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City of Burlington File #PRCN-DRT-004/24

ARBORIST REPORT

Proposed Mixed-Use Development
84-104 Plains Rd. E. & 990 Glenwood Ave.

City of Burlington

Prepared for Miura Development Group Inc.

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City of Burlington Tree Protection and Preservation
SPEC NO.SS12A (8 pages)

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1.0 Introduction

Cosburn Nauboris Ltd. was retained to conduct a Tree Inventory and Assessment by Miura Development Group Inc. for a proposed mixed-use development building including at grade and below grade parking. The legal property description is Part 1, Plan of Part of Lots 33, 34, 35, 36, 37, and 38, Registered Plan 725PF in the City of Burlington, Regional Municipality of Halton.



KEY MAP N.T.S.

The scope of this report discusses private trees 10cm DBH in size (diameter measured at 1.4m from the ground) and larger on the subject site and within approximately 6m of the property boundaries. Any size public trees fronting the subject site in the road allowances of Birchwood Avenue, Plains Road East, and Glenwood Avenue are also included in this report.

The site is currently 4 residential lots, 3 of which are occupied with houses, and 1 lot is vacant with no structures. The neighbouring properties to the south are single-family residential lots.

This report and accompanying Tree Preservation Plan addresses the existing trees involved within the subject site and identifies trees within our scope to be removed, injured, or preserved considering their condition and proposed construction impacts.

This report is prepared in support of obtaining the required tree removal approvals and permits for development applications.

2.0 Methodology

An inventory and assessment of the trees for this site was conducted on September 10, 2024 and April 22, 2025.

The trees within the site where accessible and on adjacent public land (ROW) were tagged with numbered metal tags while inaccessible private trees on adjacent lands and smaller caliper ROW trees were not physically tagged and are noted and identified by a combination of an alphabetic letter followed by a number.

This report and accompanying Tree Preservation Plan (TPP) is prepared to be consistent with City of Burlington Specifications Index For Tree Protection and Preservation (SPEC NO. SS12A) Amended September 2020, and City of Burlington A Guide To Tree Protection.

Tree inventory attributes were recorded in Table 1 using the following parameters:

Tree #:	Metallic tag number or letter/number reference
Owner:	Trees are listed under the ownership categories of *Street Trees (ROW)-Public Owner-City, Boundary Trees-Public Owners-City/Proponent, Private Site Trees Owner-Proponent, Adjacent Land Trees Owner-982 Glenwood Ave, Adjacent Land Trees Owner-981 Birchwood Ave.*
Genus & Species:	Scientific nomenclature of genus and species
Common Name:	Commonly used name
DBH (cm):	Diameter at Breast Height (1.4m from the ground using a diameter tape) for trees on site/estimated for trees on neighbouring private properties. For multi-stemmed trees, ISA standard calculation (square root of the sum of all squared tree stem diameters measured at 1.4m above grade).
Crown Diameter (m):	Estimated extent of the branch structure from the trunk
Structure/Health Rating:	Structure and Health are rated separately as a percentage based on; root, trunk, branch, leaf, and bud conditions as defined by the Council of Tree and Landscape Appraisers Guide for Plant Appraisals. Or more generally as: Good (67-100%), Fair (34-66%), Poor (1-33%), Dead (0%).
Comments:	Comments relating to the health and structure of the tree including defects, dieback, etc.
Action:	Recommended action to preserve, injure, or remove.
Rationale:	A brief reason as to why tree removal is recommended.
MTPZ Radius (m):	The Minimum Tree Protection Zone as defined by the municipality. Measured from the outside edge of the tree base towards the dripline.
CRZ Radius (m):	The Critical Root Zone as defined by the municipality. Measured from the outside edge of the tree base towards the dripline. Where work is being performed beyond the MTPZ but within the CRZ the works are subject to Section 8 of Tree Protection and Preservation (SPEC NO. SS12A).

Est. % Injury:	This is the estimated percentage of injury / encroachment within the MTPZ of a tree recommended for preservation but considered injured.

Tree locations are based on a survey plan dated Rev. 3 May 5, 2025 prepared by A.T. McLaren Ltd. The tree symbols drawn at the MTPZ radii, tree protection barriers and identifying reference are illustrated on the Tree Preservation Plan. Additional estimated tree locations were added to the TPP based on field observations as required.

3.0 Tree Assessment

Trees were assessed to determine their condition based on guidelines outlined in the Guide for Plant Appraisal 10th Edition as published by the Council of Tree and Landscape Appraisers 2019. Factors such as the health and structure of roots, trunks, branches, twigs, and leaves are considered in this evaluation.

Trees with poor form, double trunks with included bark, split trunks or branches, poor branch connections, excess dead wood, reduced branching in the crown, poor leaf development, signs of insect, fungal or bacterial infestations, have reduced ratings.

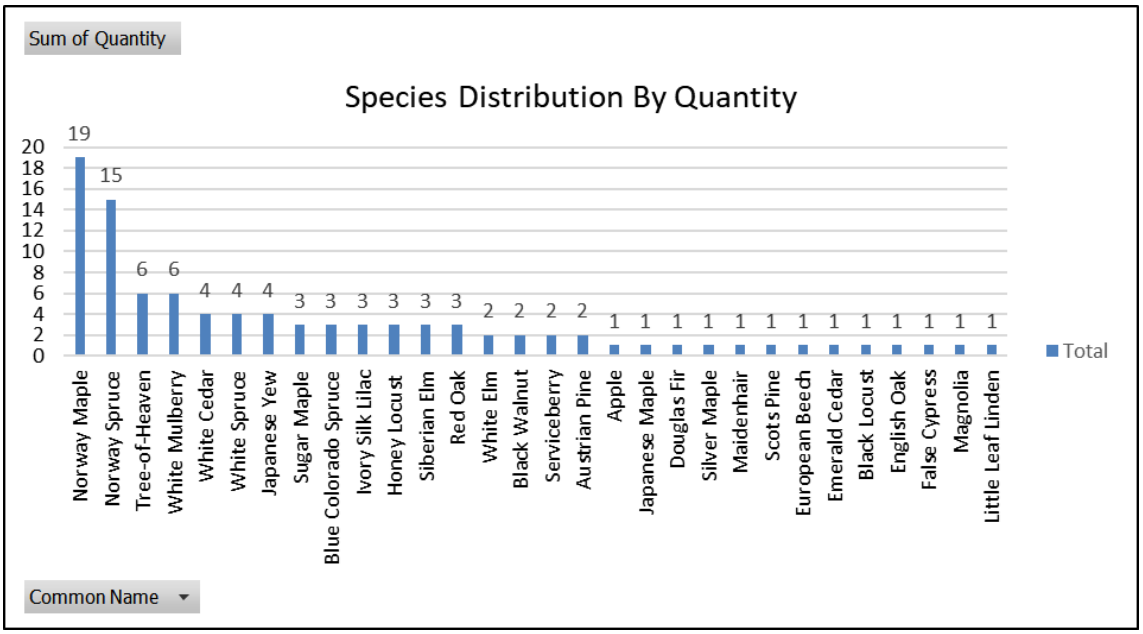
3.1 Individual Trees

Individual trees were inventoried, and statistics were compiled in Table 1. This table is attached to this report and is also included on the TPP. The statistics are to be used for determining the value of trees for retention or removal, the location of Tree Protection Zones (TPZ) and Barriers, and a quantitative assessment of trunk diameter and species for tree compensation as may be required by the municipality for removals.

The tree inventory found at total of 97 individual trees. 68 trees are within the private subject site. There are 2 trees on the adjacent private lands within approximately 6.0m of the property line, and there are 27 public street trees within the road allowances fronting the subject site of which 3 are observed as boundary trees.

The individual trees encountered were mostly non-native tree species.

A summary of the species distribution by quantity of the total is shown below in the bar graph.



95% of the trees were in good or fair condition, and 5% of the trees were in poor condition. A summary of the tree condition analysis is provided below.

Individual Tree Condition Analysis

Condition	Condition Count	% Total
Good	41	42%
Fair	51	53%
Poor	5	5%
Dead	0	0%
Total	**97**	**100%**

3.2 Tree Groupings

There was one tree grouping identified as C4 Emerald Cedar hedge and listed in the individual tree inventory in Table 1. This grouping consists of four multi-stem trees in a linear alignment within the Glenwood Avenue road allowance.

