

INTRODUCTION

The Riverview grounds encompass the most comprehensive collection of non-native trees in British Columbia. This collection of trees is of national and international significance. A comprehensive data base of all non-native trees on site has been created. Access to this data and discussion about its content is encouraged. The intent is that all new design and development work shall fully understand and appreciate the significance of the Riverview tree inventory, and make every possible effort to protect, retain, and incorporate existing trees into new designs.

The *Riverview Lands – Tree and Plant Protection Specification* (the “Specification”) has been developed to protect, regulate cutting, and ensure the overall health of the Riverview tree inventory.

DEFINITIONS

“**CANDIDATE**” means any person, company or corporation, group, tenant, Contractor or similar entity that is active or is performing work at the Riverview Lands.

“**CONTRACTOR**” means **CANDIDATE**, see above.

“**CUT DOWN**” means to fell, remove or alter any tree, including roots, such that the tree is no longer considered biologically or structurally viable by the Riverview Arborist.

“**DAMAGE**” means to alter any tree or its growing environment in a manner detrimental to its present and future health and development.

“**MUNICIPAL**” means the City of Coquitlam.

“**TREE**” means:

- (a) any living tree;
- (b) any tree indicated on Riverview Lands Tree Inventory Report;
- (c) any replacement tree, planted in accordance with current BCSLA/BCNTA Landscape Standard and as accepted by the Riverview Arborist and/or Riverview Landscape Architect.

“**PRUNING**” means to remove one or more branches from a tree in a manner consistent with the International Society of Arboriculture pruning standards, or as approved by the Riverview Arborist

“**QUALIFIED TREE EXPERT (QTE)**” means a person who has graduated from an accredited college or university with a diploma or degree in Urban Forestry, Arboriculture or the equivalent and satisfied at least one of the following requirements:

- (a) is certified with either the International Society of Arboriculture; or
- (b) is current accredited as a consulting arborist with the American Society of Consulting Arborists.

”REPLACEMENT TREE” means a tree required to be planted to replace a tree cut, removed or damaged as advised by the Riverview Arborist or Riverview Landscape Architect, and where applicable, referencing any relevant Kwikwetlem First Nation Design Guidelines.

”RIVERVIEW ARBORIST” means a consultant representing BC Housing, certified with the International Society of Arboriculture; or accredited as a registered consulting arborist with the American Society of Consulting Arborists; or is a Registered Professional Forester as recognized by the Association of BC Forest Professionals.

”RIVERVIEW LANDSCAPE ARCHITECT” means a consultant representing BC Housing, registered with the British Columbia Society of Landscape Architects or the Canadian Society of Landscape Architects Association.

”RIVERVIEW LANDS TREE INVENTORY REPORT” means the tree inventory report prepared by Dunster & Associates for the Riverview Lands and accompanying BCLS survey plan.

”TREE PROTECTION FENCE” means a physical fence as per details, placed around a tree or cluster of trees to indicate retention or protection. See Schedule 1 for detail of acceptable fencing and signage.

”TREE PROTECTION ZONE” (TPZ) means a zone established by the installation of a Tree Protection Fence that is equal to one and a half times the radial drip line distance of each tree to be protected.

”SUBJECT AREA” means the general area of activity such as lease area, construction area, film production area or similar.

OVERVIEW

The following is provided as an overview to this Specification. Detailed information is provided in the Specification section of this document.

The **Riverview Arborist** and **Riverview Landscape Architect** shall oversee the compliance of this Specification. Candidates proposing impactful activity such as cutting down, pruning, replacement, or similar activity to any tree or the tree inventory, shall retain a **Qualified Tree Expert (QTE)** to consult with the **Riverview Arborist** and **Riverview Landscape Architect** during the planning or design development stage of their project and/or prior to commencement of the activity.

