

PART 1 - GENERAL

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| <u>1.1 RELATED SECTIONS</u> | <ul style="list-style-type: none">.1 Section 01 33 00 - Submittal Procedures..2 Section 31 22 13 - Rough Grading..3 Section 32 92 19.13 - Topsoil Placement and Grading. |
| <u>1.2 REFERENCES</u> | <ul style="list-style-type: none">.1 Codes and standards referenced in this section refer to the latest edition thereof..2 Canadian Nursery Landscape Association (CNLA)<ul style="list-style-type: none">.1 Canadian Standards for Nursery Stock. |
| <u>1.3 SOURCE QUALITY CONTROL</u> | <ul style="list-style-type: none">.1 Obtain approval from Departmental Representative of plant material at source prior to digging..2 Notify Departmental Representative of source of material at least seven (7) days in advance of shipment. No work under this section is to proceed without approval..3 Acceptance of plant material at its source does not prevent rejection on site prior to or after planting operations..4 Imported plant material must be accompanied with necessary permits and import licenses. Conform to federal and provincial regulations. |
| <u>1.4 QUALITY ASSURANCE</u> | <ul style="list-style-type: none">.1 Topsoil amendments and seeding are to be performed under the direction of a qualified agricultural expert..2 Submit name, qualifications and years of experience of qualified agricultural expert for review and approval by Departmental Representative. |
| <u>1.5 QUALIFICATION</u> | <ul style="list-style-type: none">.1 Topsoil amendments are to be performed under the direction of a qualified agricultural expert..2 Submit name, qualifications and years of experience of qualified agricultural expert for review and approval by Departmental Representative. |
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1.6 SHIPMENT AND
PRE-PLANNING CARE,
STORAGE AND
PROTECTION

- .1 Co-ordinate shipping of plants and excavation of holes to ensure minimum time lapse between digging and planting.
- .2 Tie branches of trees and shrubs securely and protect plant material against abrasion, exposure, wind, frost, excessive heat, sun and extreme temperature change during transit. Avoid binding of plant 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.
- .3 Remove broken and damaged roots with sharp pruning shears. Make clean cut and cover cuts over 10 mm diameter with wound dressing.
- .4 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.
- .5 Protect plant material during transportation:
 - .1 When delivery distance is less than 30 km and vehicle travels at speeds under 80 km/hr, tie tarpaulins around plants or over vehicle box.
 - .2 When delivery distance exceeds 30 km or vehicle travels at speeds over 80 km/hr, use enclosed vehicle where practical.
 - .3 Protect foliage and root balls using antiessicants and tarpaulins, where use of enclosed vehicle is impractical due to size and weight of plant material.
- .6 Protect stored plant material from frost, wind and sun 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.
 - .3 For balled and burlapped and wire basket root balls, place to protect branches from damage. Maintain moisture level in root zones.

1.7 WARRANTY

- .1 The contractor will warrant that plant material as itemized on the drawings will remain free of defects for two (2) full growth seasons.
- .2 End-of-warranty inspection will be conducted.
- .3 Departmental Representative reserves the right to extend contractor's warranty responsibilities for an additional one year if, at end of initial warranty

1.7 WARRANTY .3 (Cont'd)
(Cont'd) period, leaf development and growth is not sufficient to ensure future survival.

1.8 SUBMITTALS .1 Submit product data for:
.1 Fertilizer
.2 Anti-dessicent
.3 Guying assembly including clamps, collar, guying wire, anchors and wire tightener.
.4 Mulch

1.9 REPLACEMENT .1 During warranty period, remove from site any plant material that has dried or failed to grown satisfactorily as determined by Departmental Representative.
.2 Replace plant material in the next planting season.
.3 Extend warranty for replacement plant material for a period equal to the original warranty period.
.4 Continue such replacement and warranty until plant material is acceptable.

PART 2 - PRODUCTS

2.1 MATERIALS .1 Water: potable and free of minerals and impurities that would inhibit plant growth.
.2 Stakes: Pressure treated wood, 50mm x 50mm x 250mm.
.3 Cables and accessories: factory galvanized cables, wire tighteners, eyebolts and turnbuckles. Use turnbuckles with 150 mm long eyebolts and 100 mm diameter threaded opening for tightening.
.4 Guy wires: steel wire strand to CSA-G4, 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.
.5 Tree Riggs: fabricated from 3 mm galvanized wire encased in two ply reinforced 12 mm diameter rubber garden hose or equivalent.

