Tree Inventory and Protection Plan

Prepared for: Steven Guglietti
45 Napier Street.
Vaughan, ON.
LOJ

prepared by:

THE URBAN ARBORIST

From the roots up.

The Urban Arborist INC.
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Certified and Insured
"From the roots up."

ISA Certified Arborist Robert Rafal Lis Cert. # ON-1374A

July 31, 2020

ATTACHMENT 8

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1.0 Introduction

1.1 Purpose of Assignment

The Urban Arborist Inc was retained by Steven Guglietti to prepare a Tree Inventory and Protection Plan for a residential project. The project consists of demolishing an existing home and rebuilding a new home.

Figure 1. Front of Subject Lot at 45 Napier Street. Vaughan, ON.

1.2 Existing Site Characteristics

There are no major grade differences on the property. The property at the rear starts to slope down slightly and has a large portion of a wooded area beyond the fence line.

2.0 Methodology

All data used in this report is empirical in nature, unless stated otherwise. All measurements in this report utilize the metric system of measurement.

2.1 Field Study

Site inspection and data collection was initiated March 1st, 2018. All trees located on the subject lands that are 20cm diameter and greater measured at base on the subject lands and beyond 6m of construction area have been inventoried, assessed, surveyed and referred to in this report as a significant tree.

2.2 Tree Locations

The locations of all significant trees were surveyed and plotted and shown on drawing in appendix 2.

2.3 Tree Conditions

During field study a generalized assessment system was used to give each significant tree a rating based on structural condition and health condition.

The following 5 level assessment for health is listed below.

Very Poor -	Tree displays severe dieback of branches, canopy is extremely sparse. May exhibit extreme pathogen infestation or infection. Or tree is dead.
Poor -	Tree displays some dieback. Branches or canopy is sparse with little or no signs of new growth or vigour. Possible pathogen infestation or infection. Foliar canopy is sparse.
Average -	Tree is developing in a manner typical to others in the area. Canopy is full.
Good -	New growth is vigorous as evidenced by stem elongation and colour. Canopy is dense.
Very Good -	In addition to the attributes of a good rating, tree is displaying extremely vigorous growth and trunk displays a pattern of vigour cracks or lines.

The following 5 level assessment for structural condition was as follows:

Very Poor -	Trunk has large pockets of decay, is bifurcated or has a severe lean. Limbs or branches are poorly attached or dead. Possible hazard.
Poor -	Limbs or branches are poorly attached or developed. Canopy is not symmetrical. Trunk has a lean.
Average -	Trunk, limb and branch development though flawed is typical of this

species.

Good - Trunk is well developed with well attached limbs and branches; some flaws but are hardly visible.

Very Good - In addition to attributes of a good rating, the tree exhibits a well developed root flare and a balanced canopy.

Factors Assessed were as follows:

Roots	**Trunk**	**Foliage/Buds**	**Scaffold Branches**	**Small Branches/Twigs**
· Collar/flare · Mechanical injury · Girdling roots · Insects/disease · Decay/fungi	· Cavities · Mechanical injury · Cracks · Swollen/sunken areas · Insects/disease · Fungi	· Size of foliage/buds · Foliage colour · Foliage injury · Dieback of buds/foliage · Insects/disease	· Attachments/included bark · Taper · Distribution · Decay/cavities · Deadwood · Insects/disease	· Vigour/growth rates · Distribution · Appearance · Insects/disease · Dieback

3.0 Tree Inventory

A total of 22 trees were inventoried at 45 Napier Street. A total of 6 trees are on neighbouring property and the remaining 16 trees are on the subject property. Below is a table summary on data collected. (See Tree Inventory Spreadsheet in appendix 1).

	Total	Reference Tag #'s
Total Trees ≥ 20cm diameter at base on subject property	9	490, 491, 492, 499-503, 1343, 1345-1347
Total Trees on Municipal Lands	1	1340
Total Trees on Adjacent Residential Lands	6	493-498
Total Trees inventoried that are undersize	3	504-506

**See Appendix 1 for full Tree Inventory.*

3.1 Trees to Preserve

The trees in this section have been evaluated suitable for preservation and fall under the Tree Preservation, Protection and Management guidelines in this report. Different approaches of Tree Preservation can be carried out following tree health and structure evaluation. The following describes the differences in approaches to Tree Preservation.

1. Preserve, Protect & Maintain
Includes protection with tree preservation hoarding, as well as pre and post-construction arboricultural works.

2. Preserve & Protect
Includes the installation of tree protection hoarding; no maintenance will be required unless specified in the recommendations in Appendix 1

3. Retain
No protection or maintenance measures are required. Installation of tree protection barriers is optional.

4. Transplanting
Where size of tree permits transplanting, it is recommended that moving a tree to a location that would suit the tree.

# of Trees evaluated as suitable for Preservation	12
# of Trees to use Method 1	N/A
# of Trees to use Method 2	9 (#493, #494, #495, #497, #498, #500, #501, #502, #503)
# of Trees to use Method 3	3 (#496, #1340, #1343)
# of Trees to use Method 4	0

In the case of 45 Napier Street and proposed development, 12 trees can be preserved. Trees that will be protected with hoarding are trees that are 20cm diameter at base and greater on the subject site and trees within 6m of the construction area. Trees suitable for preservation must be preserved only through the full implementation of the Tree Care Recommendations, Tree Preservation Plan and Tree Preservation Guidelines contained in this report for trees to continue to survive.

3.2 Trees to Remove

All trees scheduled for removal shall be removed prior to any construction, earthworks or installation of tree protection hoarding. Due to site or development, tree condition or location, retention is not warranted. A total of 1 tree is to be removed that is a category. A permit is required to remove or injure any tree on private property which is over 20cm diameter at base and greater.

There are 6 trees to be removed greater than 20cm diameter at base.

Total of number of Trees to Remove	6
Reference Tag #'s	#491, #492, #499, #1345, #1346, #1347

3.3 Trees to Injure

A total of 6 trees will be impacted by construction. Trees #493-#498 will require mitigation measures prior to disturbances due to underground parking garage and retaining wall. (see section 4.3 Sensitive Root Excavation)

Shared ownership trees or neighbouring trees potentially impacted by proposed development and/or construction activities will require authorization. Provide written authorization from an adjacent property owner where the base of a tree straddles a property line or is completely on the neighbouring property as per By-law 052-2018.