4.0 Federally and Provincially Protected Tree Species

There were no endangered or threatened tree species encountered within our scope of work listed under *Canada's Species At Risk Act (SARA) in 2005* or on the Species At Risk in Ontario (SARO List) under O. Reg. 230/08, or under the Ontario *Endangered Species Act (ESA 2007).*

5.0 Discussion and Recommendations

The following discussion and recommendations were established after review of the proposed site plan, condition of the trees, and analysis of the existing site. The following will describe the trees that are anticipated to be impacted by the proposed construction and to what extent. Also, the trees that will have minimal to no impact will be noted. Appropriate recommendations and mitigation measures will be noted where applicable.

5.1 Preservation Methods

For the proposed development, 6 trees comprised of 2 private adjacent land trees N1, N2, and 4 ROW street trees #312, 313, 314, 315 are to be protected and preserved.

All of the above noted trees will have 100% of their required MTPZ area protected or undisturbed except for adjacent land tree N2 with moderate MTPZ encroachment discussed further below.

Proposed tree protection barriers for trees #312, N1, and N2 are to be installed in locations shown on the Tree Preservation Plan TP1. Street trees #313, 314, and 315 are not fronting the proposed subject site, and will not require any tree protection fencing as they will not be involved with the proposed construction works.

Any branches from trees scheduled for protection and preservation overhanging the subject site that may interfere with proposed construction works are to be pruned for construction clearance to prevent mechanical injuries. All required pruning to be performed by an ISA Certified Arborist. No trades personnel are permitted to prune tree canopies or branches.

Tree Injury – N2

From the trees noted above to be preserved, tree N2 will require approximately 17% encroachment within its MTPZ area to allow for the excavation of the proposed underground garage to occur. As a result, tree N2 may sustain minor to moderate injuries to its root system. Mitigation measures to minimize injuries must follow the City of Burlington Tree Protection and Preservation Specification No.:SS12A and conduct root-sensitive excavation as noted below. Prior to any commencement of construction or site clearing, it is recommended written consent from the adjacent landowner of 981 Birchwood Avenue be obtained for the injury of adjacent land tree N2.

Mitigation measures are noted below to minimize injuries to trees when proposed construction must encroach within the MTPZ's of any trees.

Root-Sensitive Excavation

After the tree protection fencing has been installed as illustrated on the tree preservation plan, ensure an ISA Certified Arborist qualified in root pruning is present on-site during any work within the MTPZ's of the tree(s). Within the minimum TPZ's of any tree(s), and prior to open-faced excavations, conduct root-sensitive excavation either by careful hand-digging or using pneumatic (air) excavation (max. pressure 90psi) to a depth of 300mm to reveal any encountered roots. Pneumatic excavation must be undertaken by an experienced operator under the supervision of a qualified and experienced arborist. The air pressure excavation must be low enough that root bark is not damaged or removed. Any encountered roots shall be inspected by the on-site arborist to identify any existing roots that may be impacted by the proposed construction. Any encountered roots less than 50mm (2") in diameter shall be cleanly pruned by the qualified Arborist using acceptable arboricultural practices. Roots are to be cut a maximum of 150mm from the edge of excavation (grading or removals). Any exposed roots 50mm (2") and greater in diameter shall be left intact and incorporated into the subgrade if possible or assessed on-site by the Certified Arborist and municipal staff to determine if roots can be pruned without destabilizing the tree or causing too much injury that will result in tree health decline. No roots shall be exposed to air longer than four hours without being wrapped in wetted burlap and kept continuously damp.

For Tree N2, canopy pruning of branches overhanging the subject site following the Pruning Practices, and Root Feeding as outlined in Appendix A – Guidelines for Tree Management are recommended to further mitigate any tree injury.

5.2 Tree Protection Fencing

Prior to any site disturbance or works within the subject site, tree preservation fencing shall be installed for all applicable trees being preserved and are to be protected as per City of Burlington requirements and as shown on the approved Tree Preservation Plan.

Tree protection shall be inspected and approved by the consulting ISA Arborist and City prior to commencement of construction and be maintained in good condition throughout the construction period by the contractor/owner.

Protective fencing locations and details are indicated on the Tree Preservation Plan.

Within the Tree Protection Zone (TPZ) there must be no:

- Construction;
- Altering of grades;
- Storage of construction materials, equipment, soil, waste, or debris;
- Disposal of concrete, gas, oil, or paint;
- Movement of vehicles, equipment, or pedestrians.

Tree protection fencing and tree condition/maintenance for protected trees shall be monitored by the consulting ISA Arborist with repairs completed by the contractor as required.

5.3 Removals

The owner/developer must be aware that tree clearing shall be subject to the Migratory Bird Convention Act, S.C. 1994 c 22 current to May 5 2011 Sections; 4-Purpose, 5-Prohibitions, 12 –Regulations, Schedules section 2 Article 5 and the Fish and Wildlife Conservation Act, 1997, SO 1997, c 41

These provincial and federal regulations have restrictions on disturbing, taking, or killing nests, eggs, or birds particularly during bird nesting periods. We are in the Canadian Wildlife area C2 that indicates peak nesting season is from April 1 to August 31, however nesting can occur at other times as well. Clearing operations should not be conducted during this period unless appropriate monitoring such as bird nesting surveys are provided by a qualified naturalist that confirms birds are not actively nesting at the time of clearing.

Considering the condition of the trees, proposed excavation/shoring limits for the underground parking, new proposed public sidewalks within the adjacent road allowances, and related anticipated proposed servicing and grading / grade changes, 91 trees broken down as follows: 68 private site trees #90-93, 274-304, 306-311, 327-329, 333-335, 337-339, 803, 804, 806-820, N3, and 23 ROW public trees #305, 316-326, 330-332, 336, 805, C1-C6 will be in conflict with the proposed construction and will require removals to facilitate the proposed development.

All other smaller trees and vegetation not discussed in this report will also be removed from the subject site where necessary for the proposed development.

Trees that are to be removed should be cut down in such a way that falling trees do not damage the vegetation which does not require removal. Ensure root systems of trees being preserved are not injured or damaged during tree removal operations.

Unless specified otherwise, trees and other vegetation designated for removal shall have the stumps completely excavated and be disposed of off-site.

Ontario Forestry Act

R.S.O. 1990, CHAPTER F.26
Boundary trees
10. (1) An owner of land may, with the consent of the owner of adjoining land, plant trees on the boundary between the two lands. 1998, c. 18, Sched. I, s. 21.
Trees common property
(2) Every tree whose trunk is growing on the boundary between adjoining lands is the common property of the owners of the adjoining lands. 1998, c. 18, Sched. I, s. 21.

There are 3 observed ROW street boundary trees #324, 326, 331 considered as public trees that were bisecting the private subject site that are recommended for removal. Approval from the City of Burlington to remove these trees along with the other trees proposed for removals are obtained through the development application process.

Written permission must be obtained from landowners of any trees or hedges / vegetation (all smaller trees and vegetation not discussed in this report) on neighbouring properties or bisecting the property line or for any shared ownership trees prior to any scheduled removals or any commencement of construction activities that may injure neighbour owned or shared boundary trees / vegetation that are scheduled to be protected and preserved.

6.0 Assumptions / Limitations

Assessments occur in different seasons and not all identifying traits of trees are present at the time of an inspection, features such as: buds, flowers, leaves, fruit, diseases, and insect infestation may not all be visible to complete a thorough investigation.

The inspection and assessment of the trees was made using accepted arboriculture practices and is limited to visual examination from the ground and limiting observations of the tops of crowns. There was no climbing, probing, coring, dissection, and detailed root examination involving excavation. While reasonable efforts have been made to assess trees in this report, there is no guarantee offered, or implied that these trees or any of their parts may have problems or deficiencies that may arise in the future. Trees are living organisms and their health and vigour change over time and are subject to changes in site and weather conditions. As such this report is as accurate as possible at the time of the inspection.

The assessments of the trees on adjacent private lands were limited to observations from the subject site only and from one side of the tree.

The determination of ownership of any subject tree(s) is the responsibility of the landowner(s). Any civil or common-law issues, which may exist between property owners with respect to trees, must be resolved by the owner(s). Any recommendation to remove or retain trees does not grant permission to encroach in any manner onto adjacent private properties.

