

1.0 GENERAL

1.1 Related Work

- 1.1.1 Section 02210 - Site Grading – Rough
- 1.1.2 Section 02212 - Planting Soil and Finish Grading
- 1.1.3 Section 02990 - Landscape Maintenance

1.2 Source Quality Control

- 1.2.1 The nursery source shall be located in a hardiness Zone 3A or hardier. Contractor to notify Consultant of source of material at least 7 days in advance of shipment. No work under this Section is to proceed without approval.
- 1.2.2 Important plant material must be accompanied with necessary permits and import licenses. Contractor to conform to all Federal and Provincial regulations.
- 1.2.3 All plant material shall be inspected by City of Regina Forestry staff at time of shipping and prior to unloading.

1.3 Shipment and Pre-Planting Care

- 1.3.1 Contractor to coordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- 1.3.2 Contractor to tie branches of trees and shrubs securely and protect plant material against abrasion, exposure and extreme temperature change during transit. Avoid binding of planting stock with rope or wire which would damage bark, break branches or destroy natural shape of plant. Give full support to root ball of large trees during lifting.
- 1.3.3 Cover plant foliage with tarpaulin, and protect bare roots by means of dampened straw, peat moss, saw dust or other acceptable material to prevent loss of moisture during transit and storage.
- 1.3.4 Remove broken and damaged roots with sharp pruning shears ensuring a clean cut.
- 1.3.5 Keep roots moist and protected from sun and wind. Heel-in trees and shrubs, which cannot be planted immediately, in shaded areas and water well.

1.4 Guarantee

- 1.4.1 The Contractor shall agree to guarantee to replace and replant any plant material found dead or in poor condition within one year of the recognized completion date, without cost to the Owner. "Poor condition" shall be interpreted as meaning plant material on which the branches are dead or dying, or have not shown satisfactory growth of leaves in the judgement of the Consultant.

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- 1.4.2 The Contractor shall not be held responsible for plant material destroyed by vandalism.
 - 1.4.3 All required replacements shall be made at the next planting season and replacements of all unsatisfactory trees and shrubs continue, with all costs borne by the contractor, until the original numbers planted is satisfactory and complete.
 - 1.4.4 The Consultant reserves the right to extend Contractor's warranty responsibilities for an additional one year if, at the end of the initial warranty period, leaf development and growth is not sufficient to ensure future survival.
- 1.5 Replacements
- 1.5.1 During warranty period, contractor shall remove from site any plant material that has died or failed to grow satisfactorily as determined by the Consultant.
 - 1.5.2 Contractor shall replace plant material in the next planting season or a minimum of 30 days prior to the final takeover inspection (FAC) and extend the warranty for one year on all replaced plant material.

2.0 PRODUCTS

- 2.1 Materials
- 2.1.1 Water: potable and free of minerals or any other components which may be detrimental to plant growth.
 - 2.1.2 Stakes: T-bar steel stakes 40 x 40 x 5 x 2440 mm or wood 30 x 38 x 2400 mm.
 - 2.1.3 Cables and accessories: factory galvanized cables, wire tighteners, eyebolts and turnbuckles. Use turnbuckles with 150 mm long eyebolts and 10 mm diameter threaded opening for tightening. Use approved horticultural guy wire tightener as shown on details.
 - 2.1.4 Guy wires: steel wire stand to CSA G4-M1977 at following sizes.
 - .1 Shrubs and trees under 75 mm caliper use 2.5 mm wire.
 - .2 Trees 75 to 150 mm caliper use 3 mm wire.
 - .3 Trees 150 to 500 mm caliper use 3 strands of 4 mm wire twisted together or Grade 110, 8 mm 7 strand cable.
 - .4 Trees 500 to 750 mm caliper use Grade 110, 10 mm 7 strand cable.
 - .5 Trees over 750 mm caliper use Grade 160, 10 mm 7 strand cable.
 - 2.1.5 Eyebolts: coarse thread galvanized steel at following sizes:
 - .1 Trees 150 – 500 mm caliper use 10 mm diameter.
 - .2 Trees 500 – 750 mm caliper use 12 mm diameter.
 - .3 Trees over 750 mm caliper use 15 mm diameter.

