



LOTHLORIEN GARDEN CONSULTING

CONSTRUCTION ARBORIST REPORT

8 Main Street, Vaughan, ON L4H 3N5

Date: April 11th, 2024

Prepared for: homeowner(s)

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INTRODUCTION

Lothlorien Garden Consulting was retained by owner/s to prepare a Construction Arborist Report and Tree Preservation Plan (TPP) in support of a development application for the properties located at 8 Main Street, Vaughan, Ontario.

ASSIGNMENT

An on-site inspection was undertaken by the arborist most recently on March 7th, 2024 in order to:

- Prepare an inventory of all bylaw-protected trees. The inventory includes all private trees measured 20 cm in diameter at breast height (DBH) or greater, on or within 6 meters of the subject site, as well as all trees of all diameters located on the City road allowance;
- Document each tree's condition, location, and minimum protection requirements;
- Evaluate potential site plan modifications in the interest of tree preservation;
- Establish and illustrate the required hoarding layout to be maintained for the duration of construction activities;

SUMMARY

- The tree inventory documented a total of twenty-one **(21)** individual trees, on/or within 6 meters of the subject sites. No at risk or endangered species were encountered during the site assessment.
- A total of fourteen **(14) regulated trees** are proposed for removal in this application i.e., **T1, T2, T4, T6, T7, T8, T9, T10, T11, T13, T17, T18, T19 & T20** due to the proposed new development. Additionally, two **(2)** undersized trees will be removed to allow the construction of the new circled driveway and house. All proposed tree removals are marked with "**X**" symbol in the TPP-L1 and the section "**Pictures**" in this report.
- The removal approval must be conditional upon the provision of satisfactory replacement planting. Please see the section titled "Post Construction Replanting Plan" on **page #27**, in this report, for more details regarding the required compensation for tree's loss.
- A total of two **(2)**, permitted trees i.e., **T3 & T14** partially conflict with the proposed new development. It is the consultant's opinion that the above-noted trees have the potential to recover from the construction disturbance, provided that protection measures outlined in this report, tree protection plan are carefully followed and enforced.
- In our professional opinion, all other trees will remain undisturbed under this proposal, given that construction work associated with the proposed new development is situated at sufficient distances back from their tree protection zones.

PURPOSE AND USE

This report is provided to homeowner(s), Rubino Design Group and shall be used in whole and as provided to the City of Vaughan's Urban Forestry Planning staff and other stakeholders as it relates



solely to this project. This report should be shared with all contractors responsible for site development.

METHODOLOGY

A **Basic Tree Assessment (Level 2)** was undertaken on all bylaw-protected trees. Bylaw-protected trees include all private trees measured with a diameter at breast height (DBH) of 15 cm or greater, all trees located on the City road allowance. The BTA method is used to evaluate the health and structural condition of each tree and the site in which it grows. This method is recognized as a Limited Visual Inspection by the International Society of Arboriculture. The primary limitation of a basic assessment is that it includes only conditions that can be detected from a ground-based visual inspection. Internal, below-ground, and upper-crown factors may be impossible to see or difficult to assess, thus remaining largely undetected or unevaluated.

Tree resources were assessed based on the following parameters:

Tree #: identification number assigned to the tree, corresponding to the location plotted of the *Tree Protection Plan*.

Species: common and botanical names provided in the inventory table.

DBH: stem diameter measured 140 cm above grade. In cases where a tree has two or more stems, the diameter of the largest stem is provided. In cases where a tree has two or more stems, the combined based diameter is provided.

Condition: condition of tree considering trunk integrity, crown structure

Condition: condition of tree considering trunk integrity, crown structure, and crown vigour.

Condition ratings are defined as follows:

1. Excellent – High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.
2. Good – trees in good overall health and condition with desirable structure.
3. Fair – trees in moderate health and condition with less desirable structure.
4. Poor – trees displaying prominent health issues such as decay and disease and/or poor form and structure.
5. Very Poor – trees appear to be dying and in the last stages of life. Little live foliage.
6. Dead – trees that have no living tissue.

More details regarding tree assessment criteria can be found in *Table 1* on the next page.

Trees have been assigned one of the following ownership categories:

1. Trees with base diameters of 20 cm or more, situated on private property, within 6 m of the subject site.
2. Trees with base diameters of 20 cm or more, situated on a neighbouring property, within 6 m of the subject site.
3. Trees of all diameters situated on City-owned parkland within 6 m of the subject site.
4. Trees located in TRCA or naturalized areas of all diameters situated within 12 m of construction activity.

Trees of all diameters situated within the City road allowance, on or within 6 m of the subject site



Table 1: Assessment of plant condition considers health, structure, and form

Rating category	Condition components			Percent rating
	Health	Structure	Form	
Excellent	High vigor and nearly perfect health with little or no twig dieback, discoloration, or defoliation.	Nearly ideal and free of defects.	Nearly ideal for the species. Generally symmetric. Consistent with the intended use.	81% to 100%
Good	Vigor is normal for the species. No significant damage due to diseases or pests. Any twig dieback, defoliation, or discoloration is minor.	Well-developed structure. Defects are minor and can be corrected.	Minor asymmetries/deviations from species norm. Mostly consistent with the intended use. Function and aesthetics are not compromised.	61% to 80%
Fair	Reduced vigor. Damage due to insects or diseases may be significant and associated with defoliation but is not likely to be fatal. Twig dieback, defoliation, discoloration, and/or dead branches may comprise up to 50% of the crown.	A single defect of a significant nature or multiple moderate defects. Defects are not practical to correct or would require multiple treatments over several years.	Major asymmetries/deviations from species norm and/or intended use. Function and/or aesthetics are compromised.	41% to 60%
Poor	Unhealthy and declining in appearance. Poor vigor. Low foliage density and poor foliage color are present. Potentially fatal pest infestation. Extensive twig and/or branch dieback.	A single serious defect or multiple significant defects. Recent change in tree orientation. Observed structural problems cannot be corrected. Failure may occur at any time.	Largely asymmetric/abnormal. Detracts from intended use and/or aesthetics to a significant degree.	21% to 40%
Very Poor	Poor vigor. Appears to be dying and in the last stages of life. Little live foliage.	Single or multiple severe defects. Failure is probable or imminent.	Visually unappealing. Provides little or no function in the landscape.	6% to 20%
Dead				0% to 5%



TREE PROTECTION BY-LAW

In accordance with: THE CITY OF VAUGHAN BY-LAW NUMBER 052-2018 Last consolidated on November 17, 2020.

A By-law to regulate the planting, maintenance and removal of trees on public and private property in the City of Vaughan

PROHIBITED ACTIVITIES

5. No Person shall on Public Property do or cause or permit to be done, any of the following:

- (a) Abuse, attach, burn, cut down, carve, damage, Destroy, Injure, paint, paste, peel, prune, pull up, remove, scrape, tack, top, transplant or trim all or any part of a Tree, including a Public Tree;
- (b) Attach any object to all or any part of a Tree including, without limiting the generality of the foregoing, a birdhouse, cable, light, nail, poster, rope, sign, twine, wire or other contrivance;
- (c) Pour any substance that will Injure a Tree within the drip line of the Tree, being the area at the outer edge of the spread of the Tree's branches.

6. No Person shall Injure or Destroy or cause or permit any Trees on Private Property, having a diameter of twenty (20) centimetres or more or having a base diameter of twenty (20) centimetres or more, to be Injured or Destroyed unless authorized by a Tree Removal Permit to do so, pursuant to this By-law.

7. If a Tree is Injured or Destroyed in violation of section 6, the Owner and, if applicable the Applicant or Permit Holder, shall be presumed to have permitted such activity.

8. Despite section 6, a Tree Removal Permit is not required:

- (a) for Emergency Work;
- (b) for the Pruning of a Tree;
- (c) for the removal of dead branches;
- (d) to Injure or Destroy Trees located on rooftop gardens, interior courtyards, or solariums; or
- (e) to Injure or Destroy Trees on a Nursery or Golf Course.

9. No Person shall undertake any unauthorized activities, including but not limited to the placing of materials, vehicles, equipment or other things, within a Tree Protection Zone of a Tree.

ENCROACHMENT OF TREES ONTO PUBLIC PROPERTY

10. The City may Prune any portions of Trees on Private Property that extend over a Highway or other Public Property and may remove any decayed or Dangerous Tree that has been deemed so by the Director of Forestry.

TREE REMOVAL PERMIT APPLICATIONS

11. An Applicant who applies for a Tree Removal Permit shall submit to the Director of Forestry the following:

- (a) a completed Application, in a form satisfactory to the Director of Forestry;
- (b) a plan or drawing of the Lot, to the satisfaction of the Director of Forestry, illustrating which Trees are to be Injured or Destroyed;
- (c) payment of the required fees as prescribed in Fees and Charges By-law No. 171-2013, as amended, or its successor by-law;
- (d) an Arborist Report, if required by the Director of Forestry;
- (e) where the Tree subject to the Application is not a Public Tree and any portion of the base of the Tree falls within six (6) metres of the property line, the written consent to the Tree Removal



Permit issuance from the affected adjacent Owner;

(f) where the Application is not made and submitted by the Owner, the written authorization of the Owner consenting to the Application;

(g) any other documentation, reports or information required by the Director of Forestry.

12. A Tree Removal Permit shall be valid for only six (6) months from the date of issuance. In extenuating circumstances, a Tree Removal Permit may be extended by, and at the discretion of, the Director of Forestry.

13. The City shall not issue a Tree Removal Permit for the Injury or Destruction of Trees where the Director of Forestry has determined that:

(a) the Application is not complete, the required fee has not been paid, or the documentation and other information required has not been provided to the satisfaction of the Director of Forestry;

(b) the information received from the Applicant is false or incorrect;

(c) an alternative planting plan approved by the Director of Forestry has not been submitted;

(d) environmentally sensitive areas, ecological systems, natural landforms or contours will not be adequately protected and preserved;

(e) the removal of one or more of the subject Trees will have a negative impact on erosion or flood control;

(f) significant vistas will not be adequately protected and preserved; or

(g) the removal of one or more of the subject Trees is contrary to or in conflict with any other bylaws, policies, designations, or agreements of the City or the Regional Municipality of York, or any Acts of the Province of Ontario.

OFFENCES AND PENALTIES

22. Every Person who contravenes a provision of this By-law and every director or officer of a corporation who concurs in such contravention by the corporation, is guilty of an offence and, upon conviction, is liable to the following fines, exclusive of Expenses:

(a) a fine no less than \$500 and not more than \$10,000 for every offence committed; and

(b) a fine not less than \$500 and not more than \$10,000 for every day or part of a day that the offence continues.

23. Where a Person Injures or Destroys a Tree or Trees, in contravention of this By-law, the Person guilty of the offence or offences, upon conviction, is liable to the following fines, exclusive of Expenses:

(a) on a first conviction, a fine not less than \$250 per Tree and not more than \$2,500 per Tree; and

(b) on any subsequent conviction, a fine not less than \$500 per Tree and not more than \$5,000 per Tree.

24. In addition to any other fines, in the event that a Person is found guilty of an offence involving the Injury, Destruction or otherwise removal of Trees and the offence is determined to have occurred in the support of a development, a special fine of \$25,000 per Tree shall apply.



OBSERVATION AND COMMENTS

The subject property is located on the north side of Main Street, southeast of Islington Avenue and King's Highway 27. The rear of the designated lot falls within the TRCA Regulated Area of the Humber River watershed. Lot topography is relatively flat at the front of the site and becomes undulating and rolling across the turf covered backyard on the property. The existing site is occupied by a 1- story single-family frame dwelling, a gravel driveway fronting Lester B. Pearson Street and several old wooden shed at the rear of the property. Tree resources appear to be comprised of landscape plantings and naturally occurring trees. Trees on site include the following species: Norway maple (*Acer platanoides*), Silver maple (*Acer saccharinum*), Manitoba maple (*Acer negundo*), Austrian pine (*Pinus nigra*), White spruce (*Picea glauca*), Colorado Blue spruce (*Picea pungens* 'Glauc'), Horse-chestnut (*Aesculus hippocastanum*), Japanese lilac (*Syringa reticulata*), Purple Fountain Weeping Beech (*Fagus sylvatica* 'Purple Fountain'), Japanese maple (*Acer japonicum*), Willow (*Salix spp.*) and Crab apple (*Malus spp.*). Canopy cover is estimated at 90 percent of the lot. The hardwood dominant forest north of the stable top of bank, however, is comprised mostly of non-native tree cover, mainly Manitoba maple (*Acer negundo*), Austrian pine (*Pinus nigra*), and several native species such as Eastern Black walnut (*Juglans nigra*), Eastern White pine (*Pinus strobus*) and Willow (*Salix spp.*). It should be noted, that most of the trees beyond the slope are covered by wild grape vine.

Figure 1: shows an aerial view of the property along with the existing vegetation, as of 2023





PROPOSED DEVELOPMENT

The proposed development, as illustrated in the Proposed Site Plan (A) prepared by Rubinoff Design Group on February 20th, 2024, includes a proposal to demolish the existing house and rear sheds and construct a new two-storey single-family dwelling with integral garages to the east and west side, new permeable driveways fronting Main Street and 1½ storey pool house at the rear. The accompanying Tree Protection Plan includes an overview of the site plan details.

TYPES OF TREE DAMAGE

The tree injuries outlined below reflect the policy of Toronto Council following *“Tree Protection Policy and Specifications for Construction Near Trees published March 2009- City of Toronto Urban Forestry”*.

Physical injury to the main stem or branches of a tree will occur if construction equipment is permitted close to the trees or if structures are built into the growing space of a tree. Physical injuries are permanent and can be fatal.

Root cutting is another type of injury that can significantly impact the health of a tree. Excavation for foundations or utility installation may cut tree roots if the excavation is too close to the trees. The majority of tree roots are found in the upper 30 to 60 cm of soil. Trees can also become destabilized and may fail if structural support roots are severed. Prior to commencing with any excavation, an exploratory dig should be undertaken using a low-pressure hydro vac system, with water pressure less than 20 p.s.i. This method of non-intrusive excavation will determine the presence or absence of roots and provide guidance to design construction projects with tree protection in mind.

Compaction of the soil in which tree roots grow 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. Often, you cannot see the damage being done and unless you have some arboricultural background you are likely not aware of the damage that can occur. Soil compaction causes the pore space 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 the decline of the tree will follow. Adding soil on top of tree roots can smother them by reducing the amount of oxygen and water they are accustomed to receiving. Only a few centimetres of added soil can have a significant and sometimes detrimental impact on the health of a tree.