7.0 Tree Replacement / Compensation

As noted in the City of Burlington Guide To Tree Protection:

*When the City permits the removal of one or more **regulated tree(s)** on private property, and the tree is not **high risk, terminal,** or **dead**, a plan for tree replacement is required.*
To compensate for canopy loss, you can either:

- *plant replacement trees on private property; or,*
- *pay a replacement tree fee to allow for tree planting somewhere else in the City (also called cash-in-lieu); or*
- *a combination of both*

The total amount of replacement trees is based on the number and diameter of tree(s) approved for removal using a ratio-based system, as shown below:

Diameter at Breast Height DBH (cm) of tree approved for removal	***Tree Replacement Ratio***
<20	*Not Applicable*
20-35	*2:1*
36-74	*3:1*
75 or more	*4:1*

For this proposed development, the City of Burlington has requested that all private trees 15cm DBH or larger approved for removal is counted toward replacement.

The City's replacement tree size standard is 50mm caliper size.

7.1 Tree Compensation

This report recommends removal of a total of 68 private site trees to be considered in the compensation calculations.

For public ROW street trees, the City of Burlington will determine the number of replacement trees required for public trees approved for removal using the aggregate caliper formula method. This report recommends the removal of a total of 23 public ROW street trees.

Tree compensation calculations will be finalized at the Site Plan stage of development through consultation with the City of Burlington.

8.0 Conclusions

Cosburn Nauboris Ltd. was retained to conduct a Tree Inventory and Assessment by Miura Development Group Inc. for a proposed mixed-use development building including at grade and below grade parking. The legal property description is Part 1, Plan of Part of Lots 33, 34, 35, 36, 37, and 38, Registered Plan 725PF in the City of Burlington, Regional Municipality of Halton.

A total of 97 trees were inventoried and assessed in this report.

Considering the condition of the trees, proposed excavation limits for the underground parking, new proposed public sidewalks within the adjacent road allowances, and related anticipated proposed servicing and grading / grade changes, a total of 91 trees will be in conflict with the proposed construction and will require removals to facilitate the proposed development. These trees to be removed are broken down as follows: 68 private site trees #90-93, 274-304, 306-311, 327-329, 333-335, 337-339, 803, 804, 806-820, N3, and 23 ROW public trees #305, 316-326, 330-332, 336, 805, C1-C6.

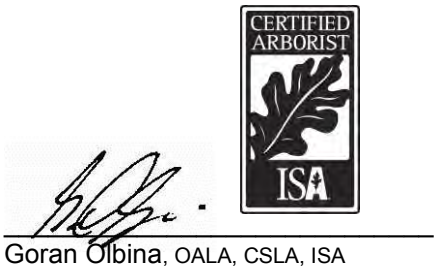
A total of 6 trees comprised of 2 private adjacent land trees N1, N2, and 4 ROW street trees #312, 313, 314, 315 are to be protected and preserved. All of these trees except for N2 will have 100% of their respective MTPZ protected with no encroachments.

Private adjacent land tree N2 located on 981 Birchwood Avenue will require approximately 17% encroachment within its MTPZ area to allow for the excavation of the proposed underground garage to occur. As a result, tree N2 may sustain minor to moderate injuries to its root system. Mitigation measures to minimize injuries have been outlined in this report. Prior to any commencement of construction or site clearing, it is recommended written consent from the adjacent landowner be obtained for the potential injury of adjacent land tree N2.

Prior to any site disturbance or works, the trees noted in this report for preservation are to have tree protection fences installed to the details and specifications as shown and noted on the Tree Preservation Plan TP1 and Tree Preservation Details and Notes TP2. Tree protection fencing is to be maintained in good condition throughout the construction period.

There is a total of 68 private trees and 23 public ROW trees proposed for removal to be considered in tree compensation calculations. Tree compensation calculations will be finalized at the Site Plan stage of development through consultation with the City of Burlington.

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Table 1 – Tree Inventory

Tree #	Genus Species	Common Name	DBH cm	Crwn sprd. m. dia.	Str.	Hea.	Comment	Action	Rationale	MTPZ m.	CRZ m.	Est. % Injury
	Private Site Trees	**Owner-Proponent**										
90	*Ulmus americana*	White Elm	16	4	Fair	Good	multi-stem	Remove	within U/G garage footprint	2.4	4	n/a
91	*Morus alba*	White Mulberry	37	12	Fair	Fair	multi-stem clump 19/19/18/17	Remove	U/G garage excavation conflict	2.4	4	n/a
92	*Ailanthus altissima*	Tree-of-Heaven	19	5	Good	Good		Remove	U/G garage excavation conflict	2.4	4	n/a
93	*Picea glauca*	White Spruce	16	3	Good	Good		Remove	within U/G garage footprint	2.4	4	n/a
274	*Picea abies*	Norway Spruce	62	8	Fair	Fair	deadwood, hangers	Remove	within U/G garage footprint	4.2	7	n/a
275	*Malus sp.*	Apple	20	4	Poor	Poor	70% dieback	Remove	poor condition	2.4	4	n/a
276	*Picea abies*	Norway Spruce	26	6	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
277	*Picea abies*	Norway Spruce	69	10	Fair	Good		Remove	within U/G garage footprint	4.2	7	n/a
278	*Juglans nigra*	Black Walnut	20	5	Poor	Fair	poor taper, 1-sided canopy	Remove	within U/G garage footprint	2.4	4	n/a
279	*Quercus rubra*	Red Oak	**85**	20	Fair	Good	weak branch attachments	Remove	within U/G garage footprint	5.4	9	n/a
280	*Morus alba*	White Mulberry	30	8	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a

281	*Acer platanoides*	Norway Maple	37	12	Good	Good		Remove	within U/G garage footprint	2.4	4	n/a
282	*Gingko biloba*	Maidenhair	46	10	Fair	Good		Remove	within U/G garage footprint	3	5	n/a
283	*Picea abies*	Norway Spruce	25	4	Poor	Fair	topped, dieback	Remove	within U/G garage footprint	2.4	4	n/a
284	*Picea abies*	Norway Spruce	36	6	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
285	*Picea abies*	Norway Spruce	34	7	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
286	*Picea abies*	Norway Spruce	31	6	Fair	Fair	lower branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
287	*Picea abies*	Norway Spruce	21	5	Fair	Fair	lower branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
288	*Pinus sylvestris*	Scots Pine	34	9	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
289	*Picea glauca*	White Spruce	25	5	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
290	*Picea abies*	Norway Spruce	50	9	Fair	Fair	branch dieback	Remove	within U/G garage footprint	3	5	n/a
291	*Picea abies*	Norway Spruce	30	6	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
292	*Picea abies*	Norway Spruce	29	7	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
293	*Acer platanoides*	Norway Maple	45	12	Good	Good		Remove	U/G garage excavation conflict	3	5	n/a
294	*Picea glauca*	White Spruce	34	5	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
295	*Acer platanoides*	Norway Maple	60	20	Fair	Good		Remove	within U/G garage footprint	3.6	6	n/a
296	*Picea glauca*	White Spruce	39	5	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a

297	*Acer saccharinum*	Silver Maple	59	20	Fair	Fair	branch dieback	Remove	within U/G garage footprint	3.6	6	n/a
298	*Picea abies*	Norway Spruce	36	6	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
299	*Ulmus pumila*	Siberian Elm	23	5	Fair	Fair	17/15 stems	Remove	within U/G garage footprint	2.4	4	n/a
300	*Picea abies*	Norway Spruce	30	6	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
301	*Picea abies*	Norway Spruce	33	6	Fair	Fair	upper stem lean, branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
302	*Acer platanoides*	Norway Maple	32	6	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a
303	*Pseudotsuga menziesii*	Douglas Fir	53	8	Fair	Fair	thinning canopy	Remove	within U/G garage footprint	3.6	6	n/a
304	*Picea abies*	Norway Spruce	38	8	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
306	*Gleditsia triacanthos*	Honey Locust	34	12	Good	Good		Remove	within U/G garage footprint	2.4	4	n/a
307	*Acer platanoides*	Norway Maple	26	6	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a
308	*Pinus nigra*	Austrian Pine	35	5	Fair	Fair	tip blight	Remove	within U/G garage footprint	2.4	4	n/a
309	*Pinus nigra*	Austrian Pine	37	6	Poor	Poor	90% dieback	Remove	poor condition	2.4	4	n/a
310	*Picea pungens glauca*	Blue Colorado Spruce	24	4	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
311	*Picea pungens glauca*	Blue Colorado Spruce	42	5	Fair	Fair	branch dieback	Remove	within U/G garage footprint	3	5	n/a
327	*Gleditsia triacanthos*	Honey Locust	38	12	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
328	*Gleditsia triacanthos*	Honey Locust	29	10	Fair	Fair	branch dieback	Remove	within U/G garage footprint	2.4	4	n/a
329	*Acer platanoides*	Norway Maple	31	7	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a

