MHBC
PLANNING
URBAN DESIGN
& LANDSCAPE
ARCHITECTURE

KITCHENER
WOODBRIDGE
LONDON
KINGSTON
BARRIE
BURLINGTON

October 28, 2020(Revised April 26, 2022)

ARBORIST REPORT
9575 Keele Street, Vaughan, Ontario

BACKGROUND

MHBC was retained to conduct an inventory of the existing trees within the subject lands located at 9575 Keele Street in the City of Vaughan. This investigation examined approximately 70 trees on-site and within 6 meters of the site boundary. Field work was completed on October 09, 2019 this report relates to the condition of the trees as observed on that date.

PROCEDURE

The on-site inventory of existing trees was carried out using the current survey of the property and relies on the accuracy of this survey. The inventory includes trees within the site boundary and all trees within adjacent public boulevard.

This inventory is summarized graphically in the Tree Inventory Plan TI-1, which shall always be read in conjunction with this report and shall form part of this report. For the purposes of this report, trees and groupings of trees are identified in terms of species, size, condition, and recommendations.

The following rating system was used in describing the general condition of the trees inventoried:

Good (G): Indicates a condition of vigour and no major concerns;
Fair (F): Indicates an adequate tree, which may have some minor issues;
Poor (P): Indicates declining health, bad form, or other more serious issues;
Dead (D): Indicates a dead tree that should be removed.

ASSUMPTIONS AND LIMITING CONDITIONS

- Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible and is assumed to be correct; however MHBC can neither guarantee nor be responsible for the accuracy of information provided by others.
- It is assumed that the properties are not in violation of any applicable codes, ordinances, statutes, or other governmental regulations.
- Unless otherwise required by law, possession of this report or a copy thereof does not imply right of publication or use for any purpose in whole or in part by any other than the person or company by whom it was commissioned.
- The use of excerpts from this report or alterations to this report, without the authorization of MHBC Planning will invalidate the entire report. This report may not be used for any purpose other than its intended purpose as outlined.
- Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflect the condition of those items at the time of inspection;

and 2) the inspection is limited to visual examination or accessible items without dissection, excavation, probing, or coring. There is no warranty or guarantee, expressed or implied, that problems or deficiencies in the plants inventoried may not arise in the future.

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

YORK REGION TREE COMPENSATION

Compensation is required for the removal of trees on the Regional road allowance in order to preserve canopy cover and to realize no net loss of trees. Compensation may be provided in the form of replacement plantings or through payment of equivalent compensation value.

$$\text{Number of replacement } trees = \left(\left(\frac{\text{(DBH of tree to be removed)}}{\text{(Replacement Tree Caliper Size)}}\right) * \text{Condition rating}\right)$$

Refer to the table below for condition rating specifications and their respective percentages.

Condition Rating	Percentage (for compensation)	Criteria
Good	100%	Growth occurs mostly as extensions from the terminal bud with little epicormics branching. Shoot growth usually exceeds 10 cm. Full, symmetrical crown, no sign of active decay, chronic or acute insect attack, large open wounds, tissue necrosis, dieback or chlorotic foliage, not leaning, falling or about to be uprooted.
Satisfactory	80%	Growth occurs mostly as extensions from the terminal bud. Epicormic branching may be heavy providing that the growth is healthy and abundant. May have a partially leaved or disfigured crown (>74%crown density), combined with a few dead branches or limbs, or small open wounds and small trunk tissue necrosis. Tree health will likely not decline further in the next 5 years.
Potential Trouble	60%	Growth occurs mostly as epicormic branching or basal sprouts. Usually no growth from terminal buds. New growth may be thin with small buds showing lack of vigour. May improve or decline in health over the next 5 years. May have a partially leaved or disfigured crown (50-74% crown density). These trees usually have a combination of problems which may include poor form or lean, chronic or acute insect attack, small trunk tissue necrosis, small stem scars, twig dieback, dead branches, exposed roots or rootball, and/or animals burrowing in to rooting area. Infection may be present in its early stages.

