

147 Spadina Avenue

ARBORIST REPORT + TREE INVENTORY +
PRESERVATION PLAN

Hullmark

Client

THE PLANNING PARTNERSHIP

Arborist Inventory & Report

August 18th 2021

MICHAEL ORMSTON-HOLLOWAY

ISA CERTIFIED ARBORIST ON-1480A

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Landscape + Urban Ecology

To: Charles Arbez, Development Manager - Hullmark
From: Michael Ormston-Holloway – The Planning Partnership
Survey Date: June 16, 2021
Report Date: August 18, 2021
Subject: 147 Spadina Avenue Tree Survey Toward Pending Re-Development

147 SPADINA AVENUE

ARBORIST SURVEY AND REPORT

The following arborist report has been prepared in keeping with the expectations of the International Society of Arboriculture (ISA), as well as the City of Toronto Urban Forestry Services.

This arborist report pertains to the site located in Ward 10 (Spadina-Fort York), Toronto, ON. The nearest major intersection is Spadina Avenue and Richmond Street West. The property surveyed for this report is 147 Spadina Avenue.

The tree inventory included a total of four (4) trees, all of which are in the public right of way (ROW). Tree #2 was found to be dead at the time of the inventory. A service request for its removal can be placed through 3-1-1, or a tree removal permit exemption can be applied for by submitting this report to Tree Protection and Plan Review South. Urban Forestry must confirm the condition of the tree and provide permission prior to the removal of this tree.

Trees #1, #3 and #4 were found to be in a fair/good condition at the time of site inventory and are proposed for removal due to construction. Improvements to the public realm will impact the root zones of these trees, and permits to remove them will be required as part of the proposed development. Using the City of Toronto's 1:1 public tree replacement ratio, 3 public replacement trees would be required on site (note that tree #2 is assumed to be permit exempt for this calculation). If the site cannot accommodate this number of replacement trees, cash-in-lieu can be applied at a rate of \$583/tree, subject to the discretion of Urban Forestry.

As with all development, sound construction practice is recommended to minimize impact and protect the healthier specimens adjacent to the survey area, and it is recommended that the attached Appendix 1 - City of Toronto Standard for Tree Protection and Specifications for Construction Near Trees be reviewed. The goal of this report is to provide a physical inventory of the trees on or adjacent to this property, as well as a tree preservation plan. Significant site documentation was undertaken and included within this report toward a more comprehensive understanding of the specimens in question. This report also ranks the trees in terms of their present impediments to growth. If you have any questions regarding tree surveying or any other information contained within this report, please contact Michael Ormston-Holloway of The Planning Partnership.

Regards,



Michael Ormston-Holloway

Partner
The Planning Partnership
ISA CERTIFIED ARBORIST ON-1480A

147 SPADINA AVENUE

Arborist Survey and Report

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Section 3 Arborist Survey Methods

The trees included in this report were inventoried on June 16, 2021 by Meghan Kirkup. All tree specimens included within 6m of the site boundaries were part of this survey.

Table 1: Site Visit Conditions

Date	Max Temp.	Conditions	Precip. (mm)
June 16, 2021	21°C	Partly cloudy	0.0

Each of these aforementioned trees were given a number, and the specimens were all individually inspected for their character, health, as well as the unique conditions within which they were growing was also documented.

The following inventory data was collected for each tree:

- Tree Number
- Species
- DBH – Diameter in centimetres at approximately 1.4m above ground level. For multi-stem trees, each trunk was measured at 1.4m above ground level, and the largest stem found was listed under the “DBH” section of the inventory chart. Additional trunk measurements are listed in “Comments.”
- T.P.Z. – Value is determined by the City of Toronto Private and City Tree Bylaws, as well as the Ravine and Natural Feature Protection Bylaw. The standard TPZ for City and Private Trees is based on the International Society of Arboriculture standard of 1’ offset per 1” diameter or 30cm of offset per 2.54cm of diameter (Figure 1 below). The RNFP Bylaw requires larger protection distances, as shown in Table 2.
- Condition – Summarized as follows:
 - 1) P = Poor
 - 2) F = Fair
 - 3) G = Good
- Comments – Included in the tree inventory notes (refer to Section 5)

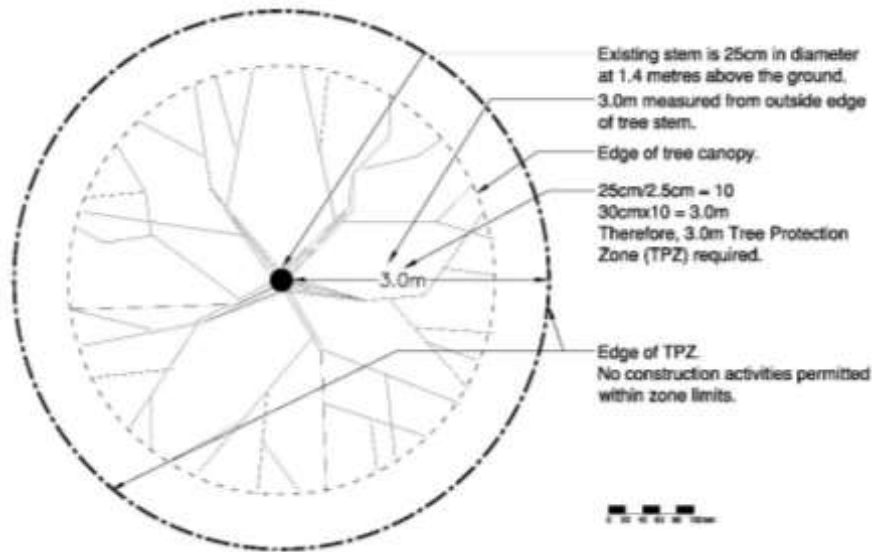


Figure 1: Tree Protection Zone Calculation

Table 2: Minimum Tree Protection Zone (TPZ) Determination, City of Toronto

Trunk Diameter (DBH) ¹	Minimum Protection Distances Required ² City-owned and Private Trees	Minimum Protection Distances Required Trees in Areas Protected by the Ravine and Natural Feature Protection By-law
		Whichever of the two is greater:
<10cm	1.2 m	The drip line ⁴ or 1.2 m
10- 29 cm	1.8 m	The drip line or 3.6 m
30 ³ - 40 cm	2.4 m	The drip line or 4.8 m
41 - 50 cm	3.0 m	The drip line or 6.0 m
51 - 60 cm	3.6 m	The drip line or 7.2 m
61 - 70cm	4.2 m	The drip line or 8.4 m
71 - 80cm	4.8 m	The drip line or 9.6 m
81 - 90 cm	5.4 m	The drip line or 10.8 m
91 - 100 cm	6.0 m	The drip line or 12.0 m
>100 cm	6 cm protection for each 1 cm diameter	12cm protection for each 1 cm diameter or the drip line ⁵

This report should be considered a snapshot of tree conditions at the time of inspection; as living organisms, trees are subject to constant change. The tree review consisted of a level 1 visual assessment only and does not supply information on any internal conditions (ie. decay) found within the trunk or branches. This report does not contain a tree risk assessment, and structural integrity of trees has been assessed visually only. The arborist is not responsible for any failure of any tree or parts of the trees present and future. Any root and root zone issues that have not been assessed in this report and any failure of the trees caused by any root related issue is not the responsibility of the arborist.

Section 4 General Results

Site Location and Size

The site surveyed is in Toronto, Ontario close to the intersection of Spadina Avenue and Richmond Street West. The property address is 147 Spadina Avenue and it is located in the fashion district of the downtown core, on the east side of Spadina Avenue. The site contains a two-story mixed use commercial building, and is located between low-rise mixed-use commercial buildings to the north and south. A 14-storey mixed-use building is located behind the site to the east. Spadina Avenue forms the western boundary of the site.

147 Spadina Avenue contains three restaurants and a dentist’s office on the ground floor, and mixed office space on the second floor.

The study area is graphically defined within Section 7 – Maps: Tree Plan Graphic, packaged with this report.

General Character

The surrounding land uses are primarily mixed commercial and residential, with significant pedestrian and vehicular traffic and a strong commercial presence at the ground level. The typical built form in the neighbourhood is a low to high-rise structure with businesses at grade and residential or office space above. The site itself is currently occupied by a brick building which houses restaurants and a dentist office on the ground floor and office space on the second floor. Trees #1-#4 are located within the ROW on the west side of the building, fronting onto Spadina Avenue. The south side of the site fronts on to Richmond Street West, and contains no trees. The north and east side of the site are separated from adjacent buildings by narrow alley ways, which contain no trees.

The four (4) City street trees along Spadina Avenue are located in tree pits in paving, and are the only trees within the site, or within 6m.

