# Arborist Report

## Pre-Construction Report

**Prepared For:**

Ryan Atkinson
80 Jutland Rd. Suite 500
Toronto, ON M8Z 2H1

**Site Address:**
1444-1458 Cawthra Rd.
Mississauga, ON L5G 4L2

**May 10, 2018**

**Prepared by:**
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©2018 Davey Resource Group. All rights reserved. This document must be used in conjunction with the tree inventory lists, and Tree Preservation Plans with arborist comments (these plans are to be printed on correct size to ensure scalability). This document must be used in whole and with all pages.

# Contents

## Summary

The following Arborist Report is with respect to the proposed redevelopment of 4 existing dwellings at 1444, 1448, 1454, and 1458 Cawthra Ra. in Mississauga, ON. The site plans call for a complete demolition of the existing structures, to be replaced with a series of town homes and single-family units. All existing driveways will be removed, and a new T shaped street will be constructed to access all the units. Each unit will also receive their own driveway. Underground secondary utilities will be installed along the roadway

There are 78 trees in the area that have been inventoried, including city owned street trees and those on neighboring properties. While some of these trees will require removal, many of these are already in poor or declining condition. The majority of those in good condition will be retained, and will require careful protection during construction.

It is imperative for all crew contracted to perform this construction and tree removal to thoroughly understand this report and the recommendations stated within.

## Introduction

Davey Resource Group (DRG) was retained by the client, Ryan Atkinson, to develop an Arborist Report and Tree Protection Plan (TPP) for the proposed demolition of existing structures and hardscapes and construction of the infill development between 1444 and 1458 Cawthra Rd, Mississauga, ON.

An inventory and assessment of all the trees within the scope of the assignment was conducted. The Arborist was to document the current condition, size, and location of the trees as they relate to the proposed work. Recommendations for tree preservation and remediation of the site are to be provided and follow City of Mississauga by-laws.

To fulfill the requirements of the tree removal permit application. This report must be accompanied by the following additional documents:

1. A full printing of the tree inventory performed by Davey Resource Group (DRG), otherwise known as the Tree Protection Action Key (TPAK). (Appendix 1)
2. The construction maps with the Arborist Comments, otherwise known as the Tree Protection Plan (TPP). (Appendix 2)

## Limitations of the Assignment

It must be understood that DRG is the assessor of the trees in relation to tree preservation practices. The construction supervisors should incorporate the information and recommendations provided within this report into their construction methodology to complete their project in a reasonable manner.

This Arborist Report is based on the project scope and details for tree preservation as discussed. All proposed construction methods are limited to what was provided in the site plans and in discussions with the Project Leader. Estimates, measurements and comments regarding tree preservation were based on the proposed construction plans.

This Arborist Report was compiled from field data collected from the ground. A basic visual assessment of the tree was performed. No level of ISA Tree Risk Assessment was performed. More data may be obtained in regards to risk through a basic or advanced ISA Tree Risk Assessment.

## Methods

- Tools used to assess the trees included a Biltmore stick, metric DBH measuring tape, metric measuring tape, and camera.
- All trees over 5cm within 6 meters of the proposed work were collected and assessed for this report.
- Site plans obtained by the client for proposed construction were utilized to determine potential replacement tree planting locations to accommodate for any removals pursuant to Mississauga by-laws.

## Observations

- The site was inspected on February 13th, 2018 by ISA Certified Arborist Michael Petryk (ON1691-A).
- Photographs of the site are enclosed within this report and were taken on February 13th, 2018 and have been cropped and labeled but otherwise unaltered.
- Weather conditions were -8ºC under clear skies.
- 78 trees were collected in the inventory for this report.
- 5 trees were collected within the city-owned right of way along Cawthra Rd.
- 27 trees collected were Ash trees. All had signs of Emerald Ash Borer (EAB) infestation and will require removal regardless of the site plans.
- 5 trees should be pruned prior to work- their low canopies may be impacted by construction.
- 35 trees should be protected during construction.
- 4 trees should be root pruned, as work will be required inside their TPZ, though not necessarily close enough to kill or destabilize the trees. Care must be taken around these trees.
- Some significant trees that require branch and root pruning are on neighboring properties. Permission to prune shall be sought from the homeowners, as well as the city (Permit to Injure)

For further details and observations, refer to the Tree Protection Action Key (Appendix 1) found in the supporting materials

## Discussion

The proposed scope of work calls for the complete demolition of 4 single family homes, their driveways, fences, and other infrastructure. New multi-family and single-family homes will be built throughout the property, as described on the maps provided. This significant construction will require heavy machinery, foundation digging, and roadway construction, and installation of underground infrastructure.