Planned tree retention shall consider the present and predicted health of the trees on site, as well as the disturbances that new development or activity will create for these trees. Landscape design work that includes the planting of new trees shall ensure that all new trees to be planted shall consider the following aspects:

- New trees must be of the highest quality available
- New trees shall be planted in carefully selected locations using high quality growing medium, planting techniques, and allow for long-term establishment and maintenance.

- New trees shall be consistent with the species already included in the Riverview tree inventory. A candidate or Contractor is expected to consult with the Riverview Arborist and Riverview Landscape Architect via a retained QTE to confirm incoming species specifications.
- New trees should have the potential to develop into a large mature size.
- New trees will complement and enhance the rest of the Riverview tree collection.

Candidates shall retain their own QTE who shall:

- Access the Riverview Lands Tree Inventory Report prepared by Dunster & Associates for the Riverview Lands;
- Document tree conditions on site before and after each phase of the work (i.e.: before demolition and prior to new construction commencement). This shall include documenting all trees still on site by their ID tag # (as per the Riverview Lands Tree Inventory Report), species, trunk diameter (cm), condition, and radial drip line distance (m);
- Liaise with the Riverview Arborist and Riverview Landscape Architect on all tree and planting proposals;
- Ensure that the recommendations provided from consultation with the Riverview Arborist and Riverview Landscape Architects are incorporated into respective project landscape and building designs;
- Provide a scaled copy of design / development plans, including tree retention, fencing and construction protection details, suggested landscaping, and notes about how these fit with the overall character of the Riverview Lands, to BC Housing for review by the Riverview Arborist and the Riverview Landscape Architect. The Riverview Arborist and Riverview landscape architect will review these details to ensure that they meet this Specification, and will provide detailed comments, feedback and suggested changes as needed.

These details will be resolved prior to the design / development plans being submitted to the City of Coquitlam.

SPECIFICATION

1.00 GENERAL

1.01 GENERAL REQUIREMENTS

- .1 Refers to all work associated with demolition, excavation, or construction.
- .2 All contract documents to form an integral part of this section.

1.02 DESCRIPTION

- .1 Using the existing Riverview tree survey data, check and validate all trees and plant material associated with the project.
- .2 Furnish all labour, materials, equipment, and services necessary to erect/maintain tree protection fencing delineating the tree protection zone noted on

the contract drawings. Coordinate work within the tree protection zone specified by Riverview Arborist.

- .3 The work shall include but is not limited to the following areas:
 - a) Survey of trees and plant material, if required
 - b) Arborist Report of Trees on in the subject area
 - c) Tree Removal Permit
 - d) Hand excavation around roots
 - e) Hand root pruning, general pruning of crown as directed by the Riverview Arborist
 - f) Grading operations including cutting and filling within the tree protection area.
 - g) Removal and disposal of excess material off site

1.02 RELATED WORK

- .1 Clearing and Grubbing

1.03 SURVEY and ARBORIST REPORT

With an application for issuance of a Municipal demolition permit, development permit or building permit, the Contractor or the applicant on behalf of the Contractor, shall submit a report, prepared by an experienced QTE. The Contractor shall refer to and make use of the Riverview Lands Tree Inventory Report that identifies:

- .1 Each tree, by tag number, located on the site area and adjacent to the site as specified by the Riverview Arborist. If additional trees, regardless of trunk size, are identified on site that are not in the Riverview Lands Tree Inventory Report, the Contractor's QTE shall consult with the Riverview Arborist to determine which other trees are to be considered for the survey plan.

The result of that determination shall be a written agreement as to which trees shall or shall not be included. The Contractor's QTE shall provide plans and a report detailing:

- .2 The surveyed location of all trees under consideration by:
 - a) tag number
 - b) species
 - c) trunk diameter in centimetres at 1.4 m above grade
 - d) radial drip line distance accurately plotted on all plans
 - e) present condition
 - f) existing elevation at the base of each tree.
 - g) location of any tree protection fencing required

- .3 the impact of the proposed development on the health of trees identified, and potential hazards to them during or after construction
- .4 recommended construction practices to protect trees during and after construction; and
- .5 an undertaking from the Contractor's QTE and the owner to BC Housing that the Contractor's QTE will perform or supervise performance of:
 - a) pre-construction treatment of trees including root and branch pruning;
 - b) regular on-site inspections during construction, and will report any offence during demolition, excavation, and construction to the Riverview Arborist, and
 - c) a post construction inspection and report of the site for submission to the Riverview Arborist for review, approval, and sign off.