3.4 Trees to Replant (Replacement)

There are 6 trees to be removed and 22 trees are required to be planted on site

City of Vaughan Replacement Requirement:

DBH of Tree to be Cut or Removed	Number of Replacement Trees Required
20cm to 30cm	1
31cm to 40 cm	2
41cm to 50cm	3
51cm or greater	4

.

Refer to appendix 2 for replanting plan. Refer to appendix 3 for replanting list.

4.0 Tree Preservation, Protection and Management

4.1 Tree Protection

All trees except trees will have their minimum tree protection zones met. All trees will have tree protection erected as shown in appendix 2.

4.2 Tree Protection Barriers

All trees scheduled to be *Preserved & Protected* shall have their critical rooting zones protected with the installation of tree protection barriers. Tree protection barriers shall be installed as per City of Vaughan Tree Protection Barriers Detail, see Appendix 3.

Tree Protection Fencing is to be installed to minimize the impact on the trees (over 20cm at base) to be preserved prior construction and is to remain until the construction is completed. (applicable to Private and Public trees) as per By-Law 052-2018.

Municipal By-law 052-2018 directs that municipal and private trees shall be protected during all phases of construction. ULA 110B Light Duty and ULA 110A Heavy Duty Tree protection fencing (plywood)

is to be installed prior to construction and is to remain until construction is completed, as per By-Law 052-2018. MLA 107B or ULA 110B Light Duty Tree protection fencing (Snow Fence) may be used where traffic sight lines will be affected within the road allowance, as per By-Law 052-2018 Additionally, Municipal By-law 052-2018 direct that if a tree is damaged or requires removal that monetary compensation and expenses shall be paid.

No construction activity, grade changes, surface treatment, excavations of any kind or material storage is permitted within the Tree Protection Zone.

Applicant shall inform Vaughan Forestry or Development Planning Department once Tree Protection has been installed, for Vaughan Forestry to inspect and approve according to specifications.

4.3 Sensitive Root Excavation

ROOT SENSITIVE EXCAVATION reduces root injuries to trees and involves trenching along the line of proposed excavation to the depth required for the proposed hardscaping, utility or site feature being installed, prior to mechanical excavation of the rest of the area. Location and Dimensions of proposed root sensitive excavation are to be provided to Urban Forestry in advance for our review.

ROOT SENSITIVE EXCAVATION may use the following trenching methods: hand digging using shovels and bars; air spade (with vacuum preferred); low-pressure hydrovac.

All ROOT SENSITIVE EXCAVATION must be performed under the supervision of a qualified arborist. All roots exposed must be documented by the supervising arborist. Every effort should be made to preserve as many exposed roots as possible. Roots approved for pruning should be cleanly cut with a sharp, non-vibrating tool such as a handsaw, secateurs, chainsaw at face of trench such that no further disturbance of the roots are to be expected once mechanical excavation begins. All root pruning is to be performed by the arborist only, as per guidelines below.

When ROOT SENSITIVE EXCAVATION is performed in regards to the installation of a deep site feature such as a foundation, roots of less than 5cm diameter can be cut sharply, if necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the Tree Protection Zone (TPZ) of bylaw trees they should be preserved and Urban Forestry must be notified to discuss the expected impacts of pruning such significant roots on the tree's health or stability.

When ROOT SENSITIVE EXCAVATION is performed in regards to the installation of site features such as post holes, all roots exposed of under 5cm diameter may be cleanly cut at face of hole such that no further disturbance of the roots are to be expected once mechanical excavation begins for the lower portion of the holes (below hand dug area). If roots of 5cm diameter or greater are uncovered they should be preserved, the post holes filled in with viable soil and the hole moved at least 0.5 metre away to avoid significant roots.

When ROOT SENSITIVE EXCAVATION is performed in regards to the installation of site features such as driveways, walkways, curbs, etc. roots of less than 5cm diameter can be cut sharply, if

necessary, unless an abundance of smaller roots are involved. If roots of 5cm diameter or greater or an abundance of smaller roots are exposed in the excavation areas inside or just outside the TPZ of bylaw trees they should be preserved and Urban Forestry must be notified to discuss the expected impacts of pruning such significant roots on the tree's health or stability, or to arrange the proposed site feature to be moved farther away from the tree and its significant roots.

When ROOT SENSITIVE EXCAVATION is performed in regards to the installation of utilities such as water lines or sewers, every effort should be made to preserve as many exposed roots as possible by installing the utilities underneath the roots without root pruning. If roots of 5cm diameter or greater are uncovered they should be preserved.

5.0 Tree Compensation, Protection, and Removal Costs

The following items have been quantified in dollar terms as an estimate for entering into a tree protection agreement with the City of Vaughan.

Tree Removal Approximate Cost: **$10,500.00**
Tree Compensation Cost: 22 x $550.00 = **$12,100.00**
Tree Protection Approximate Costs: **$3500.00**

Total costs for the purpose of entering a tree protection agreement is $26,100.00

6.0 Conclusions and Recommendations

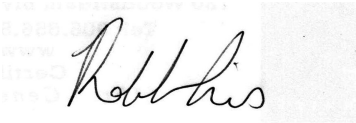
Based on all data collected from on-site field work and review of all site plans the following conclusions and recommendations are made and correspond with Tree Inventory in Appendix 1:

Conclusions	Recommendations
There are 12 trees to be protected and preserved.	Install Tree Protection Barriers as listed in this document.
The proposed development will require a total of 6 trees be removed.	Application to remove 6 trees must be submitted to City of Vaughan Forestry Department.
6 trees will require mitigation measures	Use sensitive root excavation guide as discussed in this report.
A total of 22 trees will require to be planted on site.	Plant 22 trees as specified in appendix 2.

