



## Arboricultural Assessment Report

Date of Review: 27 May 2018  
January 23, 2023

Project File No.: 18-028

Date of Report: 27 May 2018  
❖ Revised June 14, 2018  
❖ Revised July 30, 2019  
❖ Revised January 24, 2023

Project Name: Mixed Use / Residential  
1570/1580 Maple Street, 15654/15664/15674  
North Bluff Road and 1593 Lee Street  
White Rock, BC.

Weather: Sunny, clear

Arborist: Xudong Bao  
ISA Certified Arborist PN-8671A, TRAQ  
For: Meredith Mitchell  
ISA Certified Arborist PN-6089A

We completed a review of the site conditions on the date of review and note the following:

**Re: Arboricultural Services at 1570/1580 Maple St., 15654/15664/15674 North Bluff Rd. & 1593 Lee St., White Rock, BC.**

- ❖ January 24, 2023, report is updated with new site plan and site assessment, two more trees (#582 and #1000) were found reaching bylaw size. Tree #586 is revised to be removed due to its confliction with proposed PMT.
- ❖ July 30, 2019 update to address City comments from April 23, 2019 and make recommendations for the removal of City tree #OS4382, OS4383 and OS7123, to meet Engineering requirements.

For: Raghbir Gurm, Bridgewater Development Corporation

### 1.0 Introduction

A site visit was requested by Raghbir to review the quality of existing significant and bylaw protected trees at the site associated with the proposed development of a proposed Mixed Use / Multi – Family Development. We were provided with a copy of the topographical survey plan for reference. Proposed form of development has been provided by architect. Only the trees detailed in this report were assessed. The purpose of this review is to determine the existing conditions of the subject trees, including health and structure, and to determine the trees viability based on the proposed form of development. This report will be submitted to meet municipal permitting requirements.

A standardized visual assessment method was used for the on-site tree inventory and analysis. Tree species, size, and condition were noted for each, as well as any outward signs of structural defects, health deficiencies, and/or environmental conditions potentially impacting the health or structural integrity of the trees. Trees have been tagged with a number for inventory and reference purposes. Digital photos were taken for file reference and report writing purposes. A detailed inspection including aerial inspection, decay mapping, excavation explorations and root mapping was not performed.

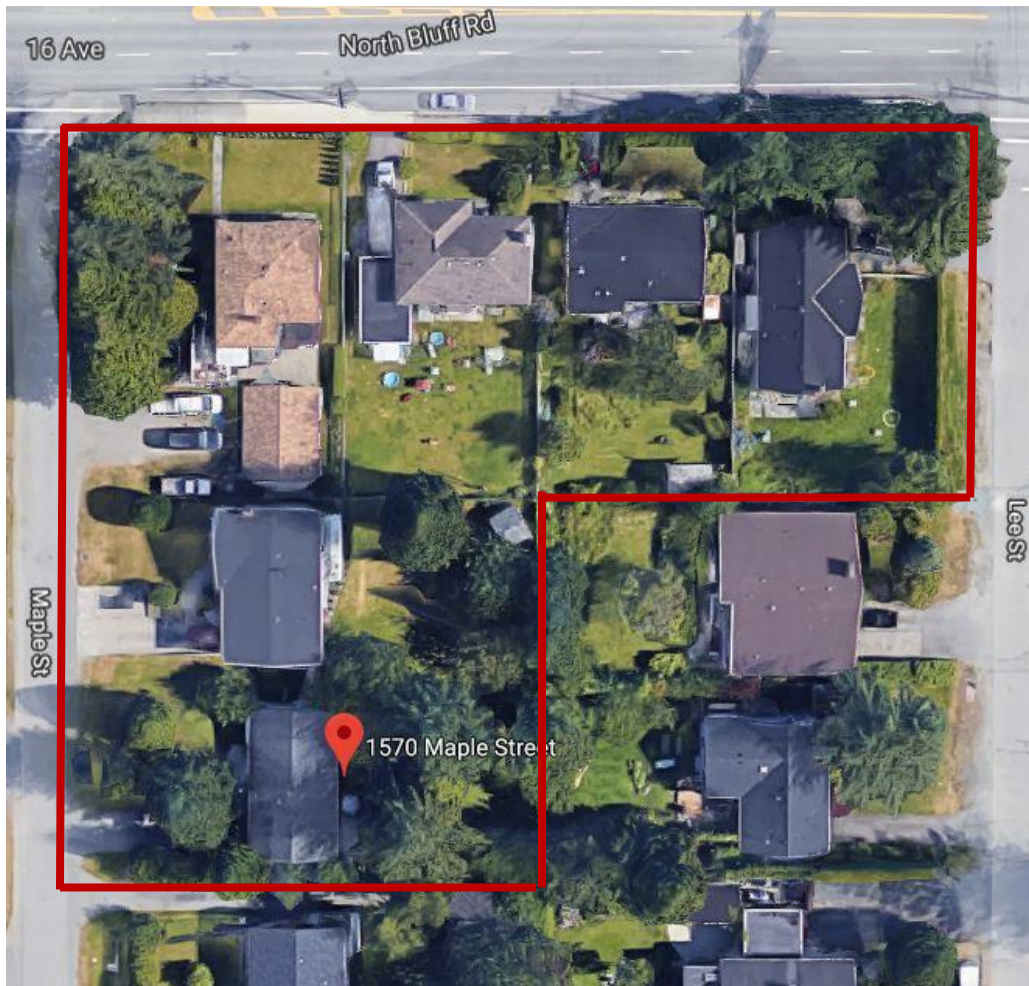
### 2.0 Scope of Work

Our scope of work is defined by the owner as follows:

- a) Assess bylaw size trees within the site and 5m of property line and of neighbouring properties.

- b) Assess the feasibility of retaining trees on the site, on neighboring properties and on city property in association with the form of development proposed.  
Provide mitigation/protection comments

### 3.0 Observation



The image above is taken from Google and the subject site is shown outlined in red.

The property is currently a series of single-family residential houses facing the three streets. Similar residential units surround the site on three sides; there is an in-construction development across Maple street to the west. The property is otherwise surrounded by single family housing.

#### Street Trees

There are no official street trees in association with this development; we note that there is a series of shared or offsite trees on Maple street (4 trees; tags 516, 4382, 4383, 7123) and 1 shared tree (part of conifer hedgerow on Lee Street (tag 395).

**Environmental, Drainage and Wildlife Comments**

There were no observed birds’ nests and no significant wildlife values noted of the site. The site was generally flat with the exception of local residential retaining walls for minor grade changes on two lots (15654, 15664 North Bluff Road). No noted areas of saturation or visible wet areas.

**Existing Trees / Vegetation**



The existing on-site trees are mixed non-native and native planted varieties of varying ages. There is a mature, poorly pruned, large Douglas-fir hedgerow on 1593 Lee Street Development, evidence historic large branch failures (noted verbally by tenants also). These were noted to have damaged overhead wires. These powerlines are connected to hospital power (the Hospital is located three blocks west of the project site). The Owner has verbally noted that BC Hydro would like these trees removed.

On Maple Street there are three remnant large native conifers, plus two stumps of previous large conifers. These trees are off-site trees and are included within the tree inventory. These three trees conflict with civil engineering plans.

The proposed form of development forward to M2 Landscape Architecture (M2LA) is a mixed-use plan with underground parking from property line to property line, except for a ROW on the southern property line of the eastern lots. It is noted that most of the on-site trees are in the centre of the site (along the property lines of individual rear yards of single-family houses). It is anticipated that the entire site will be excavated with no feasibility to retain on-site trees.

Please see the Arborist Tree Table, attached, for specific information on individual trees.