1.04 PROTECTION OF EXISTING TREES

- .1 Using the surveyed drip line data from 1.03.2 a tree protection fence plan shall be submitted for review and approval. Prior to the start of any construction or demolition activity the Contractor shall erect the Tree Protection Fence as detailed in the tree protection fence plan. The Tree Protection Fence shall be installed at a distance equal to one and a half times the radial drip line distance of each tree to be protected to create a Tree Protection Zone (TPZ). The fence shall be installed by the Contractor, and inspected, approved, and signed off as acceptable by the Riverview Arborist or the Riverview Landscape Architect prior to start of all clearing, demolition and/or construction around existing trees, understory plants and shrubs in accordance the layout indicated on the contract documents. See Schedule 1 for detail of acceptable fencing and signage.
- .2 No person shall carry out demolition, excavation or construction on a site unless there are Tree Protection Fences in place.
- .3 The Contractor shall ensure that during the course of construction the TPZ is maintained and monitored to ensure that the existing trees, under storey plants and shrubs to remain and their root systems are protected from damaging activities that include but are not limited to:
 - a) Dumping of refuse.
 - b) Materials, whether solid or liquid that may cause damage to the plant material, surrounding soil and root system.
 - c) Materials, whether solid or liquid sourced from runoff and spillage during mixing and placement of construction materials, outside the TPZ that may cause damage to the plant material, surrounding soil and root system.
 - d) Water ponding adjacent to or within the tree protection zone that may cause damage to the plant material.

- e) Flooding, erosion, excessive wetting and drying resulting from de-watering and other operations.
 - f) Vehicular and foot traffic within the tree protection zone including casual seating or equipment and material storage.
 - g) Fires adjacent to or within the tree protection zone.
 - h) Cutting, breaking and skinning of roots and branches, as well as skinning and bruising of bark.
- .4 Damage to trees and shrubs during construction shall be reported immediately to the Contractor's QTE for assessment and direction with regard to repair, remediation or replacement by the Contractor at no cost to BC Housing. All damage incidents shall be reported to the Riverview Arborist as a matter of record, and any replacement plans shall be submitted for review and approval first of all.
- .5 Contractors shall care for the retention tree within the TPZ, during the demolition, excavation, and construction process, including:
- a) sufficient watering, particularly if excavation has disturbed the tree root system;
 - b) attend to proper root pruning and care for the remaining root system;
 - c) minimizing root damage, soil erosion and tree disturbance;
 - d) use of backfill to ensure that none of the roots remain exposed;
 - e) tunnel rather than trench when installing underground utilities and drainage lines; and
 - f) maintain protection barrier, repair any damage to it, and not alter or remove it until construction is complete.
- .6 The Contractor shall notify the Riverview Arborist or the Riverview Landscape Architect in writing seven (7) days prior to the removal of any Tree Protection Fence. Conditions for removal of the Tree Protection Fence shall include but are not limited to:
- a) Contractor has provided the required seven (7) day written notice.
 - b) Construction activities have been completed and the Riverview Arborist or the Riverview Landscape Architect has confirmed in writing that the site and all associated works have been completed to the point where the damaging activities outlined in 1.04.2 will not occur.
 - c) The Contractor's QTE has reviewed the condition of the protected plant material and is satisfied that the plants are in acceptable condition and/or that the remedial work has been completed by the Contractor in accordance with direction from the Contractor's QTE.