Attachments are as follows:
Appendix 1 Tree Inventory
Appendix 2 Replanting List
Appendix 3 Site Plan / Tree Protection Plan Drawing
Appendix 4 Tree Protection Barrier Detail ULA 110A
Appendix 5 Tree Protection Barrier Detail ULA 110B
Appendix 6 Tree Planting Detail
Appendix 7 Photographs

This 9 page Report was written by

Robert Rafael Lis
ISA Certified Arborist #ON-1374-A



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Tree Inventory – 45 Napier St Kleinburg, ON L0J 1C0. January 13, 2020

Tag #	Common Name	Botanical Name	Diameter @ Base	Diameter @ Breast Height (1.4m) CM	Health Condition	Structural Condition	Notes	Recommendations Based on Site Plan	Minimum TPZ (m)	Proposed TPZ (m)	Required Replacement Ratio
490	Colorado Blue Spruce	Picea pungens	37	29	-	-	Lower limbs pruned off, some deadwood HAS FALLEN DOWN IN PREVIOUS WINDSTORM	-	-	-	-
491	Colorado Blue Spruce	Picea pungens	42	30	Average	Average	1 Meter from driveway, crowded crown	Remove	-	-	3:1
492	Colorado Blue Spruce	Picea pungens	42	34	Average	Average	Lower limbs prune	Remove	-	-	3:1
493	Eastern Red Ceder	Juniperus virginiana	39	30	Average	Average	Lower limbs pruned, some breakage, some deadwood, on neighbouring property	Preserve & Protect	1.8	1.8	-
494	Eastern Red Ceder	Juniperus virginiana	23	17	Poor	Very/Poor	Previously co-dominant, 1 co-dominant leader failure, on neighbouring property	Preserve & Protect	1.8	1.8	-
495	Eastern Red Ceder	Juniperus virginiana	25	20	Average	Average	on neighbouring property	Preserve & Protect	1.8	1.8	-
496	Eastern Red Ceder	Juniperus virginiana	38	30	Very Poor	Poor	80% cut down, on neighbouring property	Retain	dripline	dripline	-
497	Sugar Maple	Acer saccharum	50	50	Average	Average	Tag on fence, North/East corner of shed, 2.2 meter from fence, some breakage, on neighbouring property	Preserve & Protect	3	3	-
498	Silver Maple	Acer saccharum	73	68	Average	Average	1 leader prune off, lower limes prune off, on neighbouring property	Preserve & Protect	4.2	4.2	-
499	Norway Spruce	Picea abies	83	69	Good	Good		Remove	-	-	4:1
500	Manitoba Maple	Acer negundo	38	31	Average	Average/Poor	Co-dominant from base, 2 leader previously removed	Preserve & Protect	2.4	2.4	-
501	Manitoba Maple	Acer negundo	29	21	Average	Average		Preserve & Protect	1.8	1.8	-
502	Manitoba Maple	Acer negundo	29	19	Average	Average	Previously had crown failure	Preserve & Protect	1.8	1.8	-
503	Manitoba Maple	Acer negundo	52	39	Average	Average		Preserve & Protect	2.4	2.4	-
504	Emerald Ceder	Thuja occidentalis	18	4	Good	Good		Remove	-	-	-
505	Emerald Ceder	Thuja occidentalis	13	4	Good	Good		Remove	-	-	-
506	Emerald Ceder	Thuja occidentalis	18	4	Good	Good		Remove	-	-	-
1340	Red Oak	Quercus rubra	35	25	Good	Good	Tagged at a previous date by neighbouring property, on city property	Retain	1.8	1.8	-
1343	Colorado Spruce	Picea pungens	38	34	Good	Good	Tagged at a previous date by neighbouring property, beyond minimum tree protection distance, on neighbouring property	Retain	2.4	3.2	
1345	White Spruce	Picea glauca	53	42	Good	Good	Tagged at a previous date by neighbouring property	Remove	-	-	4:1
1346	Norway Spruce	Picea abies	68	57	Good	Good	Tagged at a previous date by neighbouring property	Remove	-	-	4:1
1347	Norway Spruce	Picea abies	57	44	Good	Good	Tagged at a previous date by neighbouring property	Remove	-	-	4:1
								TOTAL TREES REQUIRED TO BE PLANTED			**22**

45 Napier Street. Vaughan, ON. Replanting List – November 5 2018

COUNT	BOTANICAL NAME	COMMON NAME	CALIPER (MM)	ROOT	HEIGHT(CM)	LOCATION
3	Columnar European Beech	Fagus sylvatica 'Fastigiata'	60	W.B.	-	Backyard
11	Quercus robur x alba 'Crimschmidt'	Crimson Spire Oak	60	W.B.	-	Front yard
5	Freeman Maple	Acer freemanii	60	W.B.	-	Front yard
3	Red Bud	Cercis canadensis	60	W.B.	-	Backyard

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497	Sugar Maple	Acer saccharum	50	50	Average	Average	Tag on fence, North/East corner of shed, 2.2 meter from fence, some breakage, on neighbouring property	Preserve & Protect	3	3	-
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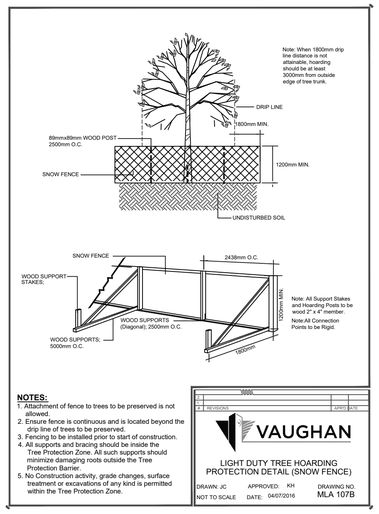

