

Construction Specification for Planting

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TS 5.30.01 SCOPE

This specification covers the requirements for the supply and installation of trees, shrubs, and perennials, groundcovers, ornamental grasses and the regular maintenance of plant material within the contract limits.

TS 5.30.02 REFERENCES

This specification refers to the following standards, specifications or publications:

City of Toronto Specifications

TS 5.10 Construction Specification for Growing Medium

Canadian Nursery Landscape Association

CNLA Canadian Standards for Nursery Stock

Agriculture Canada

Plant Hardiness Zone Map – Zone 5

Society for Ecological Restoration – Ontario Chapter

Native Plants Buyers Guidelines

TS 5.30.03 DEFINITIONS – Not Used

TS 5.30.04 DESIGN AND SUBMISSION REQUIREMENTS

TS 5.30.04.01 Plant Material

Make arrangements for approval of plant material by the Contract Administrator at a time mutually agreed upon according to TS 5.30.07.01 herein. No work shall proceed without approval of the Contract Administrator.

Prior approval shall not invalidate rejection of stock at later inspection at site should it, in the Contract Administrator's opinion, prove defective, damaged or generally inappropriate.

All plants shall be according to the varieties specified in the plant list and be legibly tagged with their proper name and size. No substitutions will be accepted without written approval of the Contract Administrator

Prior to installation, the Contractor shall advise the Contract Administrator in writing if in the Contractor's opinion any of the specified plant material will not perform according to the specifications. The City retains the right to direct the Contractor to proceed with the specified plant material including guarantee and as tendered.

Planting soil mix requirements shall be according to TS 5.10 and the bioretention specification (if applicable), and Contract Documents.

Imported plant material shall be accompanied with the necessary permits and import licenses. Contractor is to conform to all federal and provincial regulations.

Tagged material to be purchased and secured for project.

Any additional expenses for re-sourcing and approval of plant material shall be at no extra cost to the City.

All plant material industry suppliers shall be considered for material supply, not only those having pre-existing or current supply accounts with the landscape contractor.

If plant material is undersized, plant quantities will increase according to the following schedule:

- (1) perennial / groundcover / ornamental grass 9 cm pot = (3) perennial / groundcover / ornamental grass plug (PL50)
- (1) 1 gal container perennial/groundcover = (3) perennial/groundcover 9 cm pots
- (1) 5 gal container shrub = (2) 3 gal container shrubs
- (1) 3 gal container shrub = (2) 2 gal container shrubs
- (1) 2 gal container shrub = (3) 1 gal container shrubs / grasses
- (1) 70 mm cal tree = (2) 50 mm cal trees

All other sizes at equivalent replacement ratios. Notify the Contract Administrator 7 Days prior to plant material delivery for new plant material locations.

TS 5.30.04.02 Submittals

Submit affidavits to certify that manufactured or processed materials supplied in bulk meet specified requirements.

Submit instructions on maintenance procedures to be followed after end of specified maintenance period.

TS 5.30.04.03 Product Delivery, Storage and Handling

All materials shall be inspected by the Contractor for damage in transit. No defective material shall be delivered to the site. Material subsequently damaged shall be removed from the site immediately.

Label manufactured, processed or otherwise prepared materials that are packaged to indicate manufacturer, contents, weight, and a detailed description of the material. If delivered in bulk, submit affidavits giving information required as specified for labels and certifying that materials meet specified requirements. Store and protect fertilizer, limestone, bonemeal, mulching materials, and similar products to prevent damage from moisture.

No plant shall be accepted when the ball of earth surrounding its root system has been cracked or broken prior to or during planting, or after the burlap, staves, ropes or platform required in transplanting have been removed.

Trees specified as W.B. (wire basket) shall have solid root balls wrapped with 140 gram hessian burlap with no preservatives added. Root balls to have double thickness and be drum laced with 15 mm hessian twine at 200 mm spacing.

Shrubs specified as B & B (balled & burlapped) shall have solid root balls wrapped with 140 gram hessian burlap with no preservatives added. Root balls under 460 mm diameter to have single thickness, and between 460 and 900 mm diameter size to have double thickness and be drum laced with 15 mm hessian twine at 200 mm spacing.

Transport plants with frozen ball only when they are complete with root systems intact.

Transport plants with branches tied to prevent damage, and padded to avoid abrasion from equipment. Protective materials and burlap wrap tied around base of tree trunk to be removed from the tree prior to approval by the City, required prior to planting.

Trees are to be handled securely and with care and never by the trunk, to protect the bark and branches from mechanical damage.

Prevent drying out of roots, root balls, trunks, branches, and leaves of plants from time of removal at place of origin until they are planted. While temporarily stored at site, protect them with soil, or similar materials and keep moist.