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- 2.1.6 Tree rings: fabricated from 3mm galvanized wire encased in two-ply reinforced 12 mm diameter rubber garden hose or equivalent.
 - 2.1.7 Tree wrapping material: new clean, plain burlap minimum 2.5kg/m² mass and 150 mm wide.
 - 2.1.8 Anchors: T-bar steel stakes 40 x 40 x 5 x 500 mm long wood stakes 38 x 38 x 500 mm long.
 - 2.1.9 Anti-desiccant: wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transpiration. Product to be a horticulturally accepted one, and one approved by Consultant.

2.2 Plant Material

- 2.2.1 Quality and source to comply with latest edition of the “Guide Specification for Nursery Stock”, by the Canadian Nursery Trades Association, referring to size and development of plant material and root ball. Measure plants when branches are in their natural position. Height and spread dimension refer to main body of plant and not from branch tip to branch tip. Use trees and shrubs of No. 1 grade.
- 2.2.2 All plants shall be true to type and species shown on the project plans and at least one plant in each group of plants of the same species delivered to the project shall be tagged with a weatherproof label stating both the botanical and common name of the plants in the group.
- 2.2.3 Plant material shall be of the species and size indicated.
- 2.2.4 Additional plant material requirements:
 - .1 Use trees and shrubs with strong fibrous root systems; free of disease, insects, defects or injuries; and structurally sound. Use trees with straight trunks, well and characteristically branched for species. Plants must have been root pruned regularly, but not later than one growing season prior to arrival on site.
 - .2 Plant material that has come out of dormant stage and is too far advanced will not be accepted unless prior approval is obtained.
 - .3 Cold storage notification: approval shall be required for plant material which has been held in cold storage.
 - .4 Container-grown stock: acceptable if containers are large enough for root development. Trees and shrubs must have grown in container for minimum of one growing season but not longer than two. Root system must be able to “hold” soil when removed from container. Plants that have become root bound are not acceptable. Container stock must have been fertilized with slow releasing fertilizer.
 - .5 Balled and burlapped stock: coniferous and broad-leafed evergreens must be dug with soil ball. Deciduous trees in excess of 3 m height must have been dug with large firm ball. Root balls

must include 75% of fibrous and feeder root system, and conform to the CNTA “Guide Specification to Nursery Stock.” This excludes use of native trees grown in light sandy or rocky soil. Secure root balls with burlap, heavy twine and rope or wire basket. For large trees: wrap ball in double layer of burlap and drum lace with minimum 10 mm diameter rope. Protect root balls against sudden changes in temperature and exposure to heavy rainfall.

- .6 Tree spade dug material: dig plant material with mechanized digging equipment of hydraulic spade of clam-shell type. Root balls to conform to CNTA standards. Lift root ball from hole, place in wire basket designed for purpose and lined with burlap. Tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope. The following shall govern the material size allowable for transplant by tree spade method unless otherwise directed by the Consultant.

Tree Spade Size	Caliper (taken 300 mm above ground)	Tree Height
1120 mm	Maximum 100 mm	3.0 – 3.6 m
1680 mm	Maximum 150 mm	3.6 – 4.2 m
2140 mm	Maximum 200 mm	4.2 – 4.8 m

- .7 Collected or native plant material: use only native trees indigenous to area into which they are to be transplanted. Select trees from reasonably open stands. Trees must have well developed crowns and must be characteristically branched. Not more than 40% of overall tree height may be free of branches. Collected or native plant material use is acceptable only upon written approval by Consultant.
- .8 Substitutions of plant material as indicated on planting plan are not permitted unless written approval has been obtained as to type, variety and size. Approved plant substitutions must be of equal size of those originally specified.
- .9 In the event that discrepancies occur between the quantities of plants as indicated in the plant list and those indicated on the drawing, the plant quantities on the drawing shall govern.
- .10 All rejected plant material shall be removed from the project site immediately upon rejection by the Consultant.
- .11 A final “As-Built” plan including all substitutions shall be provided by the Consultant.