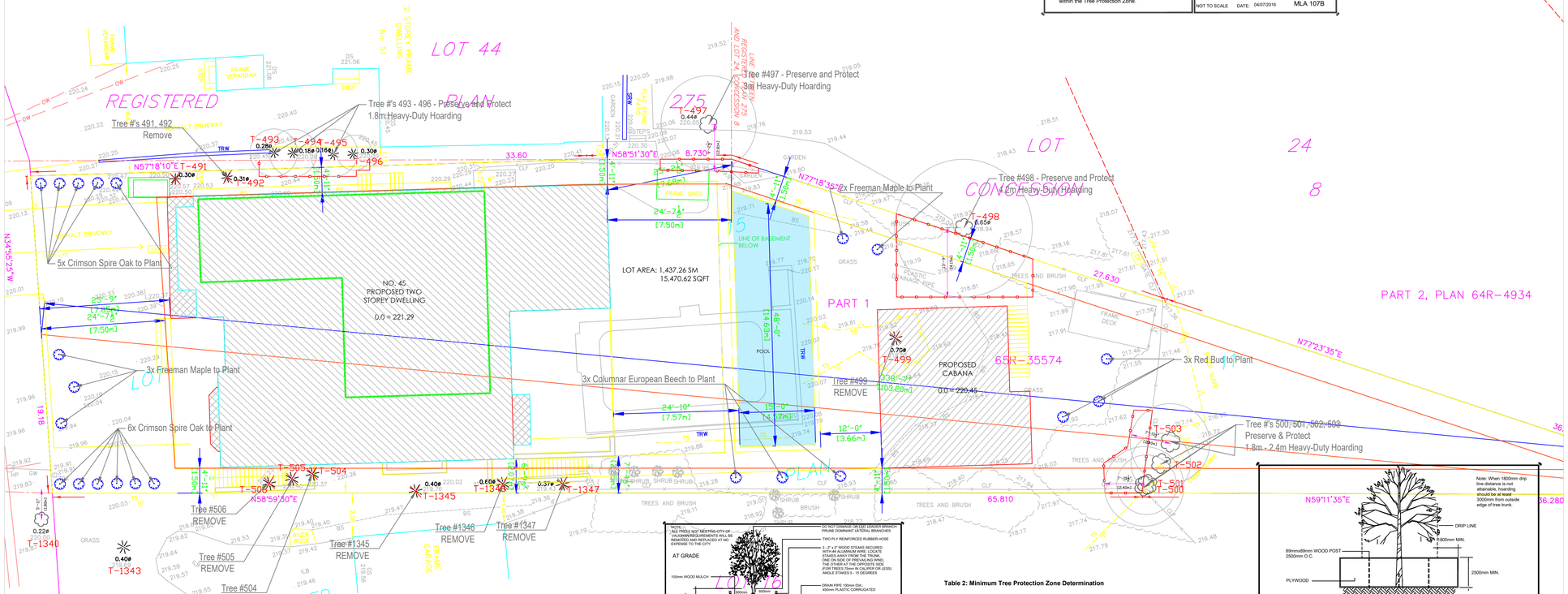

45 Napier Street, Vaughan, ON. Replanting List – November 18 2019

COUNT	BOTANICAL NAME	COMMON NAME	CALIPER (MM)	ROOT	HEIGHT(CM)	LOCATION
3	Columnar European Beech	Fagus sylvatica 'Fastigiata'	60	W.B.	-	Backyard
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5	Freeman Maple	Acer freemanii	60	W.B.	-	Front yard
3	Red Bud	Cercis canadensis	60	W.B.	-	Backyard

- ULA 110B or MLA 107B Light Duty and ULA 110A Heavy Duty Tree protection fencing (plywood) is to be installed prior to construction and is to remain until construction is completed, as per By-Law 052-2018
- ULA 110B Light Duty Tree protection fencing (Snow Fence) may be used where traffic sight lines will be affected within the road allowance, as per By-Law 052-2018
- No construction activity, grade changes, surface treatment, excavations of any kind or material storage is permitted within the Tree Protection Zone
- Tree protection & preservation methods must be followed according to City of Vaughan By-law (052-2018)
- Applicant shall inform Vaughan Forestry or Development Planning Department Once Tree Protection has been installed, for Vaughan Forestry to inspect and approve according to specifications

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-1,5 0 1,0 2,0 5,0 7,5m

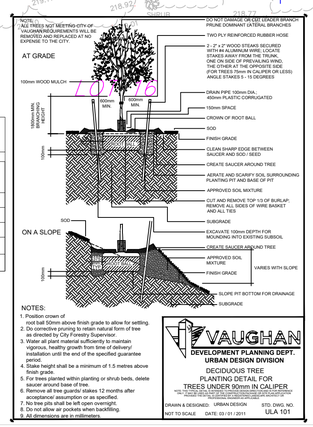
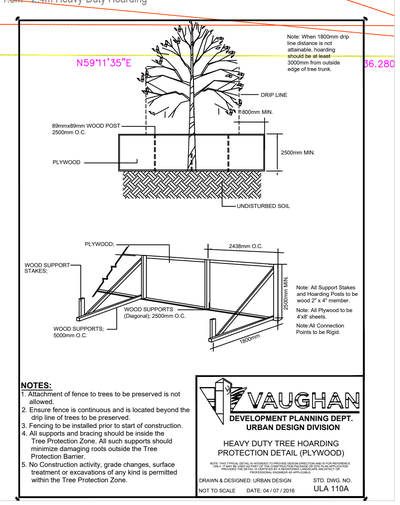


Table 2: Minimum Tree Protection Zone Determination

Diameter at Breast Height 1 in centimeters	Minimum Protection Distances Required 2(Public and Private Trees)	Minimum Protection Distances Required Trees
<10	1.2	The drip line3or 1.2 m
10-29	1.8	The drip line or 3.6 m
30-40	2.4	The drip line or 4.8 m
41-50	3.0	The drip line or 6.0 m
51-60	3.6	The drip line or 7.2 m
61-70	4.2	The drip line or 8.4 m
71-80	4.8	The drip line or 9.6 m
81-90	5.4	The drip line or 10.6 m
91-100	6.0	The drip line or 12.0 m
>100	6 cm protection for each 1 cm diameter	12 cm protection for each 1 cm diameter or the drip line

1. Diameter at breast measurement of tree trunk taken at 1.4 meters (m) above the ground.
2. Minimum Tree Protection Zone distances are to be measured from the outside edge of the tree base.
3. The drip line is defined as the area beneath the outer most branch tips of a tree
4. Converted from ISA (International Society of Arboriculture) Arborist Certification Study Guide, general guidelines for tree protectionbarriers of 0.3 meters of diameter from the tree stem for each centimeter of tree trunk diameter.