Declining	40%	Declining in health. Crowns have significant twig dieback and dead branches. Usually describes trees having large trunk tissue necrosis, large stem scars. Foliage discolouration is often associated with this condition as is moderate to heavy top dieback and epicormic branching (<50% crown density). Chronic fungal infection or insect infestation may be present. These trees may require major corrective pruning, or replacement.
Death Imminent	20%	Symptoms as in Declining but more acute. Will likely die within 5 years. Will require replacement or removal.
Dead	0%	No leaves, brittle twigs, dry buds

Replacement trees must be planted in accordance with the Region's standards and specifications for street tree planting.

Compensation value is calculated as follows:

Compensation Value ($) = (Number of replacement trees) * Replacement Cost

The replacement cost for a given tree is based on the Region's cost for planting a street tree and maintaining it in good condition and under warranty for 3 years.

Certain tree species are exempt from compensation Guidelines. Exempt trees include: Tree-of-Heaven (Ailanthus altissima), European/black alder (Alnus glutinosa), Russian olive (Elaeagnus angustifolia), any tree of the genus ash (Fraxinus sp.) not under an Emerald Ash Borer treatment program, and any tree of the genus buckthorn (Rhamnus sp.).

SUMMARY OF TREES INVENTORIED

All trees within 6 meters of the site boundary have been inventoried.
The trees shown with a tone are recommended for removal due to conflicts with the proposed works.

Tree No.	Common Name	Botanical Name	DBH (CM)	Cond.	Size of TPZ(M)	Comments	Recommendation
1*	Siberian Elm	Ulmus pumila	68	F	6.8		Retain
2*	Silver Maple	Acer saccharinum	72	F	7.2		Retain
3	Basswood	Tilia americana	57	F	3.6		Retain
4	Colorado Spruce	Picea pungens	23	F/P	1.8	In severe decline	Remove due to construction
5	Colorado Spruce	Picea pungens	19	P	1.8	In decline	Remove due to construction
6	Colorado Spruce	Picea pungens	18	F/P	1.8	In severe decline	Remove due to construction
7	Colorado Spruce	Picea pungens	17	P	1.8	In decline	Remove due to construction
8	Colorado	Picea pungens	24	P	1.8	2 stems codominant,	Remove due to

	Spruce					in decline	construction
9	Colorado Spruce	Picea pungens	21	F/P	1.8	In severe decline	Remove due to construction
10^	Silver Maple	Acer saccharinum	~24	F	3.6	Moderate lean	Retain
11^	Silver Maple	Acer saccharinum	~42	F	6.0		Retain
12^	Silver Maple	Acer saccharinum	~49	F	6.0	Obvious cavitation in trunk	Retain
13^	Silver Maple	Acer saccharinum	~55	F	7.2		Retain
14^	Silver Maple	Acer saccharinum	~60	F	7.2		Retain
15^	Silver Maple	Acer saccharinum	~62	F	8.4		Retain
16	Manitoba Maple	Acer negrundo	65	F	4.2	Evidence of past structural failures	Remove due to construction
17	Manitoba Maple	Acer negrundo	62	F	4.2	Obvious cavitation in upper trunk	Retain
18	Ash Sp.	Fraxinus Sp.	~43	D	6.0		Retain 3.0m standing peg for habitat. Dead canopy to be removed per TRCA.
19	Colorado Spruce	Picea pungens	35	F	2.4		Remove due to construction
20	Colorado Spruce	Picea pungens	45	F	3.0		Remove due to construction
21	Colorado Spruce	Picea pungens	37	F	2.4		Remove due to construction
22	Apple Sp.	Malus Sp.	17	F	1.8		Remove due to construction
23	Colorado Spruce	Picea pungens	31	F	2.4		Retain
24	Norway Spruce	Picea abies	12	F	1.8		Retain
25	Colorado Spruce	Picea pungens	35	F	2.4		Retain
26	Norway Spruce	Picea abies	10	F	1.8		Retain
27	Colorado Spruce	Picea pungens	38	F	2.4		Retain
28	Colorado Spruce	Picea pungens	19	F	1.8		Retain
29	Norway Spruce	Picea abies	10	F	1.8		Retain