DISCUSSION

The following section of the report provides discussion and analysis of the construction-related impact on the existing trees on site, tree removal requirements, and tree preservation and pruning measures relative to the proposed development and existing conditions. The following trees conflict with the proposed construction:

TREES PROPOSED FOR REMOVAL

Construction related reasons:

Tree #1: 34 cm Norway maple - Request Permit to Remove Private Tree



- Tree #2:** 39 cm Austrian pine - **Request Permit to Remove Private Tree**
- Tree #4:** 28 cm European Weeping beech - **Request Permit to Remove Private Tree**
- Tree #5:** 6 cm Japanese lilac - **Undersized; To be removed; No Permit Required**
- Tree #6:** 23 cm Colorado Blue spruce - **Request Permit to Remove Private Tree**
- Tree #7:** 36 cm Colorado Blue spruce - **Request Permit to Remove Private Tree**
- Tree #8:** 42/41/39 cm European Horse-chestnut - **Request Permit to Remove Private Tree**
- Tree #9:** 75 cm Apple tree - **Request Permit to Remove Private Tree**
- Tree #10:** 45 cm White spruce - **Request Permit to Remove Private Tree**
- Tree #11:** 122 cm Silver maple - **Request Permit to Remove Private Tree**
- Tree #13:** 80 cm Manitoba maple - **Request Permit to Remove Private Tree**
- Tree #17:** 50 cm Manitoba maple - **Request Permit to Remove Private Tree**
- Tree #18:** 78 cm Silver maple - **Request Permit to Remove Private Tree**
- Tree #19:** 90 cm Silver maple - **Request Permit to Remove Private Tree**
- Tree #20:** 32 cm Norway maple - **Request Permit to Remove Private Tree**

Construction impact

The above-noted trees are located within the proposed limit of excavation required to build the new development and cannot be preserved.

Conclusion

The proposed removals, excluding **T5** do not qualify for an exemption from the standard tree removal permit requirements, necessitating an Application to Injure or Destroy Trees. The removal approval must be conditional upon the provision of satisfactory replacement planting. Please see the section titled "Post Construction Replanting Plan" on **page #27**, in this report, for more details regarding the required compensation for tree loss.

Tree removal notes:

We recommend that all tree removal work be performed by a reputable tree care company following generally accepted arboricultural standards.

The tree removals are marked with "**X**" symbol in the section **Pictures** in this report and the TPP-L1.

TREES REQUESTED A PERMIT TO INJURE DUE TO PROPOSED CONSTRUCTION

Tree #3: 74 cm Manitoba maple - **Request Permit to Injure Private tree**

Tree #14: 95 cm Silver maple - **Request Permit to Injure Private tree**

Potential Construction impact

The Site plan indicates demolition/excavation activities within mTPZ of **T3 & T14**, associated with the new development. To mitigate the construction impact to the minimum possible degree, the following measures shall be strictly enforced:

Excavation activities within mTPZ of T14

The Site plan indicates that a new retaining wall is to be built north of the proposed dwelling. The proposed retaining wall partially encroaches within the mTPZ of **T14**. The limit of the excavation, at its closest point to the subject tree, is a distance of **2.05 m**.

In order to mitigate the construction impact to the minimum possible degree, the following measures will be strictly enforced and followed:

All excavation activities within mTPZ of the tree will be supervised by an ISA Certified Arborist.

In our professional opinion, the tertiary roots disturbed within injured zone of the above-noted tree are likely to be no larger than **10-40mm** in diameter. Root pruning shall be permitted to roots less



than **50mm** in diameter unless found in dense matts. Any roots within injured zone or which extend beyond the TPZ (if encountered) which require pruning, must be pruned by a qualified Arborist or other tree professional as approved by Urban Forestry. All pruning of tree roots must be in accordance with good arboricultural standards. This will allow a proper pruning cut and minimize tearing of the roots.

Tree Protection notes to T3 during new driveway installation

The Site plan indicates that a new driveway is to be built within the mTPZ of **T3**.

It is the consultant's recommendation permeable materials to be used for the construction of the proposed new driveway within mTPZ of the above-noted tree.

Permeable pavements are ideal for roadways with infrequent vehicular traffic, such as residential feeder streets, low-intensity commercial parking lots, roadway shoulders, and bicycle paths.

Permeable paving allows for filtration, storage, or infiltration of runoff, and can reduce or eliminate surface stormwater flows compared to traditional impervious paving surfaces like concrete and asphalt. Urban trees also benefit from being surrounded by permeable pavement rather than impervious cover, because their roots receive more air and water.

The installation of the new driveway within mTPZ of **T3** shall be supervised by an ISA Certified Arborist. In our professional opinion, the tertiary roots disturbed within injured zones of the above-noted trees are likely to be no larger than **10-40mm** in diameter. Root pruning shall be permitted to roots less than **50mm** in diameter unless found in dense matts. Any roots within injured zone or which extend beyond the TPZ (if encountered) which require pruning, must be pruned by a qualified Arborist or other tree professional as approved by Urban Forestry. All pruning of tree roots must be in accordance with good arboricultural standards. This will allow a proper pruning cut and minimize tearing of the roots.

Permeable pavements notes:

Non-woven Geotextile fabric

Install geotextile over the bottom of the sub-base layers once infiltration rates have been verified.

The geotextile should extend up the sides of the base to the pavement surface and be anchored approximately 1 ft outside of the system footprint. Excess can be cut to below the pavement surface after aggregate installation.

Geogrid Placement

A Plastic Biaxial Geogrid application is to be used as a base reinforcement within the same footprint associated with the proposed new permeable driveway.

Plastic biaxial geogrid is the ideal geotechnical material in situations where stresses are applied in two directions, it is the ideal geotechnical product used to reinforce the pavement base and improve the subgrade for any soil stabilization and reinforcement applications such as access roads, parking driveways, lots, etc.

Bedding Coarse Requirements

The bedding coarse layer applies to a Granite High-Performance Base or Granite $\frac{3}{4}$ aggregate only. These fillers are acceptable within the TPZ of trees impacted by construction activities. Granite HPB is a free draining product and will allow for oxygen and water to the tree roots. Granite is also non-alkaline and will not burn off roots like limestone screen and concrete which contain traces of Lye.

Compaction

The sub-base layers shall be tamped by light soil compacting equipment (such as Rammers, Vibrating



Plate Compactors) to grade within TPZ of the injured tree.

*For additional information, please refer to PDTD-1 on TPP-1 for construction details and specifications.

Tree Protection Notes

Construction and development activities have the potential to seriously harm trees. Common injuries that occur during construction are root damage or loss during grading and trenching, soil compaction, trunk, and branch impact injuries, and/or heat and chemical damage. Compaction of the soil in which tree roots grow 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. To mitigate the construction impact to a minimum, the following measures shall be strictly enforced:

Vertical hoarding

A vertical tree protection hoarding to enclose the protected trees shall be installed prior to any construction or demolition occurring on the property to prevent the entry of any construction materials within the tree protection zone. Inside the TPZ no construction, storage or disposal of material of any kind, adding of fill, or excavation may occur.

Please refer to the TPP L1, and L2 for the required hoarding layout, details and specifications.

Erosion and Sediment Control Protection

Sediment control fencing shall be installed in the locations as indicated in the approved TPP-L1 and/or Sediment Control plan. The sediment control fencing must be installed to Standard Sediment Control Fence (OPSD 219.130) or TRCA ESC Design Detail (04) unless otherwise specified, to the satisfaction of TRCA.

Ground Root Protection (T14)

The ground protection has been carefully designed to enclose as much as possible from the mTPZ of the above-noted tree.

The purpose of the ground protection is to protect the roots from compaction and contamination during the construction process, as well as to allow exterior work within proximity to the new retaining wall.

The ground protection shall be installed as specified below:

Light Root Zone Compaction Protection

Where limited non-vehicular access in the TPZ is anticipated (e.g., occasional foot traffic, wheelbarrow), the Light Root Zone Compaction Protection specification shall be implemented, as described below:

1. Installation of permeable geotextile over area to be protected
2. Installation of a minimum of 150 mm of wood chip mulch over area of potential impact
3. Optional: installation of $\frac{3}{4}$ " plywood over mulch (to facilitate movement over mulch, if required)

In our professional opinion, all other trees on this lot will remain undisturbed under this proposal, given that construction work associated with the installation of the proposed new development is situated at sufficient distances back from their tree protection zones.



Prescribed Irrigation during construction (T3 & T14)

It is the consultant's opinion that the excavation may cause some water-stress symptoms to the above-mentioned trees due to the potential root loss. In order to mitigate this risk to the minimum possible degree, if the excavation occurs during the vegetation period (early June to late September), irrigation must be engaged.

General notes:

The irrigation will be applied within the mTPZ immediately following the completion of the excavation. The frequency and volume of irrigation may vary and depends on the time, season and weather conditions. Since most of the absorbing roots are situated within the first 45cm of the soil level, the irrigation water should wet thoroughly the surface until this depth is achieved.

Post-construction prognosis for the above-noted injured trees

Accepted arboricultural best management practices and acceptable thresholds for percent root disturbance state that a 0-25% TPZ encroachment will have a minor impact with little to no negative impacts on tree health, vigour, structural integrity and no impacts on tree survivability. A 35% - 40% TPZ encroachment will have a definite impact to tree health, vigour, structural integrity and tree survivability and a >40% - Significant impact to health, vigour, structural integrity and overall survivability and therefore removal permit is required.

Tree #3: 74 cm Manitoba maple – encroachment within mTPZ ≈30%

Following "*Ranking of common tree species in tolerance to construction damage by (Matheny & Clark 1998)*", this species shows good tolerance.

*Tolerance: P= poor, M= moderate, G= good.

Since the excavation depth associated with the new driveway does not exceed 40cm, and this species is very hardy and resilient to construction impact, minimal impact on its health and vigour are expected, provided that the protection measures outlined in this report and TPP are carefully followed and enforced.

Tree #14: 95 cm Silver maple – encroachment within mTPZ ≈30%

In accordance with the Georgina Forestry Commission research, "*a 30% loss of the critical root zone would be considered enough to kill or significantly destabilize the tree*".

In case that roots can be retained and/or no structural roots greater than or equal to 50mm in diameter are severed, the tree is expected to be preserved with minor impact on its health and vigour, provided that the protection measures outlined in this report and TPP are carefully followed and enforced.

In our professional opinion, all other inventoried trees on this lot will remain undisturbed under this proposal, given that construction work associated with the installation of the proposed new development is situated at sufficient distances back from their tree protection zones.



INVENTORY AND PROTECTION REQUIREMENTS

Table 2: Detailed Tree Inventory Table

65Tree ID	Common	Botanical	DBH (cm) 1.4 m	Ownership Category	Heavy Duty/HTP Hoarding	Light Duty Hoarding	Removal (R)	Encroachment mTPZ (%)	mTPZ (m)	Overall Condition	Observations and Preservation Comments
1	Norway maple	<i>Acer platanoides</i>	34	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Upright growth habit; good crown density and twig elongation observed Remove – tree location within the development footprint
2	Austrian pine	<i>Pinus nigra</i>	39	1. Private	n.a.	n.a.	R	100%	n.a.	Fair	Pyramidal growth habit; reduced crown density and colour observed; Remove – tree location within the development footprint
3	Manitoba maple	<i>Acer negundo</i>	74	1. Private	<input checked="" type="checkbox"/>	n.a.		30%	4.8	Fair	Upright growth habit; crown reduction in the past; epicormic growth present To be protected as indicated on TPP-L1; an ISA Certified Arborist on site during driveway installation
4	Purple Fountain Weeping Beech	<i>Fagus sylvatica</i> 'Purple Fountain'	28	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Weeping growth habit; botanical vigour appears good; no visible defects observed Remove – tree location within the development footprint
5	Japanese lilac	<i>Syringa reticulata</i>	6	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Recently planted tree; no visible defects observed Remove – tree location within the development footprint; Undersized; No permit required
6	Colorado Blue spruce	<i>Picea pungens</i> 'Glauca'	23	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Pyramidal growth habit; good crown density and colour observed Remove – tree location within the development footprint
7	Colorado Blue spruce	<i>Picea pungens</i> 'Glauca'	36	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Pyramidal growth habit; good crown density and colour observed Remove – tree location within the development footprint



65Tree ID	Common	Botanical	DBH (cm) 1.4 m	Ownership Category	Heavy Duty/HTP Hoarding	Light Duty Hoarding	Removal (R)	Encroachment mTPZ (%)	mTPZ (m)	Overall Condition	Observations and Preservation Comments
8	European Horse chestnut	<i>Aesculus hippocastanum</i>	42 41 39	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Multi-stemmed growth habit; good crown density and twig elongation observed; Remove – tree location within the development footprint
9	Apple	<i>Malus spp.</i>	75	1. Private	n.a.	n.a.	R	100%	n.a.	Fair	Multi-stemmed growth habit; central stem removed or fallen; Remove – tree location within the development footprint
10	White spruce	<i>Picea glauca</i>	45	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Pyramidal growth habit; good crown density and colour observed Remove – tree location within the development footprint
11	Silver maple	<i>Acer saccharinum</i>	122	1. Private	n.a.	n.a.	R	100%	n.a.	Fair	Mature tree; co-dominant growth habit; large longitudinal crack below main branch union Remove – tree location within the development footprint
12	Manitoba maple	<i>Acer negundo</i>	≈40	2. Neighbour	☑	n.a.		n.a.	2.4	Fair	Reduced crown density due to excessive pruning in the past To be protected as indicated on TPP-L1
13	Manitoba maple	<i>Acer negundo</i>	80	1. Private	n.a.	n.a.	R	100%	n.a.	Poor	Structurally unsound tree; large cavity visible from the west side; Remove – tree location within the development footprint
14	Silver maple	<i>Acer saccharinum</i>	95	1. Private	☑	n.a.		30%	6.0	Good	Multi-stemmed growth habit; good radial growth and crown density observed; To be protected as indicated on TPP-L1; an ISA Certified Arborist on site during retaining wall installation required
15	Willow tree	<i>Salix spp.</i>	33 30	1. Private	☑	n.a.		n.a.	4.2	Fair	Co-dominant growth habit; reduced crown density observed; To be protected as indicated on TPP-L1
16	Austrian pine	<i>Pinus nigra</i>	35	1. Private	☑	n.a.		n.a.	2.4	Fair	Co-dominant growth habit; good crown density observed; To be protected as indicated on TPP-L1
17	Manitoba maple	<i>Acer negundo</i>	50	1. Private	n.a.	n.a.	R	100%	n.a.	Fair	Southern stem removed; evidence of previous branch failures Remove – tree location within the development footprint



65Tree ID	Common	Botanical	DBH (cm) 1.4 m	Ownership Category	Heavy Duty/HTP Hoarding	Light Duty Hoarding	Removal (R)	Encroachment mTPZ (%)	mTPZ (m)	Overall Condition	Observations and Preservation Comments
18	Silver maple	<i>Acer saccharinum</i>	78	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Upright growth habit; good crown density and twig elongation present; Remove – tree location within the development footprint
19	Silver maple	<i>Acer saccharinum</i>	90	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Upright growth habit; good crown density and twig elongation present; Remove – tree location within the development footprint
20	Norway maple	<i>Acer platanoides</i>	32	1. Private	n.a.	n.a.	R	100%	n.a.	Good	Upright growth habit; good crown density and twig elongation present; Remove – tree location within the development footprint
21	Crab apple	<i>Malus spp.</i>	15	1. Private	☑	☑			3.0	Fair	Multi-stemmed growth habit; southern leader previously removed; botanical vigour appears good To be protected as indicated on TPP-L1

*In cases where private or neighboring trees have a DBH of < 20 cm, but are within proximity of the site disturbance, they have been included in the inventory and Tree Assessment and Protection Plan in the interest of preserving a private asset. All undersized trees proposed for retention are outlined in green colour on the inventory table.