General Notes

Denotes Existing Deciduous Tree

Denotes Existing Coniferous Tree

Denotes Tree to be Planted

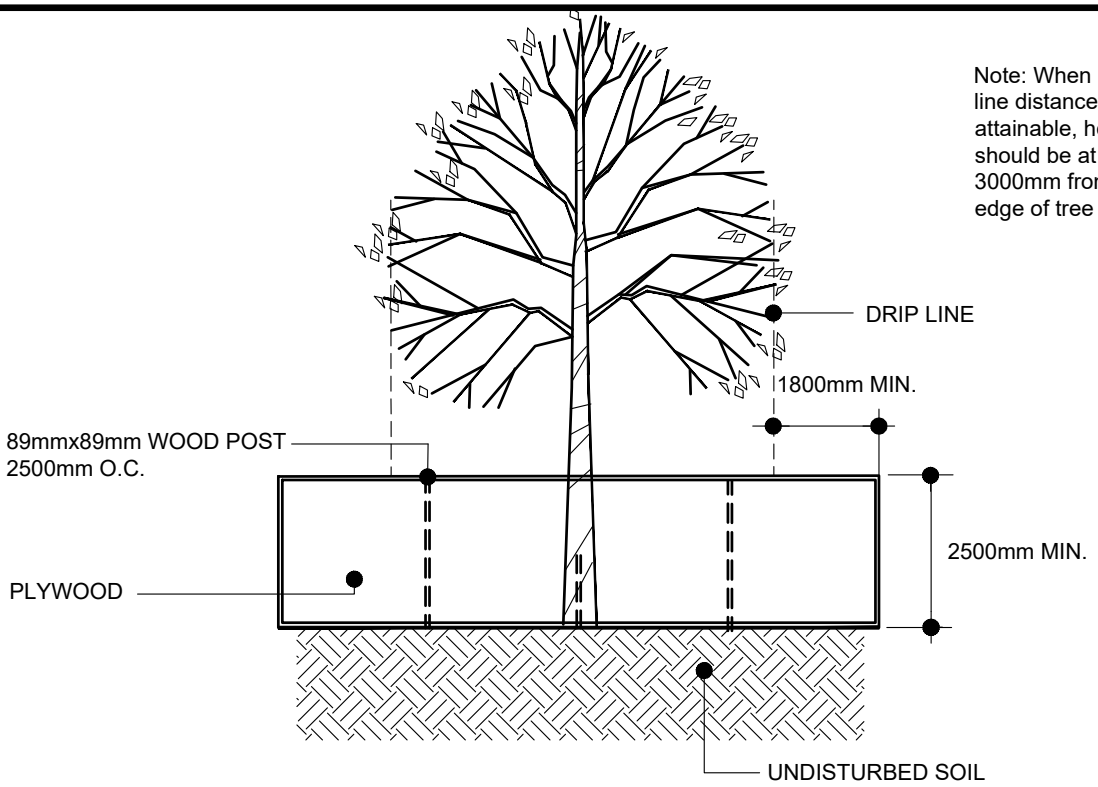
Denotes Tree Protection Fence

No.	Revision/Issue	Date

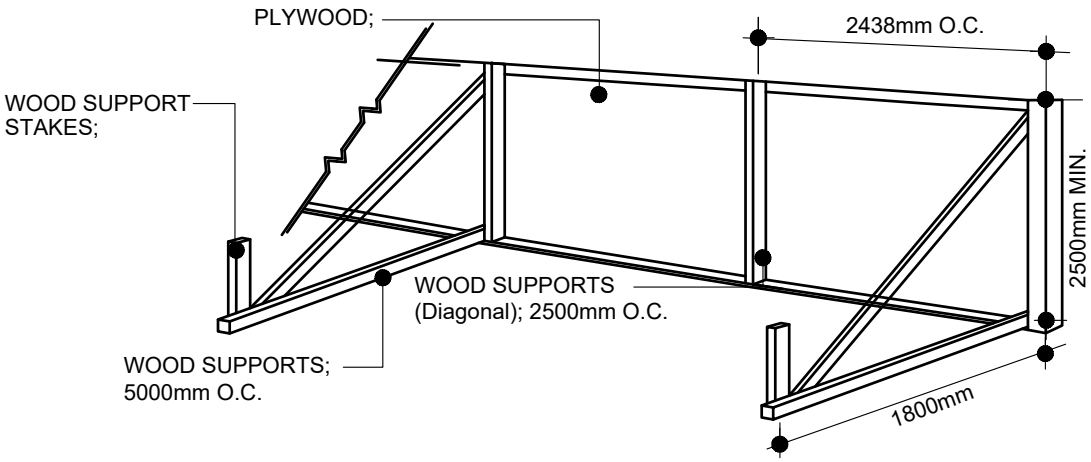
Firm Name and Address
The Urban Arborist Inc.
P.O. Box 74525 Humbertown Centre
Etobicoke, ON
M9A 5E2

Project Name and Address
45 Napier Street
Vaughan, ON
L0J
Tree Protection Plan

Project: Guglietti
Date: 31-07-2020
Scale: As Noted
Sheet: TP-1



Note: When 1800mm drip line distance is not attainable, hoarding should be at least 3000mm from outside edge of tree trunk.



Note: All Support Stakes and Hoarding Posts to be wood 2" x 4" member.

Note: All Plywood to be 4'x8' sheets.

Note:All Connection Points to be Rigid.

NOTES:

1. Attachment of fence to trees to be preserved is not allowed.
2. Ensure fence is continuous and is located beyond the drip line of trees to be preserved.
3. Fencing to be installed prior to start of construction.
4. All supports and bracing should be inside the Tree Protection Zone. All such supports should minimize damaging roots outside the Tree Protection Barrier.
5. No Construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.