3.0 EXECUTION

3.1 Workmanship

- 3.1.1 Stake out location of trees and planting beds as per planting plan. Obtain approval prior to excavating.
- 3.1.2 Apply anti-desiccant in accordance with manufacturer's instructions.
- 3.1.3 Coordinate operations. Keep site clean and planting holes drained. Immediately remove soil or debris spilled onto pavement.

3.2 Planting Time

- 3.2.1 With the exception of container stock, plant material is to be planted only during dormant period before buds have broken, or after leaf drop in autumn, unless permission has been obtained from the Consultant. Plant material noted for spring planting only, must be planted in dormant period.
- 3.2.2 Plant material imported from region with warmer climatic conditions may only be planted in early spring or late fall.
- 3.2.3 When permission has been obtained to plant deciduous plant material after buds have broken, spray plants with anti-desiccant to slow down transpiration prior to transplanting.
- 3.2.4 Plant balled or burlapped evergreens in spring before bud break, or after the middle of September. Apply anti-desiccant to evergreens before digging.
- 3.2.5 Trees, shrubs and ground covers growing in containers may be planted throughout the growing season.
- 3.2.6 Bare root stock to be used only when specified by the Consultant, and to be planted only in early spring before bud break, or in fall after leaf drop.
- 3.2.7 Plant only under conditions that are conducive to health and physical conditions of plants.
- 3.2.8 Contractor to provide planting schedule. Extending planting operations over long period using limited crew will not be accepted.

3.3 Excavation

- 3.3.1 Shrub beds: excavate to minimum depth of 500 mm.
- 3.3.2 Individual shrubs: excavate planting holes 500 mm deep and to a diameter twice that of the root ball or container.
- 3.3.3 Trees 50 mm cal. and less excavate holes 600 mm deep with diameter of 500 mm greater than root spread of root ball.
- 3.3.4 Trees larger than 50 mm cal. excavate to depth of at least 200 mm deeper than height of root ball, with width of 750 mm greater than diameter of root ball. In heavy soils, increase planting holes by 50 mm for each 100 mm of root ball diameter.

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- 3.3.5 Protect bottom of excavation against freezing prior to planting.
 - 3.3.6 Remove water which enters excavations prior to planting. Ensure source of water is not ground water.
 - 3.4 Planting
 - 3.4.1 Planting shall not be done in soil that is excessively moist or otherwise in a condition not satisfactory for planting in accordance with accepted horticultural practice.
 - 3.4.2 Plants in containers shall be planted and watered the same day the container is cut or removed.
 - 3.4.3 Plants shall be removed from containers in such a manner that the root ball is not broken. Plants with broken root balls or with root balls that fall apart while being planted will be rejected.
 - 3.4.4 Scarify bottom of planting hole to depth of 150 to 200 mm. Cover bottom of each excavation with minimum of 150 mm of soil mixture. If planting pits are dug with tree spade or power auger and 'glazing' occurs, scarify sides of planting pits as well.
 - 3.4.5 Plant trees and shrubs vertically with roots placed straight out in hole. Orient plant material to give best appearance in relation to structure, roads and walks.
 - 3.4.6 Place plant material to depth equal to depth they were originally growing in nursery.
 - 3.4.7 With balled and burlapped root balls, loosen burlap and cut away the top 1/3 without disturbing root ball. Do not pull burlap or rope from under root ball. With container stock, remove entire container without disturbing root ball. Non bio-degradable wrappings must be removed. When root balls are in wire baskets, cut off or fold back the top 1/3 of the basket without damaging root ball, so as to ensure that after planting no wire shall be present in the top 300 mm of soil.
 - 3.4.8 With frozen ball material, mulch planting pit to prevent freezing.
 - 3.4.9 Tree spade excavated material:
 - .1 Dig tree pit with same mechanical equipment as used to dig plant material. Ensure hole is as upright as possible. Place in hole a mixture of planting soil, superphosphate fertilizer (0-20-2) at a rate of 0.6 kg per cubic metre, and enough water to create a soupy consistency. This will be forced up sides of ball as root ball is placed in hole.
 - 3.4.10 During the planting of bare-rooted stock, first shake backfill of planting soil among the roots.
 - 3.4.11 Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is not acceptable. When 2/3 of

planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.