2.1 MATERIALS
(Cont'd)

- .6 Wire Mesh: galvanized, electrically welded.
 - .1 For tree guards use 1.4 mm wire with 25 x 50 mm mesh.
- .7 Reinforcing Rod: 10 mm bars to CSA G30.12.
- .8 Fiberglass Fabric: tight woven, minimum 2.5 kg/m2 Mass, 1 m wide.
- .9 Root Bull Burlap: 150 g Hessiam burlap.
- .10 Tree wrapping material: new, clean, plain burlap strips minimum 2.5 kg/m2 mass and 150 mm wide.
- .11 Anchors: T-bar steel stakes 40 x 50 x 50 mm long.
- .12 Anti-desiccant: Wax-like emulsion to provide film over plant surfaces reducing evaporation but permeable enough to permit transportation.
- .13 Wound dressing: horticulturally accepted non-toxic, non-hardening emulsion.

2.2 PLANT MATERIAL

- .1 Quality and source: comply with Guide Specifications for Nursery Stock, referring to size and development of plant material and root ball. Measure plants when branches are in their natural position. Height and spread dimensions refer to main body of plant and not from branch tip to branch tip. Use trees and shrubs of No 1 grade.
- .2 Additional plant material qualifications:
 - .1 Plant material obtained from areas with milder climatic conditions from those of site acceptable only when moved to site prior to the breaking of buds in their original location, and heeded-in, in a protected area until conditions suitable for planting.
 - .2 Use trees and shrubs with strong fibrous root system free from 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.
 - .3 Large trees must have been half root pruned during each of two successive growing seasons. The latter at least one growing season prior to arrival on site.
 - .4 Plant material that has come out of dormant stage and is too far advanced will not be accepted unless prior approval obtained.

2.2 PLANT MATERIAL
(Cont'd)

- .3 Cold storage: approval required for plant material which has been held in cold storage.
- .4 Container - Grown Stock: acceptable if containers 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: coniferous and broad-leaved evergreens over 500 mm tall must be dug with soil ball. Deciduous trees in excess of 3 m in height must have been dug with large firm ball. Root balls must include 75% of fibrous and feeder root system. This excludes use of native trees grown in light, sandy or rocky soil. Secure root balls with burlap, heavy twine or rope. 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 Frozen Ball for Large Trees: dig root ball in fall when soil conditions permit good ball formation. Mulch root ball to prevent intermittent freezing.
- .7 Tree Spade Dug Material: dig plant material with mechanized digging equipment of hydraulic space or clam-shell type. Root balls to satisfy CNLA standards. Lift root ball from hole, place in wire basket designed for purpose and line with burlap. Replace root ball and tie basket to ball with heavy rope. Take care not to injure trunk of tree with wire basket ties or rope.
- .8 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.
- .9 Substitutions to plant material as indicated on planting plan not permitted unless written approval has been obtained as to type, variety and size. Plant substitutions must be of similar species and of equal size as those originally specified.

PART 3 - EXECUTION

3.1 PRE-PLANTING
OPERATIONS

- .1 Ensure plant material is acceptable to Departmental Representative.
- .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 Stake out locations of trees and planting beds as per planting plan. Obtain approval prior to excavating.
- .5 Coordinate operations. Keep site clean and planting holes drained. Immediately remove soil and debris spilled onto pavement.

3.2 PLANTING TIME

- .1 Trees, shrubs and ground covers growing in containers may be planted throughout growing season.
- .2 Plant only under conditions that are conducive to health and physical conditions of plants.
- .3 Provide planting schedule. Extending planting operations over long period using limited crew will not be accepted.

3.3 EXCAVATION

- .1 Shrub Beds: excavate to minimum depth of 500 mm.
- .2 Individual Shrubs: excavate planting holes width at least three times $\frac{1}{2}$ root ball diameter.
- .3 Small trees (up to 3.0 m): Excavate planting holes width at least three times $\frac{1}{2}$ root ball diameter.
- .4 Excavate to depth and width as indicated.
- .5 Provide drainage for planting holes in heavy soil if natural drainage does not exist. Have method approved.
- .6 Remove subsoil, rocks, roots, debris and toxic material from excavated material that will be used as planting soil. Dispose of excess material.
- .7 Protect bottom of excavations against freezing.