VAUGHAN

DEVELOPMENT PLANNING DEPT.
URBAN DESIGN DIVISION

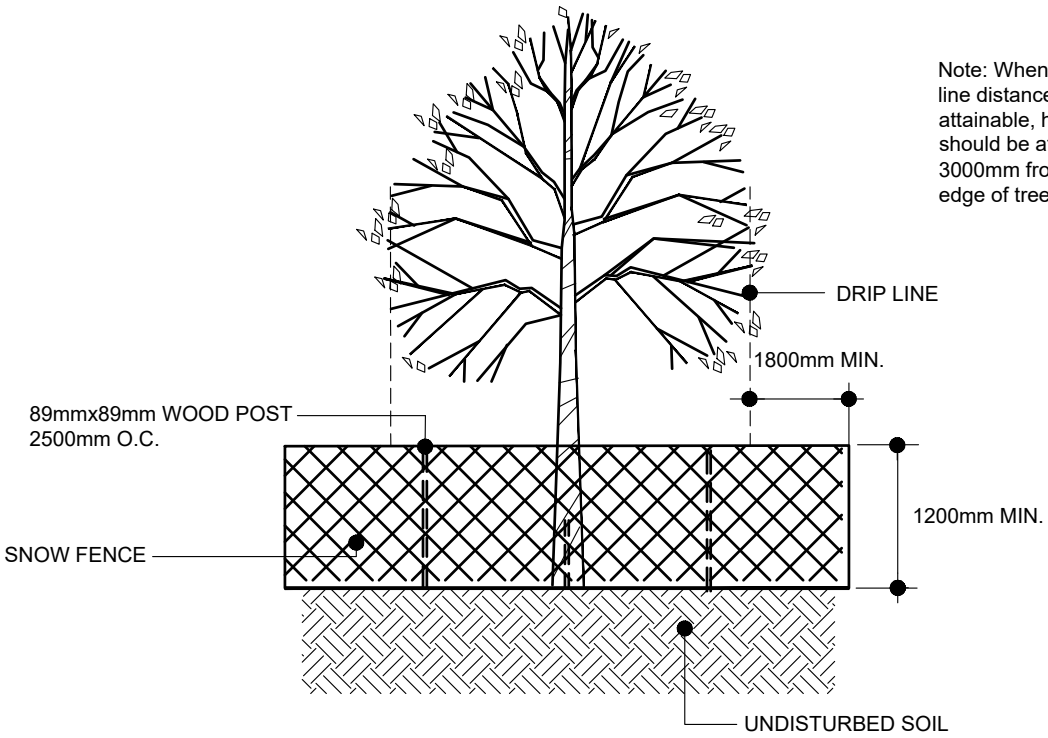
HEAVY DUTY TREE HOARDING PROTECTION DETAIL (PLYWOOD)

NOTE: THIS TYPICAL DETAIL IS INTENDED TO PROVIDE DESIGN DIRECTION AND IS FOR REFERENCE ONLY. IT MAY BE USED AS PART OF THE CONSTRUCTION PACKAGE OR SITE PLAN APPLICATION PROVIDED THE DETAIL IS CERTIFIED BY A REGISTERED LANDSCAPE ARCHITECT OR PROFESSIONAL ENGINEER AS APPLICABLE.

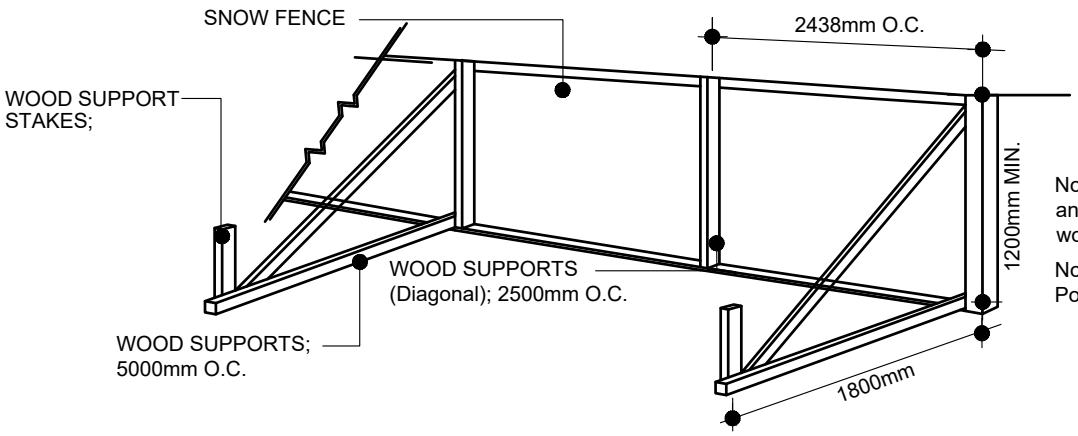
DRAWN & DESIGNED: URBAN DESIGN

NOT TO SCALE DATE: 04 / 07 / 2016

STD. DWG. NO.
ULA 110A



Note: When 1800mm drip line distance is not attainable, hoarding should be at least 3000mm from outside edge of tree trunk.



Note: All Support Stakes and Hoarding Posts to be wood 2" x 4" member.

Note:All Connection Points to be Rigid.

NOTES:

1. Attachment of fence to trees to be preserved is not allowed.
2. Ensure fence is continuous and is located beyond the drip line of trees to be preserved.
3. Fencing to be installed prior to start of construction.
4. All supports and bracing should be inside the Tree Protection Zone. All such supports should minimize damaging roots outside the Tree Protection Barrier.
5. No Construction activity, grade changes, surface treatment or excavations of any kind is permitted within the Tree Protection Zone.