30	Norway Spruce	Picea abies	17	F	1.8		Retain
31	Colorado Spruce	Picea pungens	36	F	2.4		Retain
32	Colorado Spruce	Picea pungens	46	F	3		Retain
33	Colorado Spruce	Picea pungens	22	F	1.8		Retain
34	Colorado Spruce	Picea pungens	26	F	1.8		Remove due to construction
35	Colorado Spruce	Picea pungens	29	F	1.8		Remove due to construction
36	Cedar Sp.	Thuja Sp.	27	F	1.8		Remove due to construction
37	Colorado Spruce	Picea pungens	29	F	1.8		Remove due to construction
38	Cedar Sp.	Thuja Sp.	19	F	1.8		Remove due to construction
39	Colorado Spruce	Picea pungens	28	F	1.8		Remove due to construction
40	Cedar Sp.	Thuja Sp.	25	F	1.8		Remove due to construction
41	Cedar Sp.	Thuja Sp.	32	F	2.4		Remove due to construction
42	Cedar Sp.	Thuja Sp.	34	F	2.4		Remove due to construction
43	Mulberry Sp.	Morus Sp.	15	F	1.8		Remove due to construction
44	Scots Pine	Pinus sylvestris	47	F	3.0	Sparse canopy	Remove due to construction
45	Colorado Spruce	Picea pungens	15	F	1.8		Remove due to construction
46	Sugar Maple	Acer saccharum	50	F	3.0		Remove due to construction
47	Sugar Maple	Acer saccharum	64	F	4.2		Remove due to construction
48	Cedar Sp.	Thuja Sp.	23	F	1.8	2 stem	Remove due to construction
49	Cedar Sp.	Thuja Sp.	26	F	1.8	2 stem	Remove due to construction
50	Cedar Sp.	Thuja Sp.	25	F	1.8	3 stem	Remove due to construction
51	Mountain Ash	Sorbus americana	30	F	2.4	Tree is in severe decline	Remove due to construction
52	White Pine	Pinus strobus	42	F	3.0		Remove due to construction
53	Ornamental Pear	Pyrus calleryana	17	F	1.8		Remove due to construction

54	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	15	F	1.8	Tree is shaded out by adjacent trees	Remove due to construction
55	White Spruce	Picea glauca	22	F	1.8		Remove due to construction
56^	Ivory Silk Lilac	Syringa reticulata 'Ivory Silk'	17	F	1.8	Multi-stem	Retain
57*	White Spruce	Picea glauca	26	F	2.6	Moderate signs of urban stress	Remove due to construction
58*	White Spruce	Picea glauca	25	F	2.5	Moderate signs of urban stress	Remove due to construction
59*	White Spruce	Picea glauca	17	F	2.4	Moderate signs of urban stress	Remove due to construction
60	Colorado Spruce	Picea pungens	21	D	1.8		Remove due to condition
61^	Norway Spruce	Picea abies	~15	F	3.6		Retain
62^	Crimson King Maple	Acer platanoides 'Crimson King'	~29	F	3.6		Retain
63^	Ash Sp.	Fraxinus Sp.	~60	D	7.2		Retain
64^	Manitoba Maple	Acer negrundo	~44	F	6.0	Moderate lean	Retain
65	Ash Sp.	Fraxinus Sp.	34	D	4.8		Retain 3.0m standing peg for habitat. Dead canopy to be removed per TRCA.
66^	Ash Sp. Grouping	Fraxinus Sp.	-	D	-	Grouping of 8 dead Ash trees on neighbouring property ~ 25 - 45 DBH	Retain
67^	Manitoba Maple	Acer negrundo	~32	F	4.8		Retain
68^	Manitoba Maple	Acer negrundo	~34	F/P	4.8	Heavily leaning/fallen	Retain
69	Ash Sp.	Fraxinus Sp.	~72	D	9.6		Retain 3.0m standing peg for habitat. Dead canopy to be removed per TRCA.
70^	Crabapple	Malus sylvestris	~29	F/P	3.6		Retain