333	*Ailanthus altissima*	Tree-of-Heaven	66	16	Fair	Fair	branch dieback	Remove	within U/G garage footprint	4.2	7	n/a
334	*Acer platanoides*	Norway Maple	30	14	Good	Good		Remove	within U/G garage footprint	2.4	4	n/a
335	*Morus alba*	White Mulberry	43	16	Fair	Good	discoloured bark, sap oozing	Remove	within U/G garage footprint	3	5	n/a
337	*Acer platanoides*	Norway Maple	50	12	Fair	Fair		Remove	within U/G garage footprint	3	5	n/a
338	*Acer platanoides*	Norway Maple	50	8	Poor	Fair	main stem decay	Remove	within U/G garage footprint	3	5	n/a
339	*Acer platanoides*	Norway Maple	55	16	Fair	Good		Remove	within U/G garage footprint	3.6	6	n/a
803	*Ailanthus altissima*	Tree-of-Heaven	16	4	Good	Good	2-stem union @ 1.9m	Remove	within U/G garage footprint	2.4	4	n/a
804	*Ulmus americana*	White Elm	12	4	Good	Good		Remove	within U/G garage footprint	2.4	4	n/a
806	*Fagus sylvatica*	European Beech	10	2	Fair	Good		Remove	within U/G garage footprint	1.8	1.8	n/a
807	*Morus alba*	White Mulberry	15	3	Fair	Fair	multi-stem union @ 0.9m	Remove	within U/G garage footprint	2.4	4	n/a
808	*Ulmus pumila*	Siberian Elm	12	2	Poor	Poor	poor taper, sway, dieback	Remove	poor condition	2.4	4	n/a
809	*Acer platanoides*	Norway Maple	19	4	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a
810	*Morus alba*	White Mulberry	12	4	Fair	Fair	2-stem union @ 0.4m	Remove	within U/G garage footprint	2.4	4	n/a
811	*Taxus cuspidata*	Japanese Yew	15	4	Good	Good		Remove	U/G garage excavation conflict	2.4	4	n/a
812	*Ailanthus altissima*	Tree-of-Heaven	17	4	Good	Good		Remove	U/G garage excavation conflict	2.4	4	n/a
813	*Ulmus pumila*	Siberian Elm	10	3	Poor	Fair	poor taper, dieback	Remove	within U/G garage footprint	1.8	1.8	n/a

814	*Acer saccharum*	Sugar Maple	12	3	Fair	Fair	thru clf	Remove	within U/G garage footprint	2.4	4	n/a
815	*Acer saccharum*	Sugar Maple	10	3	Fair	Fair	thru clf	Remove	within U/G garage footprint	1.8	1.8	n/a
816	*Thuja occidentalis*	White Cedar	18	3	Fair	Fair	multi-stem	Remove	within U/G garage footprint	2.4	4	n/a
817	*Robinia pseudoacacia*	Black Locust	15	3	Fair	Fair		Remove	within U/G garage footprint	2.4	4	n/a
818	*Picea pungens glauca*	Blue Colorado Spruce	16	3	Fair	Good		Remove	within U/G garage footprint	2.4	4	n/a
819	*Thuja occidentalis*	Japanese Yew	10	2	Fair	Fair	thinning canopy	Remove	within U/G garage footprint	1.8	1.8	n/a
820	*Thuja occidentalis*	White Cedar	12	2	Fair	Fair	thinning canopy	Remove	within U/G garage footprint	2.4	4	n/a
N3	*Magnolia sp.*	Magnolia	19	4	Fair	Good	multi-stem 11/9/8/7/6 clump	Remove	U/G garage excavation conflict	2.4	4	n/a
	Boundary Trees-Public	**Owners-City/Proponent**										
324	*Acer platanoides*	Norway Maple	32	10	Fair	Good		Remove	conflict w/ prop. new city sidewalk & U/G garage excavation will severe approx. 50% roots within MTPZ including large stabilizing roots	2.4	4	n/a
326	*Acer platanoides*	Norway Maple	31	9	Fair	Fair	branch dieback	Remove	U/G garage excavation conflict, approx. 50% roots within MTPZ will be severed along with	2.4	4	n/a

									large stabilizing roots & new sidewalk			
331	*Ailanthus altissima*	Tree-of-Heaven	23	7	Fair	Good	3-stems 17/11/10 clump	Remove	U/G garage excavation conflict, approx. 35% roots within MTPZ will be severed along with large stabilizing roots & new sidewalk	2.4	4	n/a
	Adjacent Land Trees	**Owner-982 Glenwood Ave.**										
N1	*Thuja occidentalis*	White Cedar	15	2.5	Fair	Fair	end tree in hedge, multi-stem 9/9/7	Preserve		2.4	4	n/a
	Adjacent Land Trees	**Owner-981 Birchwood Ave.**										
N2	*Acer platanoides*	Norway Maple	**90**	20	Fair	Good	limbs overhanging site	Injure	U/G garage excavation will require encroachment of approx. 17% of MTPZ for root removal, and canopy pruning	5.4	9	17
	Street Trees (ROW)-Public	**Owner-City**										
305	*Quercus rubra*	Red Oak	**113**	24	Fair	Good	Fungal conks on trunk (sign of internal decay)	Remove	U/G garage excavation conflict, approx. 40% roots within MTPZ will be severed along with large	6.78	10	n/a

									stabilizing roots / prop. sidewalk conflict			
312	*Morus alba*	White Mulberry	50	12	Fair	Fair	fused stems, multi-stem clump 39/24/20	Preserve	prop. services are outside MTPZ	3	5	n/a
313	*Thuja occidentalis*	Japanese Yew	35	4	Fair	Good		Preserve		2.4	4	n/a
314	*Thuja occidentalis*	Japanese Yew	19	3	Poor	Fair	stems 15/12, lean over road	Preserve		2.4	4	n/a
315	*Thuja occidentalis*	White Cedar	23	3	Poor	Fair	basal trunk rot	Preserve		2.4	4	n/a
316	*Acer saccharum*	Sugar Maple	47	8	Poor	Poor	70% dieback, declining	Remove	poor condition/sidewalk conflict	3	5	n/a
317	*Quercus rubra*	Red Oak	55	16	Fair	Fair	utility pruned, limbs overhanging road	Remove	conflict w/ prop. new city sidewalk within 70cm of trunk will severe approx. 40% roots within MTPZ including large stabilizing roots	3.6	6	35
318	*Acer platanoides*	Norway Maple	38	9	Good	Good		Remove	conflict w/ prop. new city sidewalk	2.4	4	n/a
319	*Acer platanoides*	Norway Maple	38	9	Fair	Good	2-stem 30/24 union @ 1.3m	Remove	conflict w/ prop. new city sidewalk	2.4	4	n/a
320	*Acer platanoides*	Norway Maple	35	10	Fair	Fair	utility pruned	Remove	conflict w/ prop. new city sidewalk within 90cm of trunk will	2.4	4	n/a

									severe approx. 35% roots within MTPZ including large stabilizing roots			
321	*Acer platanoides*	Norway Maple	41	10	Good	Good		Remove	conflict w/ prop. new city sidewalk	3	5	n/a
322	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Lilac	24	4	Fair	Fair		Remove	conflict w/ prop. new city sidewalk	2.4	4	n/a
323	*Acer platanoides*	Norway Maple	53	14	Fair	Good		Remove	conflict w/ prop. new city sidewalk	3.6	6	n/a
325	*Tilia cordata*	Little Leaf Linden	33	8	Good	Good		Remove	U/G garage excavation conflict, approx. 40% roots within MTPZ will be severed along with large stabilizing roots & new sidewalk	2.4	4	n/a
330	*Juglans nigra*	Black Walnut	19	3	Fair	Fair	2-stems 15/12 (fused)	Remove	conflict w/ prop. new city sidewalk	2.4	4	n/a
332	*Ailanthus altissima*	Tree-of-Heaven	16	6	Good	Good		Remove	conflict w/ prop. new city sidewalk	2.4	4	n/a
336	*Chamaecyparis spp.*	False Cypress	23	3	Good	Good		Remove	U/G garage excavation conflict, approx. 40% roots within MTPZ will be severed	2.4	4	n/a

