

**Partie 1      General**

**1.1            RELATED REQUIREMENTS**

- .1      Section 32 91 19.13 – Topsoil Placement and Grading
- .2      Section 32 01 90.33 – Tree and Shrub Preservation

**1.2            REFERENCES**

- .1      Definitions
  - .1      Mycorrhiza: association between fungus and roots of plants. This symbiosis, enhances plant establishment in newly landscaped and imported soils.
- .2      References
  - .1      Agriculture and Agri-Food Canada (AAFC)
    - .1      Plant Hardiness Zones in Canada –Most recent edition.
  - .2      Canadian Nursery Landscape Association (CNLA)
    - .1      Canadian Standards for Nursery Stock-Most recent edition.
  - .3      NQ 0605-100 “Aménagement paysager à l’aide de végétaux” standard.
    - .1      Work in this must be carried out in accordance with industry practices and most recent standards of the Bureau de Normalisation du Québec (BNQ).
  - .4      Health Canada/Workplace Hazardous Materials Information System (WHMIS)
    - .1      Material Safety Data Sheets (MSDS).
  - .5      U.S. Environmental Protection Agency (EPA) / Office of Water
    - .1      EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

**1.3            ADMINISTRATIVE REQUIREMENTS**

- .1      Contractor must obtain approval from Departmental Representative before commencing work.
- .2      Submit detailed delivery and planting schedule, coordinated with supplier, to Departmental Representative for approval. Method and planting times must be submitted for approval and integrated into other site activities.
- .3      Schedule to include.
  - .1      Shipping dates.
  - .2      Planting Dates.

#### **1.4 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for fertilizer, mycorrhiza, anti-desiccant, anchoring equipment, and mulch and include product characteristics, performance criteria, physical size, finish and limitations.
- .3 Samples:
  - .1 Submit samples of mulch (1 litre bag), stake tie and type of rodent protection for approval.

#### **1.5 QUALITY ASSURANCE**

- .1 Qualifications:
  - .1 Landscape Contractor: to be a Member in Good Standing of the Association des paysagistes professionnels du Québec (APPQ).
  - .2 Landscape Planting Supervisor: Landscape Industry Certified Technician with Softscape Installation designation.
  - .3 Landscape Maintenance Supervisor: Landscape Industry Certified Technician with Ornamental Maintenance designation.

#### **1.6 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
  - .1 When plant material is delivered, protect from frost, excessive heat, wind and sun.
  - .2 Protect plant material from frost, excessive heat, wind and sun during delivery.
    - .1 Delivery distance is less than 30 km and vehicle travels at speeds under 80 km/h, use enclosed vehicle.
    - .2 Delivery distance exceeds 30 km and vehicle travels at speeds exceed 80 km/h, use enclosed vehicle.
    - .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.
  - .3 Protect plant material from frost, excessive heat, wind, sun and sudden temperature changes during delivery and storage.
  - .4 The Contractor is responsible for unloading plants and for dégâts and damage to plants.
  - .5 The Contractor must also coordinate all delivery and planting operations to minimize time between excavation and planting.
  - .6 Plants damaged due to transportation and handling may be rejected before, during and after planting.

- .2 Storage and Handling Requirements:
  - .1 Store plants in protected, shaded location until they can be planted. Root balls and containers must be covered in mulch (heeled in) and kept humid until planting.
  - .2 Protect stored plant material from frost, wind and sun and as follows:
    - .1 For pots and containers, maintain moisture level in containers.
    - .2 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.
    - .3 Keep roots moist at all times.
  - .3 Store and manage hazardous materials in accordance with manufacturer's written instructions.

## **1.7 SCHEDULE**

- .1 The Contractor must receive approval from the Departmental Representative before beginning Work outlined in this section.
- .2 Submit a detailed delivery and planting schedule coordinated with the supplier to the Departmental Representative. The method and planting time must be submitted for approval and integrated into the other site activities.

## **1.8 WARRANTY**

- .1 The Contractor must guarantee all plants for a period of twenty-four (24) months, as of the provisional acceptance of the Work. A financial guarantee may be required by the Owner during this period to guarantee satisfaction with the Work.
- .2 The Contractor must replace dead, deteriorated or defective plants at own expense and according to drawing and plan specifications at his own cost. Replacement plants must be of the same species, size, quality and guarantee as the original plant.
- .3 The Contractor must remove dead plants within ten consecutive days of the notice from the Departmental Representative and replace them immediately or the following planting season. If the plants are not removed within then days following this notice and the replacement is not done before the period specified, the Owner will carry out the work at the Contractor's expense and the amounts will be deducted from the outstanding balance to be paid or the execution deposit. The Contractor may not contest the amount.
- .4 The Contractor must have the Departmental Representative inspect the plants at the end of the warranty period.
- .5 Departmental Representative 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.
- .6 The Contractor's guarantee includes materials, labour, equipment and tools needed for the replacement of the plants that do not meet the growth conditions required under this section.