* York Region Street Trees
^ Trees on neighbouring properties

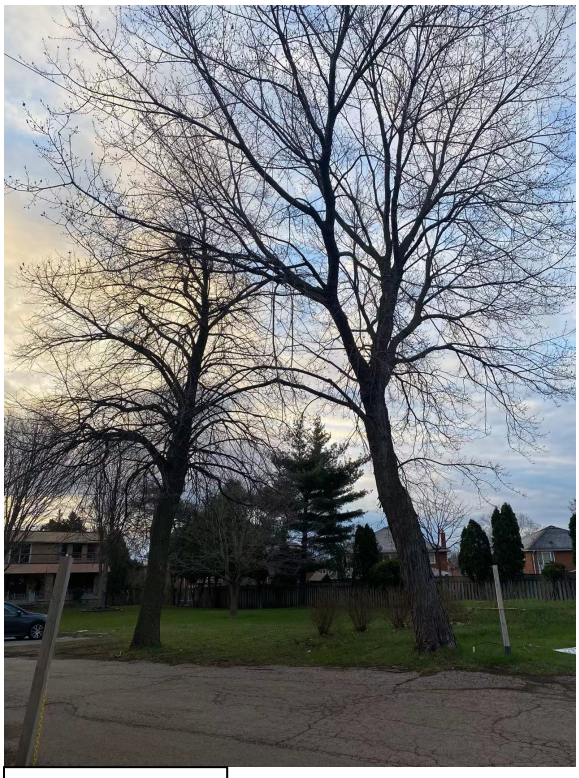
YORK REGION TREE REMOVAL COMPENSATION CALCULATION TABLE

Tree No.	DBH (CM)	Common Name	Condition Rating	%	# of Replacement Trees (calculated)	# of Replacement Trees (rounded)	Compensation Value ($)
57	26	White Spruce	Potential Trouble	60	3.1	3	2611.32
58	25	White Spruce	Potential Trouble	60	3.0	3	2611.32
59	17	White Spruce	Potential Trouble	60	2.0	2	1740.88
Total							6963.52

PHOTO RECORD

Tree #1

Tree #2. 3



Tree #2. 3

Tree #57. 58. 59

TREE PROTECTION RECOMMENDATIONS

The following standards shall apply to any trees that are identified to be retained. Where the municipality enforces its own standards, those of the governing municipality shall supersede the recommendations contained herein. In all other instances, the following recommendations shall be treated as minimum standards for tree protection and retention.

1.0 ESTABLISH A TREE PROTECTION ZONE

The purpose of the tree protection zone is to prevent root damage, soil compaction and soil contamination during construction activities. Workers and machinery shall not disturb the tree protection zone in any way. In order to prevent access, the following recommendations are offered.

- Install tree protection hoarding as per detail 1 / TI-2 and 2 / TI-2.
- Allow no fill, equipment, supplies, or waste within the tree protection zone.
- Maintain the tree protection hoarding in good condition for the duration of construction.
- Tree protection hoarding is not to be removed until all construction activities have been completed.

