

PLANTING OF TREES, SHRUBS, GROUNDCOVERS & TRANSPLANTING

PART 1 GENERAL**1.1 Description of Work**

- .1 This section describes the labour, all materials and installation requirements necessary to complete the tree, shrub, and groundcover planting and transplanting as indicated or specified herein.

1.2 Examination

- .1 Contractor to report to the Consultant, in writing of any conditions or defects encountered on the site during or before construction upon which Work of this section depends and which may adversely affect its performance.
- .2 Do not commence Work until such conditions or defects have been investigated and corrected.
- .3 Commencement of Work shall imply acceptance of surfaces and conditions and no claim for damages or extras resulting from such conditions or defects will be accepted thereafter, except in cases where such conditions cannot be known prior to or during the course of construction.

1.3 Testing

- .1 Test stockpiled topsoil as specified in Section [02911 Site Topsoil & Finish Grading](#), and as noted on the Contract Document drawings, and submit results to the Consultant for review, prior to starting Work on site.

1.4 Related Work

- .1 **Establishing Sub-Grade for Planting Beds**
Section [02311](#)Site Grading
- .2 **Preparation of Planting Beds**
Section [02911](#)Site Topsoil & Finish Grading

1.5 Submittals

- .1 Topsoil: Before delivery of topsoil, provide Contractor with a written statement giving location of properties from which soil is to be obtained, names and addresses of owners, depth to be stripped, and crops during the past two (2) years.

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1.6 Reference Standards

- .1 Trees, shrubs and ground covers are to be supplied and installed in accordance with the Metric Guide Specification for Nursery Stock Current Edition of the Canadian Nursery Trades Association except where specified otherwise.

1.7 Source Quality Control

- .1 Contractor to ensure the all plant material at source is acceptable prior to digging operations;
- .2 Imported plant materials must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations.

1.8 Samples

- .1 Provide samples for: Mulch - Canada Red Mulch or Gro-Bark.

1.9 Qualifications

- .1 All planting Work described in the Section shall be executed by experienced personnel under the direction of the Contractor.

1.10 Substitutions

- .1 All plants shall be supplied as specified in the Contract Documents. Alternates will not be allowed unless approved in writing from the Consultant.
- .2 Give timely notice in writing to the Consultant when applying for substitutions.
- .3 The Contractor must verify to the Consultant, the lack of availability and source of the specified plant material.

1.11 Delivery, Storage and Protection

- .1 Protect plant material from frost, excessive heat, wind and sun during delivery.
- .2 Immediately store and protect plant material which will not be installed within one (1) hour after arrival at site in storage location approved by the Consultant.

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- .3 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.
- .4 Protect stored plant material from frost, wind and sun and as follows:
 - .1 For bare root plant material, preserve moisture around roots by heeling-in or burying roots in sand or topsoil and watering to full depth of root zone.
 - .2 For pots and containers, maintain moisture level in containers. Heel-in fibre pots.
 - .3 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.

1.12 Warranty

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

1.13 Job Conditions

- .1 The Contractor shall receive the site with the planting areas free of waste or debris developed by other trades. Any discrepancy shall be reported to the Contractor prior to planting.

PART 2 PRODUCTS**2.1 Plant Material and Accessories**

- .1 Type of root preparation, sizing grading and quality: comply with Metric Guide Specification for Nursery Stock, latest addition of the Canadian Nursery Trades Association.

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- .2 Plant material: free of disease, insects, defects or injuries and structurally sound with strong fibrous root system.
- .3 Plant material: root pruned regularly, but not later than one growing season prior to arrival on site.
- .4 Trees: with straight trunks, with no bark damage or stump wounds, well and characteristically branched for species except where specified otherwise.
- .5 Bare root stock: nursery grown, in dormant stage, not balled and burlapped or container grown.
- .6 Collected stock: maximum 40 mm in calliper, with well developed crowns and characteristically branched; no more than 40% of overall height may be free of branches.
- .7 Water: potable and free of minerals which may be detrimental to plant growth.
- .8 Stakes: T-bar steel stakes 40 x 40 x 5 x 2440 mm drilled to receive # 10 wire and pine or fir wood 38 x 38 x 2400 mm, treated with Pentox preservative.
- .9 Black Rubber Hose: 12 mm outside diameter.
- .10 Cables and accessories: factory galvanized cables, wire tighteners, eyebolts and turnbuckles. Use turnbuckles with 150 mm long eyebolts and 10 mm diam. threaded opening for tightening.
- .11 Guy wires: steel wire strand to CSA G4-M1977 at following sizes:
 - .1 Shrubs and trees under 70 mm calliper use 1.5 mm diameter wire.
 - .2 Trees 70 to 150 mm caliper use 3 mm diameter wire.
- .12 Eyebolts: coarse threaded galvanized steel at following sizes:
 - .1 Trees 150-500 mm calliper use 10 mm dia.
- .13 Flagging: High visibility plastic flagging ribbon 12mm to 25mm width, affixed to midpoint of guy wires.
- .14 Tree rings: fabricated from 3 mm galvanized wire encased in two ply reinforced 12 mm dia. rubber garden hose or equivalent.
- .15 Wire mesh: galvanized, electrically welded.
 - .1 For tree guards use 1.4 mm wire with 25 x 50 mm mesh.