TREE PROTECTION PLAN

The tree protection policies and specifications outlined below reflect the policy of Toronto City Council as per *"Tree Protection Policy and Specifications for Construction Near Trees. March 2009- City of Toronto Urban Forestry, as well as Best Management Practices- Managing Trees During Construction-2016 by Kelby Fite; E Thomas Smiley;*

Tree Protection and Landscape Plan Details

The Tree Protection and Landscape Plan attached to this report (TPP L1, L2 and L3) include the following information:

1. Identified size and species of all existing trees on or within 6 metres of the subject site. Shown extent of the crown of all existing trees.
2. Indicated trees to be injured or removed.
3. Highlighted and labeled tree protection barriers and tree protection zones. (See Table 3 to determine size of tree protection zone. Distances are measured from base of tree).
4. Established and illustrated the required hoarding layout to be maintained for the duration of construction activities;
5. Indicated vehicular access and construction staging areas.
6. Indicated location of any excavation that requires root pruning.
7. Specified Post-Construction Restoration measures.
8. Designated guidelines of practices for the purpose of interpreting tree care standards.
9. Indicated location of all new trees proposed for replanting.

TREE PROTECTION SPECIFICATIONS AND DETAILS

Tree Protection Zones

No construction activity including grade changes, surface treatments or excavations of any kind is permitted within the area identified on the Tree Protection Plan or Site Plan as a 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 remain undisturbed at all times. The following is a chart showing minimum required distances for determining a Tree Protection Zone (TPZ) for City-owned trees located on a City Street, in parks and trees on private property subject to either the Ravine and Natural Feature Protection By-law or the Private Tree By-law. Some trees and some site conditions may require a larger TPZ.

Determining the Structural Root Zone (SRZ)

The SRZ is the area required for tree stability. A larger area is required to maintain a viable tree. The SRZ only needs to be calculated when major encroachment into a TPZ is proposed. There are many factors that affect the size of the SRZ; e.g. tree height, crown area, soil type, soil moisture etc. The



SRZ may also be influenced by natural or built structures, such as rocks and footings. An indicative SRZ radius can be determined from the trunk diameter measured immediately above the root buttress using the following formula:

$$\text{SRZ radius} = (D \times 50)^{0.42} \times 0.64$$

Where - D = trunk diameter, in m, measured above the root buttress.

The SRZ for trees with trunk diameters less than 0.15m will be 1.5m.

It needs to be emphasized that this is an indicative calculation which generalizes all the conditions influencing the estimate. SRZ is often less than the indicated calculation. An Exploratory Root Excavation (ERE) or root investigation according to *Best Management Practices- Managing Trees During Construction-2016*, may provide more information on the extent of these roots.

TPZ and SRZ Encroachment

Any encroachment into TPZ should be advised and supervised by a qualified Arborist.

Minor encroachment: *If the proposed encroachment is less than 10% of the area of the TPZ and is outside the SRZ detailed root investigations should not be required. The area lost to this encroachment should be compensated for elsewhere and contiguous with the TPZ.*

TPZ encroachment considerations: *When determining the potential impacts of encroachment into the TPZ, the project arborist should consider the following:*

- I. *Location and distribution of the roots to be determined through non-destructive investigation methods (pneumatic, hydraulic, hand digging or ground penetrating radar). Photographs should be taken and a root zone map prepared. NOTE: Regardless of the method, roots must not be cut, bruised or frayed during the process. It is imperative that exposed roots are kept moist and the excavation back filled as soon as possible.*
- II. *The potential loss of root mass resulting from the encroachment: number and size of roots.*
- III. *Tree species and tolerance to root disturbance.*
- IV. *Age, vigour and size of the tree.*
- V. *Lean and stability of the tree. NOTE: Roots on the tension side are likely to be most important for supporting the tree and are likely to extend for a greater distance.*
- VI. *Soil characteristics and volume, topography and drainage.*
- VII. *The presence of existing or past structures or obstacles affecting root growth.*

Tree sensitive construction measures such as pier and beam, suspended slabs, cantilevered building sections, screw piles and contiguous piling can minimize the impact of encroachment.

When siting a structure near to a tree, the future growth of the tree, both above and below ground should be taken into account. Precautions should be taken at the planning and design stage to minimize potential conflict between trees and new structures.

When the root zone is reactive clay, techniques such as localized pier and beam (bridged), screw pile footings or root and soil moisture control barriers may be appropriate to minimize effects on structures.

NOTE: *Collaboration may be required between the project arborist and the geotechnical or structural engineer.*



Table 3: Tree Protection Zones

City of Vaughan Minimum Tree Protection Zones (TPZ)		
Trunk Diameter DBH ¹	City Owned and Private Trees ²	Trees in Naturalized Areas <i>Whichever is greater</i>
< 10 cm	1.2 m	Dripline ³ or 1.2 m
10 – 20 ⁴ cm	1.2 m	Dripline or 1.2 m
21 – 30 cm	1.8 m	Dripline or 3.6 m
31 – 40 cm	2.4 m	Dripline or 4.8 m
41 – 50 cm	3.0 m	Dripline or 6.0 m
51 – 60 cm	3.6 m	Dripline or 7.2 m
61 – 70 cm	4.2 m	Dripline or 8.4 m
71 – 80 cm	4.8 m	Dripline or 9.6 m
81 – 90 cm	5.4 m	Dripline or 10.8 m
91 – 100 cm	6.0 m	Dripline or 12.0 m
> 100 cm	6 cm per 1 cm DBH	12 cm per 1 cm diameter or the dripline ⁵

¹ Diameter at breast height (DBH) is the measurement of the tree trunk taken at 1.4 metres above ground level.

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

³ The dripline is defined as the area beneath the outer most branch tips of a tree

⁴ Base diameter (20 cm) at which trees qualify for protection under the private tree by-law.

⁵ Converted from the ISA Arborist Certification Study Guide, general guideline for tree protection barriers of 30.4 cm of diameter from the trunk for each 1 cm of trunk diameter

- Tree Protection Plans are to include a description of tree protective measures (e.g. hand digging, compaction reduction plans, hoarding installations, etc.)
- Trees being protected are to be shown on all plans.
- Tree protection hoarding locations must be shown along with Tree Protection Zones (TPZ).
- TPZ distances from trees are shown in Table 1
- Areas within the TPZ are considered “no touch areas”. Grading, excavation, machinery access and material storage are prohibited within “no touch areas”.
- Machinery access and storage sites must be shown on plans.
- If access is required through TPZ areas, a compaction reduction plan is required as part of the report. The compaction reduction plan is to include materials and installation techniques to be employed, along with post construction treatments.

Tree Protection Barriers

Prior to the commencement of any site activity the tree protection barriers specified on this plan must be installed and written notice provided to Urban Forestry. The tree protection barriers must remain in effective condition until all site activities including landscaping are complete. Where required, signs as specified in Section “Tree Protection Signage” must be attached to all sides of the barrier. Written notice must be provided to Urban Forestry prior to the removal of the tree



protection barriers. 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.

For City-owned Trees

Tree protection barriers for trees situated on the City road allowance where visibility must be maintained, can be 1.2m (4ft.) high and consist of chain link, or orange plastic web snow fencing on a 2" x 4" wood frame. All supports and bracing used to secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots outside the TPZ. Where some fill or excavate has to be temporarily located near a tree protection barrier, plywood must be used to ensure no material enters the TPZ. If the TPZ needs to be reduced to facilitate construction access, the tree protection barrier must be maintained at a lesser distance and the exposed TPZ protected with plywood and wood chips. This must first be approved by Urban Forestry.

For trees on private property situated on or adjacent to construction sites

Tree protection barriers must be installed around trees to be protected using plywood clad hoarding or an equivalent approved by Urban Forestry. All supports and bracing to safely secure the barrier should be outside the TPZ. All such supports and bracing should minimize damage to roots outside the TPZ.

Tree Protection Hoarding in the Ravine & Natural Feature Protected Areas

The applicant/owner shall protect all trees in the protected area that have not been approved for removal or injury, throughout development works to the satisfaction of Urban Forestry.

Plywood (or chain link fence, if agreed to by Urban Forestry) tree protection hoarding shall be installed in the locations as indicated in the Urban Forestry approved tree protection plan. Tree protection hoarding shall be installed to standards as detailed in the City's Tree Protection Policy and Specifications for Construction near Trees and to the satisfaction of Urban Forestry.

Tree protection hoarding must remain in place and in good condition during demolition and/or construction and must not be altered or moved until authorized by Urban Forestry. Established tree protection zones must not be used as construction access, storage or staging areas. Grade changes are not permitted within established TPZ. All additional tree protection or preservation requirements, above and beyond the required tree protection hoarding, 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.



Site Accessibility

When site accessibility is necessary within or through Tree Protection Zone proper care must be taken when performing such activities. Site accessibility methods must be pre-approved and documented with Urban Forestry. The following methods are acceptable but must be recommended by a Certified Arborist and documented within the Tree Preservation Report and Plan. Mitigating measures such as horizontal hoarding/compaction alleviation measures must be under taken when such activities occur within the Tree Protection Zone. Depending upon the intensity of encroachment, Light, Moderate or Heavy root zone compaction protection may be required, as specified below:

Light Root Zone Compaction Protection

Where limited non-vehicular access in the TPZ is anticipated (e.g., occasional foot traffic, wheelbarrow), the Light Root Zone Compaction Protection specification shall be implemented, as described below:

4. Installation of permeable geotextile over area to be protected
5. Installation of a minimum of 150 mm of wood chip mulch over area of potential impact
6. Optional: installation of $\frac{3}{4}$ " plywood over mulch (to facilitate movement over mulch, if required)

Moderate Root Zone Compaction Protection

Where more frequent non-vehicular access or occasional light vehicle (e.g., pickup truck) access across the TPZ is anticipated, the Moderate Root Zone Compaction Protection specification shall be implemented, as described below:

1. Installation of staked-down permeable geotextile over area of potential impact
2. Installation of a minimum of 200 mm of wood chip mulch over geotextile
3. Installation of $\frac{3}{4}$ " plywood over mulch

Heavy Root Zone Compaction Protection

In areas where regular vehicle access or similar impacts are anticipated in the TPZ, the Heavy Root Zone Compaction Protection specification shall be implemented, as described below:

1. Installation of staked-down permeable geotextile over area of potential impact
1. Installation of 100 mm of clear stone over geotextile
2. Installation of permeable geotextile over stone layer
3. Installation of a minimum of 150 mm of wood chip mulch over geotextile
4. Installation of $\frac{3}{4}$ " plywood or steel plate over mulch



Snow-Fence & Plywood Clad Hoardings for Perimeter Control



Tree Protection Signage

A sign that is similar to the illustration (right) may be required to be mounted on all sides of a Tree Protection Barrier for trees protected by the Trees on Town Streets By-law and the Private Tree By-law. The sign should be a minimum of 40cm x 60cm and made of white gator board or equivalent material.





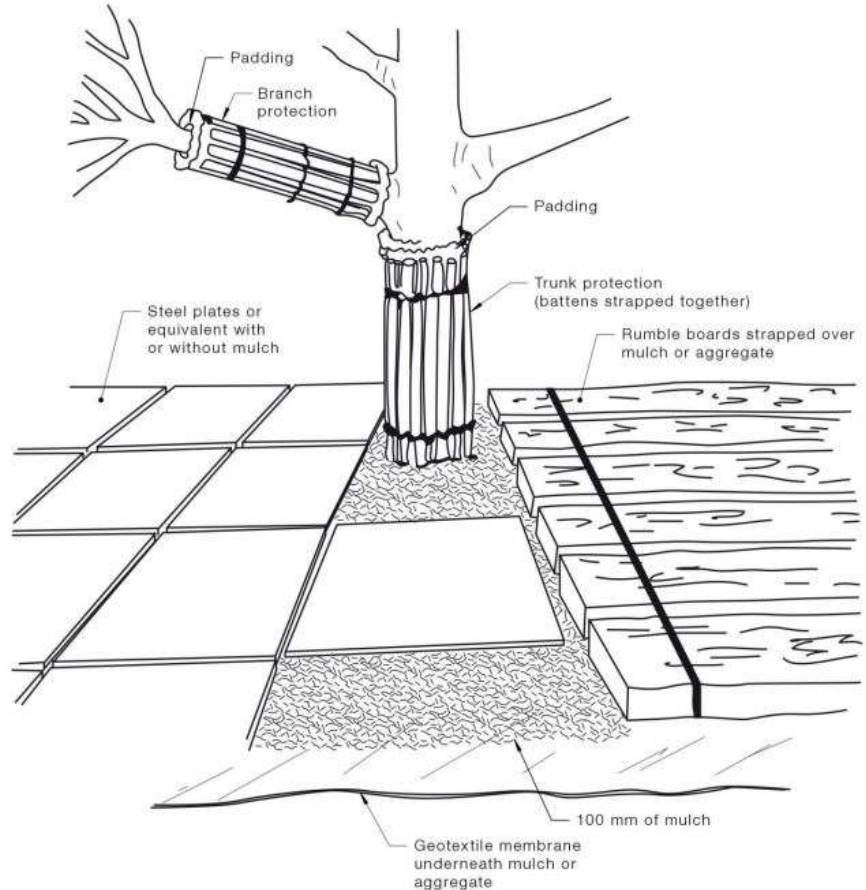
Trunk and Branch Protection

Trees impacted upon by construction works should be protected as per the Sketch to the right. It is suggested that suitable rubberized padding material be used under 75 by 50 hardwood timber which is strapped with galvanized tin strapping approximately 30 mm wide at 900 mm spacing from bottom of trunk upwards and nailed or screwed to the hardwood timber with 25 mm long galvanized fasteners. The rubberized padding material should be perforated to allow air to the trunk, and not soak water into itself. No nails or screws are to enter the tree trunk or branches and care must be taken to ensure that no materials bite into the tree surface and scar or damage its surface in any way.

Trunk and Branch Protection Detail

TPZ – Rumble boards and trunk/branch protection

When tree protection fencing cannot be installed or requires temporary removal, other tree protection measures should be used, including those set out below.



NOTES:

- 1 For trunk and branch protection use boards and padding that will prevent damage to bark. Boards are to be strapped to trees, not nailed or screwed.
- 2 Rumble boards should be of a suitable thickness (minimum 40mm) to prevent soil compaction and root damage.

Ground Protection

The planking to the right in the sketch following is an example of the planking that could be used. If temporary access for machinery is required within the TPZ, ground protection measures will be required. The purpose of ground protection is to prevent root damage and soil compaction within the TPZ. Measures should include a permeable membrane such as Geo-textile fabric beneath a layer of mulch or crushed rock, below rumble boards as per sketch for Trunk and Branch Protection Details on previous page. Rubber matting and packing plywood may also be used. Under this planking or sheeting within the TPZ, a 75 mm layer of leaf mulch or similar, aged for at least 12 weeks and proven to contain no toxic substances must be installed. These measures may also be applied to root zones beyond the TPZ. Rumble boards should be of a suitable thickness to prevent soil compaction and root damage.