2.0 ROOT PRUNING

Where possible, hand dig areas closest to each tree to prevent any unnecessary tearing or pulling of roots. Removal of roots that are greater than 2.5 centimetres in diameter or roots that are injured or diseased should be performed as follows:

- Preserve the root bark ridge (similar in structure to the branch bark ridge). Directional Root Pruning (DRP) is the recommended technique and should be employed during hand excavation around tree roots. Roots are similar to branches in their response to pruning practices. With DRP, objectionable and severely injured roots are properly cut to a lateral root that is growing downward or in a favorable direction.
- All roots needing to be pruned or removed shall be cut cleanly with sharp hand tools, by a Certified Arborist.
- No wound dressings or pruning paint shall be used to cover the ends of each cut.
- All roots requiring pruning shall be cut using any of the following tools:
  Large or small loppers, Hand pruners, Small hand saws, Woundscribers
- Avoid prolonged exposure of tree roots during construction - keep exposed roots moist and dampened with mulching materials, irrigation or wrap in burlap if exposed for longer than 4 hours.

3.0 FERTILIZATION AND IRRIGATION

The following measures are recommended:

- Aeration and deep root fertilize to ensure that all trees receive the appropriate nutrients for healthy growth.
- Fertilizer must be a low nitrogen formula such as *5-30-30* to promote root growth rather than shoot growth.
- If construction occurs during July and / or August, roots must be irrigated during conditions of drought.

4.0 ESTABLISH MAINTENANCE PROGRAM

Pre-Construction:

- Prune all trees to remove any deadwood and obstruction prune as required.

During Construction:

- Irrigate tree preservation zones during drought conditions (June through September), in an attempt to reduce the effects of drought stress.
- Inspect the site every month to ensure that all tree protection fence / hoarding is in place and in good condition, inspect the trees to monitor condition.

Post-Construction:

- Prune crowns to remove any newly developed deadwood only. Do not remove any live growth.
- Inspect the trees three times per year (May, July, and September) to monitor condition for a minimum period of 2 additional years.

5.0 LANDSCAPING

Any landscaping completed within the tree preservation zones, after construction is completed and tree protection fencing / hoarding has been removed, is to be carried out in such a way that it will not cause damage to any of the trees or their roots. The trees must be protected to the same standards listed earlier in this report, but without the use of tree protection fence or hoarding.

The following guidelines are recommended:

- **No grade changes** are permitted which include adding and/or removing soil.
- **No excavation** is permitted that can cause damage to the roots of the tree.
- **No heavy equipment** can be used to compact the soil within the tree preservation zone.
- Where possible, hard surface paving around trees to be protected should be constructed using permeable products such as interlocking stone. Areas to be paved must be hand dug when encroaching within the tree protection zone.

YORK REGION TREE PROTECTION SPECIFICATIONS

Specifications for the tree protection measures proposed in the preceding section are provided below. Complete tree protection specifications are outlined in the York Region Street Tree and Forest Preservation Guidelines.

Tree Protection Zone (TPZ)

The Tree Protection Zone (TPZ) is a defined area around an existing tree wherein tree protection measures must be implemented if site disturbance is planned within the area, or if there is a reasonable likelihood of inadvertent encroachment of any form into the area during site disturbance. The intent of tree protection measures to be undertaken within or at the limit of the TPZ is to prevent or mitigate, to the fullest extent possible, adverse impacts associated with site disturbance within the TPZ.

Unless approved by York Region or its designate and mitigated through the implementation of specified tree protection measures, the following activities shall be strictly prohibited within the TPZ prior to, during and following site disturbance:

- Installation or attachment of any items to the tree
- Operation of equipment or machinery
- Storage of equipment, machinery or materials
- Access by any personnel
- Placement of trailers, temporary buildings or structures
- Flushing, storage or dumping of fuels, chemicals or other contaminants
- Stockpiling of soil

- Digging, trenching, or excavation
- Change to existing grade

The size of the TPZ is delineated as a radius measured outward from the base of the tree to be protected, and is expressed in metres. The TPZ radius is determined based upon the diameter at breast height (DBH) of the tree's main stem.

For multi-stemmed trees, the diameter at breast height (DBH) of the largest-DBH stem is used to determine the TPZ radius.