- .7 All materials and planting methods used to replace the plants must meet the requirements of these specifications.

## **Partie 2 Products**

### **2.1 PLANT MATERIAL**

- .1 General:
  - .1 Plants will be nursery grown and typical of their species. Sizes and species are as shown on the planting list.
  - .2 The Departmental Representative must approve the plants at the nursery or on delivery to the site prior to planting. If the Contractor does not do so, the plants may be rejected prior to planting.
- .2 Supply of plants:
  - .1 The Contractor must provide all the plants indicated on the bid schedule.
  - .2 Substitutes must receive prior authorization from the Departmental Representative.
  - .3 One (1) month after the contract signing, the Contractor must inform the Departmental Representative of the source and provide proof of the plant order corresponding to the bid schedule.
  - .4 Planting materials must be first quality and correspond to BNQ, NQ 0605-300-2001, and the planting table provided in the planting plan.
  - .5 Type of root preparation, sizing, grading and quality: comply to Canadian Standards for Nursery Stock.  
Source of plant material: grown in Zone 3 and 4 in accordance with Plant Hardiness Zones in Canada.
  - .6 Plants will be nursery grown.
  - .7 Plants will be inspected and selected at the main production and storage nursery. The supplier must organize and participate in the visit to the nursery to facilitate the inspector's work to find the plants to verify.
- .3 Trees
  - .1 Quality and supply source:  
Supply first quality nursery trees. Size and development of trees and roots must comply with BNQ standard 0605-300 du BNQ, Written approval is required for trees with root balls smaller than the Standards. Tree size must be measured 30 cm from the ground for trees 100 mm and more in diameter and 15 cm from the ground for trees under 100 mm in diameter. Measure trees when branches are in normal position. Sizes indicated for tree height and branch development are based on the dimension of the main part of the tree and not the distance between branch extremities.

- .2 Plants will be nursery grown and typical of their species. Sizes and species are as shown on the planting list . Substitutes must receive prior authorization from the Departmental Representative. Container plants will be acceptable if cultivated for at least one season, two seasons at most in the same container. Containers must be large enough for development of the roots.
- .4 Shrubs:
- .1 Provide shrubs with ball of earth, container grown unless otherwise indicated.
- .2 Container grown shrubs must be as follows:  
Plants must be grown for at least one complete active growing season in containers and must have a sufficiently developed root system to keep the ball of earth intact upon removal from containers.
- .5 Perennials, annuals, grasses
- .1 Specifications regarding container size are provided in the planting table. Plant development must be proportional to container size.
- .2 Specifications regarding growth:
- | Dimension or volume of container | Growth time in container (min.) |
|----------------------------------|---------------------------------|
| 10 cm                            | 8 weeks                         |
| 1 litre                          | 6 months                        |
| 4 litres                         | 2 years                         |
- .3 Water free of impurities that would inhibit plant growth.

## **2.2 WATER**

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

## **2.3 STAKES**

- .1 T-bar, steel, 40 x 40 x 5 x 2440 mm, galvanized and painted black.

## **2.4 TIES**

- .1 For trees with caliper size of 70 mm or less, rubber "Pro-Tie" type tie, flexible and adjustable, as distributed by "Derco," Quebec or equivalent approved by Departmental Representative.
- .2 Tie fastener:  
5 mm round screw, for square screwdriver and galvanized steel bolts.

## **2.5 TRUNK PROTECTION**

- .1 Wire mesh: galvanized, electrically welded 1.4 mm wire with 25 x 25 mm mesh and fastener.

## **2.6 MULCH**

- .1 RCW mulch composed of hardwood chips, maximum 20% softwood chips. Mulch must be uniform in size not exceeding 50 X 50 X 5 mm and exempt of leaves and branches under 5 mm.

## **2.7 FERTILIZER**

- .1 Fertilizers must comply with federal fertilizer law and regulation.
- .2 Synthetic commercial type as recommended by soil test report and manufacturer's recommendations according to period and season. Indicate formulas for planting and maintenance and have validated by Departmental Representative.
- .3 Bonemeal, 100% natural, 2-11-0 ratio.
- .4 Mycorise™ growing medium.
  - .1 Ensure new roots are in contact with the mycorrhizae (growing medium).
  - .2 Use mycorrhizae according to manufacturer's written recommendations.

## **2.8 PLANTING SOIL**

- .1 Refer to specifications indicated in Section 32 91 19.13 – Topsoil Placement and Grading.