Root Protection during Works within the TPZ

Some approved works within the TPZ, such as regrading, installation of piers or landscaping may have the potential to damage roots. If the grade is to be raised the material should be coarser or more porous than the underlying material. Depth and compaction should be minimized.

Manual excavation is the preferred method and should be carried out under the supervision of an arborist to identify roots critical to tree stability and determine the actual extent of the SRZ. An ERE may be used with photographs and maps to serve as a guide for designers and workers. Relocation or redesign of construction works may be required.

Where the project arborist identifies roots to be pruned within or at the outer edge of the TPZ, they should be pruned with a final cut back to undamaged wood. Pruning cuts should be made with sharp tools such as secateurs, pruners, handsaws or chainsaws. Pruning wounds should not be treated with dressings or paints. It is not acceptable for roots within the TPZ to be 'pruned' with machinery such as backhoes or excavators.

Where roots within the TPZ are exposed by excavation, temporary root protection should be installed to prevent them drying out. This may include jute mesh or hessian sheeting as multiple layers over exposed roots and excavated soil profile, extending to the full depth of the root zone. Root protection sheeting should be pegged in place and kept moist during the period that the root zone is exposed.

Other excavation works in proximity to trees, including landscape works such as paving, irrigation and planting can adversely affect root systems. The project arborist should be consulted and supervise any works.

TPZ Encroachment Over 10%

If the proposed building footprint encroaches into the TPZ more than 10%; either the building footprint will have to change to reduce the encroachment to 10% or an Exploratory Root Excavation (ERE) could be carried out by an Arborist to determine the exact location of any roots present. Prior to an ERE make certain to contact the Urban Forestry Department to see if permission is required. If roots are discovered belonging to the tree that are under 40 mm diameter, they could be cut by an arborist to allow either the entire building footprint to be accommodated, or if that is not possible, a smaller redesigned building footprint to be accommodated. If the TPZ is varied following an ERE room must be allowed for the lost area to be compensated for elsewhere. Roots greater than 40 mm diameter and fibrous root mats or clumps greater than 50mm diameter should not be cut but need to be worked around. A well-qualified arborist may cut a root greater than 40 mm diameter, but not greater than 50 mm diameter unless given permission to cut from the Urban Forestry Department. Alternatively, if an ERE shows it is impossible to vary the TPZ, alternative "tree friendly" construction methods could be employed, such as installing a building slab above grade, pier and beam methods, or building on stumps. Piers and stumps can be relocated to avoid damage to any significant roots discovered by the ERE. These alternative building methods should be specified by a suitably qualified person.



Irrigation

During warmer periods the Tree Protection Zones should be irrigated with 1 litre of clean water for every 1 cm of trunk girth measured at the soil / trunk interface on a weekly basis.

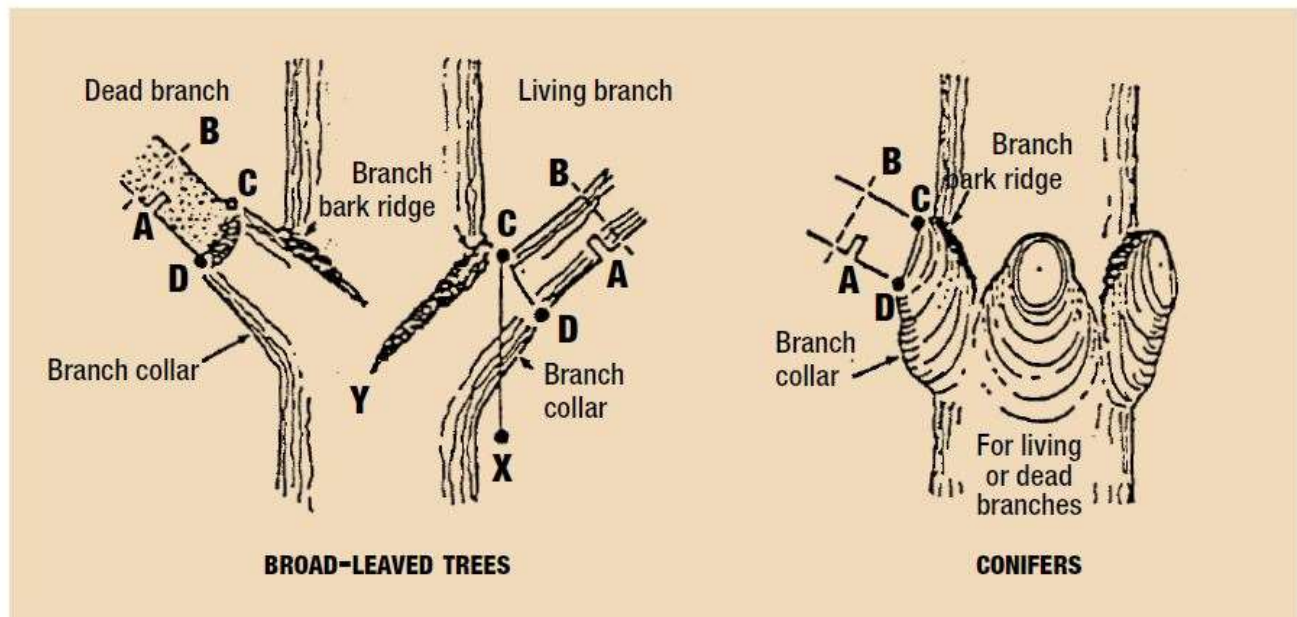
No persons, vehicles or machinery are to enter the Tree Protection Zones unless authorized to do so, preferably with permission from the Determining Authority.

Crown protection

Tree crowns may be injured by machinery such as excavators, drilling rigs, cranes, trucks, hoarding installation and scaffolding. The TPZ may need to include additional protection of above ground parts of the tree. Where crown protection is required, it will usually be located at least one metre outside the perimeter of the crown. The erection of scaffolding may require an additional setback from the edge of the crown. Crown protection may include pruning, tying-back of branches or other measures. Any branches which extend beyond the TPZ indicated on this plan which require pruning, must be pruned by a qualified Arborist or other tree professional as approved by Urban Forestry. All pruning of tree and branches must be in accordance with good arboricultural standards.

The Arborist/tree professional retained to carry out crown pruning must contact Urban Forestry no less than 48 hours prior to conducting any specified work. **NOTE:** *Prior to the pruning of or removal of any tree the Determining Authority, usually the local council must be consulted to be certain the pruning or removal is allowed by them and is lawful.*

Proper Pruning Principles



Natural Target Pruning properly removes a branch while protecting the branch collar, which is essential for wounds to heal. First cut A, second cut B, and third cut C-D.

as per: "A Guide to Preserving Trees in Development Projects" © The Pennsylvania State University 2005"



Scaffolding

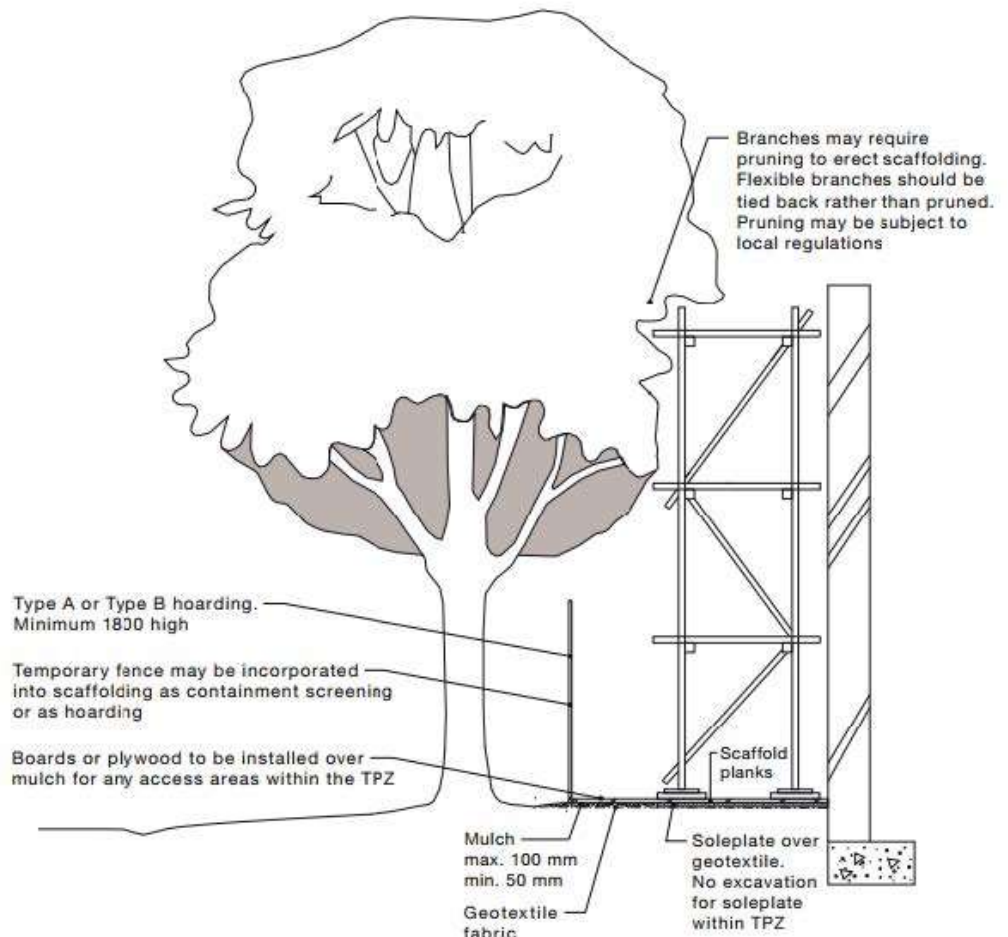
Where scaffolding is required, it should be erected outside the TPZ. Where it is essential for scaffolding to be erected within the TPZ, branch removal should be minimized. This can be achieved by designing scaffolding to avoid branches or tying back branches. Where pruning is unavoidable it must be specified by the project arborist in accordance with the *Best Management Practices- Managing Trees During Construction-2016* by Kelby Fite; E Thomas Smiley;

NOTE: Pruning works may require approval by the determining authority.

Ground below the scaffolding should be protected by boarding (e.g. scaffold board or plywood sheeting) as shown in **Trunk and Branch Protection** earlier. Where access is required, a board walk, or other surface material should be installed to minimize soil compaction. Boarding should be placed over a layer of mulch and impervious sheeting to prevent soil contamination. The boarding should be left in place until the scaffolding is removed.

There is a risk of materials falling off the scaffold decking and into the TPZ, damaging the tree. Care must be exercised, and solid walls or mesh barriers be installed on any scaffolding over the TPZ. Impervious membrane, mulch, boards or plywood must be used under the scaffold soleplates and no excavation is to be performed for the soleplates. It may be possible to erect secondary fencing inside the general TPZ fencing to further protect the tree from damage.

Scaffolding Details



NOTE: Excavation required for the insertion of support posts for tree protection fencing should not involve the severance of any roots greater than 20 mm in diameter, without the prior approval of the project arborist.



Additional notes

The applicant/owner shall protect all bylaw regulated trees in the area of consideration that have not been approved for removal throughout development works to the satisfaction of Urban Forestry.

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.

It is the applicants' responsibility to discuss potential tree injury of trees on shared property lines with their neighbours. Should such trees be injured to the point of instability or death the applicant may be held responsible for removal and such issues would be dealt with in civil court or through negotiation. The applicant would be required to replace such trees to the satisfaction of Urban Forestry.

Urban Forestry does not have the authority to issue a permit to injure or remove a heritage tree. 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.

Contravention of the Tree by-law

The City's enforcement officers may enter and inspect lands to ensure the by-law and permit is being complied with. Any person violating the by-law may be fined up to \$10,000 for first offences. Subsequent offences may be charged up to \$25,000. Any corporation violating the by-law may be fined up to \$100,000.

POST-CONSTRUCTION REPLANTING PLAN

Replacement Trees are required as a condition of all Individual tree removals. The applicants understand the replanting requirements:

- Evergreen (coniferous) trees must be at least 200 cm tall;
- Leafy (deciduous) trees must have a caliper of at least 60mm;
- If fruit-bearing trees are desired, two trees must be planted to substitute each evergreen or leafy tree replacement;
- Must be planted within one year of the issuance of the tree removal permit;
- Must not be a shrub or a low growing tree;
- Must not be an invasive species;
- Must be good quality, number one (1) grade, nursery-grown stock and installed as per City approved details and standards;







- Shall meet the highest horticultural standards of the Canadian Nursery Trades Association with respect to grading and quality, and shall be in strict accordance with the approved Plant List and Specifications.

Table 4. Ratio of Tree Replacement for Private Trees

Tree Removed Diameter of Trunk (DBH) in centimetres	Replacement Tree Ratio
20-30	1
31-40	2
41-50	3
51 or greater	4

Table 5: Compensatory Tree Planting table

Tree ID	Common	Botanical	DBH (cm)	Ownership Category	Condition	Injured	Removals	Urban Forestry Compensation
1	Norway maple	<i>Acer platanoides</i>	34	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
2	Austrian pine	<i>Pinus nigra</i>	39	1. Private	Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
4	Weeping European beech	<i>Fagus sylvatica 'Purple Fountain'</i>	28	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
5	Japanese lilac	<i>Syringa reticulata</i>	6	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
6	Colorado Blue spruce	<i>Picea pungens 'Glauca'</i>	23	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
7	Colorado Blue spruce	<i>Picea pungens 'Glauca'</i>	36	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
8	European Horse chestnut	<i>Aesculus hippocastanum</i>	60	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4
9	Apple	<i>Malus spp.</i>	75	1. Private	Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1
10	White spruce	<i>Picea glauca</i>	45	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3
11	Silver maple	<i>Acer saccharinum</i>	122	1. Private	Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4
13	Manitoba maple	<i>Acer negundo</i>	80	1. Private	Poor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	0
17	Manitoba maple	<i>Acer negundo</i>	50	1. Private	Fair	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	3
18	Silver maple	<i>Acer saccharinum</i>	78	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4
19	Silver maple	<i>Acer saccharinum</i>	90	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	4
20	Norway maple	<i>Acer platanoides</i>	32	1. Private	Good	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	2
REQUIRED NEW PLANTINGS (under provisions of the Tree By-Law)								33
PROPOSED NEW PLANTINGS (on the subject site)								10
CASH IN LIEU OF REPLANTING @ \$550.00/tree as of 2021								23
LEGEND								
 Invasive species			 Native species			 Non-native species		
						 Dying/Dead trees		

A total of ten (10) large/medium-growing shade trees shall be planted on the subject lot, post-construction, as required under provisions of the City of Vaughan **Tree By-Law**. The trees will be planted according to the methodology outlined for balled and burlapped trees in turf by Urban Forestry. Please keep in mind that a new tree should not be planted any closer than 5 meters apart,



or 1.5 meters to fences, property lines, sidewalks or driveways and far enough away from structures and existing trees to allow it to grow to full maturity.

