1 Fertilizer:
 - .1 Conform to recommendations from soil testing agency with respect to improvements for tested topsoil and apply as specified for each condition.
 - .2 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 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 Organic matter: compost Category A in accordance with current CCME PN1340, unprocessed organic matter, such as rotted manure, hay, straw, bark residue or sawdust, meeting the organic matter, stability and contaminant requirements.
- .5 Use composts meeting Category B requirements for land fill reclamation and large scale industrial applications.
- .6 Limestone:
 - .1 Ground agricultural limestone.
 - .2 Gradation requirements: percentage passing by weight, 90% passing 1.0 mm sieve, 50% passing 0.125 mm sieve.

2.5 SOURCE QUALITY CONTROL

- .1 Advise Contract Administrator 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, soluble salt contents, atrazine and pH value in order to determine the amount and type of fertilizer or additives to be applied for specific areas.
- .4 Testing of topsoil will be carried out by testing laboratory approved by Contract Administrator.
 - .1 Soil sampling, testing and analysis to be in accordance with Provincial standards.

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 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.

3.2 VERIFICATION OF CONSTRUCTED ROUGH GRADE

- .1 Verify that grades are correct.
 - .1 If discrepancies occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.
 - .2 Allow for minor adjustments to rough grade, 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 if it was contaminated from the time of rough grade acceptance.
 - .2 Remove debris which protrudes more than 50 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.

3.3 PLACING AND SPREADING OF TOPSOIL/PLANTING MIXTURE

- .1 Place topsoil after Contract Administrator has accepted subgrade.
- .2 Spread topsoil in uniform layers not exceeding 100 mm.
- .3 For sodded areas keep topsoil 15 mm below finished grade.
- .4 Spread topsoil to following minimum depths after settlement.
 - .1 100 mm for seeded areas.
 - .2 Place required depth of planting mixture for tree pits as indicated on the details.

- .5 Manually spread topsoil/planting soil around trees, shrubs and obstacles.

3.4 SOIL AMENDMENTS

- .1 For areas designated in the soil test results, apply and thoroughly mix soil amendments into the full specified depth of topsoil at recommended rates.

3.5 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 Contract Administrator.
- .1 Leave surfaces smooth, uniform and firm against deep footprinting.

3.6 ACCEPTANCE

- .1 Contract Administrator will determine acceptance of material, depth of topsoil and finish grading.

3.7 SURPLUS MATERIAL

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

3.8 CLEANING

- .1 Proceed in accordance with Section D13.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.9 MEASUREMENT

- .1 Preparation of sub-grade and placement of topsoil, will be measured in cubic metres OR square metres of installed and settled material.
- .2 No measurement shall be made for tree pit planting mixture.
- .3 Finish grading will be measured on a square metre basis.

3.10 PAYMENT

- .1 Payment for topsoil, placement and grading shall be made at the Unit Price bid in the Form of Tender and shall be compensation in full for all labour, equipment and materials required to complete the work, including testing for topsoil quality.
- .2 Payment for tree pit planting mixture shall be part of the Unit Price bid for plant material as listed in the Form of Tender.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

- .1 Section E3
- .2 Section D13
- .3 Section E15

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit product data in accordance with Section E3
 - .2 Provide product data for:
 - .1 Seed.
 - .2 Fertilizer.

1.3 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.

1.4 SCHEDULING

- .1 Schedule mechanical seeding to coincide with the preparation of soil surface and the most appropriate time of year for best seed germination.
- .2 Schedule completion of work immediately prior to hydraulic mulching.
- .3 Dormant lawn seeding may be applied in late fall for spring germination under optimal conditions.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate and recycle waste materials in accordance with Section D13.
- .2 Divert unused fertilizer from landfill to official hazardous material collections site approved by Contract Administrator.