Spray plant material with an anti-desiccant immediately before moving them from their original location. Apply a sufficient amount over trunks, branches, and foliage. Plants must be resprayed after planting.

TS 5.30.04.04 Job Conditions

Installation shall be done under suitable weather conditions and in a suitable growth season for each specified material.

TS 5.30.05 MATERIALS

TS 5.30.05.01 Plant Material

Type of root preparation, sizing, grading and quality shall be according to the Canadian Standards for Nursery Stock.

Source of plant material shall be grown in Zone 5 according to Agriculture Canada Plant Hardiness Zone Map. Native plants to be sourced from nurseries within 100 km of Toronto, unless otherwise approved by the City.

Plant material shall be freshly dug—at a time of year that is horticulturally acceptable for the species—free of disease, insects, defects or injuries and structurally sound with strong fibrous root system and densely foliated, root pruned regularly, but not later than one growing season prior to arrival on site.

Trees (general) shall be with straight trunks, well and characteristically branched for species. Container grown trees shall not be permitted for planting, unless approved by the Contract Administrator prior to purchase. Contractor to advise nurseries that trunk flare must be exposed above root ball before arrival on site. Trees that fail to meet this requirement shall be rejected by the Contract Administrator. Where the Contract Administrator approves the removal of any excess soil on top of the root ball shall be at no extra cost to the City and the two year warranty remains.

Measure plants with branches in normal position, finish grade to top of main body of plant, not from branch tip to branch tip or from root base to branch tip. Caliper dimension shall refer to diameter of trunk measured 300 mm above ground in original growing state.

Plants larger than specified shall be accepted without liability to extra charges if approved by the Contract Administrator, and they meet all specified requirements for their size.

"Collected plants", those dug from native stands, wood lots, orchards or neglected nurseries, and having received no cultural maintenance, will not be accepted unless approved by the Contract Administrator.

Plant varieties are specified in a plant schedule on the plan, and all substitutions must be approved by the Contract Administrator prior to ordering plant material. In case of discrepancy in quantity between the plant schedule or unit price schedule, the plan shall take precedence.

TS 5.30.05.02 Planting Soil

Planting soil shall be according to TS 5.10 and bioretention specification (if applicable), for planting soil requirements.

TS 5.30.05.03 Water

Potable water shall be used unless the Contractor provides testing results that demonstrate the water to be used is free of contaminants or impurities that would adversely affect the germination and growth of vegetation.

TS 5.30.05.04 Rodent Guards

Plastic rodent guard shall be approved by Urban Forestry.

TS 5.30.05.05 Root Barrier

Root barrier (root diversion device) shall be a geocomposite membrane to prevent root penetration under hard boulevard surfaces. The material shall be impermeable and ribbed with a thickness of 1 – 2 mm. Provide sample and proof of source to the Contract Administrator for approval prior to delivery and installation.

TS 5.30.05.06 Mulch

Planting beds shall be a blend of aged bark and compost materials. Provide sample and proof of source to the Contract Administrator for approval prior to delivery and installation. Refer to TS 5.10 for compost requirements.

Tree planting openings or planting beds in hard boulevard surface areas shall be a hardwood blend or finely shredded pine bark mulch pre-blended with an erosion control organic tacifier. Provide sample and proof of source to the Contract Administrator for approval prior to delivery and installation. Refer to TS 5.10 for compost requirements.

A low growing sedum mat or similar low growing, low maintenance groundcover option. Provide sample and proof of source to the Contract Administrator for approval prior to delivery and installation.

Bioretention areas: See bioretention specification for mulch requirements.

TS 5.30.05.07 Soil Amendments

Soil amendments shall refer to soil test report recommendations, according to TS 5.10 or bioretention specification (if applicable).

TS 5.30.05.08 Anti-Desiccant

Anti-desiccant shall be an emulsion to form permeable film over plant surfaces, and mixed according to manufacturer's directions.

TS 5.30.06 EQUIPMENT – Not Used

TS 5.30.07 CONSTRUCTION

TS 5.30.07.01 Pre-Planting Operations

All plant material shall be acceptable to the Contract Administrator and shall:

- 1) Arrange for nursery approval of trees. Contractor to source trees upon Contract award, as trees are a long lead item.
- 2) Contractor to provide a schedule of suppliers for plant stock showing supplier, species and size, as well as a purchase order showing purchase arrangements.
- 3) All trees must be planted according to the Contract Drawings, approved by Urban Forestry, and must arrive on site in balled and burlapped condition with a minimum caliper of 70 mm or as specified in Contract Drawings.

Unwrap and cut away top one third of jute wrapping or wire basket without damaging root ball. Do not pull burlap or rope from under root ball.

Each tree shall have the burlap and wire cage opened and soil brushed away until the first proper root is found indicating the top of the real root ball. In planting instructions for the tree, this level will be considered the top of root-ball.