Regulatory context

Trees in Mississauga are protected by City By-Law #254-12, which establishes permit requirements for work surrounding all trees planted on private property. Under the by-law, Trees over 15cm diameter at breast height (DBH, 1.4m above ground) on private property are subject to protection. Removal and/or injury of more than 2 trees over the 15cm requires a permit to proceed, subject to acceptance by the Mississauga Commissioner of Community Services. Injury to a tree is defined by any removing, cutting, girdling, or smothering of a tree or its roots, physical damage from development of construction, storage of materials and compaction of soil around the roots, application of harmful chemicals or pesticide, or any pruning of tree branches. If work is proposed within 6 meters of a tree but not within its TPZ, it is in the best interest of the client to protect it using a Tree Protection Fence built to city standards (depicted in Appendix 3). This serves to prevent any incidental contact or harm to a protected tree that would constitute a contravention of the by-law and may result in fines or a stop-work order.

The site plans call for a complete demolition and rebuilding of the existing dwellings, and the construction of new dwellings with driveways and access roads. As summarized below, some of the trees on site will need to be removed based on the current plans or due to poor condition.

*Table 1: Summary of work recommendations*

| | Removal (< 15 DBH) | Removal (< 50 DBH) | Removal (> 50 DBH) | Tree Protection (Hoarding and Root Pruning) | Upper Canopy Pruning |
|---|---|---|---|---|---|
| *Private (site)* | 5 | 28 | 5 | 5 | 2 |
| *City Trees* | | 2 | | 3 | |
| *Neighbors trees* | | | | 22 | 3 |
| *Shared* | | | | 5 | |
| *Total* | 5 | 30 | 5 | 35 | 5 |

Removals

There is a total of 40 trees that will require removal under this site plan. 5 do not require a permit under City of Mississauga rules as they are under 15 cm DBH. 33 are private trees that will require a permit, and 2 are city trees that will require a permit as well as permission from the City to remove. *Of the 33 trees, 27 are dead or dying Ash trees. These will still require a permit, though do not require a fee.*

Replanting

The city requires that where trees are over 15 cm DBH, they are replaced with new trees on site, or the applicant may pay a cash in lieu fee. Trees must be at least 1.8 m tall (coniferous trees) or 6 cm DBH (deciduous) and survive a minimum of 1 year to have the deposit returned.

Trees between 15-49 cm require 1 tree replacement, trees over 50 cm require two. City trees should also be replanted at a 2:1 ratio.

There are therefore a required 42 trees to be replanted. Sites for replanting have been recommended as a part of the TPP. While there is space for the 4 City tree replacements, there will not be enough space to replant all the required private trees.

*Table 2: Replanting Requirements*

| | City Property | Private |
|---|---|---|
| *Trees to Replant* | 4 (or $535.82 each) | 42 (or TBD) |
| *Space to Replant* | 4 | 32 |
| *Cash in Lieu* | | 10 |

Trees should be carefully selected for the site-there are overhead wires and will otherwise be limited space for large canopy trees with the new in-fill.

Tree Protection

The redesign of the site conflicts with the root systems of some of the existing trees. Within the Tree Protection Zones, removal of roots may cause significant damage that results in long-lasting stress symptoms to trees, or even decline and death. Typically, a tree can withstand up to a loss of one third of its Root Zone without risking decline and death.

Four trees to be retained will have significant incursions into the TPZ's and Root Zones.

| *Tree* | Tree Protection Zone radius (m) | Distance of tree from construction | Total incursion into Root Zone |
|---|---|---|---|
| *#17: 190 cm Crack Willow* | 15 m | 6.0 m | 24% |
| *#21: 95 cm Silver Maple* | 6.0 m | 2.5 m | 24% |
| *#42: 190 cm Crack Willow* | 15 m | 6.0m | 24% |
| *#73: 150cm Silver Maple* | 14 m | 7.1m | 23% |

*Table 3: Incursion into TPZ*

These 4 trees will require permits for work within their TPZ's, injury is potentially significant, and may cause long-term stress without protection of the remaining roots, and proper pruning of those that will be damaged.