**All wire baskets shall be carefully removed prior to planting of the above-noted new trees.*

Please refer to Table 6 below, as well as TRP -L1 and L3, attached to this report for the proposed species location, selection, and maintenance requirements.

Table 6: Recommended Tree Species for Post-Construction Replanting Plan

PLANT LIST						
DECIDUOUS TREES						
Tree ID, R#	Key	Qty	Botanical	Common	Type	Size/Caliper
1, 2, 3	Co	3	<i>Celtis occidentalis</i>	Common hackberry	W.B./pot	50mm
5, 6, 7	Cc	3	<i>Carpinus caroliniana</i>	Blue beech	W.B./pot	50mm
8, 9	Qr	2	<i>Quercus rubra</i>	Northern Red oak	W.B./pot	50mm
10	Ar	1	<i>Acer rubrum</i>	Red maple	W.B./pot	50mm
CONIFEROUS TREES						
4	Ps	1	<i>Pinus strobus</i>	Eastern White pine	W.B./pot	1.75-2.50 m

CASH-IN-LIEU CONTRIBUTION: *"In instances where more replacement trees are required than can reasonably be accommodated on the development site, a 'cash-in-lieu' payment may be made to the Forestry Tree Reserve Fund (Account #6830100.3550.05) to fund tree planting on city owned properties in the same community."*

DISCUSSION:

As previously stated, a total of ten (**10**) large/medium-growing shade trees shall be planted on the subject lot to restore the canopy loss. Since the rear of the lot falls within TRCA jurisdiction as a part of the permit process, a Landscape Restoration Plan has been prepared and submitted to the TRCA. A total of seventeen (**17**) native species (trees & shrubs) will be planted on the subject site to support functioning, diverse and self-sustaining communities of native plants and wildlife. Please refer to the Post-Construction Restoration prepared by *Lothlorien Garden Consulting March 27th, 2024* for species selection, location, quantity, etc., of all new trees/shrubs proposed for replanting.

With the above in mind, it is consultant's opinion that the proposed new vegetation will support functioning, diverse and self-sustaining communities of native plants and wildlife in the subject site.

Due to site limitation, any additional compensation in the form of replacement planting(s), (if required) shall be determined by City of Vaughan Urban Forestry staff and shall be provided as a cash payment.



PICTURES

An on-site inspection was undertaken by the arborist most recently on March 7th, 2024. During the site investigation, photographs of the Site were taken and observations of wildlife and vegetation were thoroughly recorded. **Tree removals are marked with "X" symbol*

Figure 2: The existing vegetation along Lester B. Pearson Street, viewed from the east



Figure 3: The existing vegetation along Main Street, viewed from the south

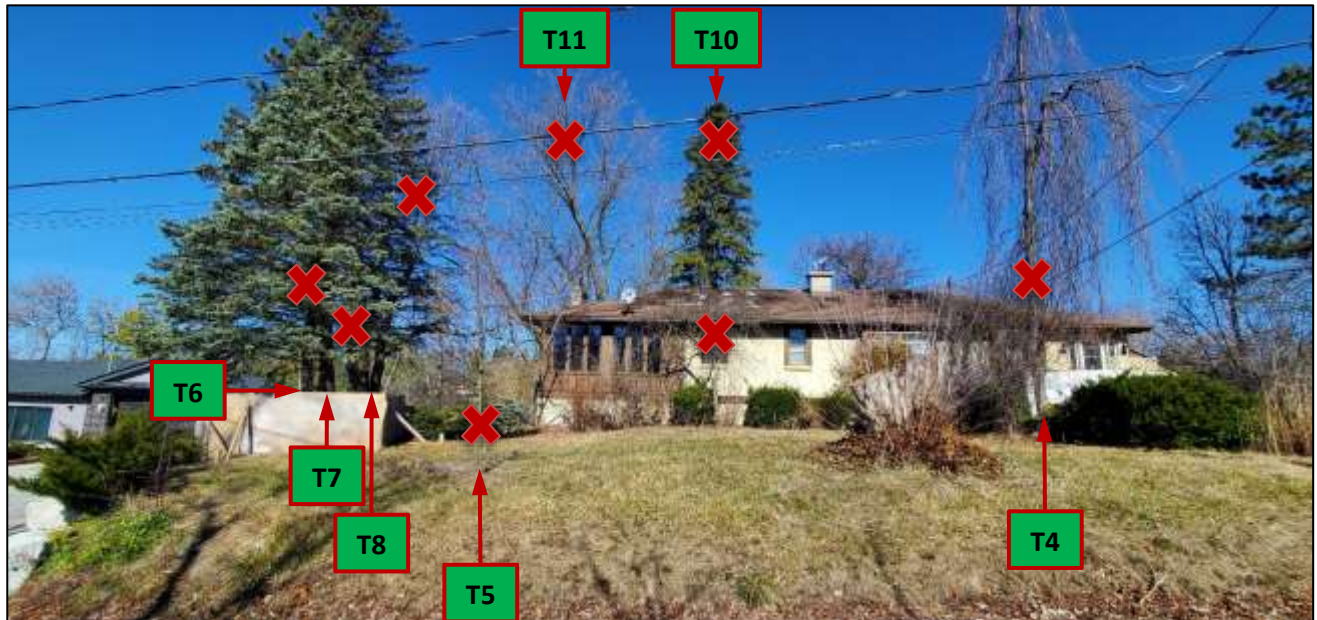




Figure 4: The existing vegetation at the rear of the lot viewed from the west

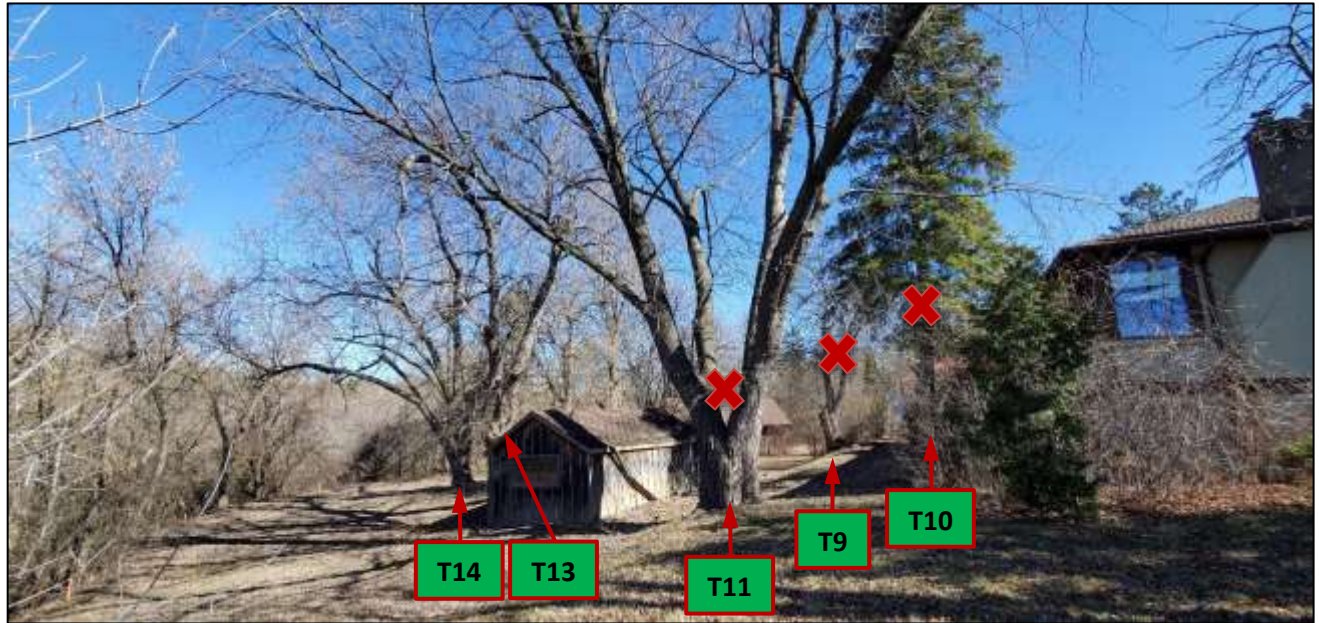


Figure 5: The existing vegetation at the rear, viewed from the east





Figure 6: The existing vegetation at the rear of the lot, close to the stable top of bank, viewed from the west

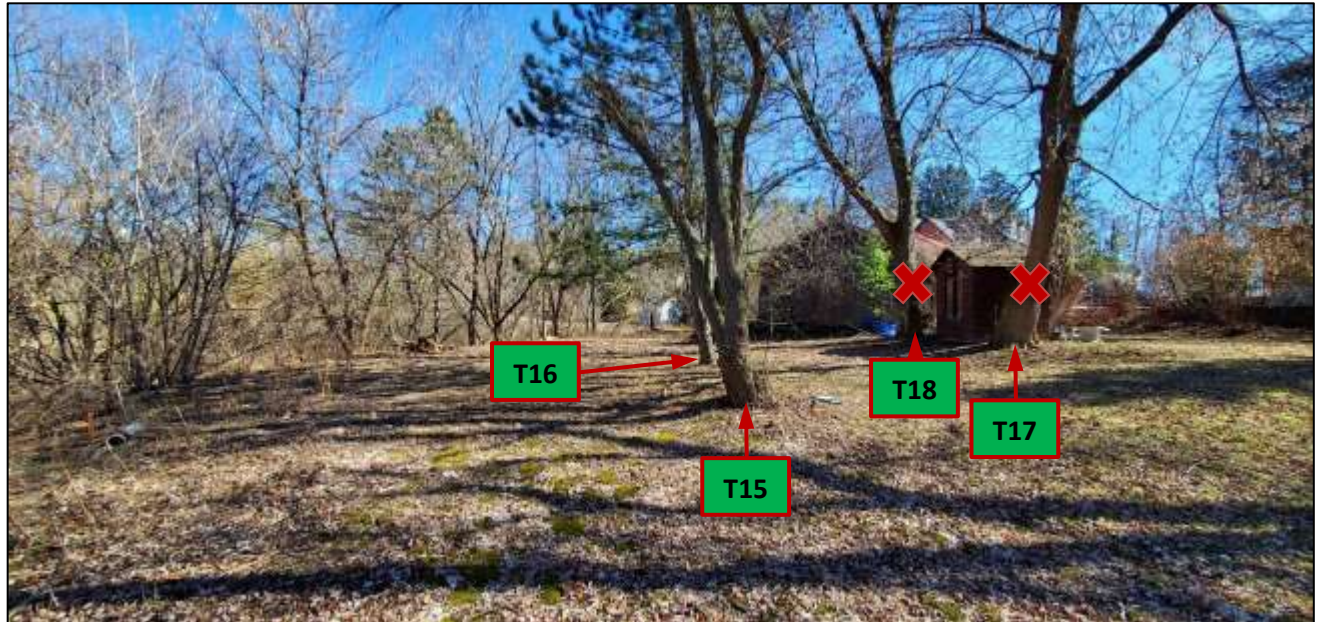
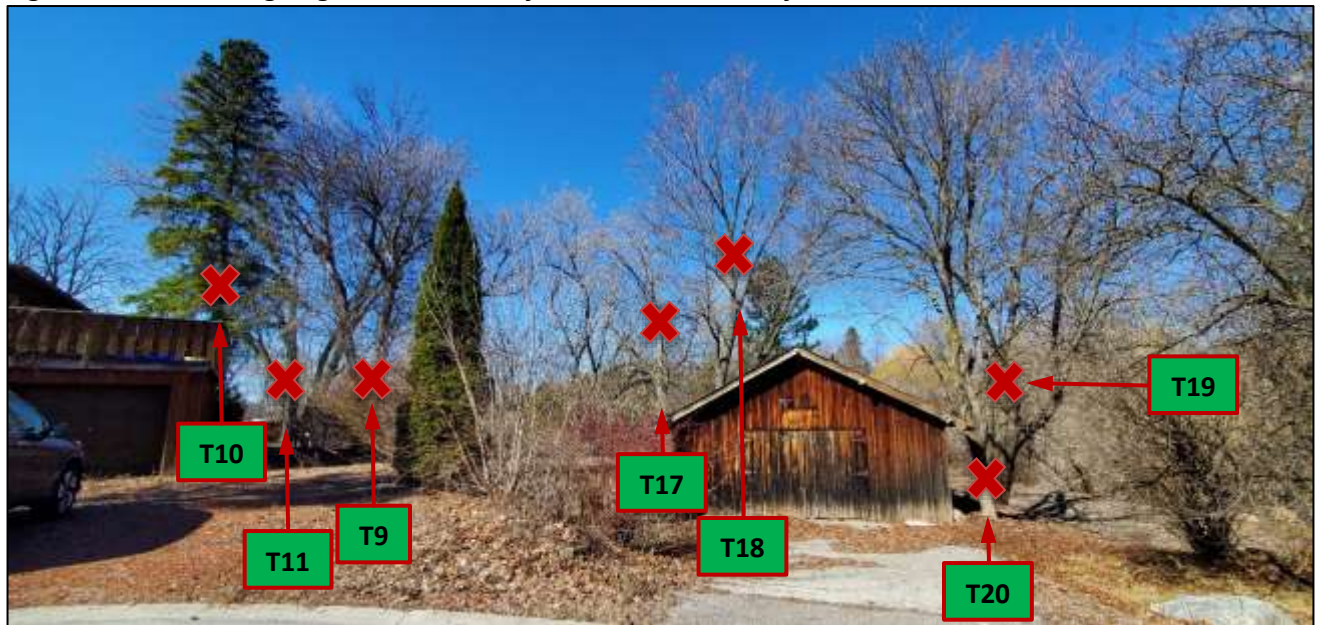


Figure 7: The existing vegetation north of the house, viewed from Lester B. Pearson Street



*Detailed pictures of the proposed tree removals may be found on the next page



Fig.8: Norway maple (T1)



Fig.9: Austrian pine (T2)



Fig.10: Apple tree (T9)



Fig.11: Silver maple (T11)



Fig.12: Base of T11, close up



Fig.13: White spruce (T10)





Fig.14: Manitoba maple (T13)



Fig.15: Silver maple (T19)



Fig.16: Norway maple (T20)



Fig.17: Manitoba maple (T17)



Fig.18: Silver maple (T18)



Fig.19: Silver maple (T19) close up





ASSUMPTIONS AND LIMITING CONDITIONS

1. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the arborist can neither guarantee nor be responsible for the accuracy of the information provided by others.
2. Loss or alteration of any part of this report invalidates the entire report.
3. Possession of the report or copy of thereof does not imply right of publication or use for any purpose by anyone other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consulting arborist.
4. The consulting arborist shall not be required to give testimony or to attend court by reason of the report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract engagement.
5. Sketches, diagrams, graphs, and photographs in the report, are intended as visual aids, and are not necessarily to scale and should not be construed as engineering or architectural reports or surveys.
6. Unless expressed otherwise: 1) the information contained in this report covers only those items at the time of inspection; and 2) the inspection is limited to visual examination of the accessible items without dissection, excavation, probing or coring. There is no warranty of guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.