									along with large stabilizing roots			
805	*Acer palmatum*	Japanese Maple	16	6	Good	Good	multi-stem	Remove	U/G garage & prop. New city sidewalk excavation conflict	2.4	4	n/a
C1	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Lilac	3	1	Good	Fair	branch dieback	Remove	conflict w/ prop. new city sidewalk	1.8	1.8	n/a
C2	*Quercus robur*	English Oak	4	1	Good	Good		Remove	conflict w/ prop. grading associated w/ driveway & within sight lines of driveway	1.8	1.8	n/a
C3	*Syringa reticulata 'Ivory Silk'*	Ivory Silk Lilac	21	1	Poor	Poor	only broken stump remains, suckering	Remove	conflict w/ prop. new city sidewalk / condition	2.4	4	n/a
C4	*Thuja occidentalis 'Emerald'*	Emerald Cedar	9	2	Good	Good	4 multi-stem trees in hedge (stem size ranges 7 to 9cm dbh)	Remove	conflict w/ prop. new city sidewalk connection & assoc. grading	1.8	1.8	n/a
C5	*Amelanchier sp.*	Serviceberry	13	3	Fair	Fair	multi-stem 8/6/5/4/4 clump	Remove	U/G garage excavation conflict, approx. 20% roots within MTPZ will be severed & within sight lines of driveway	2.4	4	n/a

C6	*Amelanchier sp.*	Serviceberry	2	1	Good	Good	new street tree	Remove	conflict w/ prop. new city sidewalk excavation & assoc. grading	1.8	1.8	n/a

Appendix A - Guidelines for Tree Management

General Guidelines

The survival rates for trees, which are in close proximity to construction, are dependent on the resultant changes to a variety of environmental and anthropogenic factors including; species resilience to construction, extent of root damage or removal, changes to soil grades over the roots and removal of limbs and branches.

Construction activities bring about changes to a variety of environmental factors, including the existing microclimate, winds, temperature, soil moisture, amount of available sunlight, soil quality, and the level of the water table. Subsequent human activities also may damage the structure and/or physiological activities of the trees. Following construction trees should be monitored for signs of deteriorating health, these signs may not become visible for several years after the damage has occurred. Therefore, recommendations for tree preservation are to be re-assessed over time, and trees are to be monitored as their potential to deteriorate and become hazardous can increase or change over time.

Tree Protection Fencing

Tree protection fencing should be installed for all trees to be protected per Municipal requirements and inspected and approved by the consulting ISA Arborist/Forester/Town/City/Region prior to commencement of site soil stripping or construction and be maintained throughout construction period by the contractor/owner.

Protective Fencing location and details are indicated on the Tree Assessment and Preservation Plan.

Within the Tree Protection Zone (TPZ) there must be no:

Construction;

Altering of grades;

Storage of construction materials, equipment, soil, waste, or debris;

Disposal of concrete, gas, oil, or paint;

Movement of vehicles equipment or pedestrians.

Tree protection fencing shall be monitored by the consulting ISA Arborist/Forester on a regular basis with repairs completed by the contractor as required.

Excavation and Fill

Excavation and filling works are not to occur inside the Tree Protection Zone.

When excavating near protected tree roots, Air Knives or low-pressure Hydro Vac excavation are the preferred method to expose roots. All exposed roots should be pruned cleanly back to the remaining soil using acceptable horticultural pruning practices. All root pruning to be performed by or under supervision of a Certified Arborist or tree professional.

When installation of conduits, irrigation lines or other service, is required directional micro tunnelling below the root system is the preferred method. When trenching is required, it is preferred that trenching occurs at a distance from the trunk of at least 12 times the diameter of the trunk.

Trenching should be completed utilizing low pressure (90psi max.) Air Knives or low-pressure Hydro Vac excavation, exposing roots to be pruned for insertion of pipes or lines.

Pruning Practices

All roots to be removed are to be exposed by Air Knife or Low-Pressure Hydro Vac excavation. Roots are to be cut clean with accepted horticultural practises under supervision of the consulting ISA Arborist, using secateurs, loppers, or saws prior to excavation. All exposed roots are to be watered and back filled as soon as possible to prevent desiccation.

All limbs to be removed to provide access for construction should be pruned cleanly, utilizing clean; secateurs in accordance with approved horticultural practices under supervision of the consulting ISA Arborist. All pruning cuts should be made to a growing point such as a bud, twig, or branch. Poor cut location, poor cut angle and torn cuts are not acceptable

All limbs damaged or broken during the course of construction should be pruned cleanly, utilizing clean secateurs in accordance with approved horticultural practices under supervision of the consulting ISA Arborist. All pruning cuts should be made to a growing point such as a bud, twig, or branch. Poor cut location, poor cut angle and torn cuts are not acceptable.

Extensive pruning is best completed before plants break dormancy. Pruning should be limited to the removal of no more than a quarter (1/4) of the total bud and leaf bearing branches.

Pruning should include the careful removal of:

deadwood,
branches that are weak, damaged, diseased,
secondary leaders of conifers,
trunk and root suckers,
trunk waterspouts, and
tight V-shaped or weak crotches.

Root Feeding

When the construction requires roots to be removed the ability of the trees to provide nutrients and water to the upper portions of the trees will be reduced and will potentially reduce health and vigor of the trees. Where grades adjacent to trees that are slated for preservation have changed, root feeding is recommended. To supplement new root development, affected trees should receive an application of granular slow-release fertilizer with a high phosphate component and a mycorrhizal fungus inoculant to improve the symbiotic relationship that aids in nutrient uptake. This should be worked into the soil that is placed back over the roots so that it is not visible to children or animals. Trees should be well irrigated during and post construction to reduce desiccation of the roots, encourage development of soil microorganisms and this should be continued during the dry conditions.

Removals

Dead or dying specimens are to be removed to prevent further damage to the existing vegetation.

Trees that are to be removed should be cut down in such a way that falling trees do not damage the vegetation which does not require removal.

Unless specified otherwise, downed trees and other vegetation that is removed should be disposed of off-site and should not under any circumstances be discarded onto any areas for retention.

Risk (Hazard) Trees

Trees that present a potential risk to people or property will be identified by the consulting ISA Arborist/Forester for removal prior to start of construction. Trees along an exposed edge or where grades changes have occurred close to the TPZ should be monitored annually for signs of decline in health or vigour. Additional crown pruning, limb, or tree removal recommendations will be provided to the Owner and appropriate Municipality in a report as required.