## **2.9 SOURCE QUALITY CONTROL**

- .1 Obtain approval from Departmental Representative of plant material prior to planting.
- .2 Provide necessary import licenses and permits, in compliance with federal, provincial and local regulations.

## **Partie 3 Execution**

### **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrate previously installed under other Sections or Contracts are acceptable for planting installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

### **3.2 PRE-PLANTING PREPARATION**

- .1 Proceed only after receipt of written acceptability of plant material from Departmental Representative.
- .2 Remove damaged roots and branches from plant material.

- .3 At Departmental Representative's request or if otherwise deemed necessary, apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.
- .4 Locate and protect utility lines.
- .5 Notify and acquire written acknowledgment from utility authorities before beginning excavation of planting pits for trees and shrubs.
- .6 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 controls in place. Maintain and repair as necessary.
  - .3 Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### **3.3 PREPARATION AND TRANSPORTATION**

- .1 Coordinate delivery of plants with digging to ensure that digging and planting occur at the same time.
- .2 Solidly attach plant branches and protect from rubbing and drastic changes in temperature during transportation.
- .3 Roots must be kept humid after uprooting and approval of plants on site. Protect exposed roots with humid mulch, peat moss, sawdust and other acceptable materials to avoid drying during transportation and storage.
- .4 Ship plants from nursery to Work site as quickly as possible.
- .5 The Contractor must transport plants in closed vehicle. Attach branches during transportation. Protect trees from sun, wind and sudden temperatures during delivery and storage.
- .6 The supplier must notify the Departmental Representative of the departure from the nursery and the arrival time of the plants at the Work site.
- .7 The Contractor is responsible for unloading plants and for dégâts and damage to plants. Plants rejected at delivery will be returned to supplier.

### **3.4 PLANTING SEASON**

- .1 The Contractor must follow the steps in the planting schedule coordinated with the General Contractor and Owner.
- .2 Do not plant unless conditions are suitable to plant health and growth.

### **3.5 PLANTING**

- .1 Use wood stakes to indicate position of individual trees, shrubs, perennials and grasses as indicated on drawings and have stake locations approved by Departmental Representative before digging.
- .2 Notify Departmental Representative of discrepancies with the drawings (location, quantity, etc.).
- .3 Usual planting periods are spring and fall, even if plants are container grown. Special care must be given to plants planted during the growing season to ensure they acclimatize; avoid hot days or lengthy periods of sun. Water abundantly and regularly.
- .4 The Contractor must pay special attention to underground pipes and cables where markers have been put down to avoid damage.

### **3.6 EXCAVATION AND PREPARATION OF PLANTING BEDS**

- .1 Establishment of sub-grade for planting beds in accordance with Section 31 22 13 - Rough Grading.
- .2 Preparation of planting beds in accordance with Section 32 91 19.13 - Topsoil Placement and Grading.
- .3 For individual planting holes
  - .1 Stake out location and obtain approval from Departmental Representative prior to excavating.
  - .2 Excavate to depth and width as indicated.
  - .3 Remove subsoil, 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 of planting hole.
  - .5 Remove water which enters excavations prior to planting. Notify Departmental Representative if water source is ground water.
- .4 Digging
  - .1 Dig holes and remove excavated material off site or as indicated by the Departmental Representative.
  - .2 The Contractor must all necessary measures during excavation to protect existing underground piping.
  - .3 Except where indicated otherwise on the drawings, holes must have vertical sides and with sufficient space to allow for adding soil around the roots.
  - .4 Except where indicated otherwise on the drawings, hole diameter must be twice the width of the root ball or large enough to spread roots at least 500 mm on sides.
  - .5 When plants are spaced more than 1,500 mm apart, plant in individual holes.
  - .6 The Contractor must keep the site clean and the holes dry. Immediately remove the earth and debris accumulated on hard surfaces. Avoid damage to adjacent landscaping or repair damage.



- .7 Protect adjacent areas when digging. Use tarps to hold excavated earth if necessary.
- .8 Do not leave open pits and remove mounds of earth after workday.
- .9 Before planting, remove water in holes, ensuring that water is not underground sourced. Remove debris, branches, stones over 100 mm and other inappropriate material.

### **3.7 PLANTING**

- .1 Backfill soil in 150 mm lifts.
- .2 Protect the trunk, top and root ball during transportation and handling. Use a three-point tree spade with clamp to keep trees in upright position during handling. Equipment must be approved by Departmental Representative prior to planting.
- .3 Remove soil from top of rootball and measure to make sure root collar is at the correct height. Make sure plants are straight in the hole; adjust position to blend well with surroundings.
- .4 Place rootball to ensure that collar level is at the same height as surrounding finish grade.
- .5 Orient plant material to give best appearance in relation to structure, roads and walks.
- .6 Loosen burlap and remove 1/3 of the top, taking care not to disturb the rootball. Do not remove the burlap and rope under rootball. In the case of container plants, remove containers without breaking up the rootball.
- .7 Do not leave wrapping materials in holes that are not biodegradable.
- .8 Add and compress by 150 mm, to eliminate air pockets. Do use frozen and water saturated soil. Fill in 2/3 of the hole with soil and the remainder with water. Let the water soak and fill in the hole up to the collar and finished soil level.
- .9 For isolated plantings, form a watering saucer (well) with substrate 100 to 150 mm high with the inner diameter of the well the same size as the exterior perimeter of the hole. Cover the berm with mulch within 15 cm of the tree trunk.