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- 3.3 EXCAVATION (Cont'd)
- .8 Remove water which enters excavations prior to planting. Ensure source of water is not ground water.
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- 3.4 PLANTING
- .1 Loosen bottom of planting hold to depth of 150 mm to 200 mm. Cover bottom of each excavation with minimum of 150 mm of topsoil mixture.
- .2 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 Place plant material to depth equal to depth they were originally growing in nursery.
- .4 With balled and burlapped root balls, loosen burlap and cut away minimum top 1.3 without disturbing root ball. With container stock, remove entire container without disturbing root ball. Non bio-degradable wrappings must be removed.
- .5 During planting of bare-rooted stock, first shake backfill of planting soil among the roots.
- .6 Tamp planting soil around root system in layers of 150 mm eliminating air voids. Frozen or saturated planting soil is unacceptable. When 2/3 of planting soil has been placed, fill hole with water. After water has completely penetrated into soil, complete backfilling.
- .7 Build 100 mm deep saucer around outer edge of hole to assist with maintenance watering.
- .8 When planting is completed, give surface of planting saucer dressing or organic 10-6-4 fertilizer at rate of 12 kg/100m² for shrub beds, or 40 to 50g/m² of caliper for trees. Mix fertilizer thoroughly with top layer of planting soil and water in well.
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- 3.5 TREE SUPPORT
- .1 Tree support: minimum to three (3) stakes.
- .1 Staking for trees up to 3 m and evergreen 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. Place stake or anchor 150 mm away from trunk on side of prevailing wind. 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 using other methods.
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- 3.5 TREE SUPPORT (Cont'd)
- .2 Tree Stakes and Wire Mesh: Protect trees indicated as requiring tree guards. Encircle staked trees with galvanized wire mesh. Leave space of at least 150 mm between tree truck and wire mesh. Fasten wire mesh to stake at 4 places using 3 mm wire.
- .3 Guy Wires for Trees up to 150 mm Caliper:
- .1 For deciduous trees taller than 3 m and evergreens taller than 2 m. Fasten three wires to tree where a branch will prevent skipping 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, paint turnbuckles orange to make them clearly visible.
- .4 Use sufficient number of guy wires to support large shrubs.
- 3.6 TRUNK PROTECTION
- .1 Install trunk protection on deciduous trees as indicated.
- .2 Install trunk protection prior to installation of tree supports when used.
- .3 Wrap deciduous trees, whose caliper is 20 to 50 mm spirally from ground up to height of second branches. Treat trunk with paste of long residual insecticide, lindane or equivalent before applying wrapping. Secure burlap with binder twine wound in opposite direction to burlap of 100 mm intervals. Place wrapping neatly and snugly with 40 mm overlap.
- 3.7 PRUNING
- .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. Treat cuts in excess of 20 mm dia. and damaged parts with application of wound dressing.
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3.8 MULCHING

- .1 Obtain approval of planting before mulching material is applied. Loosen soil in planting beds and pits and remove debris and weeds. Spread mulch to minimum thickness of 50 mm. Mulch material susceptible to blowing must be moistened and mixed with topsoil before applying. When mulching is placed in fall, place immediately after planting. When mulching is placed in spring, wait until soil has warmed up.

3.9 MAINTENANCE

- .1 Water once a week for first four (4) weeks and then sufficiently thereafter to maintain optimum growing conditions. Ensure adequate moisture in root zone at freeze-up.
- .2 Keep soil within confines of planting saucer around trees and planting beds, shallowly cultivated and free from weeds.
- .3 Spray plants to combat pests and diseases. Do not use DDT or sprays prohibited by Agriculture Canada.
- .4 Keep tree guards and guy wires in proper repair.
- .5 Provide adequate protection against winter damage, including damage caused by rodents.
- .6 Maintain plant material from date of planting up to end of warranty period.
- .7 Remove trunk wrapping, tree stakes, guy wires and eyebolts at end of warranty period.