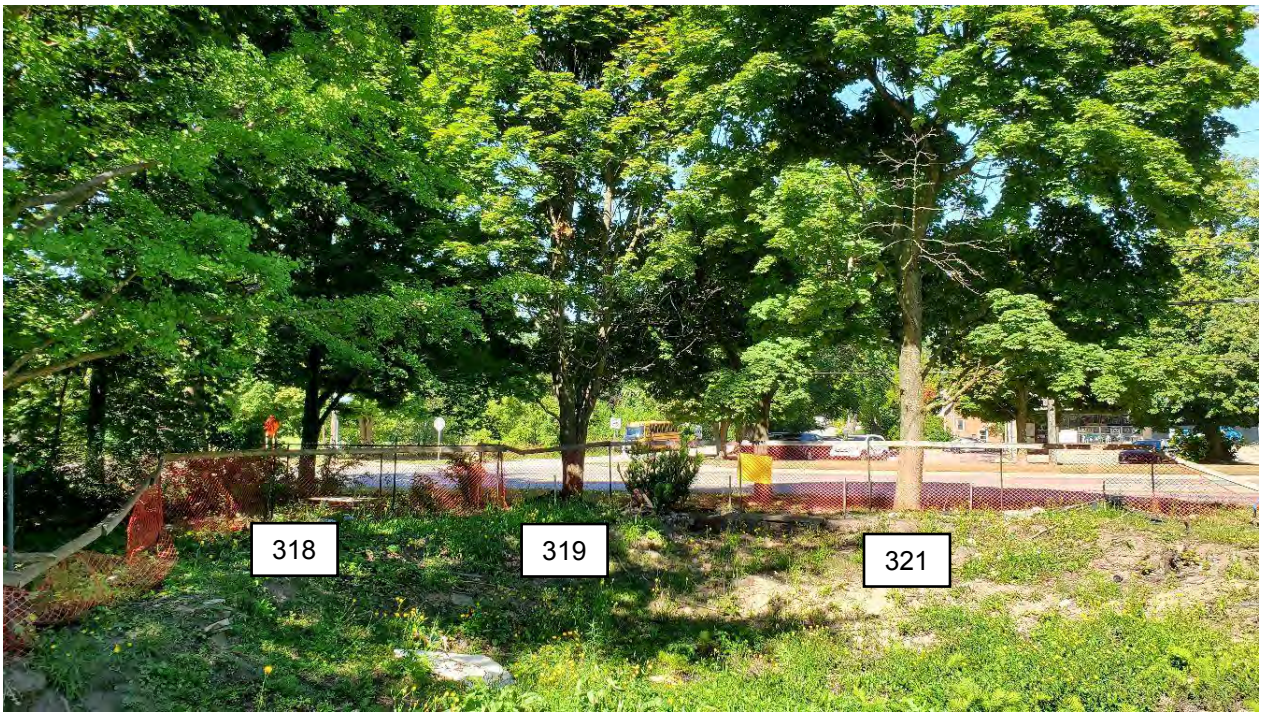
Appendix B – Site Photos





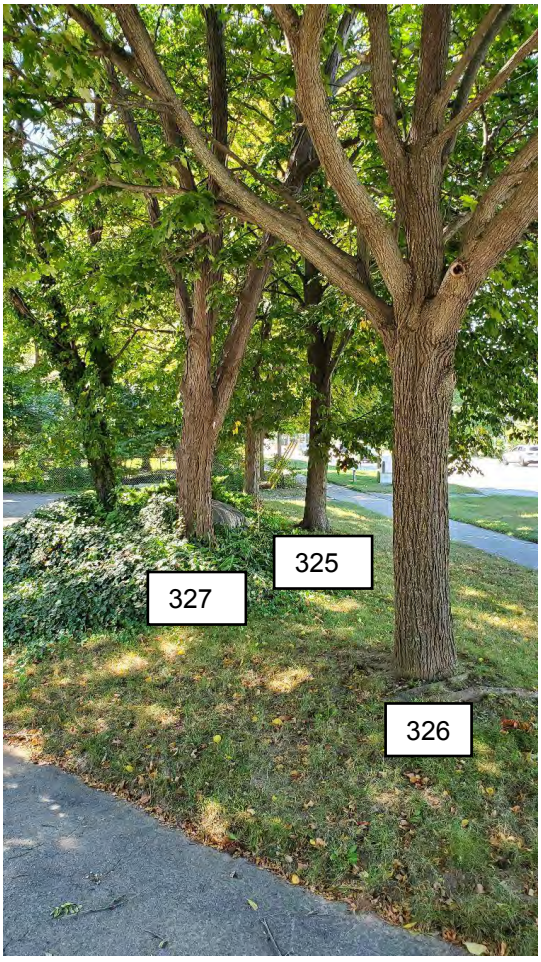


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landscape architects






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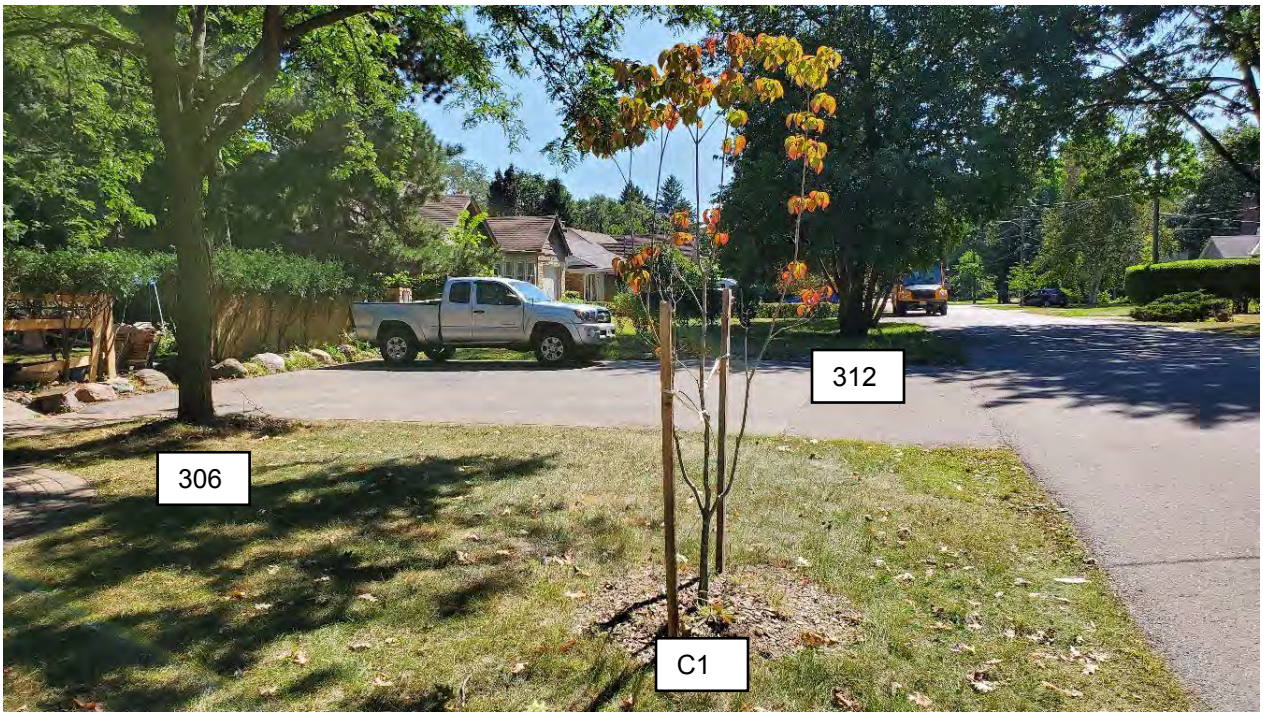

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landscape architects






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CORPORATION OF THE CITY OF BURLINGTON

SPECIFICATIONS

INDEX FOR

Tree Protection and Preservation

(SPEC NO. SS12A)

Amended September, 2020

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1. Scope

This specification describes the measures required to protect trees not designated for removal for all work on public property within the City of Burlington and for those situated on private property within the City's Urban Planning Area Boundary.

2. Definitions

For the purpose of this specification, the following definitions apply:

a) Certified Arborist:
An arborist certified by the International Society of Arboriculture (ISA) who has a diploma (minimum) in arboriculture or urban forestry. They may be required to provide their ISA Certification number. The arborist must have minimum job experience of at least 6 years in Tree Protection and Mitigation;
b) Barrier:
A fence placed around a single tree or group of trees to protect them from removal and injury;
c) Dripline:
The location on the ground surface directly beneath the theoretical vertical line from the tips of the outermost branches of the trees.

3. Application of Policy

a) Tree protection measures are required for City trees and other trees protected by City Tree by-law 068-2013 (as amended), and those privately-owned trees protected by the Private Tree By-law 02-2020 (as amended);
b) All trees situated on City property are protected under provisions of the City Tree By-law (068-2013).
c) Trees that are of permittable size situated on private property are protected under the provisions of the Private Tree By-law (02-2020);
d) Trees protected by the City Tree By-law (068-2013) may not be removed, injured or destroyed in any way without authorization from the Manager of Urban Forestry or designate. Note that the term "tree" refers to all parts of the tree, including all roots. In certain cases, City Council approval will be required pursuant to the City Tree By-law (068-2013). Trees protected by the Private Tree By-law (02-2020) may not be injured or destroyed without a permit;
e) The specifications set out in this policy shall be the standard specifications for tree protection measures during construction whenever tree protection measures are required by the City and in every instance where construction activities may result in damage to trees;
f) Higher standards of tree protection may be imposed where warranted in the opinion of the Manager of Urban Forestry or designate for municipal trees and for private trees with regard to the size, variety, location, and health of the tree and any circumstances surrounding the construction which may pose a particular hazard to the tree;
g) Lesser standards of tree protection shall only be permitted on the recommendation of a Certified Arborist (as defined in this policy) and with the written consent of the Manager of Urban Forestry or designate; and
h) Anyone failing to adhere to the tree protection policies and specifications outlined below will be financially responsible for any resulting damage to trees.