Size of TPZ (trees ≤24 cm DBH)

In order to ensure suitable conditions for future root development and tree growth, special provisions must be made to protect both the existing roots of small trees (trees 24 cm dbh or less) and their future rooting areas. Therefore, a minimum Tree Protection Zone (TPZ) radius of 2.4 metres must be provided for any tree 24 cm dbh or less, irrespective of its size or age.

Where a TPZ radius of 2.4 m cannot be provided on all sides of the tree, the TPZ shall be sized to enclose and protect a minimum of 8 m3 of soil. Soil volume shall be calculated assuming a standard soil depth of 50 cm. If the minimum soil volume cannot be effectively protected, measures to prevent or mitigate soil compaction caused by site disturbance shall be proposed and implemented.

Size of TPZ (trees ≥25 cm DBH)

For trees 25 cm DBH or greater, the extent of the TPZ is determined by the following formula:

$$\text{a. TPZ (m)} = \frac{(\text{DBH (cm)} \times 10)}{100}$$

In other words, 10 cm of protection must be provided for every centimetre of trunk diameter at breast height for trees 24 cm DBH or greater.

A visual depiction of a typical Tree Protection Zone (TPZ) is shown in drawing NHF-400 in the Guidelines.

Tree Protection Zone (TPZ) barriers

Unless otherwise approved by York Region or its designate, a vertical Tree Protection Zone (TPZ) barrier shall be installed around every tree to be preserved, including trees outside of the Regional road allowance. A typical detail drawing (NHF-400) is provided in the Guidelines.

Location – Single Tree

A vertical barrier or barriers shall be installed at the outer limit of the minimum required Tree Protection Zone (TPZ) for each tree to be preserved and shall enclose the entire TPZ. The locations of TPZ barriers shall be clearly identified on the Tree Protection Plan. If the barrier cannot be installed at the limit of the minimum required TPZ due to site constraints, the distance at which the barrier is proposed to be installed shall be clearly specified in the Tree Protection Report and Tree Inventory and the location of the barrier shall be shown on the Tree Protection Plan.

Location – Group of Trees

Where the TPZs of two or more trees overlap or where two or more trees are located in otherwise close proximity to each other and are not separated by impermeable, paved or other hard surfaces, TPZ barriers shall enclose the minimum required TPZ of each tree as well as the area between the trees, even if this area extends beyond the minimum required TPZ. The intent of this approach is to maximize the protection of available rooting space between trees and, wherever possible, protect contiguous groups of trees.

Installation Procedure

The TPZ barrier shall be installed prior to the commencement of any site disturbance except tree removals. Site disturbance shall not commence until the installation of all TPZ barriers has been completed, and has been verified and approved by York Region or its designate.

Materials

Unless otherwise specified and approved by York Region or its designate, two types of TPZ barrier shall be considered acceptable, including:

- Framed construction fencing
- Solid hoarding

Framed construction fencing is the primary method for TPZ barrier construction. Solid hoarding shall be installed where there is a likelihood of fill or other material being piled against the TPZ barrier, or where heavy machinery is to be operated in close proximity to the TPZ barrier.

Construction Method

Framed construction fencing and solid hoarding TPZ barriers shall be supported by frames constructed of solid wood 2×4s, to be secured using appropriately-sized wood screws only. Metal t-bars or similar materials shall not be used for frame construction. Nails, ties, staples or other fasteners shall not be used to attach frame sections. The height of the frame shall measure a minimum of 1.2 m (4 feet), and the width of individual frame sections shall not exceed 2.4 m (8 feet). The frame shall enclose the entire Tree Protection Zone, unless otherwise approved by York Region or its designate. A taller frame may be required by York Region. The frame shall be supported by diagonal 2×4 support legs installed inside the TPZ, secured to the frame using wood screws, and secured to the ground using an appropriately-sized wooden stake installed a minimum of 125 mm into the ground. A minimum of 1 support leg shall be installed per 2.4 m (8 feet) of linear TPZ barrier distance, or per frame section. If necessary, corner bracing shall be installed between adjacent faces of the TPZ barrier to provide additional stability.