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- .2 For gunite reinforcing use 1.4 mm wire with 50 x 50 mm mesh.
- .16 Reinforcing rod: 10 mm bars to CSA G30.12 - M1977.
- .17 Gunite concrete: to ACI 506-66.
- .18 Fibreglass fabric: tight woven, min 2.5 kg/m² mass, 1 m wide.
- .19 Root ball burlap: 150 g Hessian burlap.
- .20 Tree wrapping material: new, clean, plain burlap strips minimum 2.5 kg/m² mass 150 mm wide.

2.2 Mulch

- .1 Shredded bark wood: varying in size from 25 to 75 mm in length, from coniferous trees or approved alternate, and free of chemicals. "Gro-Bark" or "Canada Red Mulch" is acceptable. Approval of substitutions must be requested in writing prior to commencement of Work.

2.3 Fertilizer

- .1 Where topsoil is supplied by the Contractor, the quantities of fertilizers required shall be based on the following minimum rates.

10-6-4 @ 36g/1 mm cal. for trees
12-6-4 @ 890g/m³ of topsoil for shrubs

- .2 Fertilizers shall be complete, commercial fertilizers containing not less than 60% urea formaldehyde and the following percentages by weight.

<u>Nitrogen</u>	<u>Phosphoric Acid</u>	<u>Potash</u>
10	6	4
12	6	6

- .3 Synthetic commercial type, ratio 5:3:2.

2.4 Anti-Dessicant

- .1 Anti-desiccants: wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration.

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PART 3 EXECUTION**3.1 Pre-Planting Operations**

- .1 Ensure plant materials acceptable to the Consultant.
- .2 Remove damaged roots and branches from plant material.
- .3 Apply anti-desiccant to conifers and deciduous trees in leaf in accordance with manufacturer's instructions.
- .4 Remove burlap trunk wrap and notify the Consultant to inspect and accept trees. Re-wrap immediately after inspection.

3.2 Excavation and Preparation of Planting Beds

- .1 Establishment of sub-grade for planting beds is specified in Section [02311 Site Grading](#).
- .2 Preparation of planting beds is specified in Section [02911 Site Topsoil & Finish Grading](#).
- .3 For individual planting holes:
 - .1 Stake out location and obtain approval from Consultant prior to excavating.
 - .2 Stake-out all plant material to be approved prior to planting.
- .4 If planting drainage is required:
 - .1 Excavate to depth and width as indicated.
 - .2 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.
 - .3 Scarify subgrade sides of planting hole.
 - .4 Remove water which enters excavations prior to planting. Notify Consultant if water source is ground water.

3.3 Digging for Plants

- .1 All plants shall be dug and delivered to the site as specified on the Plant List, or in the case of relocation of existing plant material on the site, dug according to the following specification.

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- .2 Plants specified "B/R" shall be moved with bare roots. They shall be dug and moved while dormant, with the major portion of the fibrous root system provided.
- .3 Immediately after digging, the root system shall be wrapped or puddle and shall be kept moist to prevent drying out until planted on the site.
- .4 All plants specified "B&B" shall be moved with solid balls wrapped in burlap.
- .5 No plant shall be used when the ball of earth surrounding the roots has been cracked or broken preparatory to or during the process of planting, or when the burlap and ropes holding the soil ball have been removed prior to planting.
- .6 The sizes of root balls for trees shall be as specified below. Ball sizes are minimum and shall be adjusted according to growth habits of plants, and shall be sufficiently large to contain at least 75% of the fibrous root system.

Deciduous Trees

<u>Caliper</u>	<u>Root Ball Diameter</u>
25mm – 40mm	0.60m
50mm	0.75m
75mm	0.90m
100mm	1.05m
125mm	1.35m
150mm	1.50m
200mm	1.80m
250mm	2.50m

Coniferous Trees

<u>Height</u>	<u>Root Ball Diameter</u>
1.8m-2.4m	0.75m
2.4m-3.0m	0.90m
3.0m-3.6m	1.05m
3.6m-4.6m	1.20m
4.6m-5.4m	1.35m

3.4 Handling of Plants

- .1 All plants shall be well protected against damage and drying out from the time of digging until they are planted on the site.