Table 1: Tree Size/Location Category Summary Chart

KEY#	TREE CATEGORIES	TOTAL COUNT
1.0#	<i>Trees with diameters of 30 cm or more, situated on private property on the subject site</i>	0
2.0#	<i>Trees with diameters of 30 cm or more, situated on private property, within 6 m of the subject site.</i>	0
3.0#	<i>Trees of all diameters situated on City owned parkland within 6 m of the subject site.</i>	0
4.0#	<i>On lands designated under City of Toronto Municipal Code, Chapter 658, Ravine and Natural Feature</i>	0
5.0#	<i>Trees of all diameters situated within the City road allowance on or within 6m of the subject site.</i>	4
N/A#	<i>Trees with dbh under 30cm, situated on private property.</i>	
TOTAL TREES		4
TOTAL TREES TO BE REMOVED		1
TOTAL TREES REQUIRING PERMITS		0
TOTAL TREES TO BE PRESEVED WITHOUT INJURY		0

Section 5 Tree Inventory

Tree 1

Hackberry (*Celtis occidentalis*)

DBH	5.5 cm
CONDITION	GOOD
CATEGORY	5
ACTION	TO BE REMOVED
OWNERSHIP	PUBLICALLY OWNED
TPZ	1.2 m
COMMENTS	JUVENILE SPECIMEN, BALANCED CANOPY, HEALTHY, WATERING BAG



Figure 2: Tree 1

Tree 2

DEAD

DBH

8.75 cm

CONDITION

DEAD

CATEGORY

5

ACTION

TO BE REMOVED (Permit exemption requested)

OWNERSHIP

PUBLICALLY OWNED

TPZ

1.2m

COMMENTS

DEAD, SLOUGHING BARK



Figure 3: Tree 2

Tree 3

Hackberry (*Celtis occidentalis*)

DBH	5.5 cm
CONDITION	GOOD
CATEGORY	5
ACTION	TO BE REMOVED
OWNERSHIP	PUBLICALLY OWNED
TPZ	1.2 m
COMMENTS	JUVENILE SPECIMEN, BALANCED CANOPY, HEALTHY, WATERING BAG

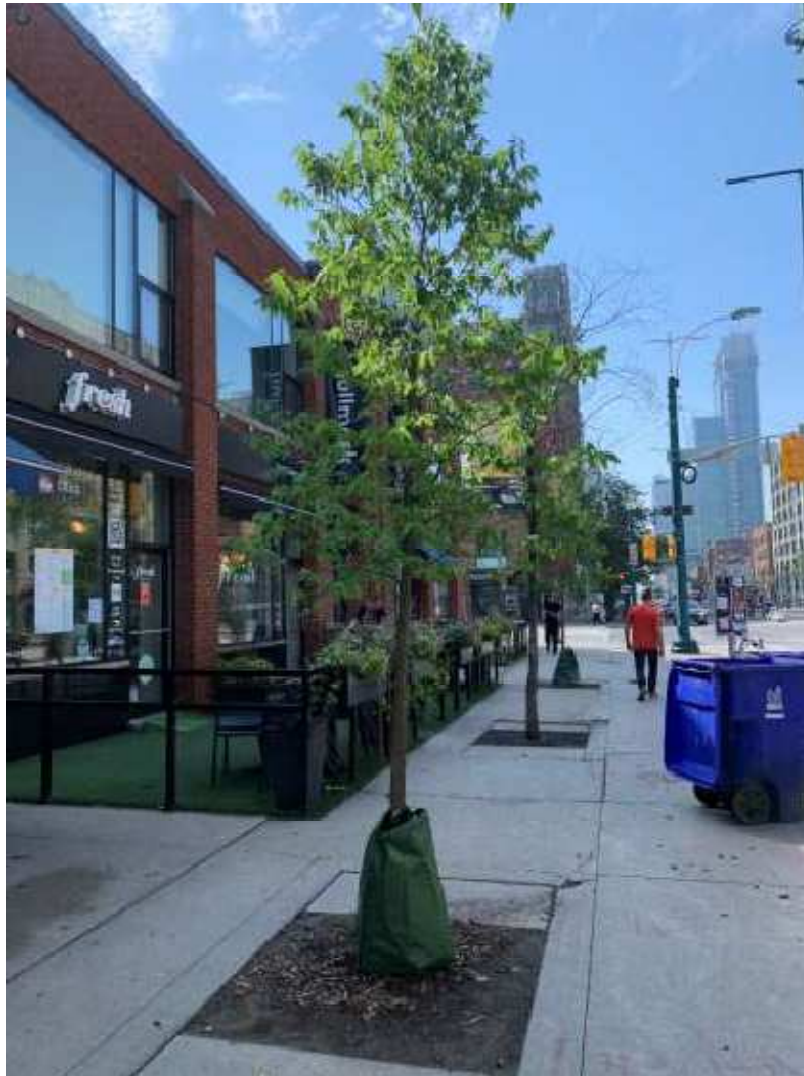


Figure 4: Tree 3

Tree 4

Ash (*Fraxinus pennsylvanica*)

DBH	22 cm
CONDITION	FAIR-GOOD
CATEGORY	5
ACTION	TO BE REMOVED
OWNERSHIP	PUBLICALLY OWNED
TPZ	1.8 m
COMMENTS	BALANCED CANOPY, OVERHEAD WIRES, CAMBIUM WOUND



Figure 5: Tree 4

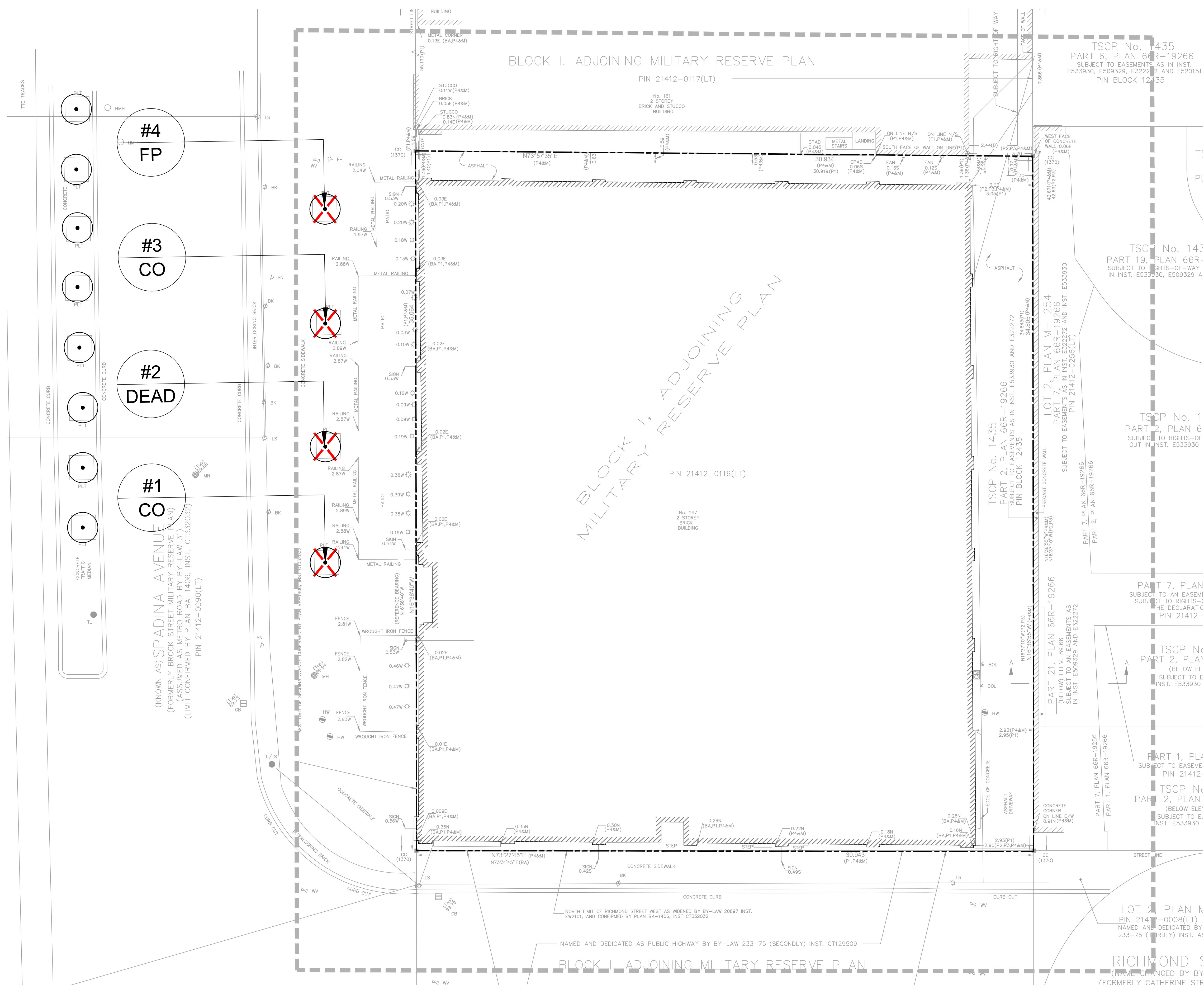
Section 6 General Recommendations + Best Management Practices

The purpose of this report is to gain a greater understanding of the plants in the study area as outlined in the Tree Inventory and Preservation Plan along with the accompanying exhaustive inventory. It is understood that due to the nature of the pending redevelopment, there will be both tree removals and injuries necessary as the construction begins.

To ensure good practice, as many of the following recommended Best Management Practices should be employed as is possible, to protect the health and future development of the trees that are either left onsite or are adjacent to the development (see Appendix A - City of Toronto: Tree Protection Policy and Specifications for Construction Near Trees of Toronto for reference):

- 1) Tree Protection Zones (TPZ): These zones establish limits for the erection of Tree Protection Hoarding; this hoarding serves to prevent the operation of equipment, the storage of equipment, or manipulation of the soil within the specified protection zone. In the event that the municipality or region does not set minimum Tree Protection Zones it is recommended the value be determined by International Society of Arboriculture standard of 1' offset per 1" diameter or 30cm of offset per 2.54cm of diameter as this considered best practice.
- 2) Tree Protection Hoarding: Tree protection hoarding should serve to prevent the operation of equipment, the storage of equipment, or manipulation of the soil within the specified protection zone. All tree protection hoarding is to be as per City of Toronto detail.
- 3) Grading: Grade changes within the TPZ should be avoided so as to prevent the damage or destruction of roots. Approximately 90% of tree roots are found within the top 30-45cm of soil. Any grade reduction will remove a significant percentage of tree roots. On the other hand, the addition of as little as 5cm of soil to the ground above the roots can severely limit the ability of roots to obtain necessary oxygen for respiration and can cause root death. In the event that the root zone is compacted within the TPZ, the soil within the root zone may need to be vertically mulched or experience radial trenching so as to reintroduce oxygen into the root zone.
- 4) Pruning: The existing trees that are to be preserved should be pruned by an arborist certified by the ISA. Pruning should focus on crown cleaning, defined as the removal of dead wood, broken branches, and crossing and interfering limbs. No trees within the City of Toronto Right of Way should be pruned without approval by Urban Forestry.
- 5) Root Pruning: In the event that construction does breach the boundary of any tree protection zone, pruning to the roots or canopy may need to occur prior to construction proceeding in order to decrease the likelihood of a pest or pathogen outbreak. No trees within the City of Toronto Right of Way should be root pruned without approval by Urban Forestry.
- 6) Fertilization and Radial Trenching: This intervention may also assist trees in the recovery from construction impacts should construction activities breach the TPZs.