Orange construction safety fencing shall be securely and tightly stapled to the outside of the TPZ barrier frame to construct the framed construction fencing TPZ barrier type. Other fencing materials (e.g., chicken wire, green snow fence, etc.) shall not be used.

Plywood or oriented strand board (OSB) sheathing with a minimum thickness of 1/2” (12.7 mm) shall be affixed using wood screws to the outside of the TPZ barrier frame to construct the solid hoarding TPZ barrier type. Nails, staples or other fasteners shall not be used.

Signage

Signage, as specified in the Guidelines, shall be installed on all sides of the TPZ barrier.

Maintenance and Inspection

TPZ barriers shall remain in place and in good working order and appearance throughout the duration of site disturbance until completion of all works. TPZ barriers shall not be moved, modified or relocated at any time without the approval of York Region or its designate.

TPZ barriers shall be inspected by a qualified tree professional once-weekly or on a schedule approved by York Region or its designate. Any deficiencies shall be noted in writing and any TPZ barriers found to be in substandard condition shall be repaired, modified or replaced as necessary within five working days of formal notification by York Region or its designate.

Tree Protection Zone (TPZ) Signage

TPZ signage shall be mounted on all sides of the TPZ barrier, as outlined below.

Content

The TPZ barrier informational signage shall bear the York Region logo, clearly identify the Tree Protection Zone (TPZ) area, provide contact information for York Region Environmental Services Department, Natural Heritage and Forestry Division, and display the following text:

Tree Protection Zone (TPZ)

Grade Change
Dumping
Storage
Unauthorized Entry
Tree Injury or Removal
Disturbance of Any Kind

are **strictly prohibited** within this TPZ.

This TPZ barrier shall not be damaged or moved.

Please report any entry into this zone to:
Access York
1-877-464-9675 ext.73000
accessyork@york.ca

Typical TPZ barrier information signage, showing acceptable formatting and layout, is found in detail drawing NHF-401.

Materials and Installation

TPZ signage shall be installed on all sides of the TPZ barrier. The distance between signs shall not exceed 10 metres on any one side of the TPZ barrier.
Signage shall be constructed of white corrugated plastic or equivalent durable material measuring no less than 400 mm (height) × 600 mm (width).

On the framed construction fencing TPZ barrier type, signage shall be installed utilizing plastic zip ties, wire tie or similar durable material in a manner that prevents tearing of the barrier fence.

On the solid hoarding TPZ barrier type, signage shall be installed using a wood screw and washer combination to prevent tearing of the signage material.

Canopy clearance pruning

Where there is a likelihood of injury of scaffold branches due to contact by construction equipment, and where re-routing construction equipment is not feasible due to site disturbance requirements, canopy clearance pruning may be required. Approved pruning must be undertaken by an ISA Certified Arborist or an Ontario College of Trades 444A Arborist or Arborist Apprentice only; no trades personnel are permitted to prune trees. Any proposed pruning must be described in the Tree Protection Report and must be approved by York Region or its designate prior to undertaking of pruning.

Root-sensitive excavation and root pruning

Where excavation is required within a Tree Protection Zone (TPZ) and it is determined that the extent of root loss associated with the proposed excavation is not likely to result in significant tree decline, mortality or loss of rooting stability, root-sensitive excavation and root pruning shall be undertaken prior to conventional excavation.

The purpose of root-sensitive excavation and root pruning is to enable tree roots to be cleanly severed and to prevent root damage in the un-excavated area through tearing, fracturing or breakage caused by conventional excavation equipment.

Root-sensitive excavation

Root-sensitive excavation shall be undertaken utilizing pneumatic soil excavation (e.g., AirSpade or similar) or hydro-vac excavation. Root-sensitive excavation shall be undertaken by excavating a trench approximately 200 mm wide and 1.0 m deep (or maximum depth of proposed excavation, whichever is greater) along the edge of the area to be excavated. The trench shall be set as far from the base of the tree as possible, and shall extend, at minimum, along the entire length of the proposed excavation within the minimum required TPZ.