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- .2 All roots shall be cleanly cut; split roots are not acceptable. Where combing is not practised, the roots shall be evenly cut at the edges of the ball. The cut ends of all roots 25 mm in diameter and larger shall be painted with asphalt emulsion.
- .3 Plants shall be transported with care taken to prevent damage. Branches shall be carefully tied in such a manner so as not to break or damage trunks. Points of contact with equipment shall be padded.
- .4 Plants with broken or abraded trunks or branches are not acceptable.
- .5 Root balls, trunks, branches and leaves shall be protected from sun and wind desiccation.

3.5 Planting

- .1 For bare root stock, place 50 mm backfill soil in bottom of hole. Plant trees and shrubs with roots placed straight out in hole.
- .2 For burlapped root balls, ensure the wire basket is sitting 100mm + below finished grade. Cut away top one-third 1/3 of wrapping and wire basket without damaging root ball. Do not pull burlap or rope from under root ball. Cut and remove all nylon rope around tree trunks.
- .3 For container stock or root balls in non-degradable wrapping, remove entire container or wrapping without damaging root ball.
- .4 Plant vertically in locations staked and approved. Orient plant material to give best appearance in relation to structure, roads and walks.
- .5 For trees and shrubs:
 - .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 on detail.
- .6 For ground covers, backfill soil evenly to finish grade and tamp to eliminate air pockets.

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- .7 Water plant material thoroughly.
- .8 After soil settlement has occurred, fill with soil to finish grade.
- .9 Dispose of burlap, wire and container material off site.

3.6 Trunk Protection

- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection after trees have been inspected and accepted by Consultant.

3.7 Tree Supports

- .1 Install tree supports as indicated on detail(s) Deciduous Tree Planting and Coniferous Tree Planting, unless otherwise specified.

3.8 Mulching

- .1 Mulch shall be free from deleterious materials and shall be stored as to prevent inclusion of foreign materials.
- .2 For fall plantings placing of mulch to occur in following spring after soil thaws and warms up.
- .3 Ensure soil settlement has been corrected prior to mulching.
- .4 Spread mulch as indicated, minimum 100 mm thick.

3.9 Acceptance

- .1 Plant material will be accepted by the Consultant after planting operation is completed provided that plant material exhibits healthy growing condition and is free from disease, insects and fungal organisms after the warranty period.
- .2 Plant material installed less than ninety (90) days prior to frost will be accepted in the following spring, thirty (30) days after start of growing season provided that acceptance conditions are fulfilled.
- .3 A preliminary inspection will be held sixty (60) days from day of acceptance to determine plant health and overall acceptability. All plants that are not healthy will be noted and shall be removed from the site and replaced with plants of the same species and size as originally specified. The Consultant may extend the warranty period for replacement plants if highly unsatisfactory conditions exists, two

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(2) years after acceptance of the replacement planting.

- .4 A final inspection of the replacement plants will be conducted at the end of extended warranty period, if any, to determine acceptance or rejection. This will be the final replacement.

3.10 Replacements

- .1 All plant materials found dead, or not in a healthy, satisfactory growing condition or which, in any other way, do not meet the requirements of the Specifications, shall be replaced by the Contractor. All costs shall be borne by the Contractor.
- .2 All required replacement shall be plants of the same size and species as specified in the Plant List and shall be supplied and planted in accordance with the Contract Document drawings and specifications.

3.11 Maintenance

- .1 Perform following maintenance operations from time of planting to Substantial Performance of the work.
 - .1 Water to maintain soil, moisture conditions for optimum establishment, growth and health of plant material without causing erosion. For all plant material, water thoroughly in late Fall prior to freeze-up to saturated soil around root system.
 - .2 Remove weeds monthly from planting beds and tree pits to ensure healthy and vigorous plant growth.
 - .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 Ensure plant material is in a healthy, vigorous state at time of Final Acceptance.
- .2 Apply pesticides in accordance with Federal, Provincial and Municipal regulations as and when required to control insects, fungus and disease. Obtain product approval from the Consultant prior to application.
 - .1 Remove dead or broken branches from plant material.

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- .2 Keep trunk protection and guy wires in proper repair and adjustment. Remove trunk protection, tree supports and level watering saucers at end of two (2) year warranty period, unless sooner as directed by the Consultant.
- .3 Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.
- .4 Submit semi-annual written reports to Consultant 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.

END OF SECTION - 02906