Attached Photos:

	
<p>Photo 1: Tree #7123 (left), 4383 (middle), 4382 (right)</p>	<p>Photo 2: Tree #7123, Douglas-fir, poor lower branch structure</p>



**Photo 3:** Tree #7123



**Photo 4:** Tree #7123



**Photo 5:** Tree #4382



**Photo 6:** Tree #4383



**Photo 7:** Tree #508



**Photo 8:** Tree #509



**Photo 9:** Tree #519



**Photo 10:** Tree #519



**Photo 11:** Tree #510, Fruiting cherry; previously topped at 4.5m



**Photo 12:** Tree #518, 513, 517



**Photo 13:** Tree #OS1, OS2, OS3; neighbouring property small hedgerow



**Photo 14:** Tree #OS1, OS2, OS3; neighbouring property small hedgerow



**Photo 15:** Tree #514; in decline



**Photo 16:** Tree #514, middle of canopy; codominant leaders



**Photo 17:** Tree #OS516, Deodar cedar; foliage good



**Photo 18:** Tree #OS516, Deodar cedar; bulge in trunk.



**Photo 19:** Tree #512; canopy in good condition



**Photo 20:** Tree #512; trunk with ivy



**Photo 21:** Tree #OS4



**Photo 22:** Tree #513





**Photo 23:** Tree #517 witches broom fungus



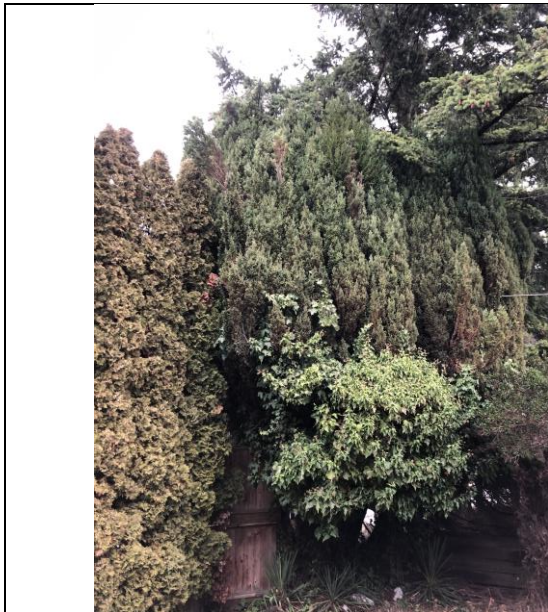
**Photo 24:** Tree #518



**Photo 25:** Tree #520; dead tree



**Photo 26:** Tree #A; undersize newly planted beech



**Photo 27:** Trees #587, 585



**Photo 28:** Tree #1000 (January 23, 2023)



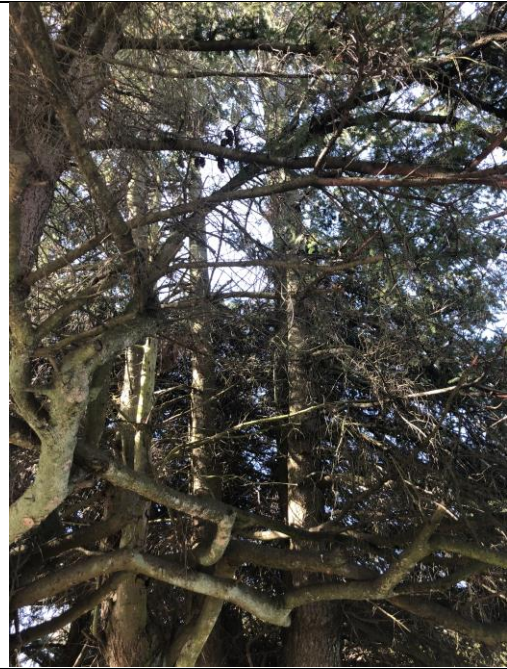
**Photo 29:** Tree #587



**Photo 30:** Tree #587



**Photo 31:** Hedgerow; trees #592, 593, 594, 595, 596



**Photo 32:** Hedgerow; trees #592, 593, 594, 595, 596 with multi-leaders; topped



**Photo 33:** Hedgerow, trees #588 - 593



**Photo 34:** Tree #586



**Photo 35:** Tree #582



**Photo 46:** Tree #583

### 3.1 Recommendations

The mandate from the client to the Arborist was to review the existing trees on site and 5m from the property line, for their overall health/ quality and to provide comments regarding their ongoing suitability for retention.

Based on the existing health and condition of existing trees, as noted in the inventory our recommendation is to retain tree OS1-OS5 and #A.

All the onsite trees are recommended for removal due to their conflict with proposed underground parking.

City tree #OS4382, OS4383 and OS7123, located within the boulevard at the north-west side of the site, have a minimum critical root zone of 4.5m and are anticipated to be significantly encroached by the proposed form of development. All three boulevard trees are recommended for removal given the Engineering requirements for the road expansion and proposed sidewalk location. Refer to the Civil drawings and drawing L2arb (attached). Removal of tree # OS4382, OS4383 and OS7123 requires authorization from the City of White Rock.

A coordinated site development plan (CSDP) may be required. This is a site development plan for a proposed project that has been coordinated with all project consultants and reviewed, approved and signed by the owner (or authorized agent), project Architect, Landscape Architect, Project Arborist, and Builder (the "Project Team"), where appropriate. The CSDP must clearly identify all site works proposed within or immediately adjacent to the critical root zones of all protected trees, and clearly state when the project arborist is required to be on-site to supervise work. Site works to address include but are not limited to building location, excavation, site grading, site servicing, driveway location, sidewalks, retaining walls, and tree removals. Specific construction techniques must be outlined that will minimize potential impacts to protected trees, where appropriate." Per city of White Rock tree Bylaw 1831.

Please see attached notes for mitigating construction near existing trees, as well as the City of White Rock tree protection fencing detail.

The client should develop the site and install suitable replacement trees on and off site, as necessary or required. The purpose of the replacement trees is to re-establish a reasonable level of tree cover. Suitable tree species shall be selected to obtain optimal growth in the given locations and conditions. Refer to municipal requirements for replacement tree recommendations and select those that will grow to a mature stature and not outgrow the space in which they will be planted. This approach will ensure the best long-term solution to the specific urban forestry requirements of this site.

#### 4.0 Limitations

We attach the following clauses to this document to ensure you are fully aware of what is technically and professionally realistic in the assessment and preservation of trees.

This Arboricultural field review report is based on site observations on the date noted, only. We ensure that the opinions expressed are a reasonable and accurate representation of the condition of all trees reviewed. The assessment was completed based on a visual review only and none of the trees were dissected, cored, probed or climbed. All trees or groups of trees have the potential to fail. No guarantees are offered or implied by M2 Landscape Architecture or their employees that the trees are safe given all conditions. Trees can be managed, but they cannot be controlled. To live, work or play near trees is to accept some degree of risk.

The assessment provided was based on preliminary information only. The opinions expressed in this report are valid for a period of one year only. Any trees retained should be reviewed on a regular (yearly) basis and tree work required should be done as soon as possible to mitigate any risk.

The information provided in this report is for the exclusive use of our client and may not be reproduced or distributed without permission of M2 Landscape Architecture.

Please contact the undersigned if you have any questions or concerns regarding this matter.

Yours Truly,  
(On behalf of M2 Landscape Architecture and Arboriculture Ltd.)