Root Pruning

To minimize damage to trees where work is required inside its TPZ, it is sometimes in the best interest of the client to hire a qualified arborist to perform root pruning at the extent of which excavation and construction of paved surfaces is to occur. Tree's roots are underground and are otherwise not detectible without physical exploration. There are two options for pruning the areas to be affected; through "daylighting", exposing roots and pruning them, or using a root pruning trenching machine. Either method should be done with an arborist on site to ensure pruning is done properly (PSI is set to not strip roots, proper equipment is used, etc).

Branch Pruning

Overhead branches may become broken or damaged if equipment bumps them, or if staff perform un-qualified pruning. Damage to bark, torn branches, and poorly made pruning cuts are vectors for disease, can cause the tree to become unsafe, and can lead to the "mortality spiral" as the tree diverts resources to seal sections that may never be properly closed. Certain trees assessed for this site require pruning of deadwood to minimize risk of failure and damage to property or personal injury. Upper Canopy pruning is to be undertaken by a qualified and licensed arborist.

All efforts should be made to avoid contact with healthy branches surrounding the work site. If this is not possible, planning should be made ahead of the work to have qualified arborist prune branches that may otherwise become injured. It is imperative that this kind of work is anticipated ahead of time, and that construction staff not perform the pruning at the last minute. Permits are required, and fines may be administered if this is not adhered to.

Tree Protection Signage

It is recommended for the client to create Tree Protection Signs to affix to tree protection hoarding. A sign should be displayed on the tree protection fencing. These signs could be made in bulk at a discounted rate and installed on the hoarding in various locations. Signage informs the public and reminds the contractors the significance of the TPZs and the efforts put forward by the client in tree preservation.

Staging Areas

All staging areas are understood to be outside the TPZ. At no time are materials, vehicles, traffic

or debris to be stacked, staged, or piled inside the hoarding (Tree Protection Fencing).

## Conclusion

Of the 78 trees collected in the inventory and assessed for potential impact from the planned demolition of the site property and redevelopment into new townhomes, 40 trees will require removal. Of the remaining trees, 4 will require permit approval for work within their TPZs that may directly result in injury to these trees.

## Recommendations

In accordance with the numbering of trees in the inventory listed on the Tree Protection Action Key (Appendix 1), we have provided the following recommendations.

- We recommend the removal of Trees # 2-16, 23-41, 43-47, and tree #77 from the site property prior to commencement of the project.
- We recommend the client submit an Application to Permit the Injury or Destruction of Trees on Private Property for all trees to be removed from the site.
- We recommend the client to include in the tree permit application the Injury of trees #17, 21, 42, and 73 for work within their TPZ's. Work is expected to cause a moderate amount of stress which is unlikely to develop long term deterioration in condition.
- We recommend root pruning through approved methods where roots are encountered inside the TPZ's of Trees #17, 21, 42, and 73.
- We recommend proper Upper Canopy pruning through approved methods where lower branches will interfere with new construction or equipment.
- We recommend the client hire a qualified arborist to perform any necessary canopy and root pruning as indicated on the TPP and TPAK.
- We recommend the client install and maintain rigid hoarding along the boundaries depicted on the site plan and Tree Protection Plan
- The DRG recommend planting of native species of small to moderate canopy trees where space is available (32 sites possible), and payment of cash-in-lieu where replacement trees are not feasible.