- .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 GRASS SEED

- .1 Canada "Certified" seed, "Canada No. 1 Lawn Grass Mixture" in accordance with Government of Canada "Seeds Act" and "Seeds Regulations".
 - .1 Grass seed mixture.
 - .1 To be determined in coordination with City of Winnipeg
 - .2 In packages individually labelled in accordance with "Seeds Regulations" and indicating name of supplier.

2.2 WATER

- .1 Free of impurities that would inhibit germination and growth.

2.3 FERTILIZER

- .1 To Canada "Fertilizers Act" and "Fertilizers Regulations".
- .2 Complete synthetic fertilizer with guaranteed minimum analysis as specified in soil test results.

Part 3 Execution

3.1 QUALITY OF WORK

- .1 Do not perform work under adverse field conditions as determined by Contract Administrator.
- .2 Remove and dispose of weeds; debris; stones 50 mm in diameter and larger; soil contaminated by oil, gasoline and other deleterious materials; off site.

3.2 SEED BED PREPARATION

- .1 Verify that grades are correct. If discrepancies occur, notify Contract Administrator and do not commence work until instructed by Contract Administrator.
- .2 Fine grade surface free of humps and hollows to smooth, even grades as indicated to tolerance of plus or minus 15 mm, surface draining naturally.
- .3 Cultivate fine grade approved by Contract Administrator to 25 mm depth immediately prior to seeding.

3.3 SEED PLACEMENT

- .1 For mechanical seeding:
 - .1 Use "Brillion" type mechanical landscape seeder which accurately places seed at specified depth and rate and rolls in single operation.
 - .2 Use equipment and method acceptable to Contract Administrator.
- .2 For manual seeding:
 - .1 Use "Cyclone" type manually operated seeder.
 - .2 Use manually operated, water ballast, landscaping type, smooth steel drum roller. Ballast as directed by Contract Administrator.
 - .3 Use equipment and method acceptable to Contract Administrator.
- .3 On cultivated surfaces, sow seed uniformly at rate of:
 - .1 ___ kg/M².
- .4 Blend applications 150 mm into adjacent grass areas and/or previous applications to form uniform surfaces.
- .5 Sow half of required amount of seed in one direction and remainder at right angles as applicable.
- .6 Incorporate seed by light raking in cross directions.
- .7 Consolidate mechanically seeded areas by rolling area if soil conditions warrant or if directed by Contract Administrator with equipment approved by Contract Administrator immediately after seeding.

3.4 FERTILIZING PROGRAM

- .1 Amend topsoil for seeded areas using the soil test analysis results as specified in Section 32 91 19 – Topsoil Placement and Grading.
- .2 Fertilize during establishment and warranty periods to following program, or as recommended by the soil testing agency:

Month	Day	Rate	Ratio
September	15 to 30	350 kg/ha	6:6:12
April	15 to 30	350 kg/ha	12:8:8

3.5 PROTECTION

- .1 Protect seeded areas from trespass satisfactory to Contract Administrator.
- .2 Erect and maintain a continuous temporary barrier fence to prevent traffic on newly seeded areas for a period of one year following Substantial Performance.
- .3 Remove protection devices as directed by Contract Administrator.

3.6 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following operations from time of seed application until acceptance by Contract Administrator:
 - .1 Grass Mixture:
 - .1 Water seeded area to maintain optimum soil moisture level for germination and continued growth of grass. Control watering to prevent washouts.
 - .2 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.
 - .3 Cut grass to 75 mm whenever it reaches height of 100 mm. Remove clippings which will smother grass as directed by Contract Administrator.
 - .4 Fertilize seeded 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.
 - .5 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.
 - .2 Conservation mixture:
 - .1 Do not mow designated wildflower and ground cover areas.
 - .2 Repair and reseed dead or bare spots to allow establishment of seed prior to acceptance.