4. General Policy

Construction activities near trees may result in injury to the trunk, limbs or roots of trees causing damage or death of the tree. In order to prevent such damage:

a) Trees within or adjacent to a construction area must be protected during construction by means of a barrier surrounding the Minimum Tree Protection Zone (MTPZ) as outlined in Sections 5 & 6 of this standard specification;

b) Activities which are likely to injure or destroy the tree are not permitted within the MTPZ. Equipment or vehicles shall not be operated, parked, repaired or refueled within the dripline of trees;
c) Tree pruning or root cutting of City owned trees is to be done in accordance with Section 8 of this specification;
d) No objects may be attached to trees protected by the City Tree by-law without written authorization by the City. Construction material, supplies, or equipment and earth shall not be stockpiled within the dripline of any tree;
e) No City tree or tree protected by the City Tree by-law may be removed without the written permission of the Manager of Urban Forestry or designate; and
f) Exposed roots from excavation must be covered with soil, mulch or burlap and watered within 24 hours of exposure to prevent drying out.

5. The Minimum Tree Protection Zone (MTPZ)

The following is a chart showing minimum required distances for determining a Minimum Tree Protection Zone. Some trees and some site conditions may require a larger Minimum Tree Protection Zone at the discretion of the City.

Table 1 – Minimum Tree Protection Zones

Trunk Diameter (DBH) [2]	Minimum Tree Protection Zone (MTPZ) Distances Required [3]	Critical Root Zone (CRZ) Distances Required [3&4]
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

NOTES:

[1] The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
[2] Diameter at breast height (DBH) measurement of tree trunk taken at 1.4 metres above ground.
[3] Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
[4] Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

6. Tree Protection Barriers

Trees within Minimum Tree Protection Zones shall be protected by means of a "tree protection barrier" meeting the following specifications:

a) The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2" x 4" frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
b) Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the Manager of Urban Forestry or designate.
c) All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports

and bracing should minimize damage to roots.

d) Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
e) No materials or fill may be stored within the MTPZ.
f) Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
g) No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the Manager of Urban Forestry or designate.
h) A laminated Minimum Tree Protection Zone sign (see attached) must be attached to the most visible side of the Tree Protection, where it will be visible by those persons entering the site. Minimum size must be 10”x14”.

7. Tree Removal and Relocation

Any requests for removal, cutting, pruning or relocating a tree must be made in writing to the City. If approval is granted for removal of a tree, the contractor will assume all costs involved. In most instances tree replacement or compensation will be required.

8. Site Services or Excavations within the Minimum Tree Protection Zone

It is recognized that there are cases where trees are growing overtop existing underground utilities that may require inspection and/or new installation. While the guidelines in this standard specification still apply, in these cases some modification to the Minimum Tree Protection Zone, in addition to pre-construction pruning, may be required where work within or near the MTPZ is approved by the Manager of Urban Forestry or designate. The objective is to avoid severance of anchor roots and or major branches and minimize damage to the tree(s) and to maintain the natural form of the crown.

a) Above ground clearance for overhanging branches in the work zone must be anticipated. The contractor is required to have a City approved tree service raise the crown of all branches to provide adequate clearance for construction equipment. The cost of above ground pre-construction pruning is to be borne by the party that requires the work to be completed.
b) When excavation is required for inspection (only) of private water and sanitary lateral connections at the property line, are within the limits of the MTPZ and the CRZ and have the potential to damage tree roots, excavation must be completed by a qualified arborist or under an arborist’s supervision using a hydro vacuum unit or air powered soil excavation tools in order to preserve the integrity of the tree’s roots. When new private water and sanitary lines must be installed, and there is not a suitable location outside of the MTPZ and the CRZ, directional micro tunneling and boring is the preferred option for installation within the MTPZ and CRZ.
c) When any site works, are within the limits of the MTPZ and the CRZ and have the potential to damage tree roots, root pruning using a hydro vacuum unit or air powered soil excavation tools is acceptable, provided it is operated by a qualified arborist or under an arborist’s supervision, and completed to a depth of 300mm. Roots are to be cut a maximum of 150 mm from the edge of excavation (grading or removals). The limit of excavation, grading or removals is to be minimized to the greatest extent possible and is to include the use of excavation shoring, smaller excavation equipment or rubber-tired machines. See Detail TP-2 (attached as an appendix) for further information.

9. Tree Repair

Trees damaged by construction operations shall be repaired as follows, within five days of the damage:

a) Branches 25 mm or greater in diameter that are broken shall be cut back cleanly on the tree side of the break or to within 10 mm of their base, if a substantial portion of the branch is damaged.
b) Bark that is damaged shall be neatly trimmed back to the uninjured bark without causing further injury to the tree.
c) Root pruning within the **Minimum Tree Protection Zone** of any tree requires root exploration via supersonic air tool or hydro vacuum unit to first remove the soil and expose the roots.

d) Roots under 2 cm in diameter can be pruned using a sharpened tool such as hand pruners or a sharpened spade under the supervision of the Construction Inspector.

e) Roots between 2 and 8 cm in diameter can be pruned by the arborist using a sharp tool, such as a handsaw, hand pruner or loppers and under the supervision of the Construction Inspector and the advisement of the Project Arborist.

f) All roots over 8 cm in diameter must be assessed by the Project Arborist prior to pruning unless the arborist on-site can confidently assess the effect of the removal of the root as not detrimental to the tree.

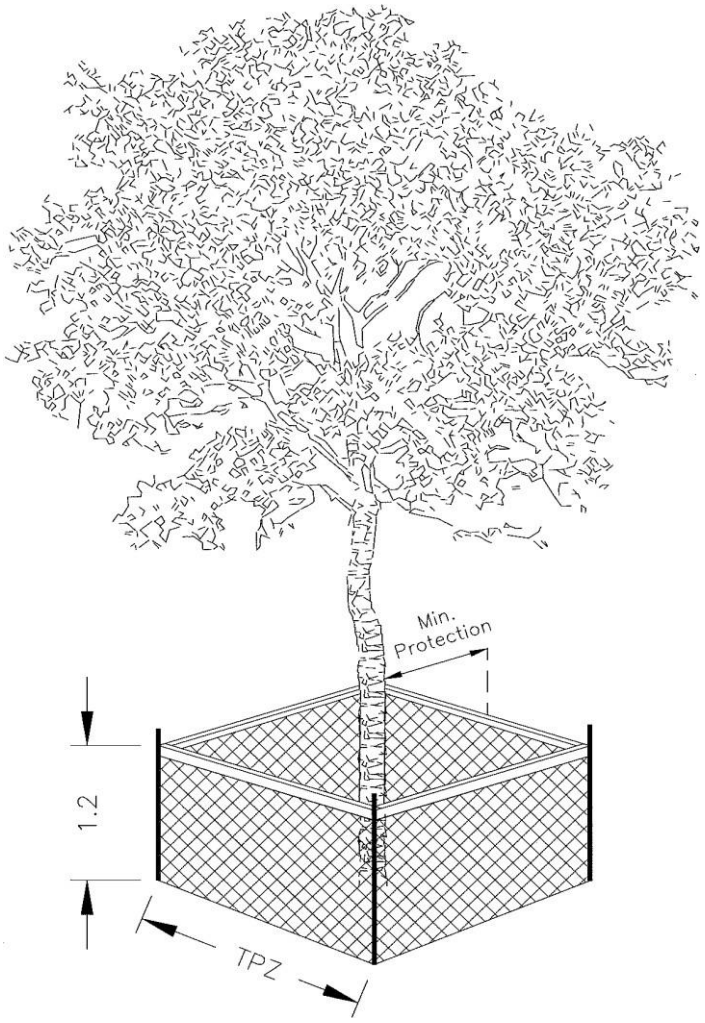
g) Root pruning within the **Critical Root Zone** and outside of the MTPZ, typically requires the use of a sharpened garden spade, cutting a line to a depth of about 30 cm by the on-site arborist under the **advisement of the Project Arborist** if needed. However, the same pruning protocol for the size of roots encountered (in the MTPZ) applies to the roots found within this area.

h) The trenches are typically backfilled with the same excavated soil or new topsoil or compost and hoarding should be installed along this trench to project the remaining roots.