Xudong Bao  
ISA Certified Arborist PN-8671A, TRAQ  
M2 Landscape Architecture

ARBORIST TREE TABLE

Tree Number	Species	DBH (cm)	Protected tree size (Y/N)	Health	ON SITE	Location	Description	Comments	CRZ (m)
508	<i>Picea pugnans</i> , Colorado Spruce	78	Y	M	Y	Lot 6	Open grown, good trunk flare; good branching structure; thinning at top; heavily pruned by resident; no leader; mature tree; weeping sap on trunk; stubs remaining from poor pruning; LCR=80%	Remove-Conflict with proposed development	
509	<i>Prunus</i> sp., Fruiting Cherry	47	Y	P	Y	Lot 6	Open grown; heavily pruned; previously topped at 3.0-4.0m; under stress; in decline; mature tree; weeping sap; codominant at 1.8m, included bark	Remove-Conflict with proposed development	
510	<i>Prunus</i> sp., Fruiting Cherry	42, 39	Y	P	Y	Lot 6	Heavily pruned; under stress; in decline; black rot at the base of the tree, and in crotch; exposed surface root system; located within 2m of concrete slab; previously topped at 4.5m; column of decay suspected; dead limb on south side, with decay at union; included bark; moss on trunk	Remove-Conflict with proposed development	
512	<i>Pseudotsuga menziesii</i> , Douglas-fir	71	Y	G	Y	Lot 7	Base of the tree within 1.5m of concrete driveway; suppressed root system at south (cracked driveway/ roots under driveway) and east (concrete sidewalk); multiple leaders at 2.5m; invasive ivy to 6m; canopy appears healthy; LCR=70-80%	Remove-Conflict with proposed development	
513	<i>Cupressus</i> sp.	38, 36	Y	P	Y	Lot 7	In decline; codominant at 1.2m, included bark; two leaders at 0.80m height; mechanical gouges and damage to trunk; witches' broom; fungus growth (shared with 517 and 518); multiple leaders; suppressed by neighbouring trees (518 and 517); pattern at 3.5m height; LCR=50%	Remove-Conflict with proposed development	
514	<i>Cupressus</i> sp.	56	Y	M	Y	Lot 7	Moderate form; partially suppressed by neighbouring tree to south (516); some minor foliage dieback (weak on south side); LCR=70-80%	Remove-Conflict with proposed development	
517	<i>Pseudotsuga menziesii</i> , Douglas-fir	67	Y	P	Y	Lot 7	Trunk flare buried; codominant at 7m; witches' broom branch structure; dead lower canopy (due to lopped branches); compacted soil within critical root zone with some suppression by patio structure; damage on the trunk; bulges; mechanical damage to trunk; fungus (shared with 513 and 518); foliage suppressed by neighbouring tree (513); LCR=50%	Remove-Conflict with proposed development	
518	<i>Pseudotsuga menziesii</i> , Douglas-fir	67	Y	P	Y	Lot 7	Soil at base of tree; compacted with some suppression by patio structure; mechanical damage on trunk; bulges; witches' broom branch structure; fungus (shared with 513 and 517); wood piled at base; foliage suppressed by neighbouring tree (513); LCR=55%	Remove-Conflict with proposed development	
519	<i>Prunus</i> sp., Fruiting Cherry	33	Y	P	Y	Lot 7	Poor condition; significant phototropic lean onto neighbour's property; heavily pruned by resident.	Remove-Conflict with proposed development	
582	<i>Acer negundo</i> , Boxelder maple	20	Y	M	Y	Lot 3	Small tree; moderate condition; multiple stump tree; included bark at crotch	Remove-Conflict with proposed development	
583	<i>Prunus</i> sp., Fruiting Cherry	43	Y	P	Y	Lot 3	Open grown; double trunk; mature tree with heavy branch structure; under stress; weak branch structure; open hollow crotch	Remove-Conflict with proposed development	

ARBORIST TREE TABLE

Tree Number	Species	DBH (cm)	Protected tree size (Y/N)	Health	ON SITE	Location	Description	Comments	CRZ (m)
584	<i>Picea glauca</i> 'Conica', Dwarf Alberta spruce	30+	Y	G	Y	Lot 2	2 or 3 separate trees in cluster; retaining wall within 2m of base of the trees on south side; significant grade change on east side; large canopy but hollow in the centre; canopy shared between trees; approx. 5.0m ht	Remove-Conflict with proposed development	
585	<i>Chamaecyparis pisifera</i> 'Baby Blue', Sawara Cypress	25, 16	Y	P	Y	Lot 3	Multiple stem (5-8 stems each); canopy suppressed on south and north side; poor condition; branches partially damaged by snow weight; weak crotch branch connections	Remove-Conflict with proposed development	
586	<i>Cornus Nutalli</i> , Pacific dogwood	27, 24	Y	G	Y	Lot 4	Moderate to good condition; double trunk with no significant defects; possibly Eddies White Wonder; edge of canopy 2.5m from face of tree dia.	Remove-Conflict with proposed PMT	
1000	<i>Alnus rubra</i> , Red alder	21	Y	G	Y	Lot4	Single stem, natural crown form, young, healthy, no major defects found.	Remove-Conflict with proposed development	
587	<i>Chamaecyparis pisifera</i> 'Baby Blue', Sawara Cypress	24, 17, 13, 12	Y	P	Y	Lot 3	Large multiple stem (5-8 stems each); canopy suppressed on south and north side; poor condition; branches partially damaged by snow weight; weak crotch branch connections, included bark; ivy growing throughout	Remove-Conflict with proposed development	
588	<i>Pseudotsuga menziesii</i> , Douglas-fir	81	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
589	<i>Pseudotsuga menziesii</i> , Douglas-fir	67	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
590	<i>Pseudotsuga menziesii</i> , Douglas-fir	59	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
591	<i>Pseudotsuga menziesii</i> , Douglas-fir	46	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	