In all cases, the aforementioned treatments should be conducted by an arborist certified by the International Society of Arboriculture, and approved by Urban Forestry as needed.

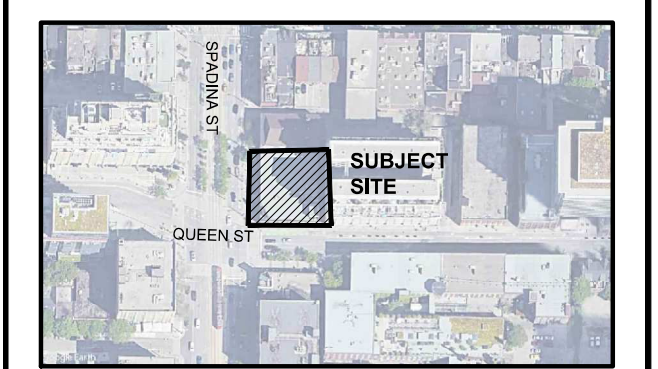


LEGEND

- BUILDING OUTLINE
- PROPERTY LINE
- EXISTING TREE
- TREE TO BE REMOVED
- TREE PROTECTION ZONE
- 6.0M OFFSET FROM PROPERTY LINE
- TREE PROTECTION HOARDING

GENERAL NOTES

1. It is the applicant's responsibility to discuss potential impacts to trees located near or wholly on adjacent properties or on shared boundary lines with their neighbours. Should such trees be injured to the point of instability or death the applicant may be held responsible through civil action. The applicant would also be required to replace such trees to the satisfaction of Urban Forestry.
2. Tree protection barriers shall be installed to standards as detailed in this document and to the satisfaction of Urban Forestry.
3. Tree protection barriers must be installed using plywood clad hoarding (minimum 19mm or 3/4" thick) or an equivalent approved by Urban Forestry.
4. Where required, signs as specified in Section 4. Tree Protection Signage must be attached to all sides of the barrier.
5. Prior to the commencement of any site activity such as site alteration, demolition or construction, the tree protection measures specified on this plan must be installed to the satisfaction of Urban Forestry.
6. Once all tree/site protection measures have been installed, Urban Forestry staff must be contacted to arrange for an inspection of the site and approval of the tree/site protection requirements. Photographs that clearly show the installed tree/site protection shall be provided for Urban Forestry review.
7. Where changes to the location of the approved TPZ or sediment control or where temporary access to the TPZ is proposed, Urban Forestry must be contacted to obtain approval prior to alteration.
8. Tree protection barriers must remain in place and in good condition during demolition, construction and/or site disturbance, including landscaping, and must not be altered, moved or removed until authorized by Urban Forestry.
9. No construction activities including grade changes, surface treatments or excavation of any kind are permitted within the area identified on the Tree Protection Plan or Site Plan as a minimum tree protection zone (TPZ). No root cutting is permitted. No storage of materials or fill is permitted within the TPZ. No movement or storage of vehicles or equipment is permitted within the TPZ. The area(s) identified as a TPZ must be protected and remain undisturbed at all times.
10. All additional tree protection or preservation requirements, above and beyond the installation of tree protection barriers, must be undertaken or implemented as detailed in the Urban Forestry approved arborist report and/or the approved tree protection plan and to the satisfaction of Urban Forestry.
11. If the minimum tree protection zone (TPZ) must be reduced to facilitate construction access, the tree protection barriers must be maintained at a lesser distance and the exposed portion of TPZ must be protected using a horizontal root protection method approved by Urban Forestry.
12. Any roots or branches indicated on this plan which require pruning, as approved by Urban Forestry, must be pruned by an arborist. All pruning of tree roots and branches must be in accordance with good arboricultural practice. Roots that have received approval from Urban Forestry to be pruned must first be exposed using pneumatic (air) excavation, by hand digging or by a using low pressure hydraulic (water) excavation. The water pressure for hydraulic excavation must be low enough that root bark is not damaged or removed. This will allow a proper pruning cut and minimize tearing of the roots. The arborist retained to carry out crown or root pruning must contact Urban Forestry no less than three working days prior to conducting any specified work.
13. The applicant/owner shall protect all by-law regulated trees in the area of consideration that have not been approved for removal throughout development works to the satisfaction of Urban Forestry.
14. Convictions of offences respecting the regulations in the Street Tree By-law and Private Tree By-law are subject to fines. A person convicted of an offence under these by-laws is liable to a minimum fine of \$500 and a maximum fine of \$100,000 per tree, and/or a Special Fine of \$100,000. The landowner may be ordered by the City to stop the contravening activity or ordered to undertake work to correct the contravention.
15. Prior to site disturbance the owner must confirm that no migratory birds are making use of the site for nesting. The owner must ensure that the works are in conformance with the Migratory Bird Convention Act and that no migratory bird nests will be impacted by the proposed work.



Keyplan NTS

Project
147 SPADINA AVE

Client
HULLMARK
474 WELLINGTON STREET WEST, SUITE 200

Issue / Revisions

No.	Description	Date
1	Issued for ZBA	2021-06-22
2	Issued for ZBA	2021-08-09
3		
4		
5		
6		
7		
8		
9		
10		

Seal

THIS DRAWING SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL SIGNED BY THE LANDSCAPE ARCHITECT.

Designed By: JW
Drawn By: KL
Checked By: JW

The Planning Partnership
1255 Bay Street, Suite 500
Toronto, Ontario, Canada M5R 2A9
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Copyright Reserved
This plan and design are, and at all times remain, the exclusive property of The Planning Partnership. They cannot be used or reproduced without written consent. Contractors shall verify and be responsible for all dimensions and conditions on the job. This office shall be informed of any discrepancies from the dimensions and conditions shown on the drawing.

General Notes

1. The contractor shall check and verify all dimensions and conditions of the project and immediately report any discrepancies to the consultant before proceeding with the work.
2. The contractor is to be aware of all existing and proposed services and utilities. The contractor shall have all underground services and utility lines staked by each agency having jurisdiction prior to commencing work.

Drawing Title:
TREE REMOVAL & PRESERVATION PLAN

Scale: 1:100
Proj. No.: 2333
Drawing No.: **LT100**

Tree Protection Zones:

Trunk Diameter (DBH)	Minimum Protection Distances Required City-owned and Private Trees	Minimum Protection Distances Required Trees in Areas Protected by the Ravine and Natural Feature Protection By-law
< 10 cm	1.2 m	Whichever of the two is greater: The drip line ^a or 1.2 m
10 - 29 cm	1.8 m	The drip line or 3.6 m
30 - 40 cm	2.4 m	The drip line or 4.8 m
41 - 50 cm	3.0 m	The drip line or 6.0 m
51 - 60 cm	3.6 m	The drip line or 7.2 m
61 - 70 cm	4.2 m	The drip line or 8.4 m
71 - 80 cm	4.8 m	The drip line or 9.6 m
81 - 90 cm	5.4 m	The drip line or 10.8 m
91 - 100 cm	6.0 m	The drip line or 12.0 m
> 100 cm	6 cm protection for each 1 cm diameter	12 cm protection for each 1 cm diameter or the drip line ^a

MINIMUM PROTECTION DISTANCES

TORONTO

TREE PROTECTION ZONE (TPZ)

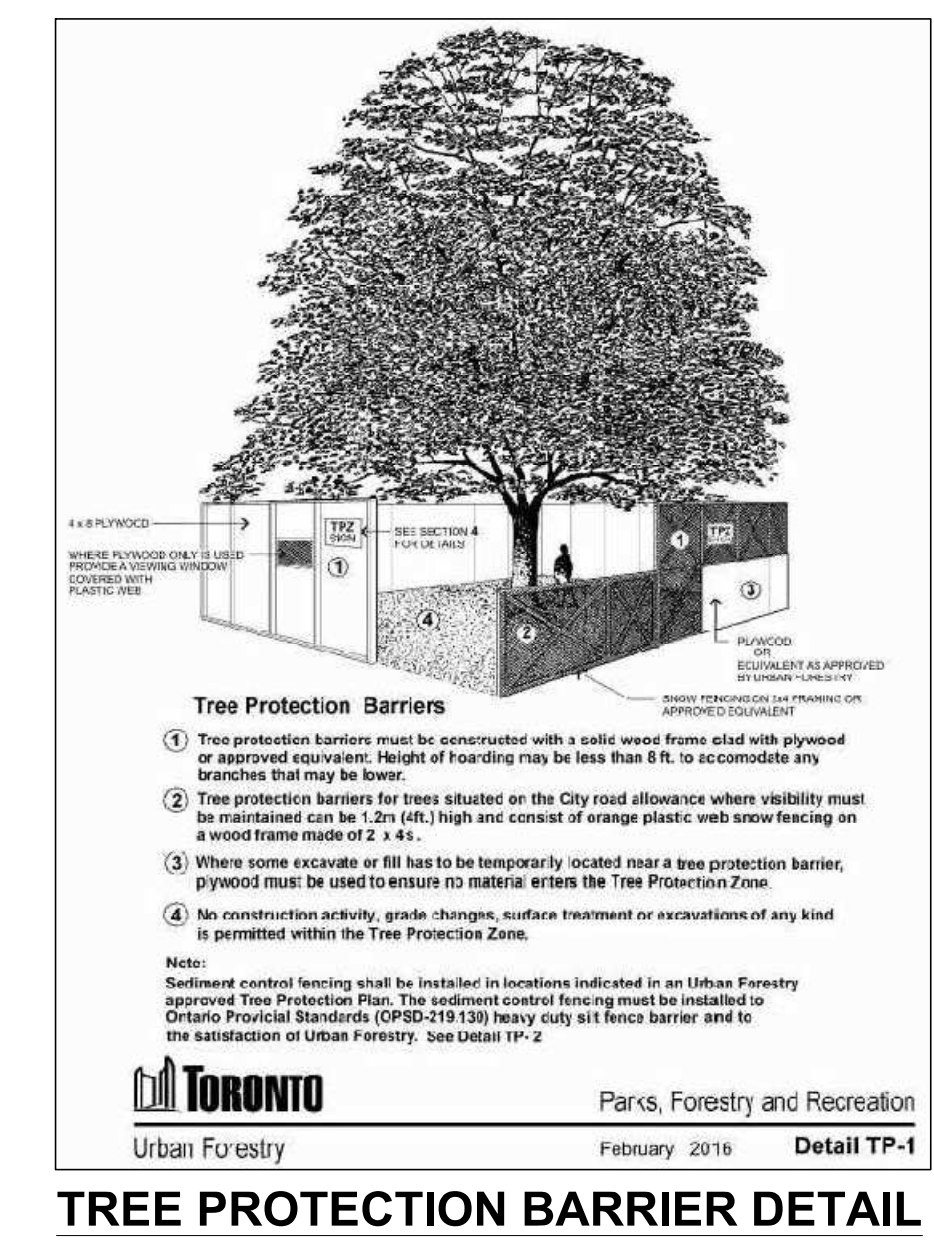
No grade change, storage of materials or equipment is permitted within this TPZ. Tree protection barrier must not be removed without the written authorization of City of Toronto, Urban Forestry.