CERTIFICATE OF PERFORMANCE

I Ivan Mitev, of Lothlorien Garden Consulting, do certify:

That I have personally inspected the subject tree(s) and/or the property defined in the “Assignment” found within this report, and have stated my findings accurately. The extent of the evaluation and/or appraisal is stated in the attached report and Terms of Assignment.

That I have no current or prospective interest in the vegetation or the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved.

That the analysis, opinions and conclusions stated herein are my own.

That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted Arboricultural practices.

That no one provided significant professional assistance to the consultant, except as indicated within the report.

That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any other subsequent events

I further certify that I am an International Society of Arboriculture Certified Arborist® and that I acknowledge, accept and adhere to the ISA Code of Ethics. I have been involved with the practice of Arboriculture and the care and study of trees since 2005.

Ivan Mitev,
M.Sc. Ecologist
ISA Certified Arborist® #2297A
Consulting Arborist – *Lothlorien Garden Consulting*
lothloriengardenconsulting@gmail.com

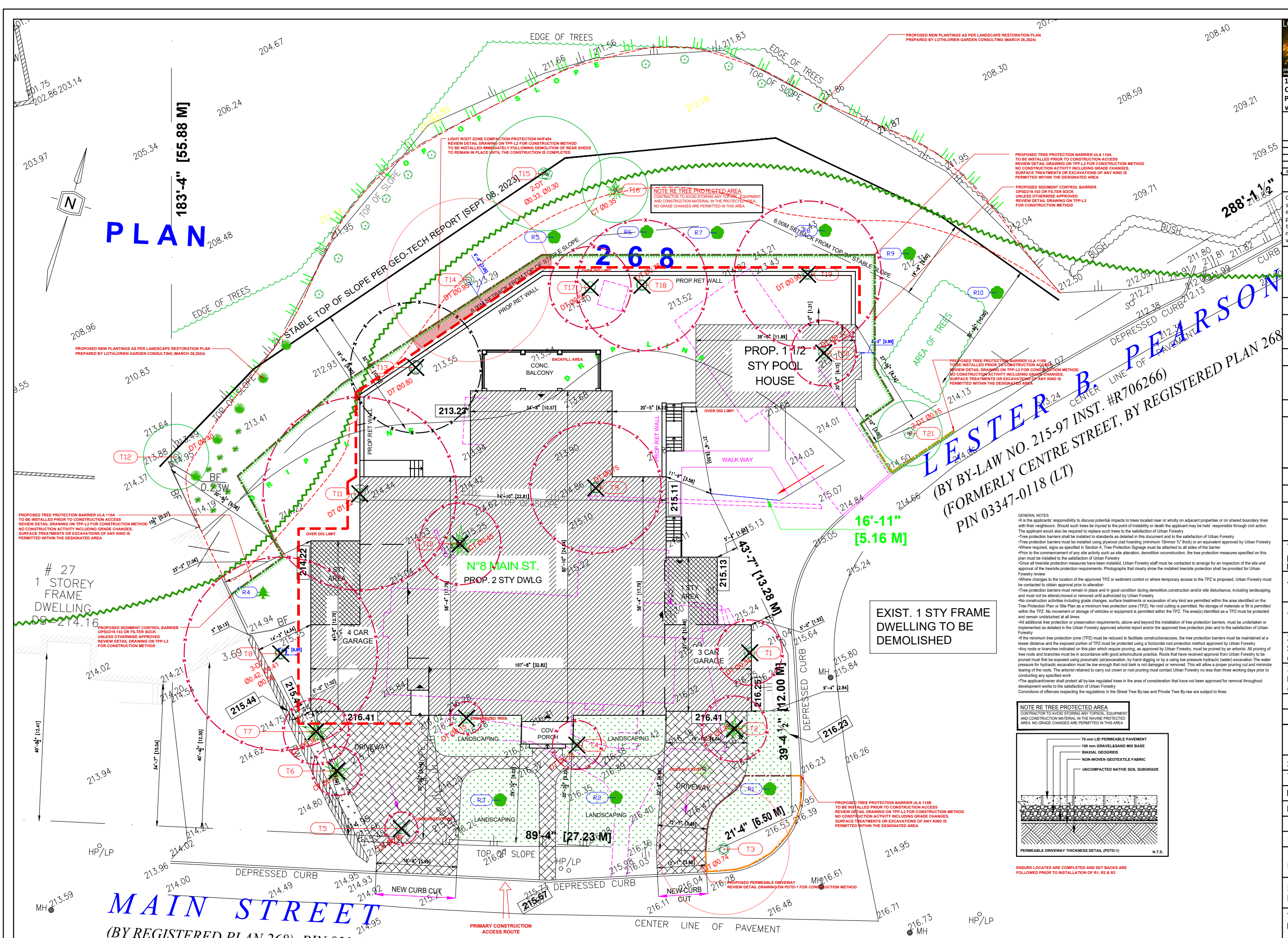


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REFERENCES AND RESOURCES

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- ANSI A300 (Part 6) – 2005. Tree, Shrub, and Other Woody Plant Maintenance –Standard Practices (Transplanting)
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- Matheny and Clark, ISA, 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition
- VERTICAL MULCHING OF TREES: EFFECTS ON ROOTS AND WATER STATUS by P.J. Kalisz, J.W. Stringer, and R.J. Wells
- AS 4970-2009 PROTECTION OF TREES ON DEVELOPMENT SITES
- Installation Guide Spectra® Roadway Improvement System ©2005, Earth Technologies, Inc.
- Tree Protection By-Laws TORONTO MUNICIPAL CODE CHAPTER 813, TREES
- THE CITY OF VAUGHAN BY-LAW NUMBER 052-2018
- THE CITY OF VAUGHAN BY-LAW NUMBER 185-2007 A by-law to prohibit or regulate the destruction or injuring of trees located on private property in the City of Vaughan.
- Tree Protection Protocol, City of Vaughan, 2018
- CITY-WIDE URBAN DESIGN GUIDELINES City of Vaughan, January 09, 2018



LOTHLORIEN GARDEN DESIGN CONSULTING
1502-111 Inverlochy Blvd. Thornhill, ON, L3T 3R7
Phone: 647 351 2631
www.lothloriengarden.com

ISSUED: [] REVISION: [] COMMENTS: [] DATE: []

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TREE PROTECTION and REPLANTING PLAN

ADDRESS:

8 Main Street, Vaughan, ON L4H 3N5

CLIENT NAME: MSV THE NIAGARA INC.

SITE PLAN: **ubisoft Design Group**
697 Mount Pleasant Rd.
Toronto, Ontario M4S 2K4
TEL: 416.667-0222 FAX: 416.667-0791 EMAIL: info@rubinoffdesign.com

TPP DRAWN BY:

IVAN MITEV
M.Sc. Ecologist
ISA Certified Arborist #ON-2297A
Consulting Arborist - Lothlorien Garden Consulting
lothloriengardenconsulting@gmail.com

DATE: 04/11/2024

SCALE: 1:250 (17" x 11")

SHEET NUMBER: TPP- L1

LEGEND

TREES TO REMAIN
protected root zone (TPZ)
EXISTING TREE KEY

TREES TO BE REMOVED

TREES TO BE INJURED

2x4 FRAME AND SNOW-FENCE-CLAD HOARDING

2x4 FRAME AND PLYWOOD-FENCE-CLAD HOARDING

BIAXIAL GEOGRID

PERMEABLE PAVERS

HORIZONTAL ROOT PROTECTION

STRUCTURAL ROOT ZONE

TRCA LIMIT

DEEP ROOT TREATMENT

ROOTS STUDY (R.S.E.)

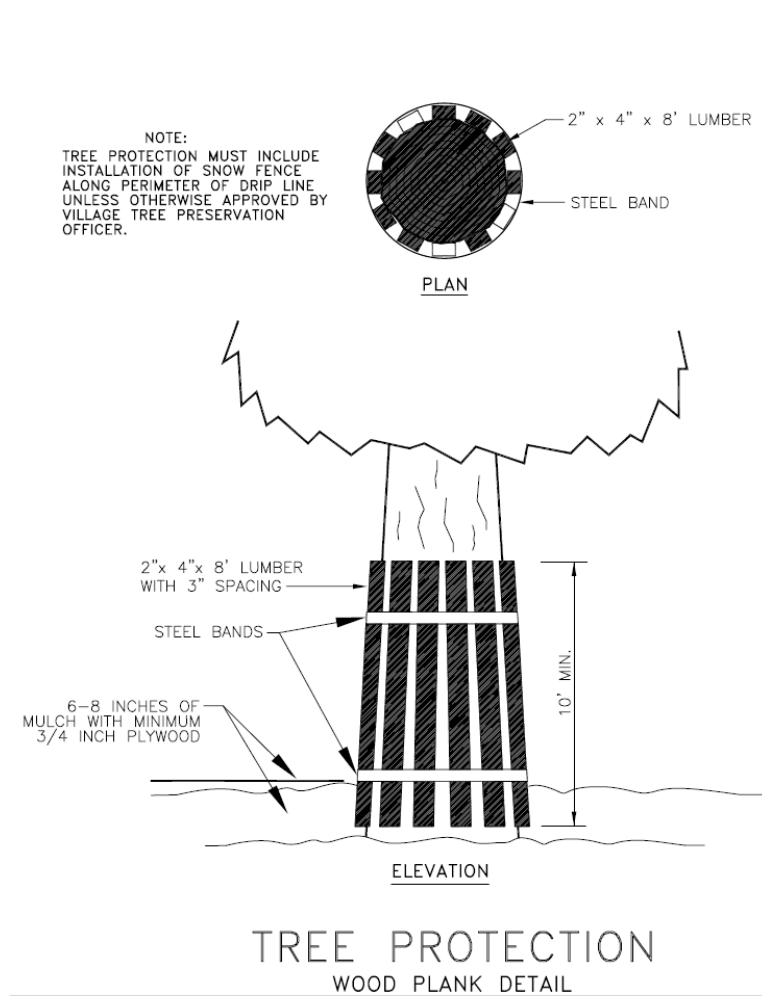
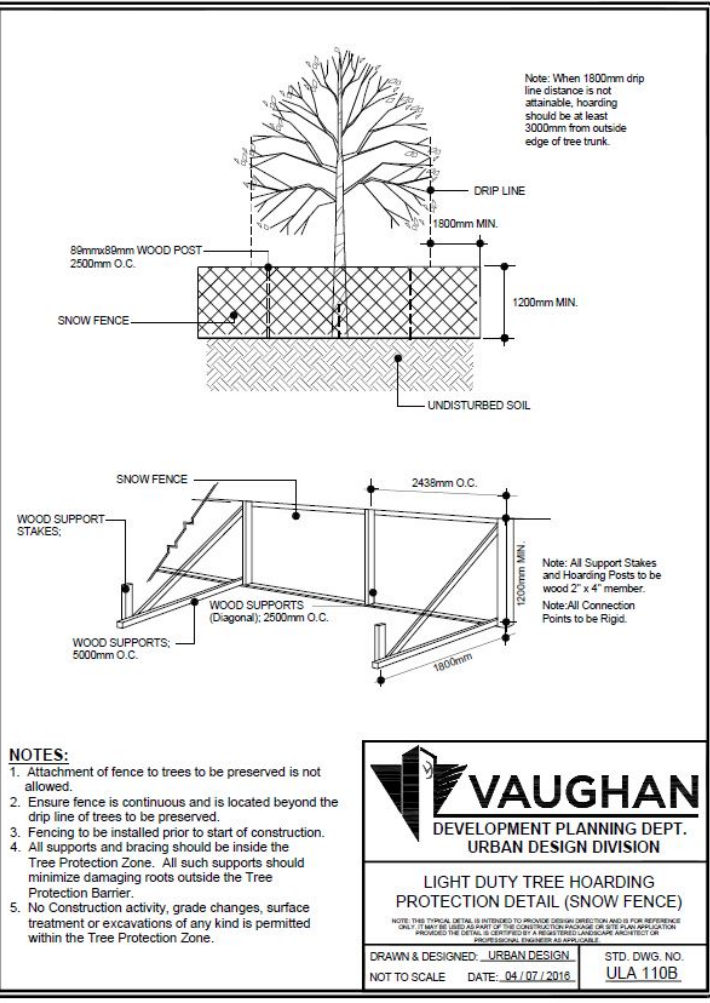
OVER DIG LIMIT

DEMOLITION LIMIT

TREES IN DECLINE PROPOSED FOR REMOVAL

SILT BARRIER FENCE

TREE REPLANTING LOCATION



1. Diameter at breast measurement of free 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 protection barriers of 0.3 meters of diameter from the tree stem for each centimeter of tree trunk diameter.



LOTHLORIEN
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CONSULTING

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<h2 style="margin: 0;">TREE PROTECTION</h2> <h2 style="margin: 0;">HOARDING DETAIL AND</h2> <h2 style="margin: 0;">SPECIFICATION</h2>	
SCALE:	NTS
SHEET NUMBER:	TPP- L2

TREE PROTECTION ZONE:
No construction activity including grade changes, surface treatments or excavations of any kind is permitted within the area identified on the Tree Protection Plan or Site Plan as a 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 remain undisturbed at all times.

TREE PROTECTION BARRIERS:
For City-owned Trees:
Tree protection barriers for trees situated on the City road allowance where visibility must be maintained, can be 1.2m (4ft.) high and consist of chain link, or orange plastic web snow fencing on a 2" x 4" wood frame. All supports and bracing used to secure the barrier should be located outside the TPZ. All supports and bracing should minimize damage to roots outside the TPZ.
Where some fill or excavate has to be temporarily located near a tree protection barrier, plywood must be used to ensure no material enters the TPZ.
If the TPZ needs to be reduced to facilitate construction access, the tree protection barrier must be maintained at a lesser distance and the exposed TPZ protected with plywood and wood chips. This must first be approved by Urban Forestry.

For trees on private property situated on or adjacent to construction sites:
Tree protection barriers must be installed around trees to be protected using plywood clad hoarding or an equivalent approved by Urban Forestry. All supports and bracing to safely secure the barrier should be outside the TPZ. All such supports and bracing should minimize damage to roots outside the TPZ.

Tree Protection Hoarding in the Ravine & Natural Feature Protected Areas
The applicant/owner shall protect all trees in the protected area that have not been approved for removal or injury, throughout development works to the satisfaction of Urban Forestry.
Plywood (or chain link fence, if agreed to by Urban Forestry) tree protection hoarding shall be installed in the locations as indicated in the Urban Forestry approved tree protection plan. Tree protection hoarding shall be installed to standards as detailed in the City's Tree Protection Policy and Specifications for Construction near Trees and to the satisfaction of Urban Forestry.
Tree protection hoarding must remain in place and in good condition during demolition and/or construction and must not be altered or moved until authorized by Urban Forestry. Established tree protection zones must not be used as construction access, storage or staging areas. Grade changes are not permitted within established TPZ.
All additional tree protection or preservation requirements, above and beyond the required tree protection hoarding, 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.
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-219.110) and to the satisfaction of Urban Forestry.