ARBORIST TREE TABLE

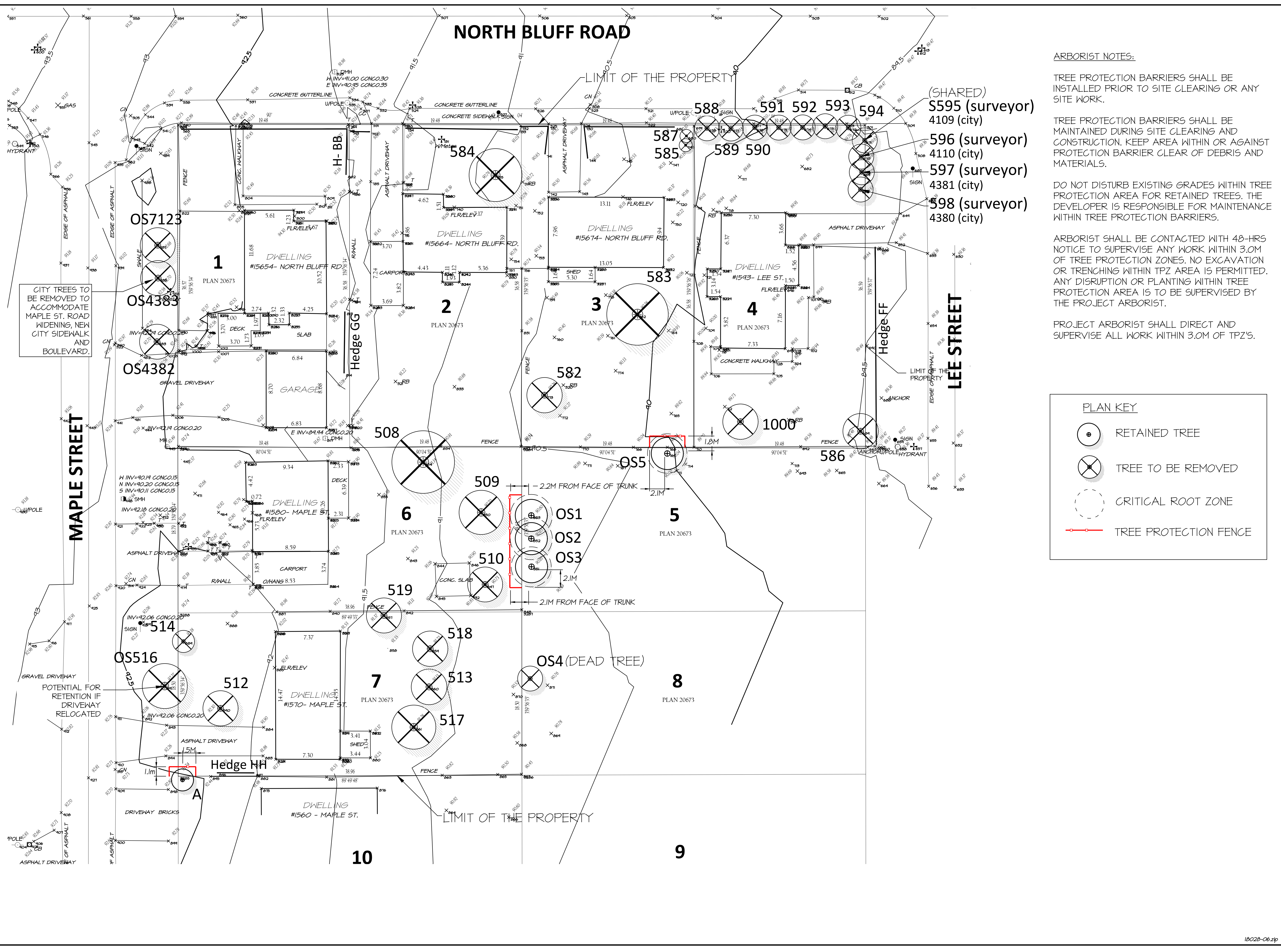
Tree Number	Species	DBH (cm)	Protected tree size (Y/N)	Health	ON SITE	Location	Description	Comments	CRZ (m)
592	<i>Pseudotsuga menziesii</i> , Douglas-fir	64	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
593	<i>Pseudotsuga menziesii</i> , Douglas-fir	46	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
594	<i>Pseudotsuga menziesii</i> , Douglas-fir	42	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
595 (surveyor) 4109 (City)	<i>Pseudotsuga menziesii</i> , Douglas-fir	43	Y	P	shared	Lot 4 and Lee St.	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
596 (surveyor) 4110 (City)	<i>Pseudotsuga menziesii</i> , Douglas-fir	86	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
597 (surveyor) 4381 (City)	<i>Pseudotsuga menziesii</i> , Douglas-fir	42	Y	P	Y	Lot 4	Hedge row on north-east property line of lot 4; planted approximately 2m O.C.; historically heavily pruned by residents and/or Hydro - topped at approximately 1.5m ht; poor condition; bulges on the trunk; multiple leaders overgrown; poor branch connections; history of dropping branches; over head wires above canopy; LCR= 35%	Remove-Conflict with proposed development	
598 (surveyor) 4380 (City)	<i>Pseudotsuga menziesii</i> , Douglas-fir	71	Y	P	Y	Lot 4	The same as tree #597 (4381); root system suppressed by concrete driveway on south side; large main leader with disproportionate branch to trunk ratio; expansion growth on leaders showing stress LCR= 50%	Remove-Conflict with proposed development	
A	<i>Fagus sylvatica</i> 'Dawyck Purple', Dawyck Purple Beech	n/a	n/a	G	N	Lot 10 (not in scope)	Newly installed by neighbour; small enough that no impact is anticipated during development	Retain	At property line
OS1	<i>Pseudotsuga menziesii</i> , Douglas-fir	37	Y	M	N	Lot 5 (neighbours)	Neighbours Douglas-fir trees (OS1-OS3); has leader; canopy diameter = 8.2m; LCR=70-75%	Retain	2.2m

P=Poor; M=Moderate; G=Good;  
OS=Off Site; CRZ=Critical Root Zone



ARBORIST TREE TABLE

Tree Number	Species	DBH (cm)	Protected tree size (Y/N)	Health	ON SITE	Location	Description	Comments	CRZ (m)
OS2	<i>Pseudotsuga menziesii</i> , Douglas-fir	37	Y	M	N	Lot 5 (neighbours)	Neighbours Douglas-fir trees (OS1-OS3); has leader; canopy diameter = 3.9m; LCR=70-75%	Retain	2.2m
OS3	<i>Pseudotsuga menziesii</i> , Douglas-fir	35	Y	M	N	Lot 5 (neighbours)	Neighbours Douglas-fir trees (OS1-OS3); has leader; canopy diameter = 3.5m; LCR=70-75%	Retain	2.1m
OS4	<i>Prunus</i> sp., Fruiting Cherry	n/a	n/a	P	N	Lot 8 (neighbours)	Dead; nvasive ivy on the trunk.; neighbouring tree	Retain	
OS4382 (city)	<i>Thuja plicata</i> , Western redcedar	79	Y	P	N	NE (Maple St.)	Roots supressed by the road and driveway; one trunk and multiple leaders; clearance pruned; reaction wood noted on branch connections, particularly in crotch of leaders; metal hook installed in tree; included bark in a branch at 3m height; suckering on trunk; full canopy; LCR=60-70%	Remove - conflicts with civil engineering plans	
OS4383 (city)	<i>Abies procera</i> , Noble fir	80	y	M	N	NE (Maple St.)	Roots supressed by the road; no sign of insect damage; supressed foliage - primarily east and west, due to proximity to neighbouring trees; LCR=60-70%	Remove - conflicts with civil engineering plans	
OS5	<i>Pseudotsuga menziesii</i> , Douglas-fir	34	Y	M-G	N	Lot 5 (not in scope)	Moderate condition; canopy diameter = 10m; ivy on trunk	Retain	2.1m
OS516	<i>Cedrus Deodora</i> , Deodar cedar	43	Y	M	N	SW (Maple Street)	Trunk deformed at base; bulges; foliage in good condition but supressed by proximity to neighbouring trees (512 and 514); LCR=60%	Remove - conflicts with civil engineering plans	
OS7123 (city)	<i>Pseudotsuga menziesii</i> , Douglas-fir	77	Y	P	N	NE (Maple St.)	Roots supressed by the road; large iclusion on the trunk at 3.5m; canopy formed primarily east and west, due to proximity of the other trees; insect damage on trunk; weeping sap; evidence of long term stress to tree with multiple seasons sap; LCR=55-60%	Remove - conflicts with civil engineering plans	