Root pruning

Following root-sensitive excavation and prior to conventional excavation, all exposed roots shall be properly pruned by a qualified tree professional. Root pruning shall be undertaken in the following manner:

1. Exposed roots shall be pruned back to the face of trench wall to be retained (i.e., the back face of the trench). No roots greater than 6 cm (2.5”) in diameter shall be pruned without authorization of York Region or its designate.

2. All roots must be pruned with clean and sharp hand tools only. Shovels, picks or other construction tools shall not be used to prune roots. Wound dressings or pruning paint shall not be used to cover the ends of any cut.

3. Roots should be pruned in a similar fashion as branches, taking care to maintain the integrity of the root bark ridge, where present. Roots should be pruned back to native soil; root stubs must not be left upon completion of root pruning.

4. Prolonged exposure of tree roots must be avoided. All pruned roots should be covered with soil or excavated trenches should be backfilled with native material as soon as possible following root pruning.

5. If conventional excavation is not scheduled to occur immediately after root-sensitive excavation and root pruning, the trench should be backfilled. The TPZ barrier should be set to the limit of the trench to ensure that excavation does not extend beyond the limit of root pruning.

6. Conventional excavation must not encroach beyond the back face of the trench and limit of root pruning in order to prevent further damage to pruned roots.

COMPENSATION FOR TREE REMOVALS

The compensation value of York Region-owned trees to be removed has been calculated in accordance with the York Region Street Tree and Forest Preservation Guidelines. The compensation calculation table is provided above.

The total calculated number of required compensation trees is **8**. The total calculated compensation value, assuming $870.44 per tree, is **$6963.52**.

CONCLUSIONS

After conducting the site investigation, we are of the opinion that thirty-six (36) trees will need to be removed due to their conflict with the proposed development and or state of health. All other trees identified for retention can be successfully retained if the recommendations contained herein are followed. Special care shall be taken when working within or near the tree protection zones of trees that are to be retained.

The following table identifies trees where an encroachment within the Tree Protection Zone (TPZ) is proposed, and the description of the proposed injury:

Tree #	Description of proposed injury	Percentage of TPZ impacted	Classification of injury	Recommendations
1	Removal of existing asphalt driveway and returning to soft landscaping (sod).	Less than 2%	Minor	Hand dig within TPZ.
3	Provision of concrete sidewalk within TPZ to accommodate access at semi-detached units.	19%	Minor	Hand dig within TPZ.
17	Provision of concrete sidewalk.	Less than 2%	Minor	Hand dig within TPZ.
61	Excavation for shoring relating to underground garage. Building overhang over part of TPZ.	16%	Moderate	Hand dig within TPZ at grade. Machine digging is acceptable for shoring (roots to be pruned cleanly per the recommendations contained in this report).

Where applicable, permit applications are to be submitted to the City of Vaughan and York Region pursuant to the relevant Tree By-laws and permits shall be in hand prior to any removals.

Tree protection methods must be followed according to City of Vaughan's Tree Protection By-law 052-2018. Tree protection shall be installed as outlined in the arborist report/TPP prior to the commencement of any construction/demolition activities. The tree protection barriers shall be installed at their approved location and shall be maintained in their original location and condition until all construction activities within the site have ceased and all equipment is removed from the site. No equipment or material storage, flushing of fuel or washing of equipment is allowed within the TPZ. Any works within the TPZ area to be performed or supervised by a Certified Arborist.

Kindly direct any questions regarding this report to the undersigned.

Respectfully submitted,
MHBC Planning, Urban Design & Landscape Architecture

Nick A. Miele BLA, OALA, CSLA, ISA
Senior Landscape Architect, Partner
ISA Certified Arborist No. ON-1251A