For information call Urban Forestry at: (416) 338-TREE (8733)

TREE PROTECTION ZONE (TPZ) SIGNAGE

147 SPADINA AVENUE TREE INVENTORY TABLE
(refer to arborist report dated August 6, 2021)

Tree #	Botanical Name	Common Name	Condition	D.B.H.	T.P.Z.	Category	Action
1	<i>Celtis occidentalis</i>	Hackberry	Good	5.5	1.8	5.0	Remove
2	Dead	Dead	Dead	8.75	N/A	5.0	Remove
3	<i>Celtis occidentalis</i>	Hackberry	Good	5.5	1.8	5.0	Remove
4	<i>Fraxinus pennsylvanica</i>	Ash	Fair-Good	22	4.8	5.0	Remove



TREE PROTECTION BARRIER DETAIL

2021-06-18 2333-LT100-TREE

Tree Protection Policy and Specifications for Construction Near Trees

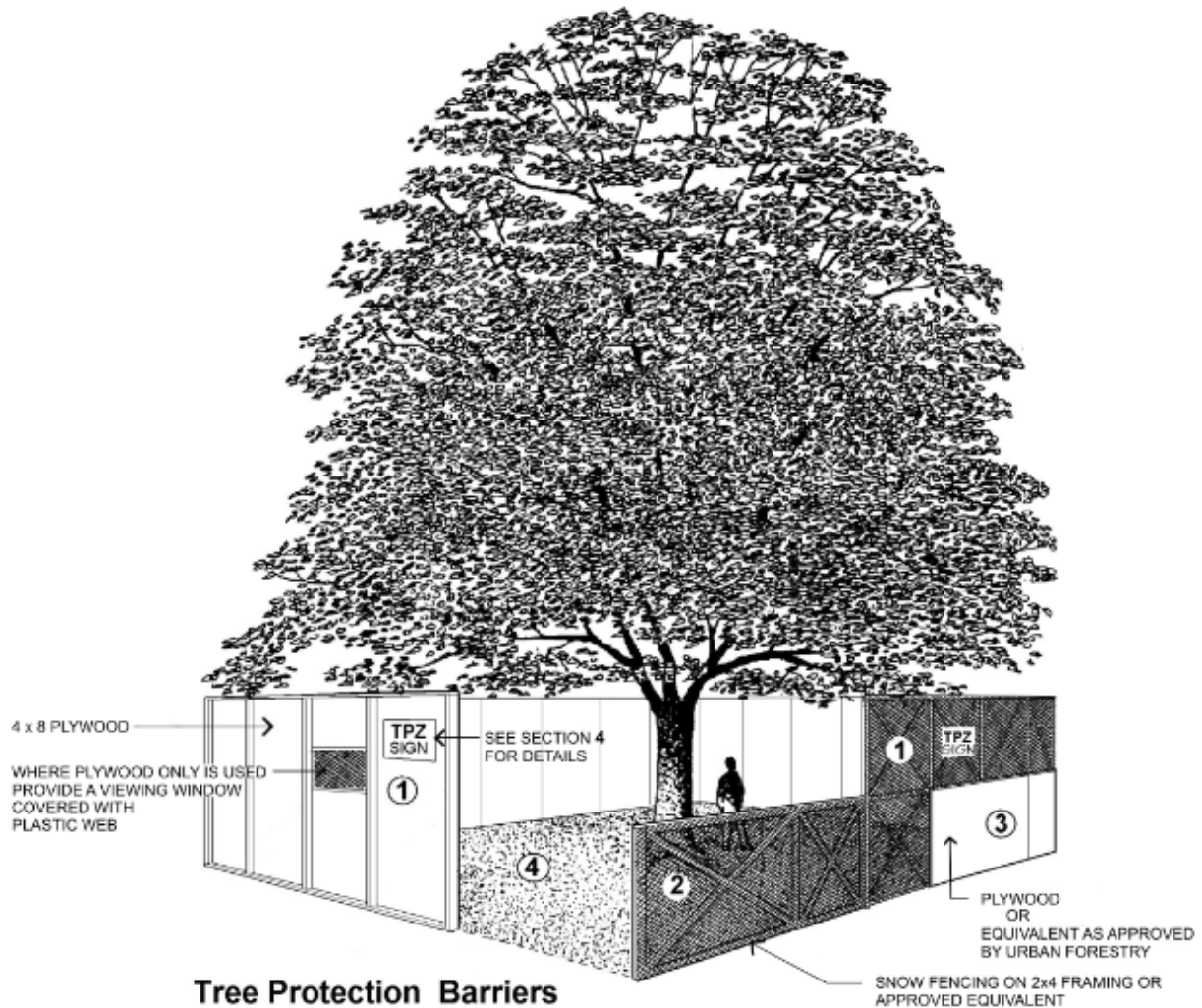


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1. Introduction

Maintenance, growth and enhancement of the urban forest are important goals of the City of Toronto. Preserving and protecting healthy trees can help the City to achieve these goals. Considering tree protection in the initial stages of construction planning may mean the difference between preserving a healthy tree and having to remove it. Plans created with tree protection in mind help protect the city's urban forest.

The tree protection policy and specifications outlined below reflect the policy of Toronto City Council. Anyone failing to adhere to the tree protection policy and specifications will be financially responsible for any resulting damage to trees and may be charged under the provisions of the applicable City of Toronto tree by-law or subject to orders to comply.

Prior to commencing with any demolition or construction activity it is important that an arborist¹ determines the location, species, size and condition of trees on the property and surrounding properties and becomes familiar with the tree protection by-laws that could impact the proposal.

The following by-laws protect trees in the City of Toronto:

- [Street Tree By-law](#), City of Toronto Municipal Code Chapter 813, Article II, protects all trees situated on City streets.
- [Private Tree By-law](#), Article III, Chapter 813 of the City of Toronto Municipal Code protects trees on private property with diameter of 30cm or more and trees of any diameter that were planted as a condition of a permit issued under this bylaw or a site plan agreement.
- The [Ravine & Natural Feature Protection By-law](#), Chapter 658 of the City of Toronto Municipal Code prohibits and regulates the injury and destruction of trees, as well as filling, grading and dumping within designated areas of the City. There is no minimum diameter for a tree to qualify for protection under the Ravine and Natural Feature Protection By-law. Trees of any size located in the designated areas qualify for protection.
- The [Parks By-law](#), Municipal Code Chapter 608, Article VII protects all trees located in a City park.

All above noted by-laws are implemented by Urban Forestry under the authority of the General Manager, Parks, Forestry and Recreation. City of Toronto's tree protection by-laws can be found at www.toronto.ca/trees.

Types of Tree Damage

Physical injury to the trunk, crown and roots of a tree will occur if construction equipment is permitted close to trees or if structures are built into the growing space of a tree. Inappropriate pruning may also result in tree injury. Physical injuries are permanent and can be fatal.

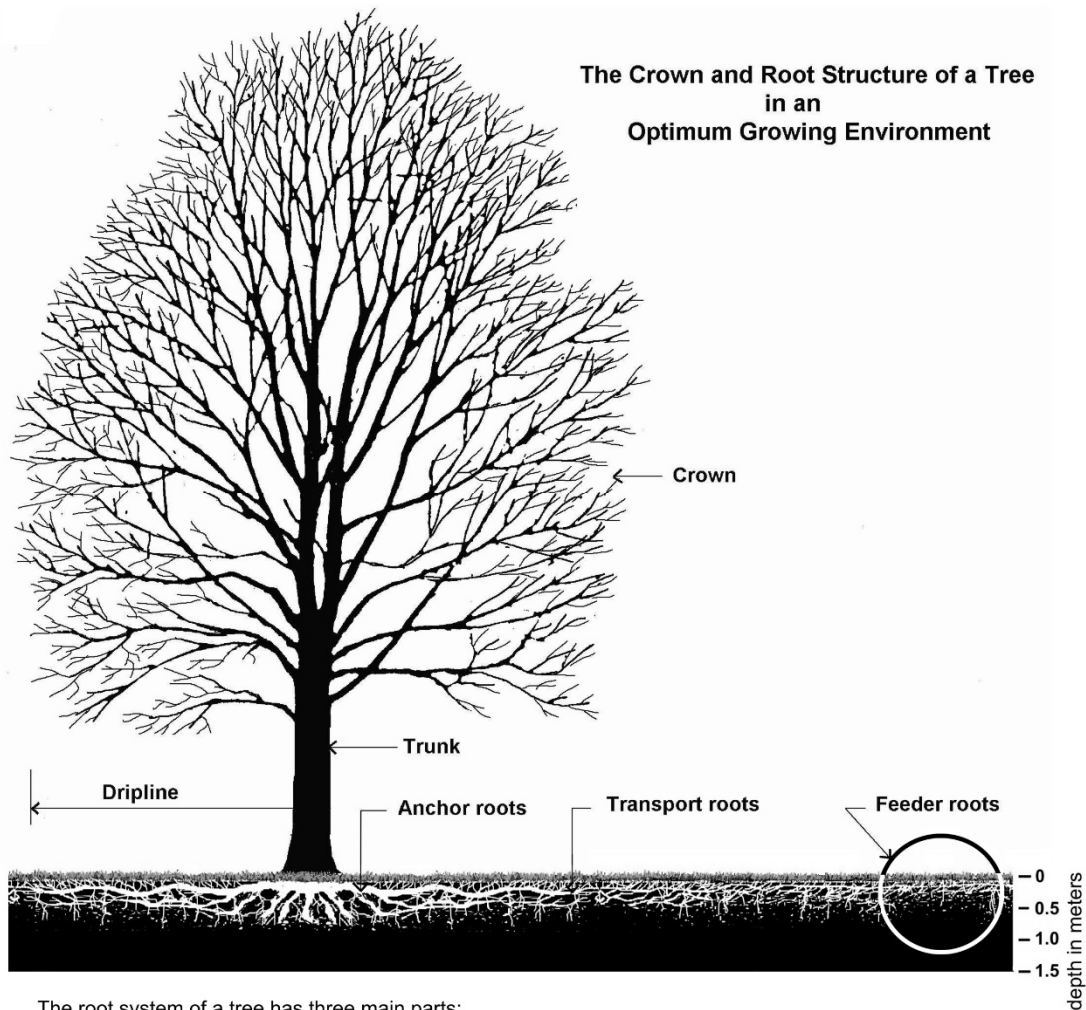
¹ Arborist – An expert in the care and maintenance of trees including an arborist qualified by the Ontario Training and Adjustment Board Apprenticeship and Client Services Branch, a certified arborist qualified by the International Society of Arboriculture, a consulting arborist registered with the American Society of Consulting Arborists, a registered professional forester or a person with other similar qualifications as approved by the General Manager, Parks, Forestry and Recreation.