**ARBORIST NOTES:**

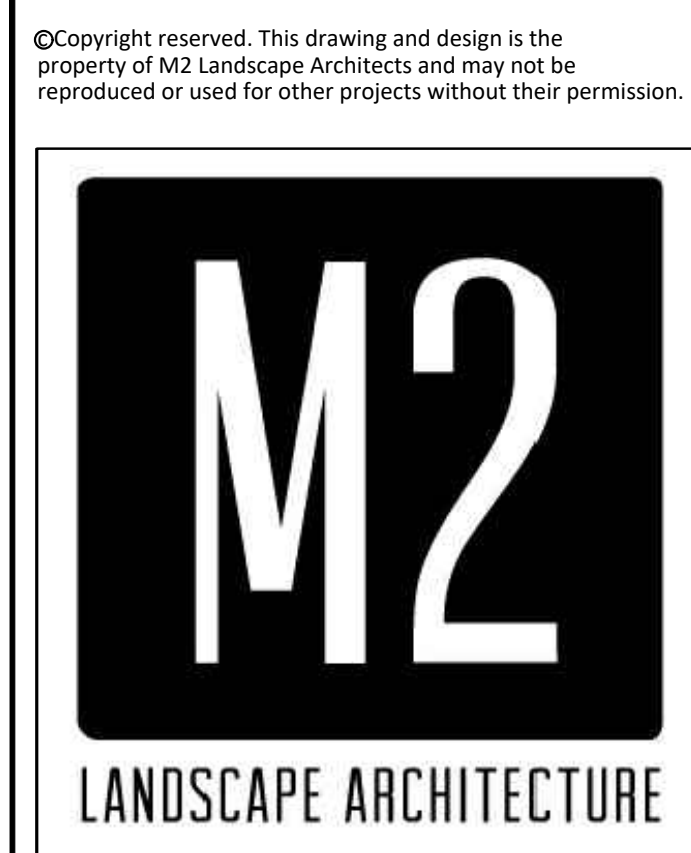
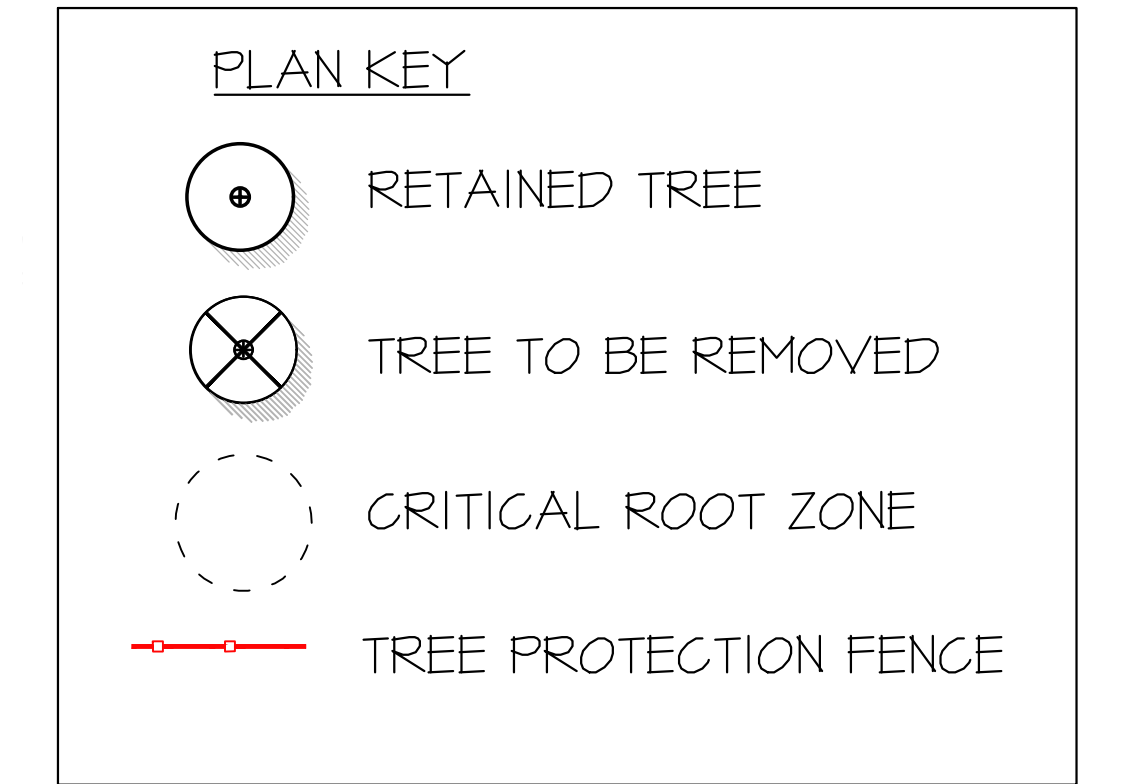
TREE PROTECTION BARRIERS SHALL BE INSTALLED PRIOR TO SITE CLEARING OR ANY SITE WORK.

TREE PROTECTION BARRIERS SHALL BE MAINTAINED DURING SITE CLEARING AND CONSTRUCTION. KEEP AREA WITHIN OR AGAINST PROTECTION BARRIER CLEAR OF DEBRIS AND MATERIALS.

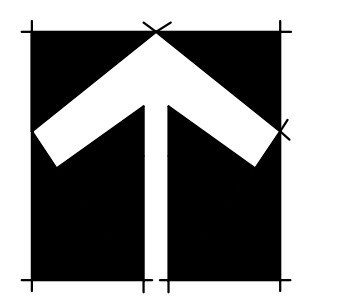
DO NOT DISTURB EXISTING GRADES WITHIN TREE PROTECTION AREA FOR RETAINED TREES. THE DEVELOPER IS RESPONSIBLE FOR MAINTENANCE WITHIN TREE PROTECTION BARRIERS.

ARBORIST SHALL BE CONTACTED WITH 48-HRS NOTICE TO SUPERVISE ANY WORK WITHIN 3.0M OF TREE PROTECTION ZONES. NO EXCAVATION OR TRENCHING WITHIN TPZ AREA IS PERMITTED. ANY DISRUPTION OR PLANTING WITHIN TREE PROTECTION AREA IS TO BE SUPERVISED BY THE PROJECT ARBORIST.

PROJECT ARBORIST SHALL DIRECT AND SUPERVISE ALL WORK WITHIN 3.0M OF TPZ'S.



#220 - 26 Lorne Mews  
 New Westminster, British Columbia  
 V3M 3L7  
 Tel: 604.553.0044  
 Fax: 604.553.0045  
 Email: office@m2la.com



NO.	DATE	REVISION DESCRIPTION	DR.
5	2023-JAN-23	REVISED PER NEH SITE PLAN	JB
4	2019-11-30	REVISED PER CITY COMMENTS	EB
3	2018-AUG-28	REVISED PER B' RIGHT OF WAY	EB
2	2018-JUN-15	ARB-2 PLAN ISSUED	JB
1	2018-APR-01	ARB-1 PLAN ISSUE	JB

NO. DATE REVISION DESCRIPTION DR.

PROJECT:

**MAPLE STREET**  
 15654/15664/15674 NORTH BLUFF RD.  
 1570/1580 MAPLE ST. AND  
 1593 LEE ST.  
 WHITE ROCK, B.C.

DRAWING TITLE:

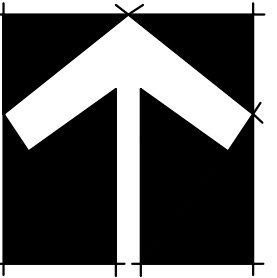
**ARBORIST PLAN**

DATE: 18-MAY-10	DRAWING NUMBER:
SCALE: 1/250	<b>L1arb</b>
DRAWN: JS	
DESIGN: JS	
CHK'D: MM	

M2LA PROJECT NUMBER: 18-028



#220 - 26 Lorne Mews  
New Westminster, British Columbia  
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Email: office@m2la.com



**ARBORIST NOTES:**

TREE PROTECTION BARRIERS SHALL BE INSTALLED PRIOR TO SITE CLEARING OR ANY SITE WORK.

TREE PROTECTION BARRIERS SHALL BE MAINTAINED DURING SITE CLEARING AND CONSTRUCTION. KEEP AREA WITHIN OR AGAINST PROTECTION BARRIER CLEAR OF DEBRIS AND MATERIALS.

DO NOT DISTURB EXISTING GRADES WITHIN TREE PROTECTION AREA FOR RETAINED TREES. THE DEVELOPER IS RESPONSIBLE FOR MAINTENANCE WITHIN TREE PROTECTION BARRIERS.

