

3093 Princess Boulevard **Burlington, Ontario Arborist Report & Tree Protection Plan**

Wildwood Tree Services Report to: City of Burlington Submitted by:

Forestry Department

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Jennifer Kreller Requested by: **Report Author:**

David Carrothers

Carrothers and Associates

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Re: **Building Permit Application**

Date: February 10, 2021

REVISED April 28, 2021 REVISED May 5, 2021

of Pages: 18

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Site & Report Background:

To obtain a permit to install a 2 storey dwelling at 3093 Princess Boulevard in Burlington.

I have visited the above site and collected all relevant data pertaining to the tree protection on site and any relevant trees within 4 meters of the property line. Data was collected on February 4, 2021 by Mike Boulanger ISA Certified Arborist.

Observations & Recommendations:

There are 22 trees identified on this report; any municipal trees located within 4 meters of the property line and all privately owned trees over 20cm in DBH within 4 meters of the property line.

Sapling tree 1 requires removal to accommodate the proposed driveway. Permission from the city of Burlington is required. The House has been designed to the required side yard setbacks. The Saplings current location in conjunction with the location of the existing Bell pedestal restricts any legal driveway width required to access the house.

Tree 5 requires removal to accommodate demolition. A tree removal permit is required prior to removal.

The removal of the existing soft and hardscaping in the backyard will encroach on the tree protection zones of trees 9-18. It is recommended this is done by hand. Where hard surface exists, machine use is only permitted to stay on the existing surface and working away from the trunk of the trees to ensure the machinery is not driving on the root systems of these trees.

All remaining trees to be preserved and protected throughout construction in accordance with the City of Burlington's private tree bylaw.

This report has been written in accordance the City of Burlington's Tree Protection and Preservation during Construction Procedures. Additional information can be found at https://www.burlington.ca/en/services-for-you/resources/Forestry%20Operations/Tree_Protection_and_Preservation/Tree_protection_and_preservtion.pdf

Inspection of the trees on site was limited to a visual assessment from the ground only, unless stated otherwise. No inspection via climbing, exploration below grade, probing, or coring were conducted. Any observations and data collected from site are based on conditions at the time of inspection. Diameters of trees located on neighbouring properties were estimated to avoid trespassing.

Tree Inventory

Tree No.	Species	DBH (cm)	Crown Reserve (m)	Health	Structural Condition	Preservation Rating	TPZ (m)	Ownership	Observations/ Comments/ Recommendations
1	Bitternut Hickory, Carya cordiformis	4	1	G	G	L REMOVE	N/R	City of Burlington	Proposed for removal. Permission from city is required.
2	Bitternut Hickory, Carya cordiformis	4	1	G	G	H PRESERVE	1.8	City of Burlington	
3	Silver Maple, Acer saccharinum	111	20	F	F	H PRESERVE	6.0	City of Burlington	PP. DW. TD. CD.
4	Sugar Maple, Acer saccharum	74	18	G	G	H PRESERVE	4.8	City of Burlington	DW. PP. 1.5 meters from property line.
5	Blue Spruce, Picea pungens	20	5	G	G	L REMOVE	N/R	Private	PD; requires removal to accommodate demolition. Permit required. Slightly LN.
6	Blue Spruce, <i>Picea</i> pungens	20	4	G	G	H PRESERVE	2.4	Neighbour	LS. DW.
7	Blue Spruce, <i>Picea</i> pungens	12	4	G	G	H PRESERVE	2.4	Neighbour	LS. DW.
8	Blue Spruce, <i>Picea</i> pungens	20	4	G	G	H PRESERVE	2.4	Neighbour	LS. DW.