# Appendix 1 – Tree Protection Action Key (TPAK)

| Tree Map Number | Species | *Botanical* | DBH (cm) @ 1.4 m | Tree Category | Toronto Minimum Protection Distance (m) | Health | Structure | Overall Condition | Live Crown Ratio (%) | Deadwood (%) | Crown Width (m) | Tree Height (m) | Construction inside Min TPZ | Construction Impact (None, Low, Medium, | Hoarding Required (Y/N) | Removal (Y/N) | Upper canopy Pruning (Y/N) | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Hedge Maple | *Acer campestre* | 26 | 5. City Owned | 2.4 | Fair | Fair | Fair | 60 | 0 | 6 | 6 | | | Y | | | Hydro |
| 2 | White Ash | *Fraxinus americana* | 26 | 1. Private | 2.4 | Poor | Poor | Poor | 10 | 80 | 6 | 12 | | | | Y | | EAB- |
| 3 | White Ash | *Fraxinus americana* | 42 | 1. Private | 3.0 | Poor | Poor | Poor | 20 | 80 | 6 | 14 | | | | Y | | EAB- |
| 4 | White Ash | *Fraxinus americana* | 40 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 11 | 15 | | | | Y | | EAB- |
| 5 | Pin Cherry | *Prunus pensylvanic* | 20 | 5. City Owned | 2.4 | Poor | Poor | Poor | 40 | 20 | 4 | 5 | | | | Y | | Hydro; Blackknot |
| 6 | Hedge Maple | *Acer campestre* | 32 | 5. City Owned | 2.4 | Fair | Fair | Fair | 40 | 0 | 6 | 5 | | | | Y | | Hydro |
| 7 | Colorodo Spruce | *Picea pungens* | 44 | 1. Private | 3.0 | Good | Good | Good | 80 | 0 | 8 | 15 | | | | Y | | |
| 8 | Silver Maple | *Acer saccharinum* | 66 | 1. Private | 4.2 | Good | Good | Good | 60 | 10 | 15 | 18 | | | | Y | | |
| 9 | White Ash | *Fraxinus americana* | 24 | 1. Private | 2.4 | Poor | Poor | Poor | 15 | 80 | 4 | 11 | | | | Y | | EAB |
| 10 | White Ash | *Fraxinus americana* | 60 | 1. Private | 3.6 | Dead | Dead | Dead | 0 | 100 | 8 | 18 | | | | Y | | Other Stem; 24 |
| 11 | White Ash | *Fraxinus americana* | 45 | 1. Private | 3.0 | Dead | Dead | Dead | 0 | 100 | 6 | 17 | | | | Y | | EAB |
| 12 | White Ash | *Fraxinus americana* | 18 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 6 | 17 | | | | Y | | EAB |
| 13 | White Ash | *Fraxinus americana* | 24 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 4 | 17 | | | | Y | | EAB |
| 14 | White Ash | *Fraxinus americana* | 20 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 4 | 17 | | | | Y | | EAB |