- 4) Arrange for approval sample of each shrub type on site, prior to general order and delivery.

Remove damaged roots and branches from plant material prior to planting.

Apply anti-desiccant to conifers and deciduous trees in leaf according to the manufacturer's instructions.

Ensure that subgrade preparation and drainage is satisfactory for plant material growth.

Drain test shall ensure adequate subsoil drainage by filling bottom one-third of tree pit with water and checking for complete drainage after 24 hours. Obtain approval of drain test from the Contract Administrator prior to planting and backfilling.

TS 5.30.07.02 Excavation and Preparation of Planting Beds

Preparation of planting beds shall be according to TS 5.10, and if applicable, bioretention specifications, and as specified in the Contract Documents.

For individual planting holes:

- 1) Stake out location and obtain approval from the City prior to excavating.

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- 2) Excavate to depth and width as specified in the Contract Documents. If no drawing is shown, assume minimum planting soil depth of 600 mm for planting bed and one metre depth for tree planting areas.
 - 3) Scarify sides and break up soil at bottom of planting hole to a depth of 200 mm, or as specified in the Contract Documents.
 - 4) Remove water which enters excavations prior to planting. Notify the Contract Administrator if water source is ground water.

If existing topsoil/growing medium is approved by City for planting, mix topsoil/growing medium with amendments specified in soil report thoroughly, prior to planting. Refer to TS 5.10 for requirements for using existing topsoil/growing medium for planting.

Mix topsoil/growing medium and amendments just before planting, but not when frozen or muddy. Do not stockpile more than two days.

Excavate plant pits to allow at least 150 mm of planting soil under root ball, or as specified in the Contract Drawings.

When planting in late fall or early spring, prevent freezing of bottom of plant pits.

Provide further excavation and additional planting soil to ensure adequate drainage for survival of the plants.

Install root barrier to the full depth of the planting area, and as shown on the Contract Drawings.

Placing of growing medium shall be according to TS 5.10, and if applicable, bioretention specification.

Fertilizer according to the recommendations in soil analysis report shall be applied during the final operation of fine grading, but not longer than one week prior to planting.

TS 5.30.07.03 Planting

Final placement of shrubs shall be approved by the Contract Administrator prior to backfilling with growing medium.

Final placement of trees shall be approved by the Contract Administrator prior to excavation for tree planting.

Any tree found planted with the first proper root more than 2.5 cm below planting level will be rejected and require replacement or replanting at the Contract Administrator's discretion.

For container stock or root balls in non-biodegradable wrapping, remove entire container or wrapping without damaging root ball prior to planting.

Plant material to be planted vertically in locations as indicated.

Trees to be oriented with southern exposure as marked by the nursery, or as directed by the Contract Administrator to give best appearance on site.

Trees to be planted at a level that places trunk flare above finished grade, and as specified in the Contract Drawings.

For trees and shrubs:

- 1) Backfill growing medium 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 details.

Or as noted in bioretention specification (if applicable).

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

TS 5.30.07.04 Mulching Planting Beds

Ensure soil settlement has been corrected prior to mulching.

Provide continuous layer of mulch for all shrub beds.

Ensure ground is not frozen prior to mulching.

TS 5.30.07.05 Pruning

Prune plants according to proper horticultural practices. Prune sufficiently to remove dead or injured members, to compensate for loss of roots when transplanted, and to shape the plant into natural character as intended by landscape design.

Do not remove leaders.

Make cuts smooth, clean and flush to base members. Leave no stubs.

Cut back cambium to living tissue where cuts are made, and at bruises, scars and other injuries. Shape wood to prevent retention of water.

TS 5.30.07.06 Maintenance During Establishment Period

Perform the following maintenance operations from time of planting:

- 1) Water to maintain soil moisture conditions for optimum establishment, growth and health of plant material without causing erosion.
- 2) For evergreen plant material, water thoroughly in late fall prior to freeze-up to saturate soil around root system.
- 3) Remove weeds monthly.
- 4) Replace or respread damaged, missing or disturbed mulch.

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- 5) Where mulch is in place, remove and replace in spring after soil thaws and warms up. Top up as necessary to maintain a 75 mm layer depth.
 - 6) Apply pesticides according to federal, provincial and municipal regulations as and when required to control insects, fungus and disease. Obtain written product approval from Urban Forestry prior to application.
 - 7) Remove dead or broken branches from plant material, according to proper horticultural practices.
 - 8) Keep trunk protection in proper repair and adjustment.
 - 9) Remove and replace dead plants and plants not in healthy growing condition. Make replacements in same manner as specified for original plantings.

TS 5.30.07.07 Acceptance, Adjustment and Replacement

Plant material shall be accepted at the end of growing season (to be determined by the City), provided that plant material exhibits healthy growing condition and is free from disease, insects and fungal organisms.