### **3.8 PLANTING SHRUBS, PERENNIALS, ANNUALS AND GRASSES**

- .1 Always remove plants from container.
- .2 Fill holes in successive layers of well crumbled soil, placed carefully between the roots, compressed and stabilized with water, to eliminate air pockets.
- .3 Tamp soil carefully to avoid crushing or breaking roots.
- .4 Do not plant in soil that is too wet or compacted.
- .5 Make a well around the plantings to retain water.
- .6 Ensure plant collars are even with finish grade of beds.

### **3.9 PRUNING**

- .1 Plantings require minimal trimming at planting time, if transported properly. Cut away dead, dry or damaged branches or parts of branches.

Remove stems, parts of stems and twigs that are dead, dry, damaged or mishapen.

Trim back healthy, very long or straggly branches in keeping with specific requirements of plant species or cultivar. Follow instructions of specialized overseer.

### **3.10 FERTILIZATION**

- .1 Trees: mix in the following with soil:
  - .1 200 grams 2-11-0 fertilizer (bonemeal)/tree.
  - .2 500 ml Mycorise Pro Végétalisation/tree.
- .2 Shrubs: mix in the following with soil:
  - .1 100 grams 2-11-0 fertilizer (bonemeal)/tree.
  - .2 100 ml Mycorise Pro Végétalisation/tree.
- .3 Perennials, grasses and annuals:
  - .1 Organic base slow-release granular fertilizer, 10-25-20, 3.8 kg/100 m<sup>2</sup> / plant.
  - .2 30 ml Mycorise Pro Végétalisation/plant.

### **3.11 TRUNK PROTECTION**

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection before installation of tree supports.

### **3.12 TREE SUPPORTS**

- .1 Deciduous tree:
  - .1 Fill in 2/3 of hole and drive in T-bar stakes, taking care not to damage main roots. Install stakes, two per tree, 150 mm from trunk on prevailing wind side. Attach trunk to stake with collars. Stakes must remain in place for a minimum of two (2) years. Equipment remains the owner's property.
  - .2 Do not alter collars, except in the case of a modified collar.
  - .3 Collar screws must not be longer than 5 mm past nuts once collar is attached.
  - .4 Collars and stakes must be compatible to ensure solid, safe installation.

### **3.13 MULCHING**

- .1 Ensure soil settlement has been corrected prior to mulching.
- .2 Mulch beds as indicated by Departmental Representative.
- .3 Ensure soil settlement has been corrected, and remove debris and weeds prior to mulching.
- .4 Spread mulch evenly 100 mm thick. If mulch is likely to blown away, wet and mix with a little soil. Thin at base of plantings and avoid placing too close to perennials.
- .5 Reduce to 50 mm near perennials, grasses and annuals.

### **3.14 MAINTENANCE DURING ESTABLISHMENT PERIOD**

- .1 Perform following maintenance operations from time of planting to acceptance by Departmental Representative.
  - .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 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative 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.

### **3.15 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 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 If required to control insects, fungus and disease, use appropriate control methods in accordance with Federal, Provincial and Municipal regulations. Obtain product approval from Departmental Representative 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 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
  - .12 For each year of maintenance, submit monthly written reports 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.

### **3.16 CLEANING**

- .1 Progress Cleaning: Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment.

### **3.17 CLOSEOUT ACTIVITIES**

- .1 Submit maintenance reports to Departmental Representative for trees, shrubs, and other plantings.

### **3.18 PROVISIONAL ACCEPTANCE OF PLANTING WORK**

Once planting work is completed, provisional acceptance is given after verified and approved by Departmental Representative.

- .1 Provisional acceptance of planting work will be given, provided that:
  - .1 All plant materials installed on the site are healthy and meet normal growth conditions.
  - .2 Comply with requirements of planting list regarding species and size.
  - .3 Planting materials are insect and disease free.
- .2 Labels identifying plants are removed after provisional acceptance.

### **3.19 FINAL ACCEPTANCE OF PLANTING WORK**

- .1 Final acceptance of work will be granted after the warranty period following provisional acceptance of the last step, provided conditions are met.

**END OF SECTION**