ARBORIST SHALL BE CONTACTED WITH 48-HRS NOTICE TO SUPERVISE ANY WORK WITHIN 3.0M OF TREE PROTECTION ZONES. NO EXCAVATION OR TRENCHING WITHIN TPZ AREA IS PERMITTED. ANY DISRUPTION OR PLANTING WITHIN TREE PROTECTION AREA IS TO BE SUPERVISED BY THE PROJECT ARBORIST.

PROJECT ARBORIST SHALL DIRECT AND SUPERVISE ALL WORK WITHIN 3.0M OF TPZ'S.

**PLAN KEY**

- RETAINED TREE
- TREE TO BE REMOVED
- CRITICAL ROOT ZONE
- TREE PROTECTION FENCE

**eta** inc  
1600 West 2nd Avenue  
Vancouver, BC, Canada V6Z 1Y6  
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F | 604.683.1459  
W | www.etalab.ca

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Project  
**Beachway**

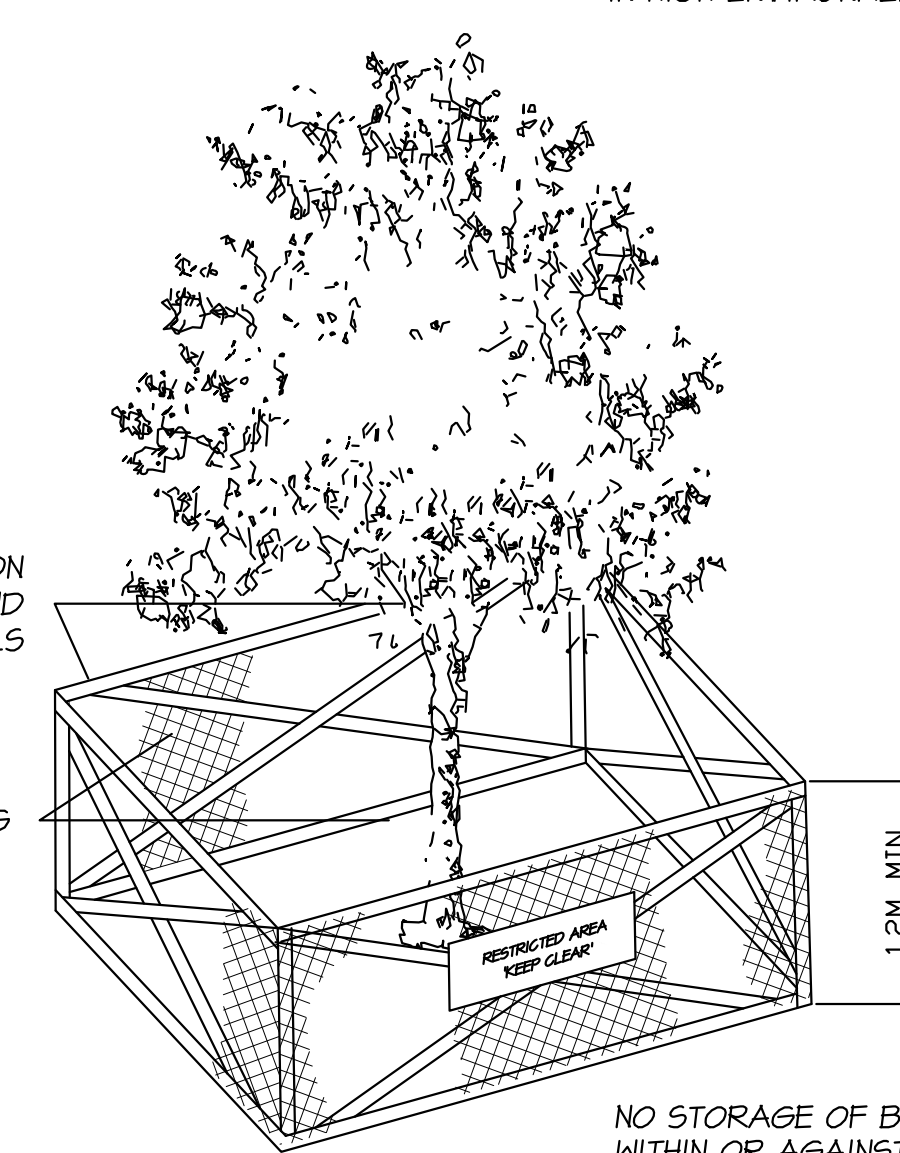
NOTE: ALL TREES REGARDLESS OF SIZE ARE PROTECTED IN HIGH ENVIRONMENTALLY SENSITIVE AREAS

**LANDSCAPE GRADING & DRAINAGE PLAN**

- TW 0.00m TW - Top of Wall
- BW 0.00m BW - Bottom of Wall
- TS 0.00m TS - Top of Step
- BS 0.00m BS - Bottom of Step
- ToS 0.00m ToS - Top of Slab
- FFE 0.00m FFE - Finish Floor
- PG 0.00m PG - Proposed Grac
- EG 0.00m EG - Existing Grade
- IG 0.00m IG - Interpolated Gr
- 1% - 5% Slope
- MIN-MAX
- \*AD Area Drain