1.06 PRUNING OF ROOTS

- .1 All pruning operations shall be carried out or under the direction of an I.S.A. Certified Arborist using clean sharp pruning tools.
- .2 Do not break, chop and mutilate roots or branches during pruning operations.

1.07 EXCAVATION AROUND TREES AND SHRUBS

- .1 Excavation within the TPZ shall not be permitted unless previously approved by the Riverview arborist as an exemption to the tree protection zone requirements of one and half times the radial drip line distance.
- .2 All such exemptions shall be requested at least ten working days in advance of the planned works, and shall be submitted in writing to the Riverview arborist showing plans of the TPZ, dimensions and location of the variance being requested, a rationale as to why the variance is being requested, and any mitigation work suggested by the Contractor's QTE.
- .2 Excavation for New Construction within TPZ:
 - .1 Hand excavate to minimize damage to root systems.
 - .2 Use narrow tine spading forks to probe and comb soil to expose roots.
 - .3 Relocate roots into backfill areas whenever possible. If large, main lateral roots are encountered, expose beyond excavation limits as required to bend and relocate without breaking.
- .4 Utility trenching Within the TPZ:
 - .1 No utility tunneling within the TPZ shall be allowed unless reviewed and approved in writing by the Riverview arborist.
 - .2 Tunnel under and around roots by hand digging will be permitted.
 - .3 Main lateral roots may not be cut.
 - .4 Cutting of smaller roots that interfere with installation of new work shall be done with clean, sharp pruning tools.
- .5 Roots encountered immediately adjacent to the location of new construction that are not readily maneuvered to beyond the excavation area shall be cut 150mm (6") back from new construction.
- .6 Protection of exposed roots: Do not allow exposed roots to dry out prior to placement of permanent cover. Provide one of the following temporary remedial measures:
 - .1 Provide temporary cover with soil.
 - .2 Pack with four (4) layers of wet, untreated burlap.
- .7 Temporarily support and protect exposed roots from damage until permanently relocated and covered with backfill. Water puddle backfill around roots to eliminate voids and air pockets.
- .8 When suggested by the Contractor's QTE, and with written approval of the Riverview Arborist, above ground pruning operations may include the removal of limbs to restore natural shape or reduce the area of the crown of the tree(s)

or shrub(s). No crown pruning shall be undertaken without the consent of the Riverview Arborist.

- .10 Trees and shrubs to remain are to be thoroughly watered as required to maintain a healthy condition throughout the construction period. Contractor to document all watering operations and submit to BC Housing one (1) copy of documentation at substantial performance.
- .11 When the Contractor undertakes site excavations or disturbs the soil, the Contractor shall comply with the requirements of the *Heritage Conservation Act* and *Kwikwetlem First Nation Heritage Policy* and regulations, policies, standards and applicable permits issued thereunder.

1.08 RAISING GRADE AROUND EXISTING TREES

- .1 DO NOT RAISE GRADES within or adjacent to the TPZ unless authorized by the Riverview Arborist or Riverview Landscape Architect.

1.09 LOWERING GRADE AROUND EXISTING TREES

- .1 DO NOT LOWER GRADES within or adjacent to the tree protection zone unless authorized by the Riverview Arborist or Riverview Landscape Architect.
- .2 Lowering Grade:
 - .1 Carefully excavate by hand from limit of drip line of branch spread to proposed grade until the specified gradient has been achieved.
 - .2 Re bury or prune and remove roots as instructed by the Contractor's QTE.
 - .3 Construct a growing medium dike at periphery of branch spread to retain water. Dike to be constructed at each individual tree location unless instructed otherwise by Contractor's QTE.
- .3 Excavation Through Root Area shall follow the requirements laid out in section 1.07.

1.10 SURPLUS MATERIAL

- .1 Remove surplus material from site and dispose of at approved disposal area.

SCHEDULE 1 Tree Protection Fencing and Signage

Riverview Tree Protection Fencing Detail