Root cutting is another type of physical injury that can significantly impact the health of a tree. The majority of tree roots are found in the upper 30 to 60 cm of soil. Excavation for foundations or utility installation may cut roots if the excavation is too close to trees. Trees can become destabilized and may fall over if anchor roots are severed.

Compaction of the soil in the tree root zone is one of the leading causes of tree decline in Toronto's urban forest. Soil compaction occurs primarily from vehicles and equipment moving across the root zones. Piling or storing materials or debris on top of the root system can also result in soil compaction. Soil compaction causes the pore spaces in the soil, which contains air and water necessary for root growth, to be reduced. Without space available for oxygen and water, tree roots will suffocate and tree decline will follow. With rutting, a form of intense compaction, roots are severed by the tires of equipment. Root destruction can also be caused by changes to the existing grade. Adding soil on top of tree roots can smother them by reducing the amount of oxygen and water they can receive. Only a few centimetres of added soil can have a detrimental impact on tree health.

The structural elements of a tree in an optimal growing environment are shown on Figure 1. This figure illustrates the terms used in this policy.

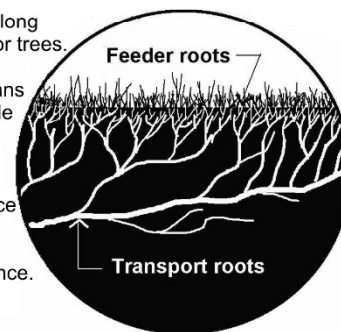
The Crown and Root Structure of a Tree
in an
Optimum Growing Environment



The root system of a tree has three main parts:
Forming the base of the tree are large **anchor roots** from which extend long **transport roots** which together provide the main structural framework for trees. From the transport roots extend a complex network of **feeder roots** that grow outward and upward. These non-woody roots branch out to form fans of thousands of slender roots with fine root hairs. These tiny roots provide the surface where the absorption of air, water and nutrients takes place that sustains the life of the tree.

The root system of a tree grows mainly within the top 60 cm of the surface of good quality, well drained and uncompacted soil.

The root system can extend to more than 2 to 3 times the **dripline** distance.



Urban Forestry

Parks, Forestry and Recreation

November 2015 **Detail TP - 3**

Figure 1: Urban Forestry Detail TP-3

2. Protecting Trees

There are a number of steps that can be taken to protect trees prior to, during and after any construction project. Hiring an arborist should be the first step. An arborist can advise on current tree maintenance requirements and determine the impact the proposal will have on trees and the surrounding natural environment.

An inventory of trees on subject and adjacent properties that may be impacted by the proposed work should be prepared in accordance with the City tree by-laws so that the project can be designed with tree protection in mind. A tree protection plan prepared by an arborist will identify the location, species, size and condition of all trees within the area of consideration, identify the extent of injury where applicable and outline proposed tree protection measures for the trees identified for protection.

The **area of consideration** for trees protected under the Private Tree By-law (Municipal Code, Chapter 813, Article III) includes the entire area of site disturbance, including construction related traffic and material storage, and extends 6m beyond the limit of site disturbance. For trees protected under Ravine and Natural Feature Protection By-law (Municipal Code, Chapter 658), the area of consideration includes the area of site disturbance and 12m area beyond.

The following chart provides the required distances for determining a **minimum tree protection zone (TPZ)** for trees located on a City street, in parks and on private property subject to Private Tree By-law and for trees located in areas regulated under the Ravine and Natural Feature Protection By-law. The minimum tree protection zones are based on the diameter of the tree. While these guidelines provide minimum protection distances for the anchor and transport roots of a tree, there can still be significant loss of the feeder roots beyond the established tree protection zone. Feeder roots are responsible for water and nutrient absorption and gas exchange. **For this reason, Urban Forestry may require a TPZ larger than the minimum, depending on the tree and the surrounding environment.**

Trunk Diameter (DBH) ¹	Minimum Protection Distances Required ² City-owned and Private Trees	Minimum Protection Distances Required Trees in Areas Protected by the Ravine and Natural Feature Protection By-law
		Whichever of the two is greater:
<10cm	1.2 m	The drip line ⁴ or 1.2 m
10- 29 cm	1.8 m	The drip line or 3.6 m
30 ³ – 40 cm	2.4 m	The drip line or 4.8 m
41 – 50 cm	3.0 m	The drip line or 6.0 m
51 – 60 cm	3.6 m	The drip line or 7.2 m
61 – 70cm	4.2 m	The drip line or 8.4 m
71 – 80cm	4.8 m	The drip line or 9.6 m
81 – 90 cm	5.4 m	The drip line or 10.8 m
91 – 100 cm	6.0 m	The drip line or 12.0 m
>100 cm	6 cm protection for each 1 cm diameter	12cm protection for each 1 cm diameter or the drip line ⁵

Table 1: Minimum Tree Protection Zone (TPZ) Determination

¹Diameter at breast height (DBH) measurement of tree stem taken at 1.4 metres (m) above the ground.

²Minimum Tree Protection Zone distances are to be measured from the outside edge of the tree base.

³Diameter (**30 cm**) at which trees qualify for protection under the Private Tree By-law.

⁴The drip line is defined as the area beneath the outer most branch tips of a tree.

⁵Converted from ISA Arborists' Certification Study Guide, general guideline for tree protection barriers of 1 foot of diameter from the stem for each inch of stem diameter.

The diagram below shows how the TPZ is determined:

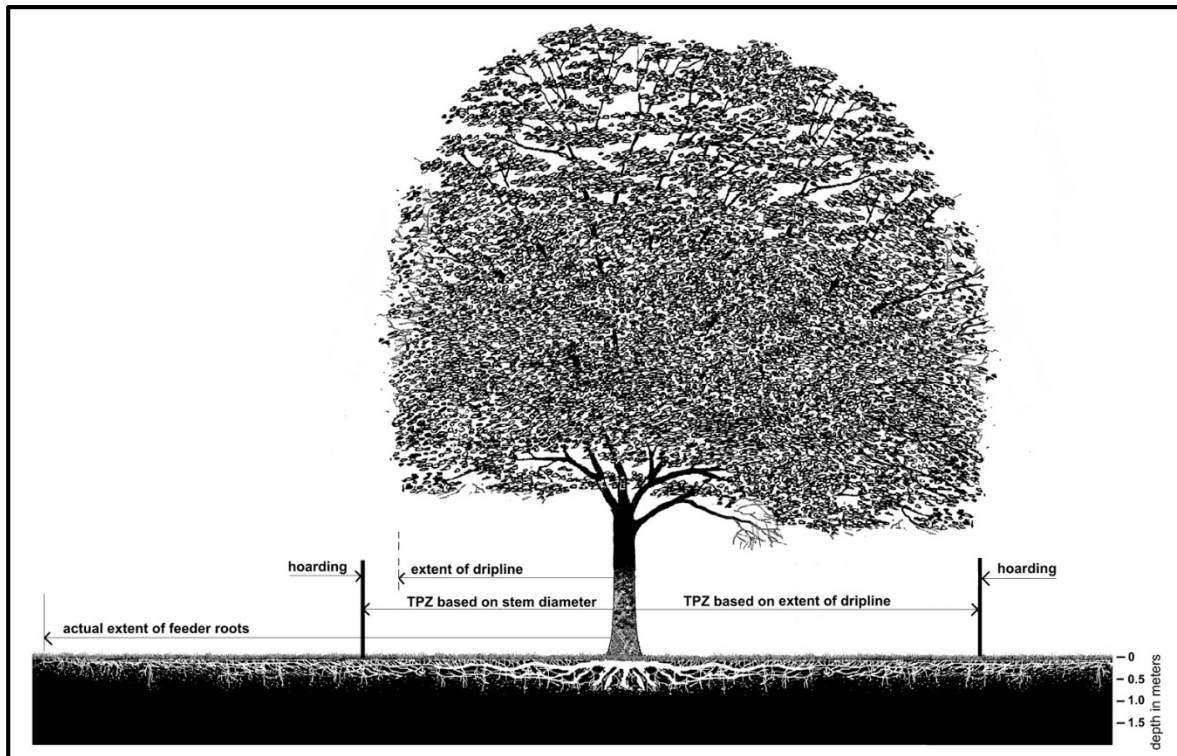


Figure 2: Minimum Tree Protection Zone (TPZ) Determination

In some cases, disturbances in the TPZ may be unavoidable, in which case, the TPZ must be adjusted in consultation with the arborist and Urban Forestry. In these situations, it may be necessary to implement other tree protection measures such as horizontal root protection as noted in section 3 of this document.