3.4.12 Build 100 mm deep saucer outer edge of hole to assist with maintenance watering.

3.4.13 When planting is completed, give surface of planting saucer dressing of organic 10-6-4 fertilizer at rate of 12kg/100m² for shrub beds or 40 to 50 g/mm of calliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.

3.5 Tree Support

3.5.1 Tree support is shown on planting details.

3.5.2 Staking for trees up to 3 m and evergreens up to 2 m in height: Backfill planting-hole 2/3, drive T-rail stake 900 mm into bottom of pit, taking care not to damage main roots. Fasten trunk to stake or anchor with tree ring. Different methods of fastening tree trunk to stake or anchor are acceptable if no damage to bark of tree will occur. Obtain approval prior to use other methods.

3.5.3 Guy wires for trees up to 150 mm calliper:

- .1 For deciduous trees taller than 3 m and evergreens taller than 2 m, fasten three wires to tree where a branch will prevent wires from slipping down. Use tree rings to prevent abrasion of bark.
- .2 Fasten guy wires to anchors at distance from tree base equal to height of where wire is attached to trunk. Break wires, install wire tighteners and tighten slightly.
- .3 Where guy wires are used close to pedestrian traffic ways, fasten approved flags to wire or paint turnbuckles orange to make them clearly visible.
- .4 Use sufficient number of guy wires to support large shrubs.

3.5.4 Guy wires for trees over 150 mm calliper:

- .1 Maintain tree in correct position with 4 guys spaced at equal intervals.
- .2 Fix guys at 2/3 height of evergreens, above bottom branches of deciduous trees or at least half tree height.
- .3 Secure guys to anchors at 45° angle to trunk of tree.
- .4 Position each anchor at right angles to trunk in pit 1200 mm deep. Compact backfill to 90 Standard Proctor density.
- .5 Secure guys to trees with four eyebolts spaced at vertical intervals of 150 mm minimum by drilling trunk same diameter as eyebolt. Use nuts and washers. Dress ends with wound dressing.
- .6 Secure cable ends with cable splicing bolts.

- .7 Where guy wires are used close to pedestrian traffic ways, fasten approved flags to wires or paint turnbuckles orange to make them clearly visible.

3.6 Pruning

- 3.6.1 Prune trees and shrubs after planting, as indicated, to compensate for loss of roots suffered during transplanting. Postpone pruning of those trees where heavy bleeding may occur, until in full leaf. Employ clean sharp tools and make cuts flush with main branch, smooth and sloping as to prevent accumulation of water. Remove projecting stumps on trunks or main branches. Remove dead and injured branches and branches that rub causing damage to bark. Trim out crown of trees and shrubs without changing their natural shape. Do not damage lead branches or remove smaller twigs along main branches.

3.7 Maintenance

- 3.7.1 Water once a week for first 4 weeks and then sufficiently thereafter to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.
- 3.7.2 Keep soil, within confines of planting saucer around trees and planting beds, shallowly cultivated and free from weeds.
- 3.7.3 Spray plants to combat pests and diseases. Do not use DDT or sprays prohibited by Agriculture Canada.
- 3.7.4 Keep tree guards and guy wires in proper repair.
- 3.7.5 Provide adequate protection against winter damage including damage caused by rodents.
- 3.7.6 Maintain plant material from date of planting up to Final Acceptance.
- 3.7.7 Remove trunk wrapping, tree stakes, guy wires, and eyebolts at end of warranty period.
- 3.7.8 Provide maintenance as outlined in specifications for Landscape Maintenance, Section 02990.