*DBH Estimated due to access restraints PWF = Protected with fencing

N/R= Tree Protection Fencing Not Required Requires attention

Tree Inventory

	<u> </u>								
Tree No.	Species	DBH (cm)	Crown Reserve (m)	Health	Structural Condition	Preservation Rating	TPZ (m)	Ownership	Observations/ Comments/ Recommendations
9	Norway Spruce, <i>Picea</i> abies	72	15	G	G	H PRESERVE	4.8	Private	DW.
10	Norway Spruce, Picea abies	45	12	G	G	H PRESERVE	3.0	Boundary	DW.
11	Norway Spruce, Picea abies	39	11	G	G	H PRESERVE	2.4	Private	
12	Red Maple, acer rubrum	53	16	F	F	H PRESERVE	3.6	Boundary	Large DW. PP. Broken limbs. RP.
13	Honeysuckle, Lonicera	20	7	G	G	H PRESERVE	2.4 PWF	Neighbour	MS.
14	American Beech, Fagus grandifolia	35	12	G	F	H PRESERVE	2.4 PWF	Neighbour	LN. LS.
15	White Birch, Betula papyrifera	50*	16	G	G	H PRESERVE	3.0	Neighbour	3 meters from property line.
16	White Birch, Betula papyrifera	40*	17	Р	Р	L PRESERVE	3.0	Neighbour	CD. DW. IB. Infected with bronze birch borer. <1 meter from property line.W

*DBH Estimated due to access restraints

N/R= Tree Protection Fencing Not Required

Mike Boulanger ISA Certified Arborist ON-0893AT Wildwood Tree Services Ltd.

PWF = Protected with fencing

Requires attention

Tree No.	Species	DBH (cm)	Crown Reserve (m)	Health	Structural Condition	Preservation Rating	TPZ (m)	Ownership	Observations/ Comments/ Recommendations
17	Eastern Hemlock, Tsuga canadensis	17	7	G	G	H PRESERVE	2.4	Private	LS.
18	Eastern Hemlock, Tsuga canadensis	21	6.5	G	G	H PRESERVE	2.4	Private	LS.
19	Pussy Willow, Salix discolor	15	3	G	G	H PRESERVE	2.4	Private	PT.
20	White Birch, Betula papyrifera	30	12	G	G	H PRESERVE	2.4 PWF	Private	MS.
21	White Birch, Betula papyrifera	40	15	G	G	H PRESERVE	2.4 PWF	Private	MS.
22	White Birch, Betula papyrifera	30	7	G	G	H PRESERVE	2.4 PWF	Private	MS.

Tree Inventory

*DBH Estimated due to access restraints PWF = Protected with fencing N/R= Tree Protection Fencing Not Required Requires attention

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TREE INVENTORY METHEDOLOGY

DBH (cm): Diameter at breast height, standard of 1.4m above ground.

Height (m): Height of tree from ground to top of crown.

Crown Reserve (m): Diameter of crown, the trees canopy width.

Health: General overall health of the tree. Rated as (E) excellent, (G) good, (F) fair, (P) poor, (D) dead.

Structural Condition: Based on structural faults or defects Rated as (E) excellent, (G) good, (F) fair, (P) poor.

Preservation Rating: A trees projected survival based on the existing conditions. Rated as (H) high, (M) moderate, (L) low.

Observations, Comments, and Recommendations:

BC= broken crown LN= leaning

BN= bark necrosis (dead/dying bark)

BR= branch

BS= bark split

LS= light suppressed

MS= multiple stems

PC= pollarded crown

BT= bent trunk PL= poor leader development

CD= crown die back PP= passed pruning CN= crown PTH= planted high

DC= tree in decline PD= proposed development near

DD= dead tr

DF= defoliated PS= prune away from structure
DS= diseased PT= preserve tree
DW= deadwood PTL= planted low