3.7 FINAL ACCEPTANCE

- .1 Seeded areas will be accepted by Contract Administrator provided that:
 - .1 Areas are uniformly established and turf is free of rutted, eroded, bare or dead spots and free of weeds.
 - .2 Areas have been cut at least twice, if required.
 - .3 Areas have been fertilized.
- .2 Areas seeded in fall will be accepted in following spring, one month after start of growing season provided acceptance conditions are fulfilled.

3.8 MAINTENANCE DURING WARRANTY PERIOD

- .1 Perform following operations from time of acceptance until end of warranty period.
 - .1 Water seeded area to maintain optimum soil moisture level for continued growth of grass. Control watering to prevent washouts.
 - .2 Repair and reseed dead or bare spots to satisfaction of Contract Administrator.

- .3 Cut grass to 75 mm whenever it reaches height of 100 mm. Remove clippings which will smother grass as directed by Contract Administrator.
- .4 Fertilize seeded 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.
- .5 Control weeds by mechanical or chemical means utilizing acceptable integrated pest management practices.

3.9 CLEANING

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

3.10 MEASUREMENT

- .1 Mechanical seeding for each type of grass will be measured on a square metre basis.
- .2 Maintenance during the warranty period of areas seeded will be measured on a square metre basis.

3.11 PAYMENT

- .1 Payment shall be made at the Unit Price bid in the Form of Tender and shall be compensation in full for all labour, equipment and materials required to complete the work. Areas of blending into existing turf grass will not be measured for payment.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Materials and installation for plant material, accessories, mulch, planting, tree support, mulching and maintenance.
- .2 Related Sections:
 - .1 Section E3.
 - .2 Section D13.
 - .3 Section E15.
 - .4 Section 32 91 19 - Topsoil Placement and Grading.

1.2 REFERENCES

- .1 Agriculture and Agri-Food Canada (AAFC).
 - .1 Current Plant Hardiness Zones in Canada.
- .2 Canadian Nursery Landscape Association (CNLA).
 - .1 Current Canadian Standards for Nursery Stock.
- .3 Department of Justice Canada (Jus).
 - .1 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
 - .2 Transportation of Dangerous Goods Act (TDGA), 1992, c.34.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
 - .1 Material Safety Data Sheets (MSDS).

1.3 DEFINITIONS

- .1 Mycorrhiza: association between fungus and roots of plants. This symbiosis enhances plant establishment in newly landscaped and imported soils.

1.4 SUBMITTALS

- .1 Make submittals in accordance with Section E3.
- .2 Submit product data for:

- .1 Fertilizer.
- .2 Anti-desiccant.
- .3 Guying assembly including clamps, collar, guying wire, anchors and wire tightener.
- .4 Mulch.
- .3 Submit WHMIS MSDS - in accordance with Section E3 and Section D13.
- .4 Submit samples for:
 - .1 Mulch.
 - .2 Planting mixture.

1.5 QUALITY ASSURANCE

- .1 The work in this Section shall be executed by a licensed in Manitoba, and who is known to have been responsible for satisfactory installations during a period of at least five years.

1.6 STORAGE AND PROTECTION

- .1 Protect plant material from frost, freezing, excessive heat, wind and sun during delivery.
- .2 Immediately store and protect plant material which will not be installed within 1 hour after arrival at site in an approved shaded site storage location.
- .3 Plant material delivered to site shall be installed within 5 days of arrival on site. Plant material not installed within 5 days of arrival on site will not be accepted.
- .4 Protect plant material from damage during transportation:
 - .1 When delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, tie tarpaulins around plants or over vehicle box.
 - .2 When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/h, use enclosed vehicle where practical.
 - .3 Protect foliage and root balls using anti-desiccants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
 - .4 Plant material delivered in an enclosed vehicle shall be kept cool for the duration of transport.
- .5 Protect stored plant material from frost, wind and sun and as follows:
 - .1 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.
- .6 Waste Management and Disposal:

- .1 Separate waste materials for reuse and recycling in accordance with Section D13.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene and corrugated cardboard packaging material for recycling in accordance with Waste Management Plan (WMP).
- .4 Separate for reuse and recycling and place in designated containers Steel, Metal, and Plastic waste in accordance with WMP.
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, and Regional and Municipal regulations.
- .7 Divert unused metal materials from landfill to approved metal recycling facility.
- .8 Fold up metal and plastic banding, flatten and place in designated area for recycling.
- .9 Divert discarded plastic plant containers materials from landfill to approved plastic recycling facility.
- .10 Dispose of unused fertilizer at approved official hazardous material collection site.
- .11 Dispose of unused anti-desiccant at approved official hazardous material collections site.
- .12 Divert unused wood and mulch materials from landfill to approved recycling or composting facility.

1.7 SCHEDULING

- .1 Obtain approval for the planting program schedule from the Contract Administrator 7 days in advance of shipment of plant material.
- .2 Plant only under conditions that are conducive to the health and best physical condition of plant materials.
- .3 Schedule of planting program to include:
 - .1 Quantity and type of plant material.
 - .2 Shipping dates.
 - .3 Arrival dates on site.
 - .4 Planting dates.
 - .5 Duration of planting operations.

- .4 Coordinate shipping of plants and planting operations to ensure minimum time lapse between digging and planting.
- .5 Extended planting operations over a long period of time with a limited crew will not be accepted.

1.8 WARRANTY

- .1 The Contractor hereby warrants that plant material as itemized on plant list will remain free of defects for two full growing seasons from the date of Substantial Performance.
- .2 End-of-warranty inspection will be conducted by the Contract Administrator. Attendance by the Contractor is mandatory.
- .3 The Contract Administrator reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at end of initial warranty period, leaf development and growth is not sufficient to ensure future survival.

Part 2 Products

2.1 PLANTING MIXTURE

- .1 Planting mixture to be 6 parts topsoil, 2 parts decomposed weed-free manure, 1 part peat moss and 0.75 kg superphosphate (Triple Mix).

2.2 PLANT MATERIAL

- .1 Plant material to conform to the plant list shown on the drawings.
- .2 Substitutions for specified plants require the Contract Administrator's written approval.
- .3 Type of root preparation, sizing, grading and quality: comply with Canadian Standards for Nursery Stock.
 - .1 Source of plant material: grown in Zone 3a in accordance with Plant Hardiness Zones in Canada.
 - .2 Plant material must be planted in zone indicated as appropriate for its species.
 - .3 Plant material in location appropriate for its species.
- .4 Plant material: free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.
- .5 Trees: with straight trunks, well and characteristically branched for species except where specified otherwise.
- .6 Collected stock: not permitted.
- .7 Conifers: spring dug, selected by Contract Administrator prior to digging.

2.3 WATER

- .1 Free of impurities that would inhibit plant growth.

2.4 STAKES

- .1 Metal T-Bars.

2.5 WIRE TIGHTENER

- .1 Not applicable.

2.6 GUYING WIRE

- .1 ArborTie[®] GREEN, (3) 3048 mm lengths, by Deep Root Partners, L.P., 1 800 458 7668.

2.7 CLAMPS

- .1 Not applicable.

2.8 GUYING COLLAR

- .1 Not applicable.

2.9 TRUNK PROTECTION

- .1 Burlap: clean, minimum 2.5 kg/m² mass and 150 mm wide, and twine fastener.
- .2 Rodent guard:
 - .1 Welded wire mesh or PVC trunk guard. No dark coloured materials.
 - .2 Bottom of guard to be 50 mm below finished grade. Check and adjust guards every fall to ensure they are mouse tight, free of trash and not interfering with root or trunk development.

2.10 MULCH

- .1 Approved clean untreated wood chips
- .2 Ensure wood mulch is well shredded, wood chunks greater than 15cm in length are not acceptable.

2.11 FERTILIZER

- .1 Synthetic commercial type as recommended by soil test report.