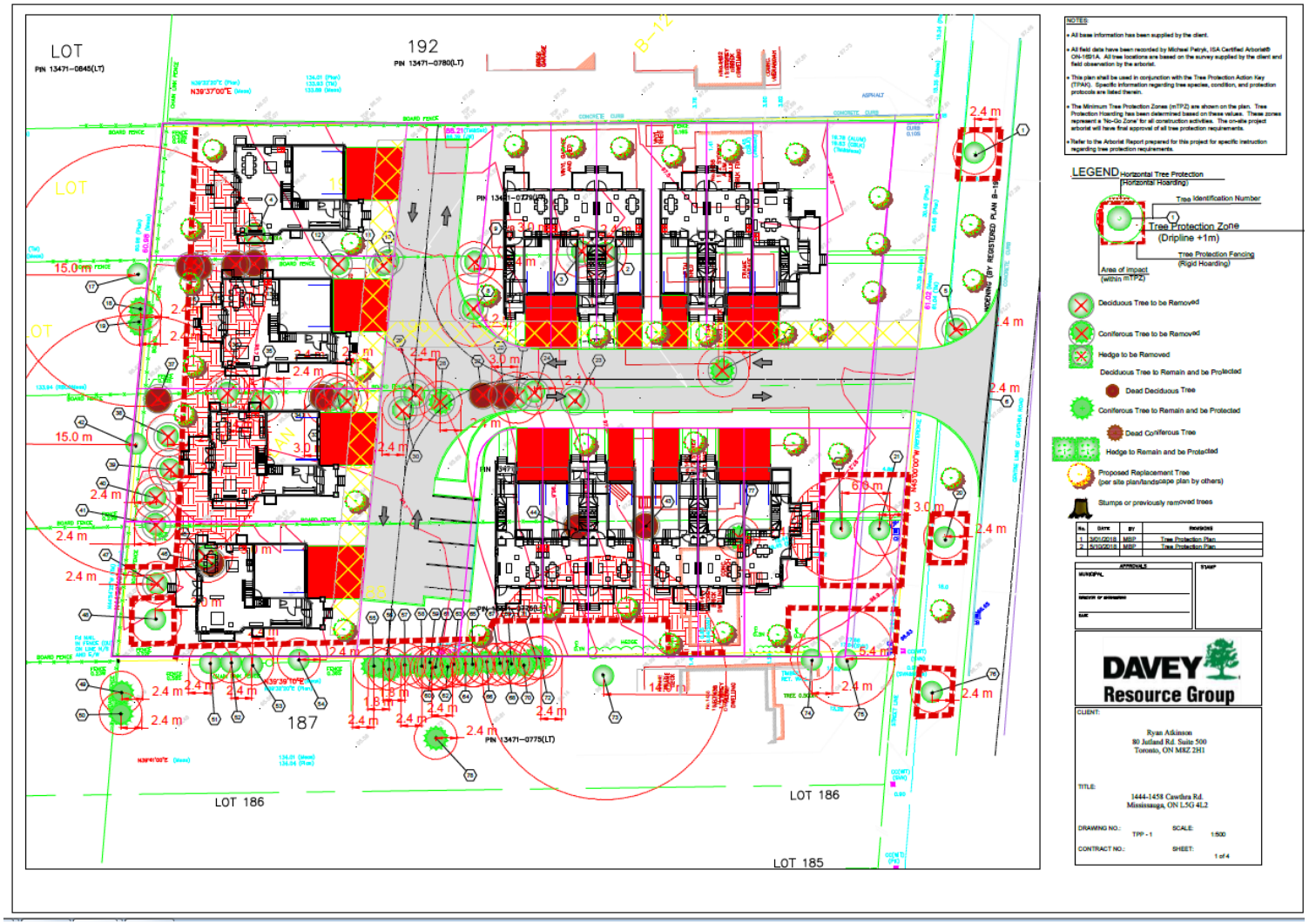
| Tree Map Number | Species | *Botanical* | DBH (cm) @ 1.4 m | Tree Category | Toronto Minimum Protection Distance (m) | Health | Structure | Overall Condition | Live Crown Ratio (%) | Deadwood (%) | Crown Width (m) | Tree Height (m) | Construction inside Min TPZ | Construction Impact (None, Low, Medium, | Hoarding Required (Y/N) | Removal (Y/N) | Upper canopy Pruning (Y/N) | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15 | White Ash | *Fraxinus americana* | 18 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 4 | 17 | | | | Y | | EAB |
| 16 | White Ash | *Fraxinus americana* | 16 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 4 | 17 | | | | Y | | EAB |
| 17 | Crack Wilow | *Salix fragilis* | 190 | 2. Neighbours | 15.0 | Fair | Poor | Poor | 60 | 15 | 15 | 18 | | | Y | | Y | Broken Limbs, cavity, suckers |
| 18 | White Spruce | *Picea glauca* | 15 | 2. Neighbours | 2.4 | Good | Good | Good | 70 | 0 | 3 | 6 | | | Y | | | Suppressed |
| 19 | White Spruce | *Picea glauca* | 16 | 2. Neighbours | 2.4 | Good | Good | Good | 70 | 0 | 3 | 6 | | | Y | | | Suppressed |
| 20 | Littleleaf Linden | *Tilia cordata* | 28 | 5. City Owned | 2.4 | Fair | Fair | Fair | 60 | 10 | 4 | 6 | | | Y | | | Deadwood |
| 21 | Silver Maple | *Acer saccharinum* | 50 | 1. Private | 3.0 | Good | Good | Good | 20 | 10 | 9 | 18 | | | Y | | | Hyrdro; suppressed |
| 22 | Silver Maple | *Acer saccharinum* | 95 | 1. Private | 6 | Fair | Fair | Fair | 60 | 10 | 15 | 18 | | | Y | | Y | |
| 23 | White Ash | *Fraxinus americana* | 52 | 1. Private | 3.6 | Poor | Poor | Poor | 10 | 90 | 8 | 15 | | | | Y | | EAB |
| 24 | White Ash | *Fraxinus americana* | 20 | 1. Private | 2.4 | Poor | Poor | Poor | 10 | 90 | 4 | 10 | | | | Y | | EAB |
| 25 | Silver Maple | *Acer saccharinum* | 46 | 1. Private | 3.0 | Good | Good | Good | 30 | 5 | 10 | 15 | | | | Y | | |
| 26 | White Ash | *Fraxinus americana* | 12 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 2 | 6 | | | | Y | | |
| 27 | White Ash | *Fraxinus americana* | 12 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 2 | 6 | | | | Y | | |
| 28 | White Spruce | *Picea glauca* | 22 | 1. Private | 2.4 | Fair | Fair | Fair | 70 | 15 | 4 | 14 | | | | Y | | |
| 29 | White Ash | *Fraxinus americana* | 20 | 1. Private | 2.4 | Poor | Poor | Poor | 20 | 30 | 5 | 15 | | | | Y | | EAB |
| 30 | Manitoba Maple | *Acer negundo* | 12 | 1. Private | 2.4 | Poor | Poor | Poor | 40 | 30 | 5 | 8 | | | | Y | | Leaning; Other Stems; 10, 10, 10 |