In addition to establishing and creating tree protection zones, it may be necessary to implement other protective measures, such as adding mulch to the root zone, aeration of the soil, pruning for deadwood or removing limbs that may be impacted by construction activity. This is also the time to determine the location where new trees can be planted to compliment the construction project and help with the renewal and growth of the urban forest.

Prior to commencing with any excavation, roots approved for pruning by Urban Forestry must first be exposed using pneumatic (air) excavation, by hand digging or by using a low pressure hydraulic (water) excavation. This **exploratory excavation** must be undertaken by an experienced operator under the supervision of a qualified and experienced arborist. The water pressure for hydraulic excavation must be low enough that root bark is not damaged or

removed. This will allow a proper pruning cut and minimize tearing of the roots. The arborist retained to carry out root pruning must contact Urban Forestry no less than three (3) working days prior to conducting any specified work.

Exploratory excavation may also be required for open face cuts outside the minimum tree protection zone (TPZ).

Communication between owners and their designated agents, arborists, contractors and sub-contractors throughout the construction process is critical to ensure that everyone involved is aware of the issues surrounding tree protection, and fully understands the tree protection methodology. Construction damage to trees is often irreversible.

Prohibited Activities Within a TPZ

Except where authorized by Urban Forestry, any activity which could result in injury or destruction of a protected tree or natural feature, or alteration of grade within a Ravine and Natural Feature Protection (RNFP) area, is prohibited within a TPZ, including, but not limited to, any of the following examples:

- demolition, construction, replacement or alteration of permanent or temporary buildings or structures, parking pads, driveways, sidewalks, walkways, paths, trails, dog runs, pools, retaining walls, patios, decks, terraces, sheds or raised gardens
- installation of large stones or boulders
- altering grade by adding or removing soil or fill, excavating, trenching, topsoil or fill scraping, compacting soil or fill, dumping or disturbance of any kind
- storage of construction materials, equipment, wood, branches, leaves, soil or fill, construction waste or debris of any sort
- application, discharge or disposal of any substance or chemical that may adversely affect the health of a tree e.g. concrete sludge, gas, oil, paint, pool water or backwash water from a swimming pool
- causing or allowing water or discharge, to flow over slopes or through natural areas
- access, parking or movement of vehicles, equipment or pedestrians
- cutting, breaking, tearing, crushing, exposing or stripping tree's roots, trunk and branches.
- nailing or stapling into a tree, including attachment of fences, electrical wires or signs
- stringing of cables or installing lights on trees
- soil remediation, removal of contaminated fill
- excavating for directional or micro-tunnelling and boring entering shafts

The above mentioned prohibitions are for area(s) designated as a TPZ. If possible, these prohibitions should also be implemented outside the TPZ in areas where tree roots are located. The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the dripline.

3. Tree and Site Protection Measures

The following are examples of specific tree and site protection measures that may be required by Urban Forestry:

- Plywood tree protection hoarding (minimum 19mm or ¾"), or equivalent barriers, as approved by Urban Forestry, shall be installed in locations as detailed in an Urban Forestry approved Tree Protection Plan. Tree protection barriers must be made of 2.4m (8ft) high plywood hoarding or equivalent as approved by Urban Forestry. Height of hoarding may be less than 2.4m (8ft), to accommodate tree branches that may be lower, or as approved by Urban Forestry. Within a City road allowance where visibility is a consideration, 1.2m (4ft) high orange plastic web snow fencing on a 38 x 89mm (2"x 4") frame should be used. The detail on tree protection barrier construction is shown on Figure 4 in section 7 of this document
- In specific situations where the required full minimum tree protection zone (TPZ) cannot be provided, a **horizontal** (on grade) **root protection**, designed by a qualified professional such as arborist or landscape architect, may be considered, subject to approval by Urban Forestry. Urban Forestry's objective is zero soil compaction within the tree protection zone, therefore best efforts must be made to achieve this objective using materials and best practices available that minimize the vertical loading and spread the loading horizontally.
- Any area designated for stockpiling of excavated soil must be outside of TPZs and be enclosed with sediment control fencing. Sediment control fencing shall be installed in the locations as indicated in an Urban Forestry approved Tree Protection Plan. The sediment control fencing must be installed to Ontario Provincial Standards (OPSD-219.130 – see Section 7, Figure 5) and to the satisfaction of Urban Forestry. When feasible, the sediment control fencing can be attached to the tree protection barrier as shown in Figure 6. Sediment control fencing near trees shall be constructed as per detail shown on Figure 6 of this document

4. Tree Protection Signage

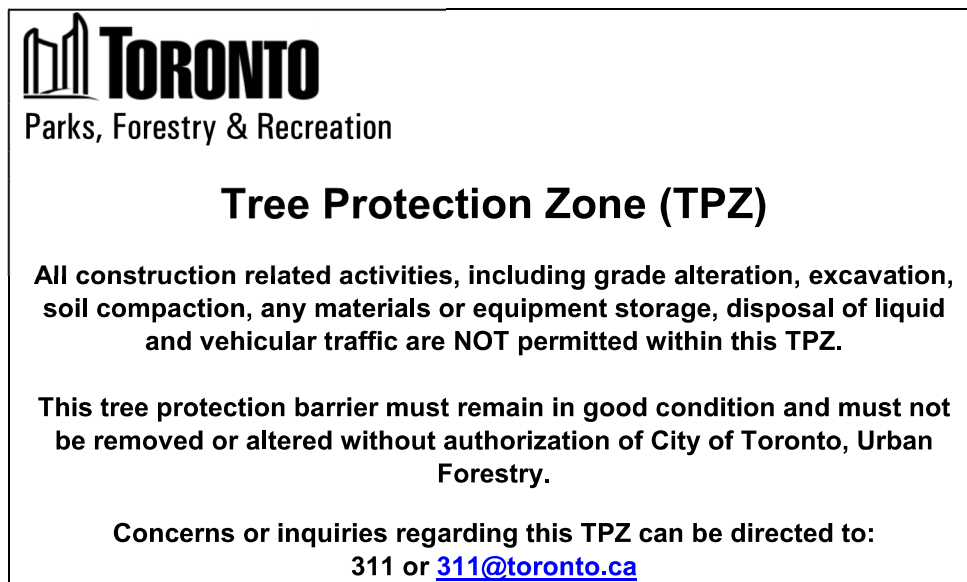


Figure 3: Tree Protection Sign

A sign that is similar to the illustration above may be required to be mounted on all sides of a tree protection barrier for trees protected by the Street Tree By-law and the Private Tree By-law. The sign should be a minimum of 40cm x 60cm and made of white corrugated plastic board or equivalent material. The sign may also be acquired from Urban Forestry Tree Protection and Plan Review (TPPR) district service counters.

5. Tree Protection Plan

All construction related applications must include a Tree Protection Plan that shows details of tree protection, prepared in conjunction with an arborist report or in consultation with an arborist, when protected trees are in proximity to the proposed work. All Tree Protection Plans must be legible, prepared at a usable metric scale and include the following information:

- Show all existing buildings, structures, hard surfaces and all existing trees within the area of consideration (as defined in Section 2 of this document). Depending on the extent of site disturbance, trees on neighbouring properties may need to be included. Note that area of disturbance must include all areas that will be disturbed by the proposed work, including the areas required for over-dig, stockpiling, construction traffic, vehicular access and construction staging
- The extent of the crown (drip line) or the extent of minimum tree protection zone TPZ (whichever is greater) of each existing tree
- Proposed changes on site, including all proposed structures, services, hard surfaces and grade changes
- Indicate vehicular access and construction staging areas. Areas proposed for temporary stockpiling of fill or excavated material shall be fenced with sediment control to prevent sediment runoff
- Indicate location of any excavation that requires root pruning
- Indicate trees proposed to be removed and/or injured
- Highlight and label tree protection barriers and the proposed tree protection zones. (See Table 1 to determine size of tree protection zone. Distances are to be measured from base of tree)
- The extent of proposed tree injury, where applicable.
- Include a comprehensive legend

See Section 6, Tree Protection Plan Notes, and Section 7, Tree Protection Plan Details, for further information.

6. Tree Protection Plan Notes

The following notes are to be included on tree protection plans submitted for construction related applications:

General Notes

- It is the applicants' responsibility to discuss potential impacts to trees located near or wholly on adjacent properties or on shared boundary lines with their neighbours. Should such trees be injured to the point of instability or death the applicant may be held

responsible through civil action. The applicant would also be required to replace such trees to the satisfaction of Urban Forestry

- Tree protection barriers shall be installed to standards as detailed in this document and to the satisfaction of Urban Forestry
- Tree protection barriers must be installed using plywood clad hoarding (minimum 19mm or ¾" thick) or an equivalent approved by Urban Forestry
- Where required, signs as specified in Section 4, Tree Protection Signage must be attached to all sides of the barrier
- Prior to the commencement of any site activity such as site alteration, demolition or construction, the tree protection measures specified on this plan must be installed to the satisfaction of Urban Forestry
- Once all tree/site protection measures have been installed, Urban Forestry staff must be contacted to arrange for an inspection of the site and approval of the tree/site protection requirements. Photographs that clearly show the installed tree/site protection shall be provided for Urban Forestry review
- Where changes to the location of the approved TPZ or sediment control or where temporary access to the TPZ is proposed, Urban Forestry must be contacted to obtain approval prior to alteration
- Tree protection barriers must remain in place and in good condition during demolition, construction and/or site disturbance, including landscaping, and must not be altered, moved or removed until authorized by Urban Forestry
- No construction activities including grade changes, surface treatments or excavation of any kind are permitted within the area identified on the Tree Protection Plan or Site Plan as a minimum tree protection zone (TPZ). No root cutting is permitted. No storage of materials or fill is permitted within the TPZ. No movement or storage of vehicles or equipment is permitted within the TPZ. The area(s) identified as a TPZ must be protected and remain undisturbed at all times
- All additional tree protection or preservation requirements, above and beyond the installation of tree protection barriers, must be undertaken or implemented as detailed in the Urban Forestry approved arborist report and/or the approved tree protection plan and to the satisfaction of Urban Forestry
- If the minimum tree protection zone (TPZ) must be reduced to facilitate construction access, the tree protection barriers must be maintained at a lesser distance and the exposed portion of TPZ must be protected using a horizontal root protection method approved by Urban Forestry
- Any roots or branches indicated on this plan which require pruning, as approved by Urban Forestry, must be pruned by an arborist. All pruning of tree roots and branches must be in accordance with good arboricultural practice. Roots that have received approval from Urban Forestry to be pruned must first be exposed using pneumatic (air) excavation, by hand digging or by using low pressure hydraulic (water) excavation. The water pressure for hydraulic excavation must be low enough that root bark is not damaged or removed. This will allow a proper pruning cut and minimize tearing of the roots. The arborist retained to carry out crown or root pruning must contact Urban Forestry no less than three working days prior to conducting any specified work
- The applicant/owner shall protect all by-law regulated trees in the area of consideration that have not been approved for removal throughout development works to the satisfaction of Urban Forestry