2.12 ANTI-DESICCANT

- .1 Wax-like emulsion.

2.13 FLAGGING TAPE

- .1 Fluorescent, orange or green colour.

2.14 SOURCE QUALITY CONTROL

- .1 Make arrangements for inspection of the plant material by the Contract Administrator at the source of the supply, minimum 7 days prior to the scheduled shipment of the material.
- .2 Obtain written approval from Contract Administrator of plant material prior to planting.
- .3 Imported plant material must be accompanied with necessary permits and import licenses. Conform to Federal, Provincial or Territorial regulations.

Part 3 Execution

3.1 PRE-PLANTING PREPARATION

- .1 Ensure plant material on site is acceptable to the Contract Administrator.
- .2 Deliver all materials in their original containers with all labels intact and legible. Containers with additives shall clearly indicate contents, weight, analysis, and manufacturer's name.
- .3 Remove damaged roots and branches from plant material.
- .4 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.

3.2 EXCAVATION AND PREPARATION OF PLANTING BEDS

- .1 Establishment of sub-grade for planting beds is specified in Section E15.
- .2 For individual planting holes:
 - .1 Stake out location of tree pits and obtain approval from the Contract Administrator prior to excavating.
 - .2 Excavate to depth and width as indicated.
 - .3 Remove rocks, roots, debris and toxic material from excavated material that will be used as planting soil for trees and individual shrubs. Dispose of excess material.
 - .4 Scarify sides and bottom of tree pits.
 - .5 Remove water which enters excavations prior to planting. Notify the Contract Administrator if water source is ground water.

3.3 PLANTING

- .1 For jute burlapped root balls, cut away top one third of wrapping and wire basket without damaging root ball. Do not pull burlap or rope from under root ball.

- .2 Plant vertically in locations as indicated. Orient plant material to give best appearance in relation to structure, roads and walks.
- .3 For trees:
 - .1 Backfill soil in 150 mm lifts. Tamp each lift to eliminate air pockets. When two thirds of depth of planting pit has been backfilled, fill remaining space with water. After water has penetrated into soil, backfill to finish grade.
 - .2 Form watering saucer as indicated.
 - .3 Install filter fabric over tree saucers prior to mulching.
- .4 Install all plant material 75 mm high relative to finished grades to allow for natural settlement.
- .5 Water plant material thoroughly.
- .6 After soil settlement has occurred, fill with soil to finish grade.
- .7 Dispose of burlap, wire and container material off site.

3.4 TRUNK PROTECTION

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection prior to installation of tree supports when used.

3.5 TREE SUPPORTS

- .1 Install tree supports as indicated.
- .2 Use single stake tree support for deciduous trees less than 3 m and evergreens less than 2 m.
 - .1 Place stake on prevailing wind side. Do not drive stake through the rootball.
 - .2 Drive stake minimum 1000 mm into undisturbed soil beneath roots. Ensure stake is secure, vertical and unsplit.
 - .3 Install ArborTie^R GREEN as per manufacturer's instructions.
- .3 Use 3 stake tree supports for deciduous trees greater than 3 m and evergreens greater than 2 m.
 - .1 Use ArborTie^R GREEN for trees less than 75 mm in diameter and Type 3 guying wire with clamps for trees greater than 75 mm in diameter.
 - .2 Use Type 1 anchors for trees less than 75 mm in diameter and Type 2 anchors for trees greater than 75 mm in diameter.