EC= elevate canopy

ER= exposed roots

EX= existing cable

FC= frost cracks

RB= remove basket

RC= requires cabling

RM= remove plant

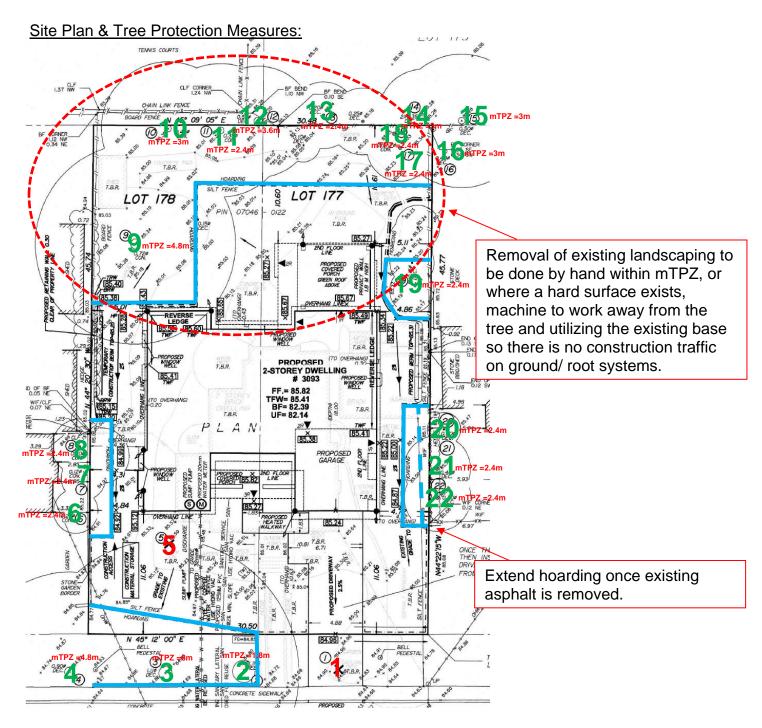
RP= requires pruning

FS= plant in footprint of proposed RS= remove stakes or wire

structure TD= trunk decay

GC= impact from grade changes TP= transplanting potential GR= girdling roots TRS= transplant stress

HT= hazardous tree TS= trunk split IB= included bark UT= understory tree



Air Spade by certified arborist prior to excavation

Hoarding is indicated in BLUE — — 1st phase of hoarding

Layer of woodchips and plywood or Steel Plating **Digging Access**

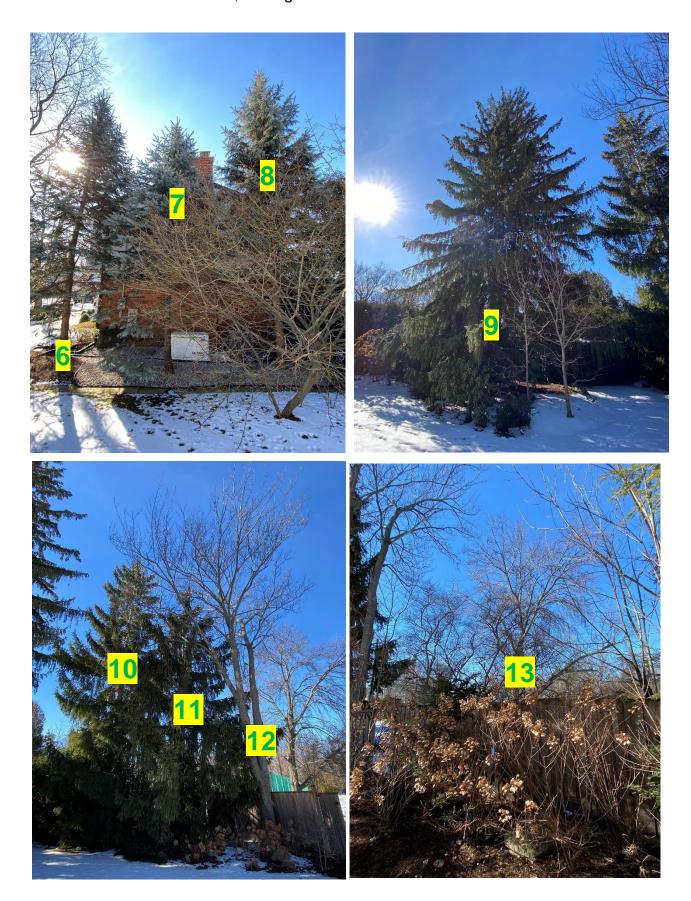
TREE NUMBERS IN RED = REMOVAL **GREEN = PRESERVE**

Please see the Inventory Page to determine the recommended TPZ (Tree Protection Zone) requirements for each tree.

Site Photos



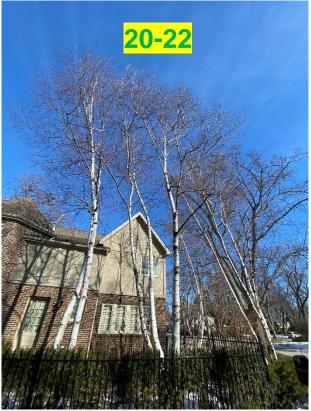
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Wildwood Tree Services Ltd. Favored Tree Species for Urban Settings.