General Note:
Prior to the commencement of any site activity the tree protection barriers specified on this plan must be installed and written notice provided to Urban Forestry. The tree protection barriers must remain in effective condition until all site activities including landscaping are complete. Where required, signs as specified in Section 4 "Tree Protection Signage" must be attached to all sides of the barrier.
Written notice must be provided to Urban Forestry prior to the removal of the tree protection barriers.

ARBORICULTURAL WORK:

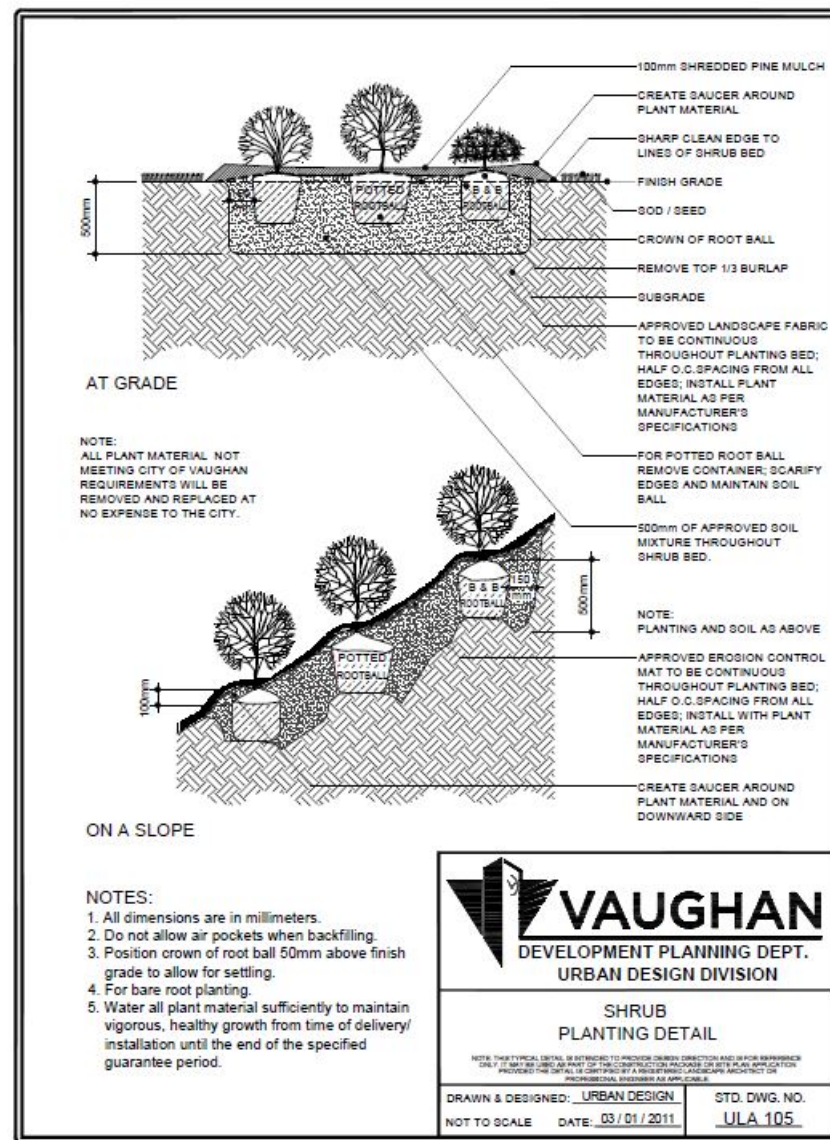
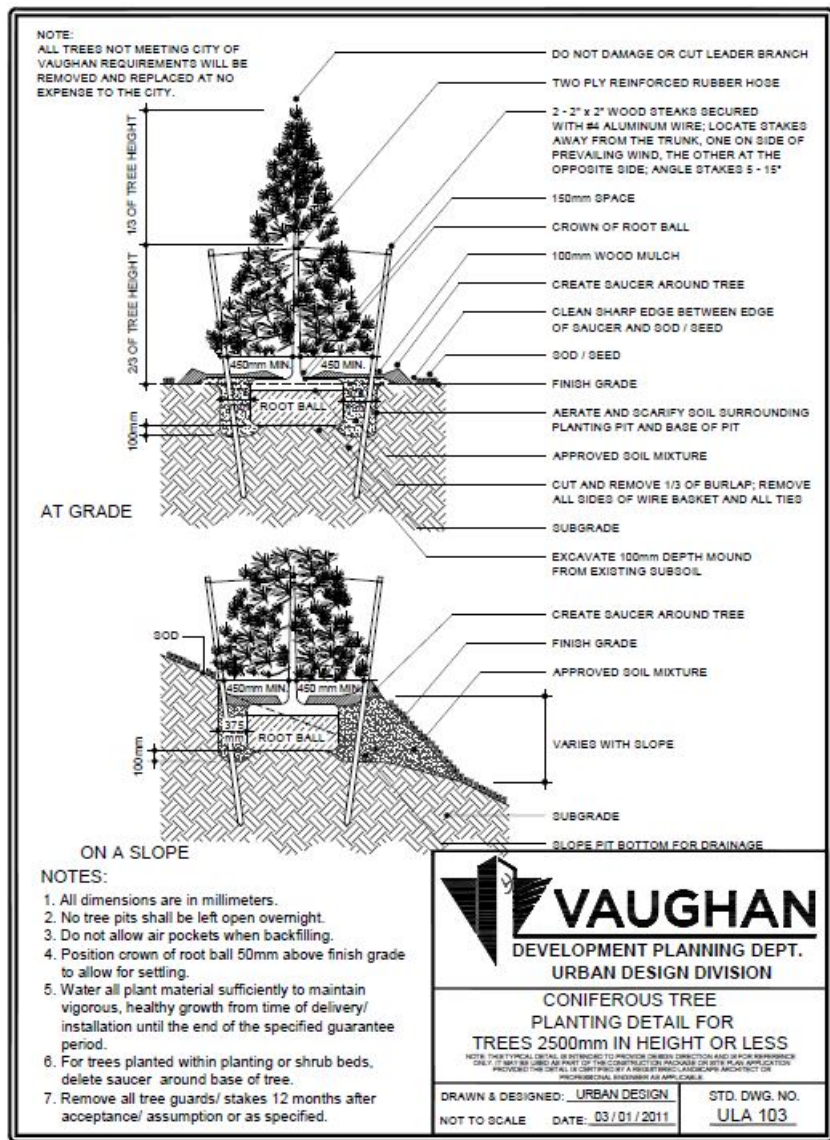
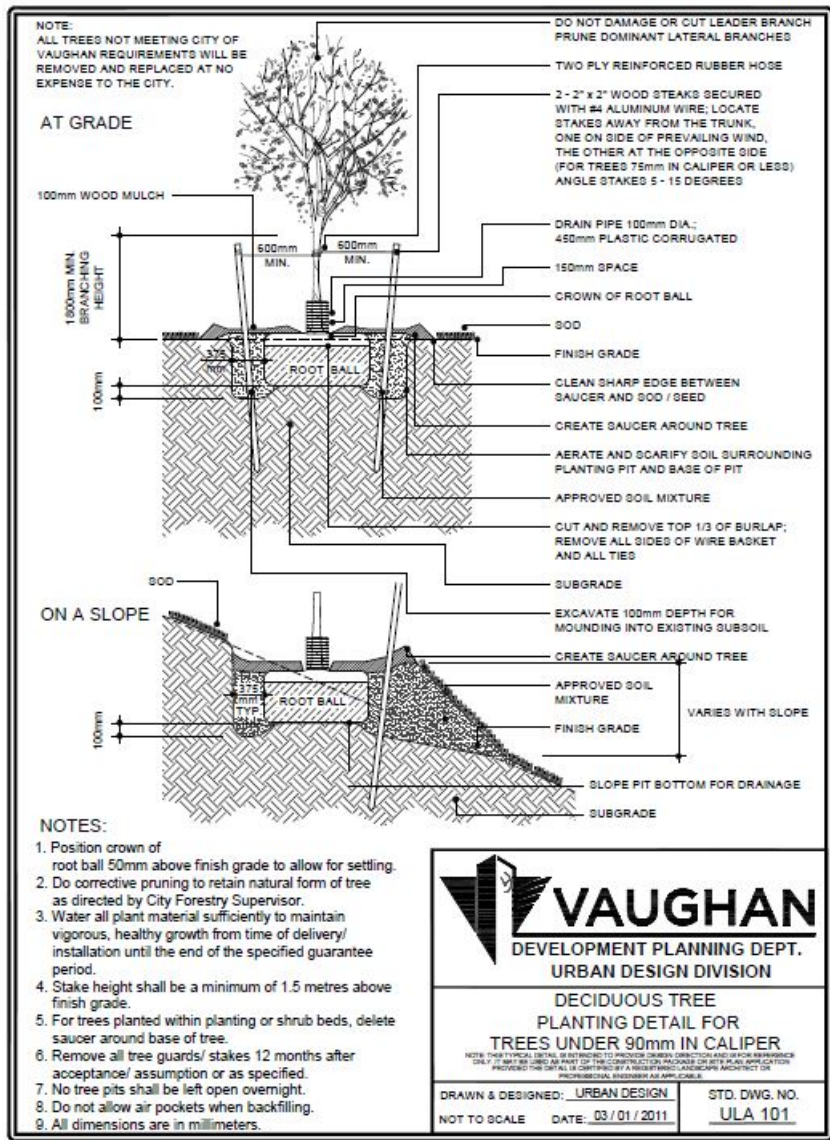
Any roots or branches which extend beyond the TPZ indicated on this plan which require pruning, must be pruned by a qualified Arborist or other tree professional as approved by Urban Forestry. All pruning of tree roots and branches must be in accordance with good arboricultural standards. Roots located outside the TPZ that have received approval from Urban Forestry to be pruned must first be exposed by hand digging or by using a low pressure hydro vac method. This will allow a proper pruning cut and minimize tearing of the roots. The Arborist/tree professional retained to carry out crown or root pruning must contact Urban Forestry no less than 48 hours prior to conducting any specified work.

TREE DAMAGES:

Physical injury to the trunk, crown and roots of a tree will occur if construction equipment is permitted too 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.

Root cutting is a type of physical injury that can significantly impact the health of a tree. The majority of tree roots are found in the upper 15 -25 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 and may result in safety concerns.

Compaction of the soil in the tree root zone is one of the leading causes of tree decline. 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 a reduction in the pore spaces in the soil, which contain air and water necessary for root growth. Without space available for oxygen and water, tree roots will suffocate and a decline in tree health 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 centimeters of added soil can have a detrimental impact on tree health.

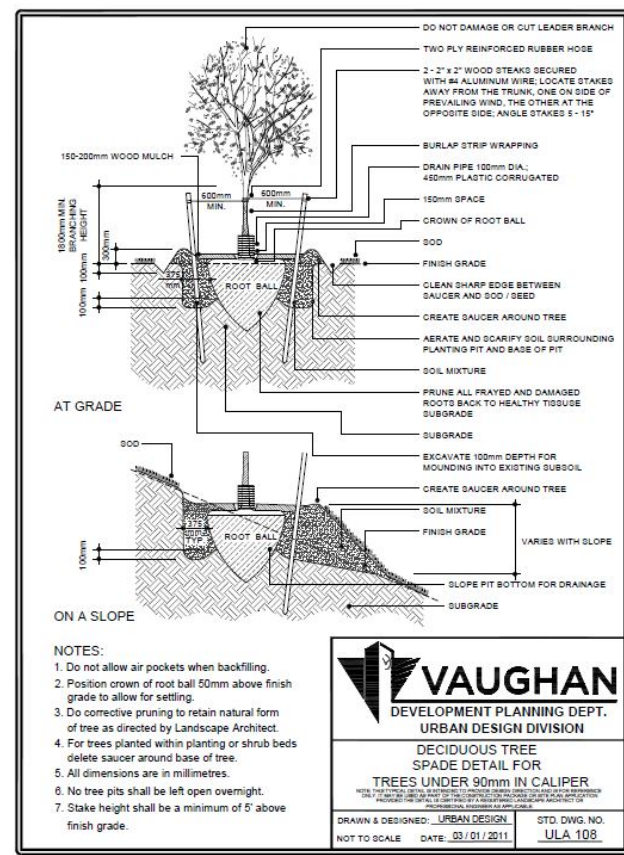
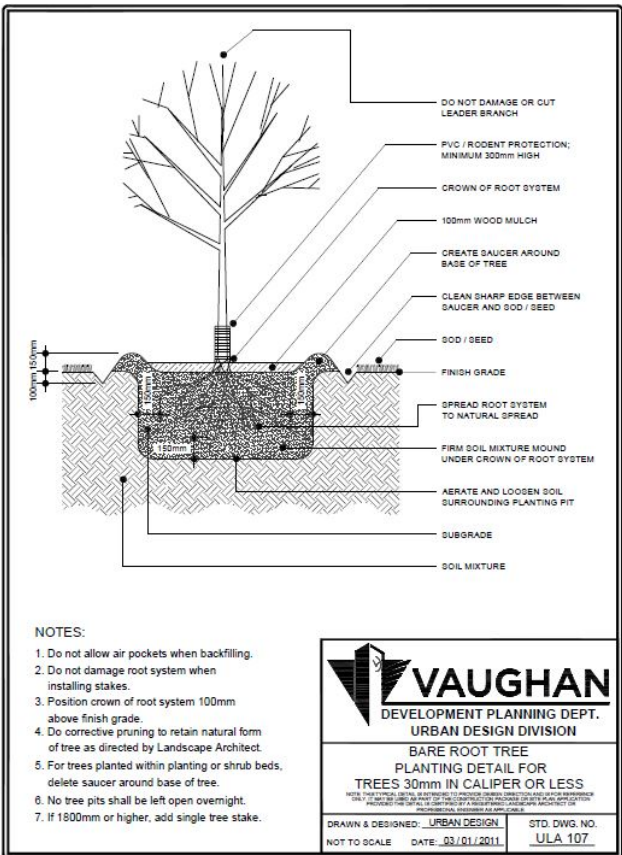
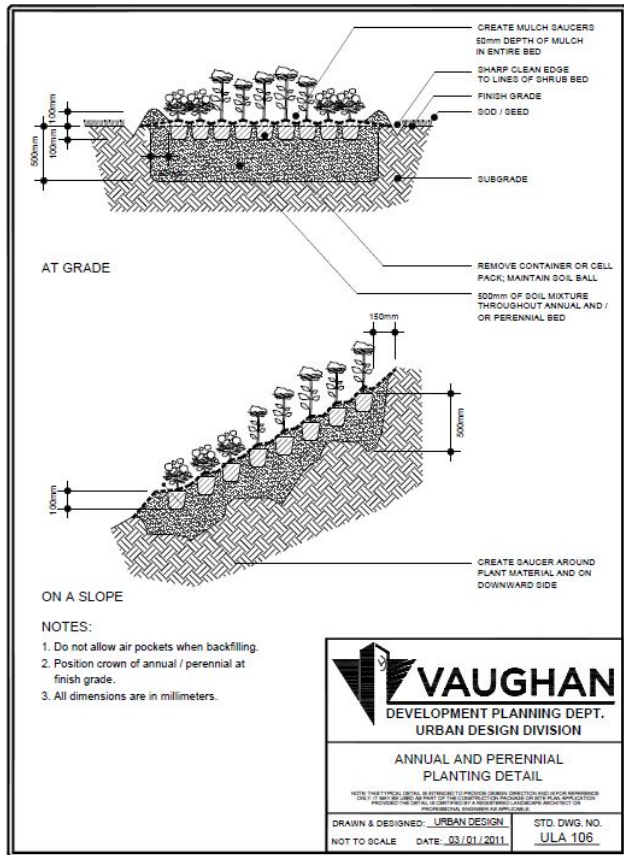