- .3 Install guying collars above branch to prevent slipping at approximately 2/3 height for evergreens and 1/2 height for deciduous trees. Collar mounting height not to exceed 2.5 m above grade.
- .4 Guying collars to be of sufficient length to encircle tree plus 50 mm space for trunk clearance. Thread guy wire through collar encircling tree trunk and secure to lead wire by clamp or multi-wraps; cut wire ends close to wrap. Spread lead wires equally proportioned about trunk at 120 degrees.
- .5 Install anchors at equal intervals about tree and away from trunk so that guy wire will form 45 degree angle with ground. Install anchor at angle to achieve maximum resistance for guy wire.
- .6 Attach guy wire to anchors. Tension wire and secure by multi-wraps.
- .7 Install wire tightener ensuring that guys are secure and leave room for slight movement of tree.
- .8 Saw tops off wooden anchors which extend in excess of 100 mm above grade or as directed by Contract Administrator.
- .9 Install flagging tape to guys as indicated.

3.6 PRUNING

- .1 After tree supports have been installed, prune all plants to remove dead and broken branches.
- .2 Preserve the natural character of the plant. Do not remove the leader.
- .3 Use clean, sharp tools and make cuts clean and flush without leaving stubs.
- .4 Cut back to living tissue all cuts, scars and bruises and shape so as not to retain water.

3.7 MULCHING

- .1 Ensure soil settlement has been corrected prior to mulching.
- .2 Spread mulch as indicated.

3.8 MAINTENANCE DURING ESTABLISHMENT PERIOD

- .1 Perform following maintenance operations from time of planting to acceptance to Substantial Performance.
 - .1 Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
 - .1 For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
 - .2 Remove weeds monthly.

- .3 Replace or respread damaged, missing or disturbed mulch.
- .4 For non-mulched areas, cultivate as required to keep top layer of soil friable.
- .5 Apply pesticides in accordance with Federal, Provincial and Municipal regulations as and when required by the Contract Administrator to control insects, fungus and disease. Obtain product approval from the Contract Administrator prior to application.
- .6 Remove dead or broken branches from plant material.
- .7 Keep trunk protection and guy wires in proper repair and adjustment.
- .8 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

3.9 ACCEPTANCE

- .1 All plant material will be accepted by the Contract Administrator when the entire project has reached Substantial Performance and the planting operation is complete, provided that the plant material exhibits healthy vigorous growth and is free from disease, insects and fungal organisms.
- .2 All plant material installed less than 90 days prior to frost will be reviewed for acceptance in the following spring, 30 days after the start of the growing season, provided that acceptance conditions are fulfilled.

3.10 MAINTENANCE DURING WARRANTY PERIOD

- .1 From time of acceptance by the Contract Administrator 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 Reform damaged watering saucers.
 - .3 Remove weeds monthly.
 - .4 Replace or respread damaged, missing or disturbed mulch.
 - .5 For non-mulched areas, cultivate monthly to keep top layer of soil friable.
 - .6 Apply pesticides in accordance with Federal, Provincial and Municipal regulations as and when required by the Contract Administrator to control insects, fungus and disease. Obtain product approval from the Contract Administrator prior to application.
 - .7 Apply fertilizer in early spring as indicated by soil test.
 - .8 Remove dead, broken or hazardous branches from plant material.

- .9 Keep trunk protection and tree supports in proper repair and adjustment.
- .10 Remove trunk protection, tree supports and level watering saucers at end of warranty period.
- .11 Submit monthly written reports to the Contract Administrator 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.
- .12 An inspection of plant material will occur after the first year following Substantial Performance. Replacements may be required at that time depending on the extent of plant deficiencies noted. Replacements shall be planted as soon as possible, during the proper planting season, in accordance with accepted horticultural practices.

3.11 END OF WARRANTY

- .1 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
- .2 Remove trunk protection and tree supports.
- .3 Adjust rodent protection, leave intact.
- .4 Final inspection of plant material at the end of the warranty period may require extended warranties depending on the number of replacements required.

3.12 MEASUREMENT

- .1 Trees, shrubs and groundcovers will be measured on an each basis.

3.13 PAYMENT

- .1 Payment shall be made at the Unit Price bid in the Form of Tender and shall be compensation in full for all labour, equipment and materials required to complete the work, including planting mixture and hardware as indicated on the details.

END OF SECTION