SOLID 2x4 CONSTRUCTION WITH CROSS BRACING AND TOP AND BOTTOM RAILS

PLASTIC MESH SCREENING



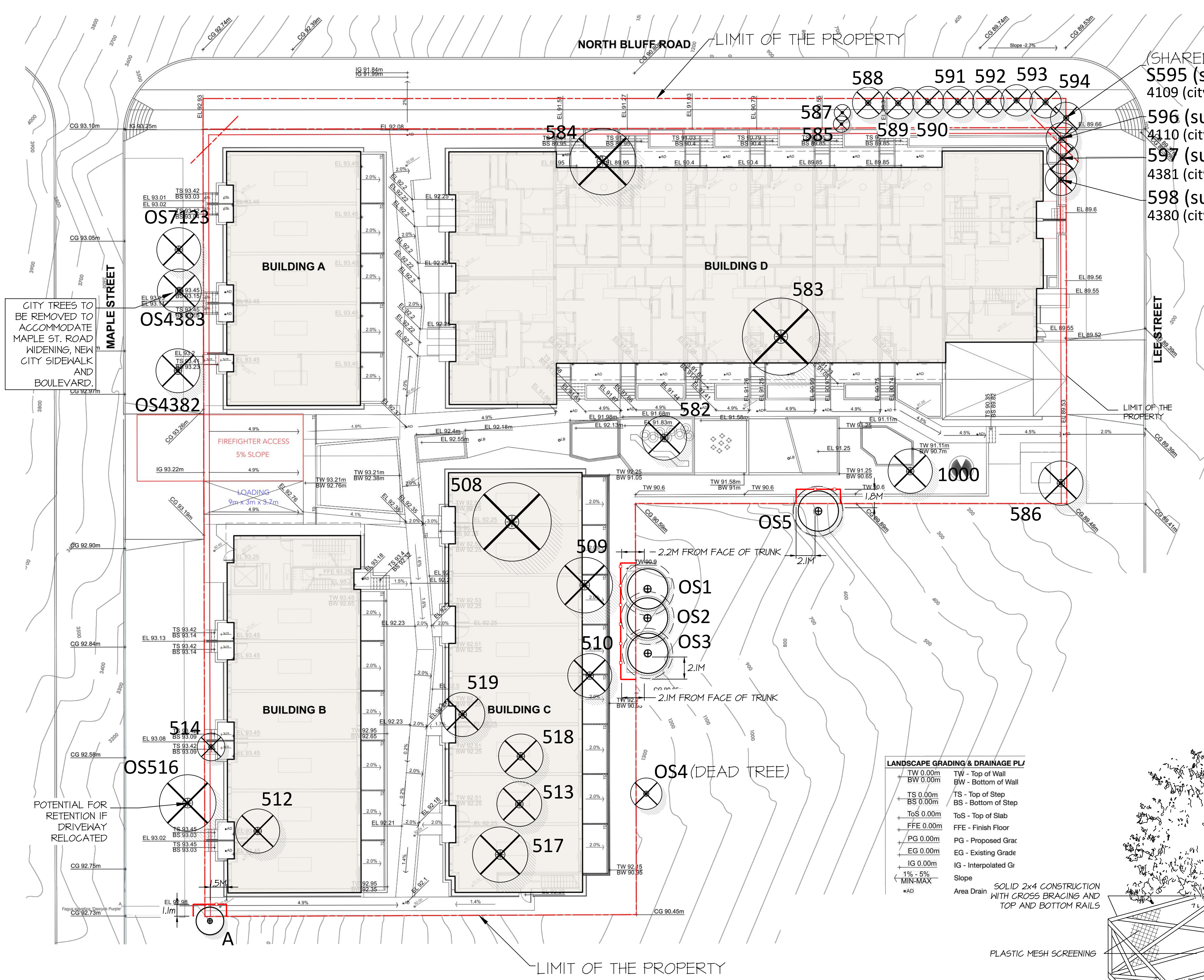
NO STORAGE OF BUILDING MATERIALS WITHIN OR AGAINST PROTECTION BARRIER

**TREE PROTECTION DISTANCE TABLE**

TRUNK DIAMETRE In cm. @	MINIMUM REQUIRED PROTECTION RADIUS (DISTANCE FROM TRUNK IN METRES)
20	1.2
25	1.5
30	1.8
35	2.1
40	2.4
45	2.7
50	3
55	3.3
60	3.6
75	4.5
90	5
100	6.0

EXTRAPOLATE PROTECTION RADIUS FOR TREES LARGER THAN 100CM dbh. \*DIAMETRE AT BREAST HEIGHT OR 1.4M FROM GRADE.

**1**  
**L1** TREE PROTECTION BARRIER  
N.T.S.



CITY TREES TO BE REMOVED TO ACCOMMODATE MAPLE ST. ROAD WIDENING, NEW CITY SIDEWALK AND BOULEVARD.

FIREFIGHTER ACCESS  
5% SLOPE

LOADING  
9m x 3m x 9.7m  
4.9%

POTENTIAL FOR RETENTION IF DRIVEWAY RELOCATED



# Tree Protection Guidelines

Planning and Development Services

P: 604-541-2136 | F: 604-541-2153

City of White Rock

15322 Buena Vista, White Rock B.C. V4B 1Y6

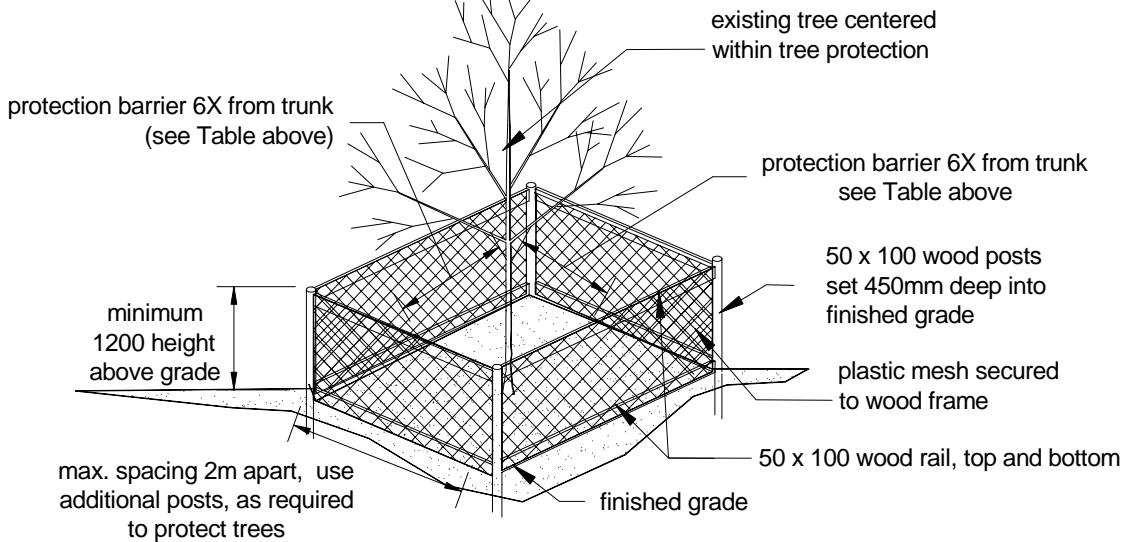
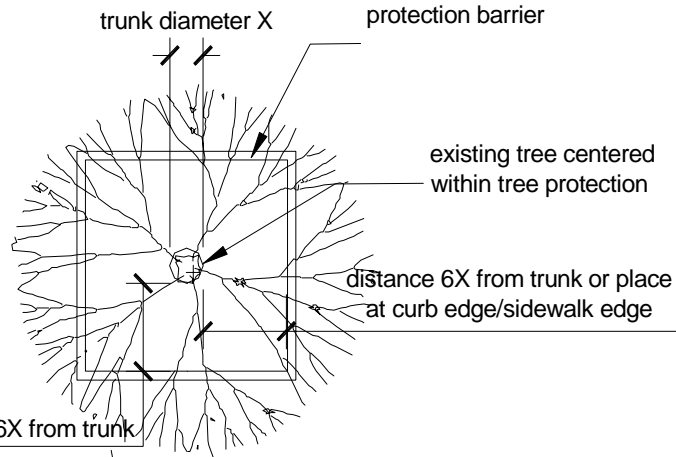
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## Where trees are to be retained on or adjacent to a development site, the following procedures must be followed to adequately protect the trees during development:

1. A tree protection barrier at least 1.2 metres in height must be installed around the tree to be retained. This must be constructed and inspected prior to the issuance of a demolition or building permit and remain intact throughout the entire period of construction.
2. Tree protection barriers must be inspected by your hired certified arborist consultant or city arboricultural technician prior to the issuance of a demolition or building permit unless a letter of assurance by a certified arborist is submitted that the certified arborist will be on site for demolition and no barriers will be built.
3. The required location of the tree protection barrier fencing is determined by the trunk diameter (see chart on reverse). These distances will only be reduced in instances where the full distance cannot be provided, upon a written report from a certified arborist and confirmed by the City's arboricultural technician.
4. The tree protection barrier must be constructed of snow fencing securely fastened to wood stakes with top and bottom railings as shown in illustration on reverse.
5. Storage, dumping, parking and machinery operation are prohibited within the protection tree barrier zone. All weather signage indicating the area of the protected zone must be attached to the barrier.
6. Any required digging inside the tree protection zone (inside the tree barriers) to accommodate underground services, footings, fences, etc.....must be indicated in an arborist and preapproved by the City Arboricultural Technician. A certified arborist must supervise all work performed inside the tree protection zone.
7. Trees inside the tree protection zone must be adequately cared for throughout the construction process. I.e. – The trees must be watered sufficiently, particularly if the tree root system has been disturbed by construction (even outside the tree protection zone)
8. Root and branch pruning, when necessary, must be performed by a certified arborist and in accordance with City and arboricultural guidelines. Only the City or its authorized contractor may prune trees on City Property.