VAUGHAN

DEVELOPMENT PLANNING DEPT.
URBAN DESIGN DIVISION

LIGHT DUTY TREE HOARDING PROTECTION DETAIL (SNOW FENCE)

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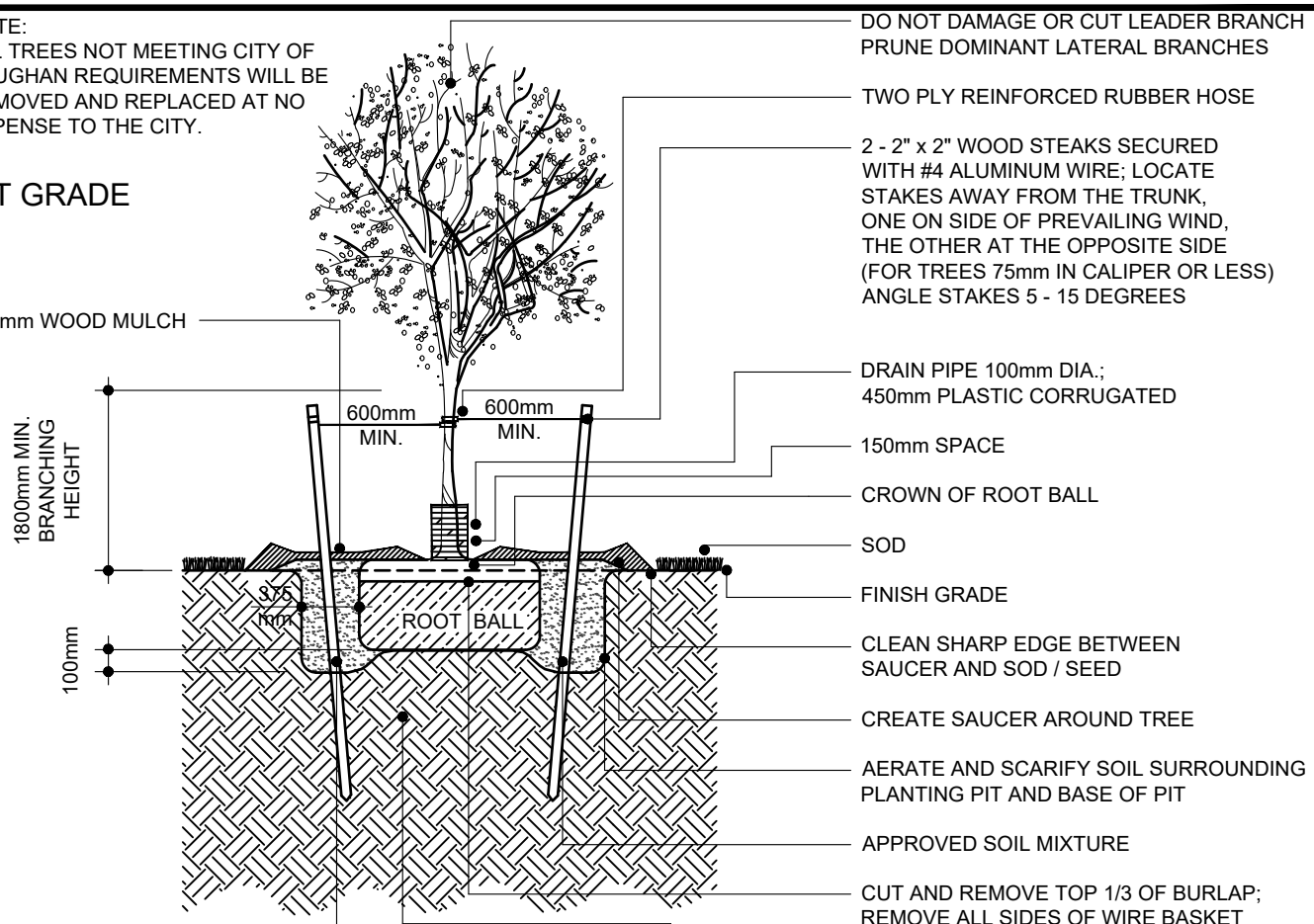
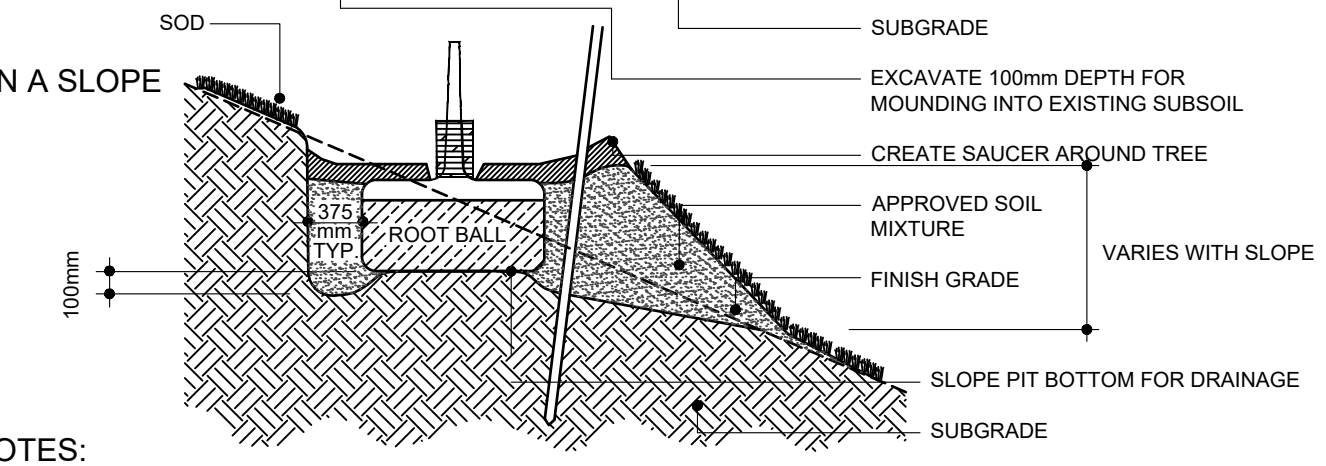
ULA 110B

NOTE:
ALL TREES NOT MEETING CITY OF VAUGHAN REQUIREMENTS WILL BE REMOVED AND REPLACED AT NO EXPENSE TO THE CITY.

AT GRADE



ON A SLOPE



NOTES:

1. Position crown of root ball 50mm above finish grade to allow for settling.
2. Do corrective pruning to retain natural form of tree as directed by City Forestry Supervisor.
3. Water all plant material sufficiently to maintain vigorous, healthy growth from time of delivery/ installation until the end of the specified guarantee period.
4. Stake height shall be a minimum of 1.5 metres above finish grade.
5. For trees planted within planting or shrub beds, delete saucer around base of tree.
6. Remove all tree guards/ stakes 12 months after acceptance/ assumption or as specified.
7. No tree pits shall be left open overnight.
8. Do not allow air pockets when backfilling.
9. All dimensions are in millimeters.