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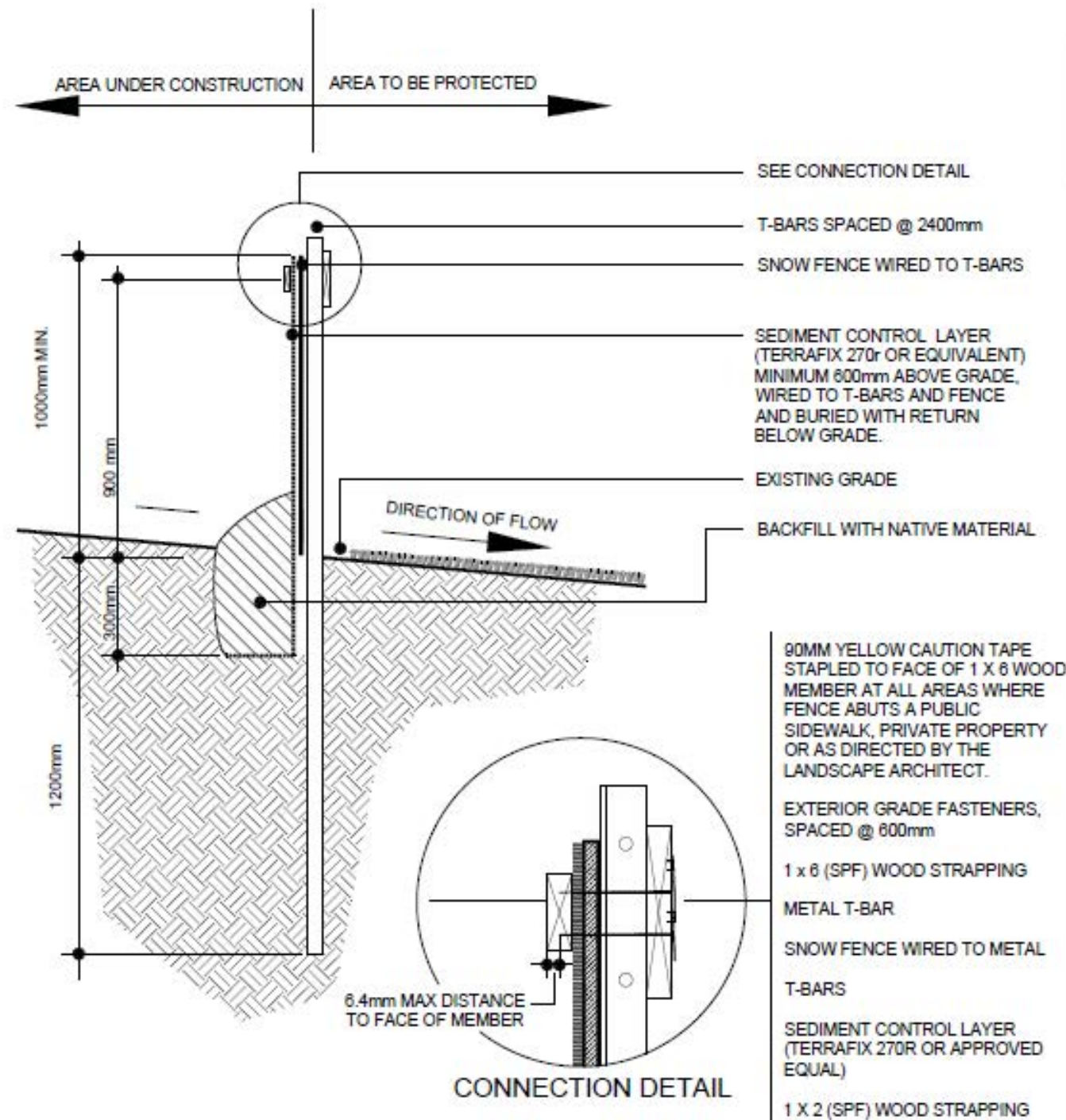
TREE REPLANTING DETAIL AND SPECIFICATION

SCALE: NTS
SHEET NUMBER: TPP- L3



Post-Construction Restoration General notes:

1. The proponent is responsible for ensuring that all plantings are native species and are suitable given the soil, moisture, and light conditions of the site, as well as any specific stresses. Cultivars of native species are generally not acceptable. While invasive species are not permitted, non-invasive exotic species may be used in some limited areas. Plantings should also be compatible and complementary to the existing vegetation communities.
2. Early successional species should be used alone or in concert with shade tolerant (i.e. late-seral species) to allow natural succession to ensue. Shade tolerant species can be used if conditions are favourable and in areas where a source of late-seral seed does not exist in order to promote succession.
3. In general, woody plantings should follow the standard densities of 1 metre on centre for shrubs and 5 metres on centre for trees. However, higher densities may be required depending on the situation (e.g. live staking, use of stock 100 cm or smaller, edge management, sensitive areas, or other site-specific situations).
4. Indicate that site stabilization will occur during or immediately following construction to avoid unacceptable levels of erosion. Depending on their suitability, various techniques may be employed including hydroseeding, or installing straw mulch or jute mats, etc. Although sod is acceptable as an interim measure, it will not be permitted as a permanent groundcover in natural areas and associated buffers.
5. Seeding mixtures should consist of quick-growing, non-invasive species. Manufacturers offer an assortment of mixtures that are suited to various conditions, including a slope stabilization mix, meadow mix, and wetland mix. In particularly sensitive areas, a seed mix consisting entirely of native species should be used to avoid the invasion of aggressive vegetation. Please refer to the TRCA Seed Mix Guidelines for further details. In areas where invasive species are a particular problem, eradication of these species may become a component of the restoration initiative.
6. Ensure that riparian planting coverage for a stream extends from the watercourse edge to a minimum of 10 metres on either side. For a valley, coverage should include plantings within the entire feature plus an additional 10 metres. Generally, we only require restoration in areas being disturbed.
7. Riparian plantings should be installed after the spring freshet to avoid being uprooted during high flows if planted the previous autumn. Mulch application may not be appropriate in riparian zones as this material can be easily washed away during high water periods. Alternative methods of dealing with competitive vegetation should be considered, however herbicide application is not desirable.
8. The objective is to establish at least 50% woody coverage through restoration in areas where the desired vegetation community is forest.
9. When selecting vegetation for plantings, try to achieve a degree of structural and species diversity.
10. If the area is very grassy, mulch and rodent guards may be needed to protect young tree stems. Larger planting stock may be required in these areas due to competing herbaceous vegetation. Maintenance plans should include watering during summer dry spells for the first 2-3 years after planting.
11. Other than in sites with competing herbaceous vegetation, we generally have no size requirements for vegetation to be planted. Typically, we prefer greater numbers of smaller-sized vegetation over fewer numbers of larger-sized vegetation. Planting large vegetation may cause more disturbance to the site.
12. Plans should indicate timing of the restoration works, as well as phasing if applicable.
13. Indicate how existing vegetation to be retained will be protected. Please refer to the TRCA Edge Management Guidelines for further detail.
14. Drawings should include a plan view showing planting locations, species and numbers, a detail showing the installation, and a note listing the species, size, and condition (i.e. bareroot, balled and burlapped, potted). The latter will ultimately dictate the season when works can be done. Bareroot stock should only be installed while dormant in spring or after leaf fall in autumn. Planting of balled and burlapped and container-grown stock can be installed at any time during the growing season if adequate water is supplied.



NOTES:

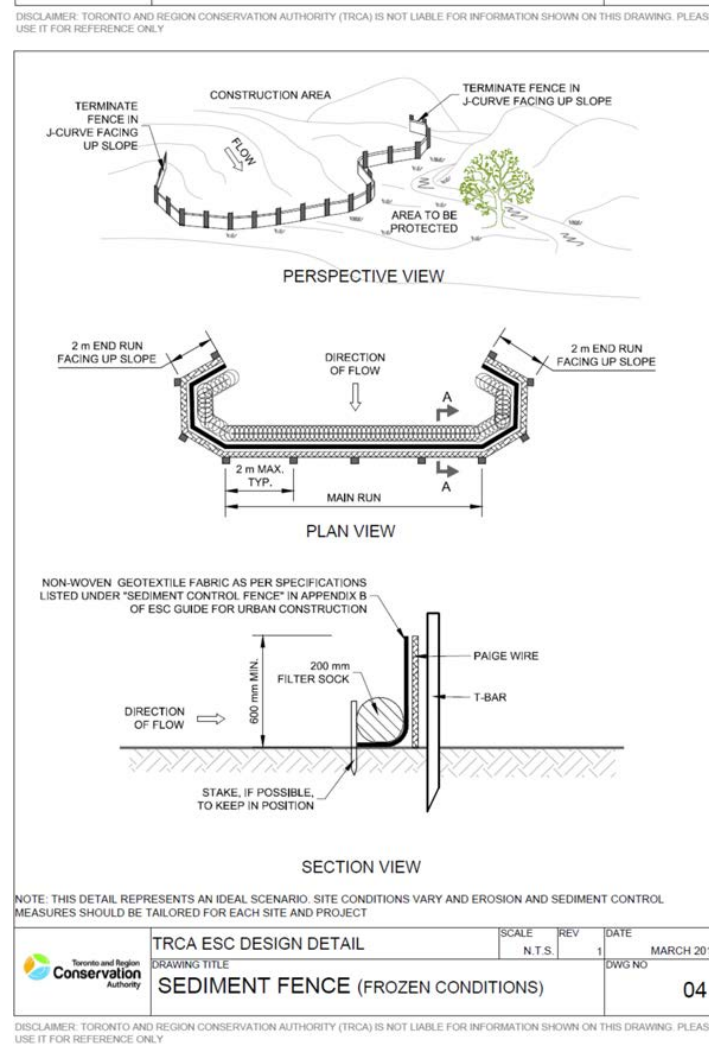
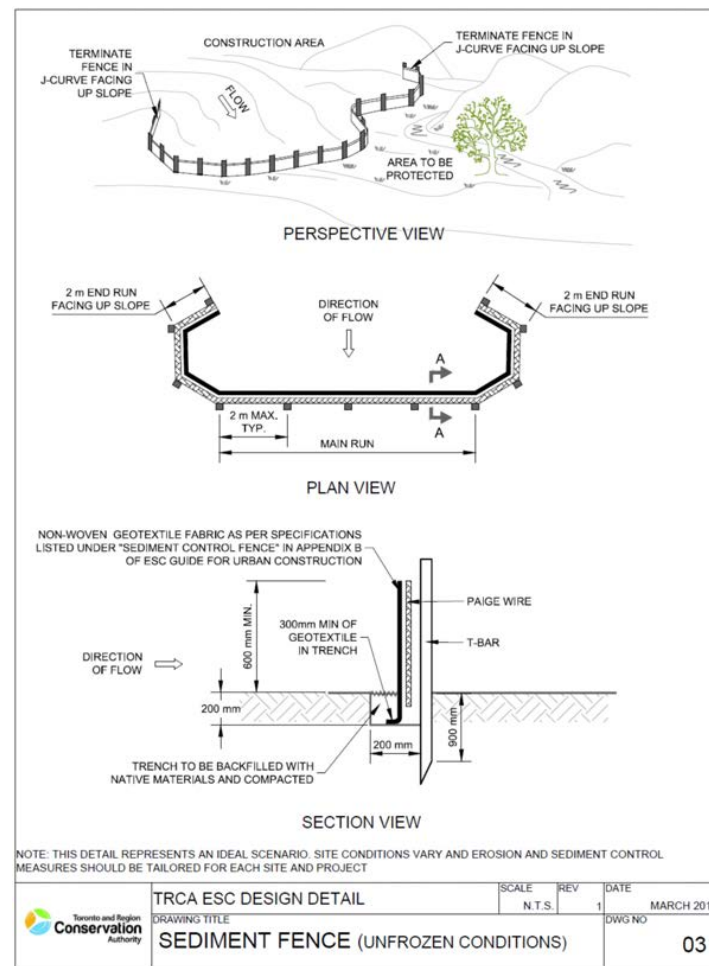
1. SEDIMENT CONTROL FABRIC TO HAVE HORIZONTAL OVERLAP OF 1000mm @ ALL JOINTS
2. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE RESTORATION AND COST OF REPLACING ALL AREAS AND MATERIAL AFFECTED BY THE EXCAVATION FOR THE SEDIMENT CONTROL FENCE.
3. ALL FASTENERS ARE TO BE FLUSH WITH FACE OF MEMBERS. THE GENERAL CONTRACTOR IS RESPONSIBLE TO GRIND OR REMOVE ALL FASTENERS THAT PROJECT THROUGH FACE OF MEMBERS
4. ALL DIMENSIONS SHOWN IN MILLIMETERS

VAUGHAN
DEVELOPMENT PLANNING DEPT.
URBAN DESIGN DIVISION

**SEDIMENT CONTROL
CONSTRUCTION FENCING DETAIL**

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 STD. DWG. NO. ULA 111
NOT TO SCALE DATE: 03/01/2011



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SILT FENCE BARRIERS DETAILS AND SPECIFICATIONS

SCALE: NTS
SHEET NUMBER: TPP- L4

SEDIMENT FENCE INSTALLATION GUIDE

1. Support posts should be no more than 2 metres apart and driven into the ground to a depth of at least 90 cm.
2. Brace the fence posts diagonally in areas where deep ponding is anticipated.
3. Geotextile fabric should be stretched tight across the structural fencing with no sagging and extend up from the ground to a minimum height of 60 cm. Fabric should be fastened to the structural support fencing and support posts with wire ties tied at the posts.
4. Where the geotextile is joined to provide a continuous run, the ends should be overlapped at least 50 cm and securely fastened to posts.
5. The bottom 30 cm of the geotextile should be tied into soil, using either static slicing or trenching methods, to ensure there is no space between the bottom of the geotextile and the ground. The trench should be constructed to be at least 20 cm deep and 40 cm wide.
6. The trench should be backfilled and compacted to ensure structural stability of the fence.
7. In frozen soil conditions, if trenching cannot be achieved the geotextile should be secured with a filter sock (recommended diameter of 450 mm) staked into place along the upstream side of the fence.
8. Double row sediment control fence should be installed with straw bales or a similar measure to provide structural support in between the fence rows.