Large Shade Trees.

- Sugar Maple, Acer saccharum
- Red Oak, Quercus rubra
- American Beech, Fagus grandifolia
- European Beech, Fagus sylvatica
- Tulip Tree, Liriodendron tulipifera
- Kentucky Coffeetree, Gymnocladus dioicus

Evergreens (Coniferous)

- Silver Fir, Abies concolor
- Canadian Hemlock, Tsuga canadensis
- Eastern White Pine, Pinus strobus
- Colorado Blue Spruce, Picea pungens
- Hicks Yew, Taxus media hicksii
- Black Cedar, Thuja Occidentalis Nigra

Small and Ornamental Trees.

- Hackberry, Celtis occidentalis
- River Birch, Betula nigra
- Chanticleer Pear, Pyrus calleryana chanticleer
- Bradford Pear, Pyrus calleryana bradford
- Paperbark Maple, Acer griseum
- Bloodgood Japanese Maple, Acer palmatum bloodgood
- Siberian Crab Tree, Malus baccata
- Pyramidal English Oak, Quercus robur fastigiata
- Dawyck Purple Beech, Fagus Sylvatica dawyck purple
- Tricoloured Beech, Fagus sylvatica 'Tricolor'
- Florida Dogwood, Cornus florida Std.

It is best to consult an arborist to ensure you are selecting a species that is suitable for its location. A well maintained and carefully selected tree will ensure a tree that is both beautiful and sustainable.

"The true meaning of life is to plant trees, under whose shade you do not expect to sit." ~Nelson Henderson

CORPORATION OF THE CITY OF BURLINGTON SPECIFICATIONS INDEX FOR

Tree Protection and Preservation (SPEC NO. SS12A)

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1. Scope

This specification describes the measures required to protect trees not designated for removal for all works within the City of Burlington's road right-of-way.

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

- Tree protection measures are required for City trees and other trees protected by City Tree by-law 19-1975
 as amended and are recommended for all trees which may be impacted by construction activities;
- All trees situated on City property are protected under provisions of the City Tree by-law. Some trees situated on private property are also protected by the City Tree bylaw or as conditions of approvals granted by the City under site plan approval or subdivision agreements;
- c) Trees protected by the City Tree by-law may not be removed, injured or destroyed in any way without authorization from the City Arborist. Note that the term "tree" refers to all parts of the tree, including all roots. In certain cases, City Council will be required pursuant to the Tree By-law;
- d) 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;
- e) Higher standards of tree protection may be imposed where warranted in the opinion of the City Arborist for municipal trees and Project Arborist 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;
- f) 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 City Arborist;
- g) 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.

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- 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.
- No City tree or tree protected by the City Tree by-law may be removed without the written permission of the City Arborist.
- 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 Zone
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

Table 1 - Minimum Tree Protection Zones

NOTES:

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 City Arborist.
- 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.

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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.

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.

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.

- No materials or fill may be stored within the MTPZ.
- 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 City Arborist.
- 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"-14"

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 City Arborist. 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.

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.

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- 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.

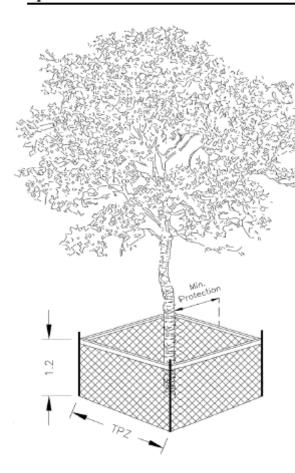
10. Securities for Non-Compliance

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's Aggregate Caliper Formula. 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 City Arborist. 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 City Arborist, 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 City Arborist, 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.

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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:

- ¹The 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

- 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 City Arborist.
- 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.
- 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.
- No construction activity, grade changes, surface treatment or excavations of any kind is permitted within the MTPZ without written authorization from the City Arborist.
- 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".

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