| Tree Map Number | Species | *Botanical* | DBH (cm) @ 1.4 m | Tree Category | Toronto Minimum Protection Distance (m) | Health | Structure | Overall Condition | Live Crown Ratio (%) | Deadwood (%) | Crown Width (m) | Tree Height (m) | Construction inside Min TPZ | Construction Impact (None, Low, Medium, | Hoarding Required (Y/N) | Removal (Y/N) | Upper canopy Pruning (Y/N) | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 31 | White Ash | *Fraxinus americana* | 12 | 1. Private | 2.4 | Poor | Poor | Poor | 100 | 5 | 6 | 6 | | | | Y | | EAB |
| 32 | White Ash | *Fraxinus americana* | 32 | 1. Private | 2.4 | Poor | Poor | Poor | 30 | 5 | 6 | 12 | | | | Y | | EAB |
| 33 | Silver Maple | *Acer saccharinum* | 50 | 1. Private | 3.0 | Fair | Fair | Fair | 50 | 15 | 8 | 12 | | | | Y | | Cavity |
| 34 | White Ash | *Fraxinus americana* | 20 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 6 | 6 | | | | Y | | EAB |
| 35 | White Ash | *Fraxinus americana* | 21 | 1. Private | 2.4 | Poor | Poor | Poor | 50 | 20 | 6 | 6 | | | | Y | | EAB |
| 36 | White Birch | *Betula papirifera* | 20 | 1. Private | 2.4 | Good | Good | Good | 50 | 0 | 6 | 11 | | | | Y | | |
| 37 | White Ash | *Fraxinus americana* | 18 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 5 | 12 | | | | Y | | EAB |
| 38 | Manitoba Maple | *Acer negundo* | 36 | 1. Private | 2.4 | Fair | Fair | Fair | 50 | 10 | 5 | 11 | | | | Y | | Lean |
| 39 | Manitoba Maple | *Acer negundo* | 18 | 1. Private | 2.4 | Fair | Fair | Fair | 50 | 10 | 5 | 11 | | | | Y | | Leaning; Other Stems; 18, 14, 14, 12 |
| 40 | Norway Maple | *Acer platanoides* | 16 | 1. Private | 2.4 | Good | Good | Good | 30 | 10 | 5 | 13 | | | | Y | | |
| 41 | Manitoba Maple | *Acer negundo* | 26 | 1. Private | 2.4 | Fair | Fair | Fair | 40 | 10 | 6 | 10 | | | | Y | | Leaning; Other Stems; 28 |
| 42 | Weeping Willow | *Salix alba* | 190 | 2. Neighbours | 15.0 | Poor | Poor | Poor | 60 | 20 | 15 | 18 | | | Y | | Y | Broken/Cracked limbs; |
| 43 | Green Ash | *Fraxinus pennsylvanica* | 40 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 5 | 11 | | | | Y | | EAB |
| 44 | Green Ash | *Fraxinus pennsylvanica* | 26 | 1. Private | 2.4 | Dead | Dead | Dead | 0 | 100 | 5 | 11 | | | | Y | | Other Stems: 22 |
| 45 | Green Ash | *Fraxinus pennsylvanica* | 45 | 1. Private | 3.0 | Poor | Poor | Poor | 10 | 90 | 5 | 11 | | | | Y | | |
| 46 | Green Ash | *Fraxinus pennsylvanica* | 56 | 1. Private | 3.6 | Dead | Dead | Dead | 0 | 100 | 5 | 11 | | | | Y | | |
| 47 | Silver Maple | *Acer saccharinum* | 18 | 1. Private | 2.4 | Fair | Fair | Fair | 40 | 10 | 8 | 8 | | | | Y | | Other Stems; 14, 12, 12 |
| 48 | Silver Maple | *Acer saccharinum* | 44 | 1. Private | 3.0 | Good | Good | Good | 40 | 0 | 6 | 11 | | | Y | | Y | Other Stems; 42 |
| 49 | Norway Spruce | *Picea abies* | 28 | 2. Neighbours | 2.4 | Good | Good | Good | 80 | 0 | 6 | 12 | | | | | | |
| 50 | Norway Spruce | *Picea abies* | 29 | 2. Neighbours | 2.4 | Good | Good | Good | 80 | 0 | 6 | 12 | | | | | | |
| 51 | Norway Maple | *Acer platanoides* | 12 | 6. Shared | 2.4 | Good | Good | Good | 40 | 5 | 3 | 6 | | | Y | | | |