Plant material installed less than 30 Days prior to frost or after October 15, whichever comes first, will be accepted in the following spring, 30 Days after start of growing season provided that acceptance conditions are fulfilled.

At time of Final Acceptance and again at termination of Warranty Period, Work shall be inspected by the Contract Administrator and adjustments and replacements shall be made according to the following:

- 1) Commencement of Warranty Period is predicated on written acceptance by the Contract Administrator.
- 2) Adjustment and replacement work shall be performed with materials of same size, variety and quality of material replaced.
- 3) Replacement work shall be done under an additional Warranty Period of the same length and conditions as described in this specification. It shall date from time of the Contract Administrator's approval of replacement work.
- 4) Replace plant stock that in the opinion of the Contract Administrator is dead, or not in satisfactory growing state, or does not meet specification requirements. Remove dead stock immediately. Replace stock at proper time during planting season. At the discretion of the Contract Administrator, unacceptable plant material may be left, its guarantee period extended, and again inspected next planting season. At this time, the Contract Administrator will decide if replacement will be made and the guarantee extended accordingly.
- 5) After settlement has occurred at planting pits, fill in to specified grade as per the detail.

TS 5.30.07.08 Regular Maintenance During Warranty Period

Work shall include maintenance of installations to ensure vigorous and healthy growth until the end of the Warranty Period.

For Plant Material: pruning; cultivating; weeding; mulching; resetting to proper grade or to upright positions; spraying to keep free from pests, insects and disease; and barriers to prevent damage by persons or animals.

All plant material installed under this section to be watered for the duration of the Warranty Period to ensure healthy, vigorous plant growth at all times. Watering to be coordinated in order to prevent overwatering or under watering. Contractor is responsible for ensuring adequate watering of plant material during Warranty Period.

Watering for tree and shrub beds to ensure saturation of full depth of planting soil. Care to be taken to avoid over-watering in the event of slow draining subsoil conditions.

Top up mulch as necessary to maintain a 75 mm minimum layer depth.

TS 5.30.08 QUALITY ASSURANCE

TS 5.30.08.01 Warranty

All plants shall be guaranteed for a period of two years following written acceptance in accordance with the General Conditions of the Contract and as modified by this section, and shall be alive and in vigorous growth at the end of the Warranty Period.

Less than 30 Days prior to frost or after October 15, whichever comes first, the start of warranty does not start until the following spring, 30 Days after start of growing season.

All plant material that in the opinion of the Contract Administrator is not in a healthy growing condition shall be replaced by the Contractor at no extra cost to the City, prior to terminating their responsibilities under this Contract.

All plant material that in the opinion of the Contract Administrator has not survived the first winter (based on a site inspection by the Contract Administrator in early spring, and in comparison to the performance of other plant material of that type) shall be replaced by the Contractor within two weeks of notification by the Contract Administrator.

Seasonal timing of all other replacement plantings shall be at the discretion of the Contract Administrator, based on an evaluation of the original planting and replacement planting conditions.

All replacements shall be plants of the same size and variety as specified in the Contract Documents. The cost shall be borne by the Contractor, except for possible replacement resulting from theft, vandalism, or carelessness on the part of others. The Contract Administrator shall be the sole judge in case of dispute regarding responsibility for replacement of plant material.

TS 5.30.09 MEASUREMENT FOR PAYMENT

TS 5.30.09.01 Perennial, Ground Cover, Ornamental Grass, 9 cm Pot

For measurement purposes, a count shall be made of the number of 9 cm pot(s) installed.

TS 5.30.09.02 Perennial and Ground Cover, 1 Gallon

For measurement purposes, a count shall be made of the number of one gallon containers(s) installed.

TS 5.30.09.03 Shrub, 5 Gallon

For measurement purposes, a count shall be made of the number of 5-gallon containers(s) installed.

TS 5.30.09.04 Shrub, 3 Gallon

For measurement purposes, a count shall be made of the number of 3-gallon containers(s) installed.

TS 5.30.09.05 Shrub, 2 Gallon

For measurement purposes, a count shall be made of the number of 2-gallon containers(s) installed.

TS 5.30.09.06 Tree, 70 mm Caliper

For measurement purposes, a count shall be made of the number of 70 mm caliper tree(s) installed.

TS 5.30.10 BASIS OF PAYMENT

- TS 5.30.10.01 Perennial, Ground Cover, Ornamental Grass, 9 cm Pot – Item**
Perennial and Ground Cover, 1 Gallon – Item
Shrub, 5 Gallon – Item
Shrub, 3 Gallon – Item
Shrub, 2 Gallon – Item
Tree, 70 mm Caliper – Item

Payment at the Contract Price for the above tender items shall be full compensation for all labour, Equipment and Material to do the work.