10. Securities for Non-Compliance

Where a tree has been damaged through non-compliance with the Tree Protection and Preservation Specification, any security provided for tree preservation or replacement may be held by the City for up to three (3) years from the date of the final inspection of the construction project. If the tree dies or needs to be replaced within those three years, the Owner shall pay for replacement planting with nursery stock according to the City of Burlington standards. Replacement trees must have a minimum height of 180cm for coniferous trees and 80mm caliper for deciduous replacements. Replacements must be made to the satisfaction of the Manager of Urban Forestry or designate. If the Owner meets their financial obligations and there is no further need to care for the tree, after three (3) years, the City shall return the deposit(s) or the balance of the deposit(s) if the City had to use some of the money for monitoring, preservation or replacement of the tree. If the tree does not recover to the satisfaction of the Manager of Urban Forestry or designate, then the City shall retain the deposit(s) for the continued maintenance, preservation or eventual replacement of the tree. The Owner may be required to post additional securities if, in the opinion of the Manager of Urban Forestry or designate, the saved tree is very damaged and will need on-going monitoring, preservation or replacement that will exceed the cost of the deposit(s) mentioned above.

Securities may be released prior to the expiry of the three-year period provided the City is satisfied that the tree has not been damaged. Applicants for the early release or reduction of securities shall submit a report from a Certified Arborist certifying that the tree is in a state of vigorous health and has not been injured or destroyed as a result of the construction activities.



Detail TP-1 – Tree Protection Detail.

Trunk Diameter (DBH) [2]	Minimum Tree Protection Zone (MTPZ) Distances Required [3]	Critical Root Zone (CRZ) Distances Required [3&4]
< 10 cm	1.8 m	1.8 m
11 - 40 cm	2.4 m	4.0 m
41 - 50 cm	3.0 m	5.0 m
51 - 60 cm	3.6 m	6.0 m
61 - 70 cm	4.2 m	7.0 m
71 - 80 cm	4.8 m	8.0 m
81 - 90 cm	5.4 m	9.0 m
91 - 100+ cm	6.0 m	10.0 m

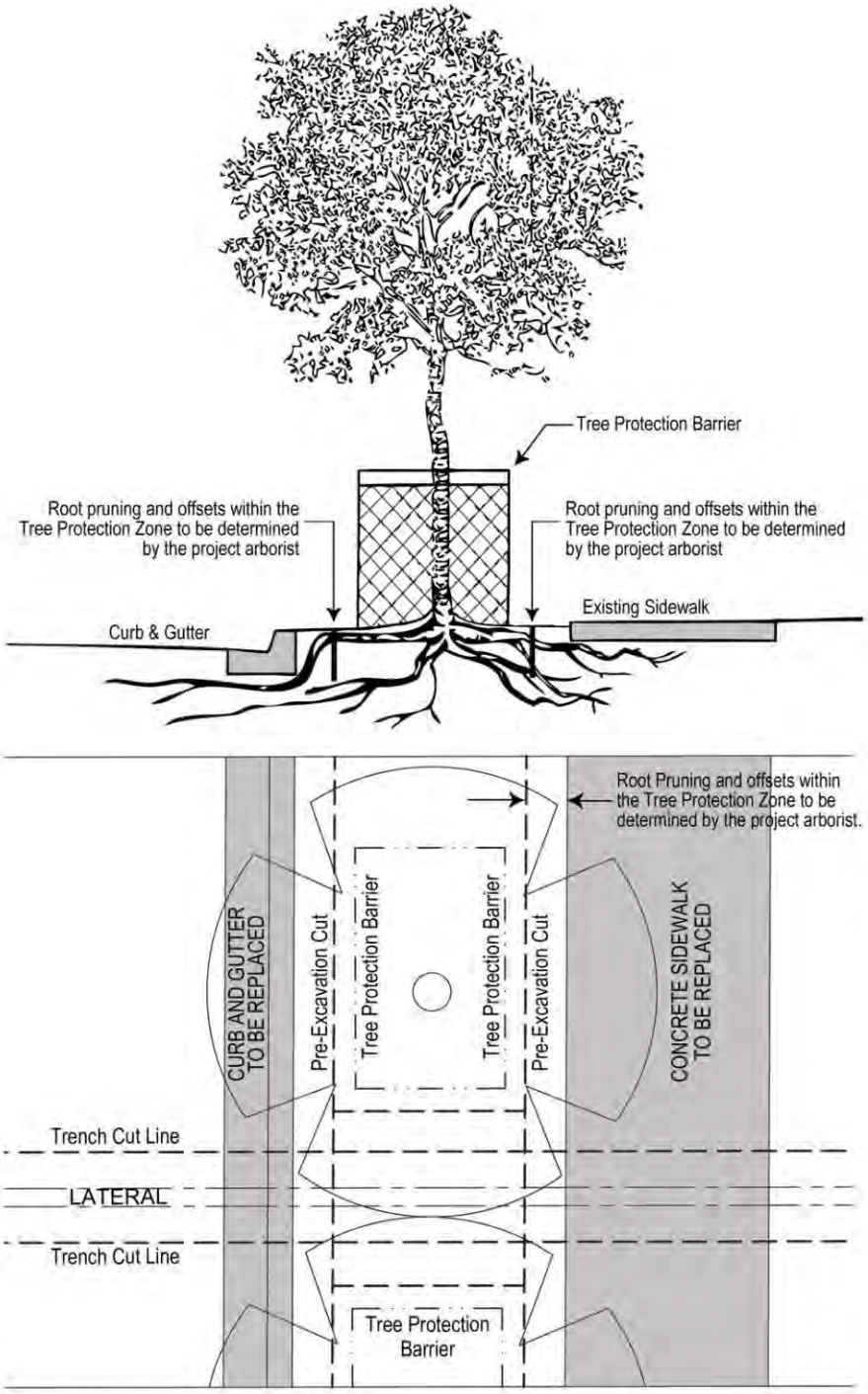
NOTES:

[1] The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.
[2] Diameter at breast height (DBH) is the measurement of tree trunk taken at 1.4 metres above ground.
[3] Minimum Tree Protection Zone and Critical Root Zone distances are to be measured from the outside edge of the tree base towards the drip line and may be limited by an existing paved surface, provided the existing paved surface remains intact throughout the construction work and is subject to Section 6 of this specification.
[4] Where work is being performed beyond the Minimum Tree Protection Zone but within the Critical Root Zone the works are subject to Section 8 of this specification.

TREE PROTECTION BARRIER

1. The required barrier is a 1.2 metre (4 ft) high orange plastic web snow fencing on 2” x 4” frame. Where orange plastic web snow fencing creates a restriction to sightlines, page wire fencing with reflective tape can be used.
2. Tree protection barriers are to be erected prior to the commencement of any construction or grading activities on the site and are to remain in place throughout the entire duration of the project. The barriers shall be maintained erect and in good repair throughout the duration of construction operations with breaks and unsupported sections repaired immediately. Tree protection may be not be removed prior to the completion of construction without written authorization from the Manager of Urban Forestry or designate.
3. All supports and bracing used to safely secure the barrier should be located outside the MTPZ. All supports and bracing should minimize damage to roots.
4. Where some fill or excavated material must be temporarily located near a MTPZ, a wooden barrier with silt fencing must be used to ensure no material enters the MTPZ.
5. No materials or fill may be stored within the MTPZ.
6. Equipment or vehicles shall not be operated, parked, repaired, or refueled within the MTPZ.
7. No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the Manager of Urban Forestry or designate.
8. A laminated Minimum Tree Protection Zone sign (See Detail TP-3 – Minimum Tree Protection Zone Sign) must be attached to the side of the Tree Protection where it will be visible by persons entering the site. Minimum size must be 10”x14”.

Detail TP-2 – Root Pruning Detail



NOTE:
For excavations perpendicular to to the curbing (ie. sidewalk, curbing, water or sewer laterals renewal)

(a) The contractor is to use a trench box to minimize the width of the open cut.
(b) When the lateral replacement is within the Tree Protection Zone of a tree, the contractor is to complete the works using trenchless technologies.

Detail TP-3 – Minimum Tree Protection Zone Sign