TABLE: PROTECTION BARRIER DISTANCE

TRUNK DIAMETER (CM)	MINIMUM PROTECTION DISTANCE (M FROM TRUNK)
X	6X
20	1.2
25	1.5
30	1.8
35	2.1
40	2.4
45	2.7
50	3.0
55	3.3
60	3.6
75	4.5
90	5.0
100	6.0



**NOTES**

Install tree protection barrier before construction begins and keep in place until landscape installation is complete.

Storage of building materials & litter within or against protection barrier is prohibited. Developer/Owner responsible for maintenance within Tree Protection Barrier.

Damaged trees will be replaced at Developer/Owner's cost.

Maintain existing grades at protection barrier for all protected retained and existing trees.

Regrading outside of protection barrier should not adversely compromise protected retained and existing trees.

**STREET TREE PROTECTION DETAIL**

Parks Department  
City of White Rock

January 2006



## General Guidelines for Mitigating Construction Impacts in Proximity to Trees

Trees can be sensitive to changes in their environment during construction. While certain tree species are more resilient than others, the following presents some general recommendations regarding tree management during construction:

- Limit any continuous excavation or trenching to outside of the critical root zone (CRZ). The definition for CRZ varies between municipal tree bylaws, however, this zone is usually a factor of the tree's diameter at breast height (DBH) or its dripline (canopy area of the tree), whichever is greater.
- Use construction techniques to minimize excavations including providing structural support to buildings by using piles or soil screws and spanning or bridging over root zones rather than continuous trenching for concrete or other foundations/footings.
- If excavation within the CRZ is absolutely necessary, vertical excavation and the application of shotcrete shoring to the cut line will help to maintain the integrity of soils before forming work occurs. Excavation should be done with excavator placed outside of the CRZ, and soils removed parallel to the existing roots, not dragged across or perpendicular to the existing roots.
- If roots are exposed during excavation, root prune to acceptable arboricultural standards all exposed roots to the soil cut line or to a strong lateral root, whichever is longer. Root pruning should be performed by the project arborist, and backfilling should be done as soon as possible following excavation.
- Hand excavation or air-spade removal of soils from within the CRZ of the tree should not remove bark of roots.
- Any bridging or spanning construction technique should ensure the grade beam is entirely above grade.
- Any driveway, slab, or other treatment should not change the grade within the critical root zone of the preservation trees with excavations or other treatments. The location of these applications should avoid the CRZ where possible.
- For driveway applications in or over the CRZ of protected trees, and after the organic layer is removed by hand, stabilizing geogrid such as Nilox Triax should be laid down first to distribute loads and reduce impact to critical roots. 3-4" of compacted 1-2" clear crushed gravel should be installed on top of the geogrid, and then the final surface can be laid over the gravel.
- Organics removal within the CRZ of protected trees should be done by hand and under the supervision of the Arborist.
- Any concrete or other pathway material proposed through the CRZ of protected trees should not be installed by excavating within the CRZ. Concrete can be laid thicker than 4" or use rebar to maintain the structural integrity rather than excavating for the base material installation and the subsequent compaction required to the base material.
- Any pruning to mitigate conflicts between branches and existing or proposed structures should not remove more than 20% of the live crown ratio. Pruning should avoid where possible the removal of any branches greater than 4 inches in diameter.
- 

The following tree preservation guidelines and standards are provided for further consideration but relate specifically to sites under construction and for protecting root zones of preservation trees:

- Tree protection barriers should be installed at the dripline of the preservation trees or at a distance from the trunk six times the DBH, whichever is greater, creating the root protection zone (RPZ).
- Arborist must be on-site for all construction works within the dripline of all preservation trees.
- No soil disturbance or stripping of soils within the dripline or RPZ.



- The natural grade shall be maintained within the RPZ.
- No storage, dumping of materials, parking, underground utilities or fires within the RPZ.
- Utilities should be routed around the RPZ where possible.
- Excavations and construction work within 5 meters of the preservation trees should be supervised and directed by a consulting arborist.
- Surface drainage should not be altered so as to direct water into or away from the RPZ.
- Site drainage improvements should be designed to maintain the natural water table within the RPZ.
- Hand-digging only within the dripline of all preservation trees. Care must be taken not to remove or damage roots, including the bark.
- No continuous trenching within the dripline or RPZ.
- No passage or operation of vehicles or equipment in the RPZ.
- No placement of temporary structures or services.
- No affixing lights, signs, cables, or any other device to retained trees.
- No unauthorized pruning or cutting of retained trees. Any pruning or other treatment of a retained tree must be completed by a qualified arborist or tree service firm employing ISA certified arborists and in conformance with ANSI A300 standards or under the supervisions of the arborist from this firm.

Other consideration for tree management that may aid in forming some of the decision making criteria in regards to any architectural/construction changes to the site:

- Topped trees are generally considered with poor structure and can be considered for removal and replacement.
- Shorter lived tree species that are already showing signs of decline can be considered for removal and replacement, as construction will likely exacerbate their condition.
- Trees with evidence of large scaffold failure predispose them to fungal infections and insect infestations, reducing their long-term viability.
- Architectural and civil plans should make use of the strongest tree resources of the site in order to put forth the most suitable retention candidates.
- Certain trees are much more tolerant to changes in their environments, while others will almost certainly succumb to the stress of construction impacts. Selecting the appropriate tree species for retention is much more cost effective.

Once excavation, backfilling, and clearance pruning is complete, the following plant health recommendations will apply:

- Water the tree a minimum of once per week and up to three times per week during prolonged dry and hot weather. Watering should be to a depth of 45cm at and within the dripline of the tree. If the tree flags or edges of leaves brown, more water may be required.
- Apply composted or coarse mulch up to 8 cm (3 inches) deep within the CRZ and to the dripline of the tree.
- Deep root fertilization can be performed up to three times per season

- Application of an anti-desiccant may be recommended if tree shows signs of severe stress from excavation and root loss impacts.
- Monitoring is recommended once per month to track tree stress response to the root loss from excavation and the impacts from any mitigation efforts.

## General Tree Protection Barrier Specifications (Varies by Municipality)

### Tree Protection Specifications

Trees that are identified for protection through a Permit require the following protection measures to be implemented if any demolition, construction or change of land grade will take place within 5 metres of the Critical Root Zone of the tree; and for all existing trees on the highway fronting the parcel on which construction is to take place:

A protection barrier or temporary fence of at least 1.2 meters in height shall be placed around the Critical Root Zone of the tree. This barrier shall be in place before any excavation or construction work begins, and the barrier shall remain intact throughout the entire period of construction.

#### Specifications for Construction:

1. 1.2 m (~4') height;
2. 2"x 4"s to be used for vertical posts, top and bottom rails and cross-bracing (in an "X"); round, untreated vertical posts may be used with a minimum diameter of 9 cm;
3. Spacing between vertical posts to be a minimum of 3.7 m (12') on center;
4. Structure shall be sturdy with vertical posts driven firmly into the ground;
5. Continuous plastic mesh high visibility screening (e.g. orange snow fencing);
6. Posted with visible all weather signage advising that encroachment inside the protected area is forbidden;
7. Located at a distance from the tree based on the calculation of its Critical Root Zone.

The area within a Tree Protection Barrier shall remain undisturbed and not be used for any purpose including storage, dumping, parking and machinery operation.

Any required excavation in and around the Critical Root Zone of a tree shall be approved by the City and shall be completed by hand. (eg. underground servicing, footings, etc.) under the supervision of a Certified Arborist.

Grades within the Critical Root Zone shall be maintained as original. Re-grading outside the Critical Root Zone shall not negatively affect the drainage or the health of the retained trees. Trees within the Critical Root Zone shall be adequately cared for throughout the construction process.

If trees within the Critical Root Zone are damaged beyond repair, the Owner shall provide 4 Replacement Trees for each tree damaged.