- Convictions of offences respecting the regulations in the Street Tree By-law and Private Tree By-law are subject to fines. A person convicted of an offence under these by-laws is liable to a minimum fine of \$500 and a maximum fine of \$100,000 per tree, and /or a Special Fine of \$100,000. The landowner may be ordered by the City to stop the contravening activity or ordered to undertake work to correct the contravention
- Prior to site disturbance the owner must confirm that no migratory birds are making use of the site for nesting. The owner must ensure that the works are in conformance with the Migratory Bird Convention Act and that no migratory bird nests will be impacted by the proposed work

The following additional notes shall be added on plans for properties regulated by the Ravine and Natural Feature Protection Bylaw:

- Ravine and Natural Feature Protection By-law (RNFP) note:

Ravine & Natural Feature Protection By-law

The Ravine & Natural Feature Protection By-law, Chapter 658 of the City of Toronto Municipal Code, regulates the injury and destruction of trees, dumping of refuse and changes to grade within protected areas.

Under this by-law protected trees may not be removed, injured or destroyed, and protected grades may not be altered, without written authorisation from Urban Forestry Ravine & Natural Feature Protection, on behalf of the General Manager of Parks, Forestry & Recreation.

Convictions of offences respecting the regulations in the Ravine and Natural Feature Protection By-law are subject to fines, and the landowner may be ordered by the court to restore the area to the satisfaction of the City. A person convicted of an offence under this Bylaw is liable to a minimum fine of \$500 and a maximum fine of \$100,000 for each tree destroyed, a maximum fine of \$100,000 for any other offence committed under this chapter, and /or a Special Fine of \$100,000. A person convicted of a continuing offence, including failure to comply with ravine permit conditions is liable to a maximum fine of not more than \$10,000 for each day or a part of a day that the offence continues.

- The exact location of the limit of the RNFP area must be shown on all pertinent plans including Tree Protection Plan. The applicant/owner shall have this limit marked on their survey or other plans drawn to a suitable scale. This service costs \$72.37 plus tax and can be requested by contacting the City of Toronto, Information and Technology, Geospatial Competency Centre, Map Service Counter at 416-392-2506 or mapsales@toronto.ca. This line may then be transferred onto other plans to be submitted.
- Sediment control fencing shall be installed in the locations as indicated in the Urban Forestry approved sediment control plan. The sediment control fencing must be installed to Ontario Provincial Standards (OPSD-219.130, see Section 7, Figure 5) and to the satisfaction of Urban Forestry. Sediment control near trees and over root zones shall be installed as shown on Figure 6 of this document and to the satisfaction of Urban Forestry.

7. Tree Protection Plan Details

The following diagrams provide details for tree protection barriers and sediment protection barriers:

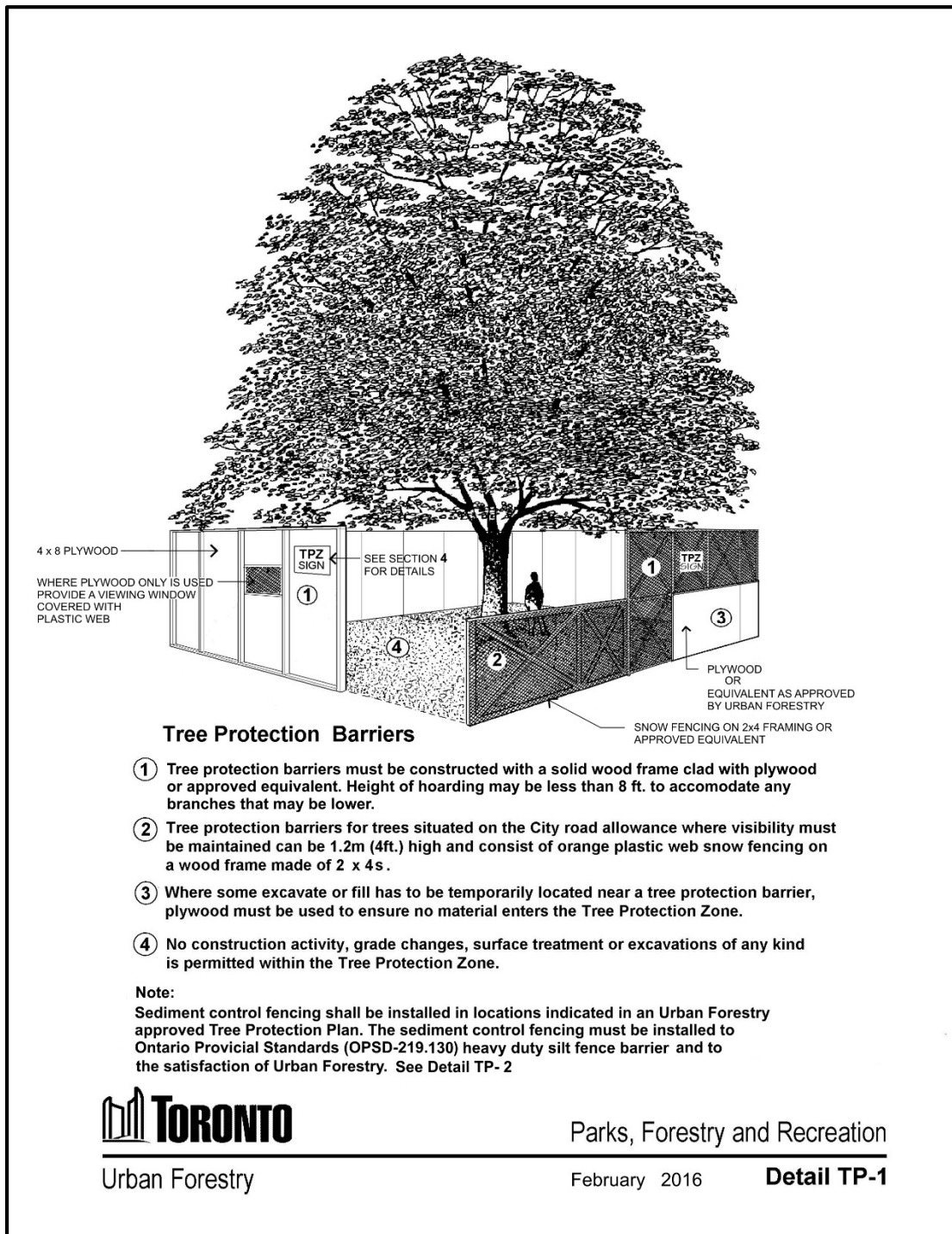


Figure 4: Urban Forestry Detail TP-1

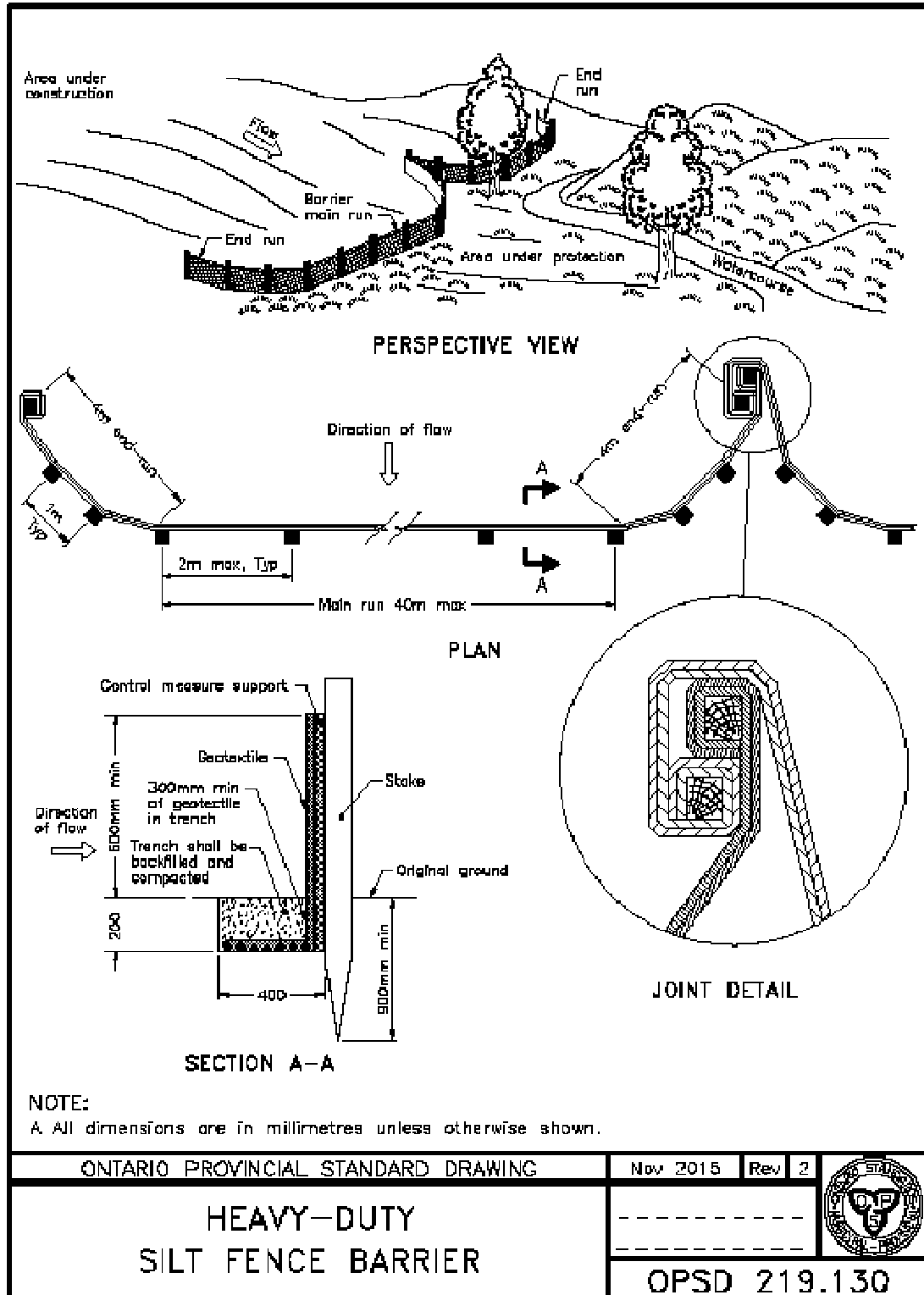


Figure 5: OPSD Detail for Heavy Duty Silt Fence Barrier

The following detail shall be used when constructing sediment protection fencing near trees.

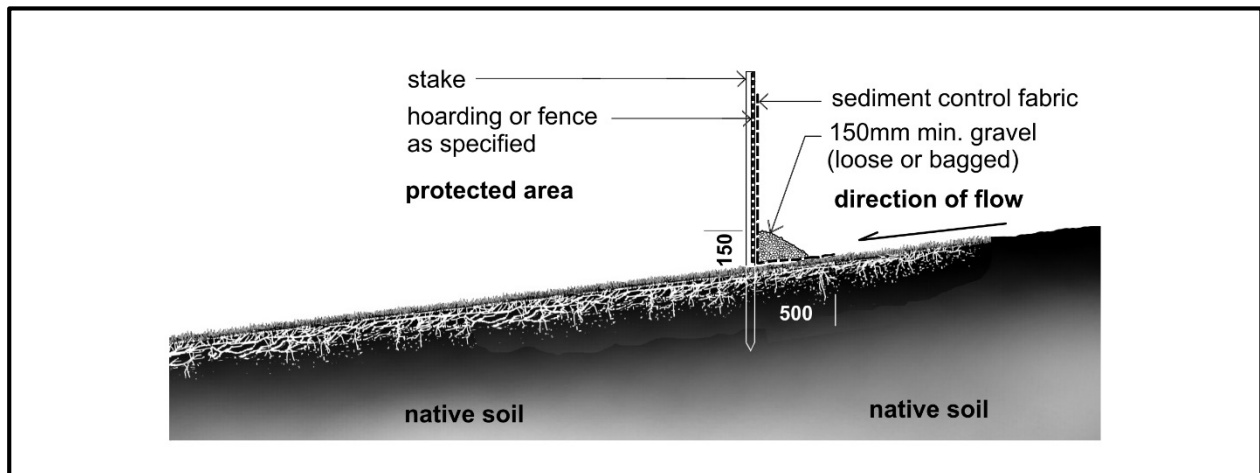


Figure 6: Sediment control barriers for use over tree root zone

8. Permits for Tree Removal or Injury

If the full minimum tree protection zone (TPZ) as identified in Section 2 cannot be provided, a permit to injure the tree must be obtained.

Any requests for removal or injury of a tree protected by City by-laws must be made on the appropriate application forms and submitted to Urban Forestry at the appropriate address. [Permit application forms](#) are available at www.toronto.ca/trees. Any requests for tree relocation will be considered as a tree injury.

If approval is granted for removal of a City-owned tree, applicants will assume all costs involved, which include appraised tree value, removal, and tree replacement costs. If approval is granted for removal of private trees or trees in ravine and natural feature protected areas, the permit will be subject to conditions, including tree replacement. If approval is granted for injury of City-owned, private trees or trees in ravine and natural feature protected areas, the permit will be subject to conditions, including implementation of a Tree Protection Plan, as determined by Urban Forestry.

In some instances, where the tree is healthy and the management of the tree or forest cover has not been addressed to the satisfaction of Urban Forestry, requests received by Urban Forestry may be forwarded to a Community Council and City Council for approval.

Urban Forestry does not have the authority to issue a permit to injure or remove a heritage tree². Such requests would be forwarded to a Community Council and/or City Council for approval.

Butternut (*Juglans cinerea*, L.) is an endangered species. Butternuts and their habitat are protected under [Endangered Species Act](#) (S.O. 2007, c.6) available on the Government of Ontario website at <http://www.ontario.ca/laws/statute/07e06/v1>. A permit to injure or remove a butternut tree must be obtained from the [Ministry of Natural Resources and Forestry Ontario](#).

² Heritage Tree – A tree that has been designated under Part IV of the Ontario Heritage Act or trees recognized as heritage trees by the Ontario Heritage Tree Program of Trees Ontario.

Any person who contravenes any provision of the City's tree protection by-law is guilty of an offence.

More information on tree protection and permit application forms for tree removal and injury are available on Urban Forestry web page at www.toronto.ca/trees.

For additional information regarding the removal or injury of trees protected under City by-laws, please call 311.

9. Tree Guarantee Deposits

Tree Protection Guarantee

Urban Forestry may request a **tree protection guarantee** to secure the protection of trees that may be impacted by work on city streets, or to secure the satisfaction of all conditions of permit issuance. Tree protection guarantees held by the City shall only be released by the City provided that all construction activities are complete, compliance with all permit terms and conditions has been verified, there has been no encroachment into the minimum tree protection zone (TPZ) and the trees are healthy and in a state of vigorous growth.

Where Urban Forestry has confirmed an unauthorized encroachment into the TPZ or the terms and conditions of a permit have not been complied with, Urban Forestry will retain the guarantee until satisfactory compliance.

It is the applicant's responsibility to submit a written request to Urban Forestry for the refund of the tree protection guarantee deposit as soon as construction and landscaping is completed.

Tree Planting Security

Urban Forestry may request a **tree planting security deposit** in an amount equal to the cost of planting and maintenance for two (2) years in order to ensure compliance with approved landscape or replanting plans. The security deposit may be held by the City after the planting of the trees for a period of two (2) years and shall be released by the City provided that the trees have been maintained, are healthy and in a state of vigorous growth upon inspection, two (2) years after planting. It is the applicant's responsibility to advise Urban Forestry that trees have been planted in accordance with approved plans, in order that the two (2) year maintenance period begin.

Prior to release by the City, any dead/dying trees must be replaced, deadwood and sucker growth should be pruned, and mulch should be topped up where necessary. If stakes and ties were used, they must be removed within one (1) year. Any encroachments are to be removed prior to assumption, including walkways, timbers or bricks that result in increased height of soil or mulch around the trees, and lights in trees.

It is the applicant's responsibility to submit a written request to Urban Forestry for the refund of a Tree Guarantee Deposit, two (2) years after the completion of all construction activity and/or two (2) years after tree planting. This request should be made during the growing season, not while

the trees are dormant, so that a site inspection can be arranged to confirm the trees are acceptable. The City will not release security deposits where trees are not in good condition, or if there are encroachments.

Financial securities must be in the form of a certified cheque, letter of credit or an alternative acceptable to Urban Forestry, with amounts payable to the Treasurer, City of Toronto.

10. Emergency Repairs to Utilities

The utility company is responsible for notifying Urban Forestry by calling 311 as soon as possible when by-law regulated trees are involved, so that an inspector can be dispatched. Urban Forestry staff may be contacted after hours by calling 311, and requesting the assistance of an on-call Urban Forestry inspector.

11. Tree Species that are Intolerant of Construction Disturbance

The following tree species are intolerant of construction disturbance, and tree protection plans must take this into account. The tree protection zones required by these species may need to be quite extensive to avoid damage to the roots and crown associated with compaction, excavation or construction above grade that will impact the branches.

Acer rubrum (red maple)
Acer saccharum (sugar maple)
Betula papyrifera (paper birch)
Carya glabra (pignut hickory)
Fagus grandifolia (American beech)
Liriodendron tulipifera (tulip tree)
Ostrya virginiana (ironwood)
Pinus resinosa (red pine)
Pinus strobus (white pine)
Prunus serotina (black cherry)
Quercus alba (white oak)
Quercus velutina (black oak)
Tsuga canadensis (eastern hemlock)
Tilia americana (basswood)

12. Contact Information

Tree Protection and Plan Review (City-owned and Private Trees)

North York District

5100 Yonge Street, 3rd Floor
Toronto, ON, M2N 5V7
Telephone: 416-395-6670
Fax: 416-395-7886
tpprnorth@toronto.ca

Etobicoke York District

399 The West Mall, Main Floor, North Block
Toronto, ON, M9C 2Y2
Telephone: 416-338-6596
Fax: 416-394-8935
tpprwest@toronto.ca

Scarborough District

150 Borough Drive, 5th Floor
Toronto, ON, M1P 4N7
Telephone: 416-338-5566
Fax: 416-396-4170
tppreast@toronto.ca

Toronto and East York District

50 Booth Avenue, 2nd Floor
Toronto, ON, M4M 2M2
Telephone: 416-392-7391
Fax: 416-392-7277
tpprsouth@toronto.ca

Ravine and Natural Feature Protection

General Enquiries

Telephone: 416-392-2513
Fax: 416-392-1915
Email: rnfp@toronto.ca

Office Location

18 Dyas Road, 1st Floor
Toronto, ON, M3B 1V5

Areas regulated under Ravine and Natural Feature Protection By-law can be viewed using the [City's mapping tool](#) available at www.toronto.ca/trees.