VAUGHAN

DEVELOPMENT PLANNING DEPT.
URBAN DESIGN DIVISION

DECIDUOUS TREE
PLANTING DETAIL FOR
TREES UNDER 90mm IN CALIPER

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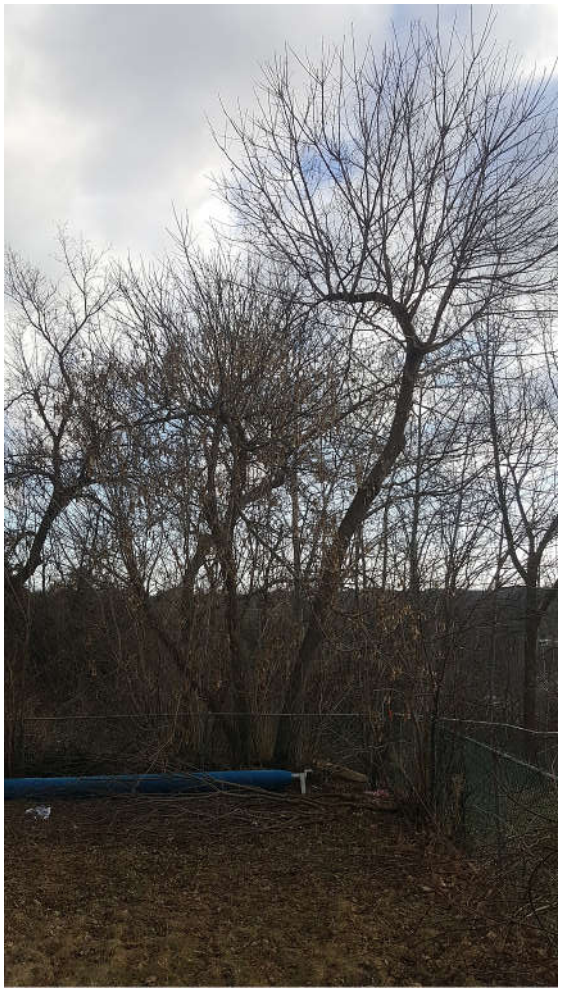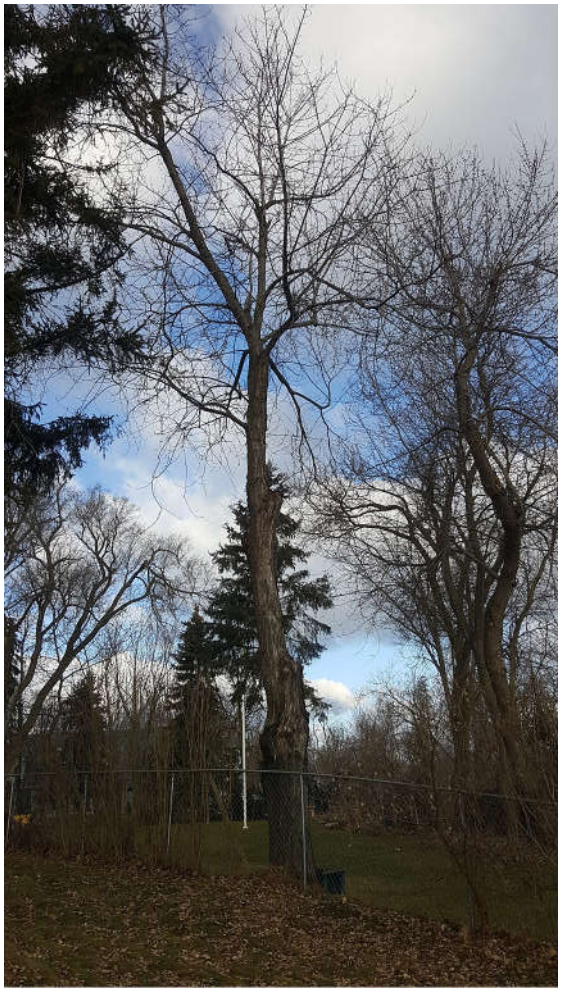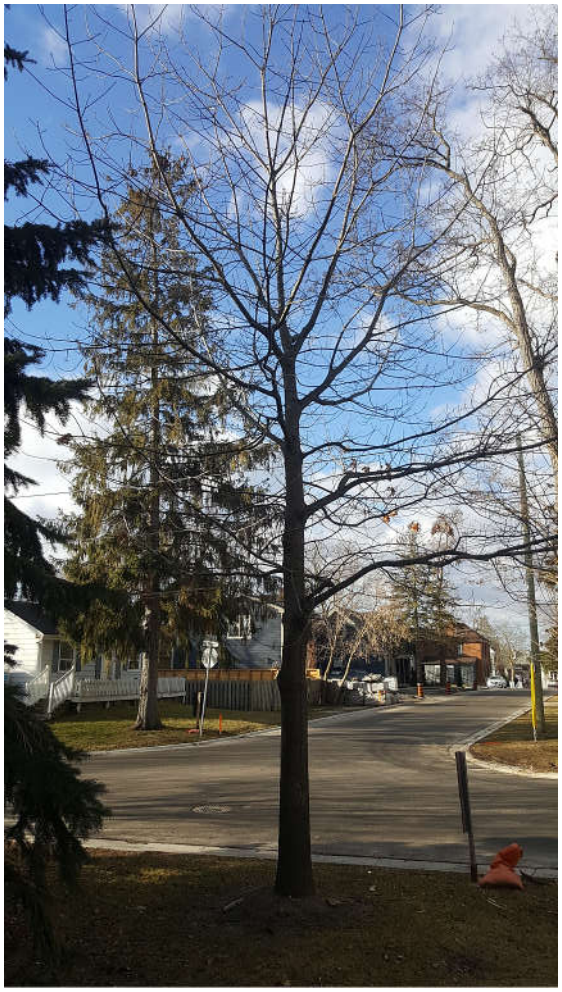
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