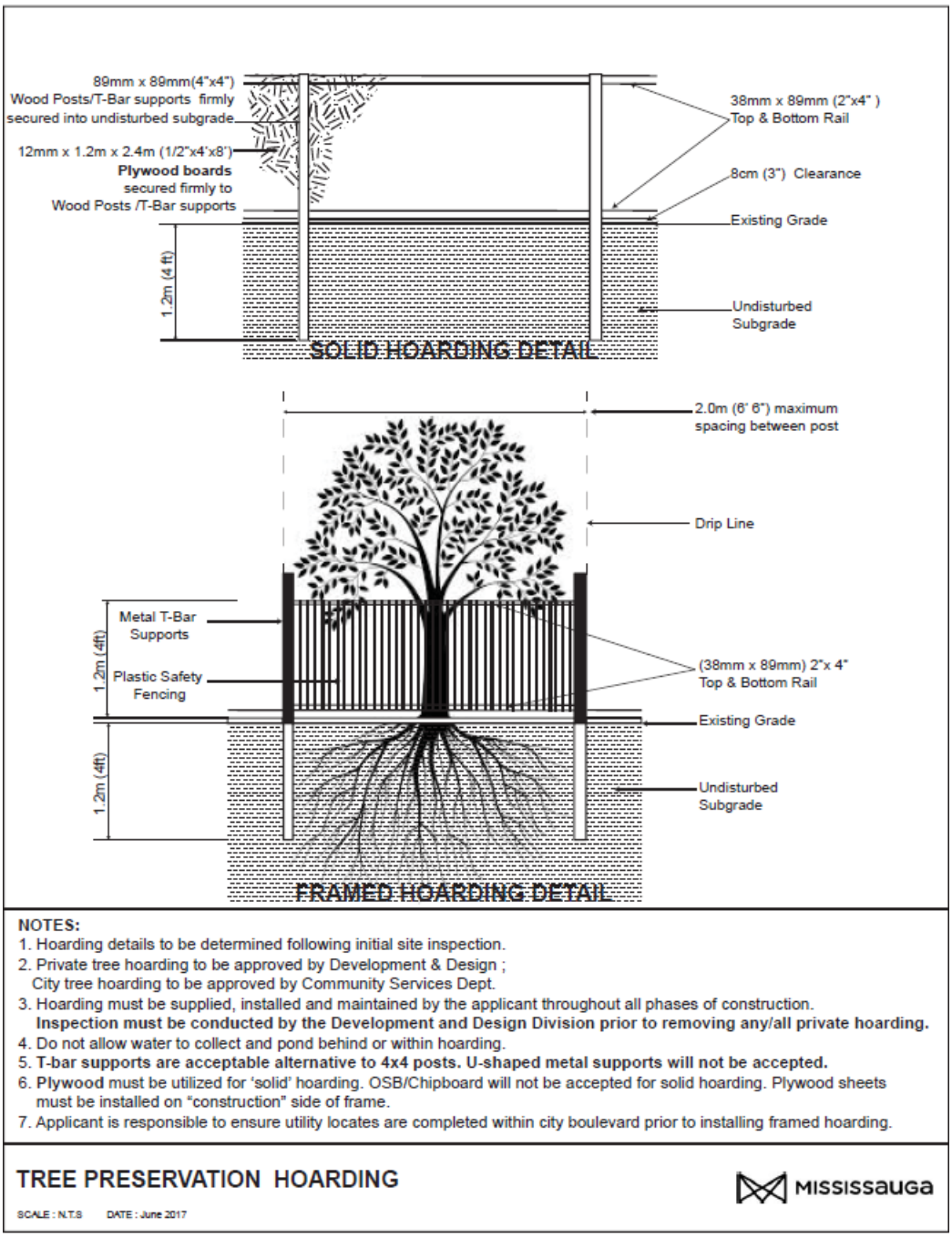
| Tree Map Number | Species | *Botanical* | DBH (cm) @ 1.4 m | Tree Category | Toronto Minimum Protection Distance (m) | Health | Structure | Overall Condition | Live Crown Ratio (%) | Deadwood (%) | Crown Width (m) | Tree Height (m) | Construction inside Min TPZ | Construction Impact (None, Low, Medium, | Hoarding Required (Y/N) | Removal (Y/N) | Upper canopy Pruning (Y/N) | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 52 | Norway Maple | *Acer platanoides* | 13 | 6. Shared | 2.4 | Good | Good | Good | 40 | 5 | 3 | 6 | | | Y | | | |
| 53 | Siberian Elm | *Ulmus pumila* | 12 | 6. Shared | 2.4 | Fair | Fair | Fair | 40 | 5 | 3 | 5 | | | Y | | | Other Stems: 10 |
| 54 | Silver Maple | *Acer saccharinum* | 22 | 6. Shared | 2.4 | Good | Good | Good | 40 | 5 | 4 | 8 | | | Y | | | Other Stems: 18; Growing in fence |
| 55 | Silver Maple | *Acer saccharinum* | 25 | 6. Shared | 2.4 | Good | Good | Good | 40 | 5 | 4 | 8 | | | Y | | | Other Stems: 22; Growing in fence |
| 56 | White Cedar | *Thuja occidentalis* | 8 | 2. Neighbours | 1.8 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 57 | White Cedar | *Thuja occidentalis* | 10 | 2. Neighbours | 1.8 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 58 | White Cedar | *Thuja occidentalis* | 34 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 59 | Manitoba Maple | *Acer negundo* | 8 | 2. Neighbours | 1.8 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 60 | White Cedar | *Thuja occidentalis* | 20 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 61 | White Cedar | *Thuja occidentalis* | 24 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | Other Stems:20 |
| 62 | White Cedar | *Thuja occidentalis* | 18 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 63 | White Cedar | *Thuja occidentalis* | 18 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 64 | White Cedar | *Thuja occidentalis* | 20 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 65 | White Cedar | *Thuja occidentalis* | 14 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 66 | White Cedar | *Thuja occidentalis* | 18 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |

| Tree Map Number | Species | *Botanical* | DBH (cm) @ 1.4 m | Tree Category | Toronto Minimum Protection Distance (m) | Health | Structure | Overall Condition | Live Crown Ratio (%) | Deadwood (%) | Crown Width (m) | Tree Height (m) | Construction inside Min TPZ | Construction Impact (None, | Hoarding Required (Y/N) | Removal (Y/N) | Upper canopy Pruning (Y/N) | Observations |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 67 | White Cedar | *Thuja occidentalis* | 22 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 0 | 4 | 10 | | | Y | | | |
| 68 | White Cedar | *Thuja occidentalis* | 18 | 2. Neighbours | 2.4 | Fair | Fair | Fair | 60 | 0 | 4 | 10 | | | Y | | | Wound |
| 69 | White Cedar | *Thuja occidentalis* | 14 | 2. Neighbours | 2.4 | Fair | Fair | Fair | 60 | 0 | 4 | 10 | | | Y | | | Wound |
| 70 | White Cedar | *Thuja occidentalis* | 18 | 2. Neighbours | 2.4 | Fair | Fair | Fair | 60 | 0 | 4 | 10 | | | Y | | | Wound |
| 71 | White Cedar | *Thuja occidentalis* | 12 | 2. Neighbours | 2.4 | Fair | Fair | Fair | 60 | 0 | 4 | 10 | | | Y | | | Wound |
| 72 | White Cedar | *Thuja occidentalis* | 20 | 2. Neighbours | 2.4 | Fair | Fair | Fair | 60 | 0 | 4 | 10 | | | Y | | | Wound |
| 73 | Silver Maple | *Acer saccharinum* | 180 | 2. Neighbours | 14.0 | Fair | Fair | Fair | 50 | 10 | 18 | 18 | | | Y | | Y | |
| 74 | Red Maple | *Acer rubrum* | 32 | 2. Neighbours | 2.4 | Good | Good | Good | 60 | 5 | 6 | 12 | | | Y | | | Hydro |
| 75 | Sugar maple | *Acer saccharum* | 90 | 2. Neighbours | 5.4 | Good | Good | Good | 60 | 5 | 7 | 14 | | | Y | | | |
| 76 | Hedge Maple | *Acer campestre* | 18 | 5. City Owned | 2.4 | Fair | Fair | Fair | 50 | 10 | 4 | 4 | | | Y | | | Hydro |
| 77 | White Cedar | *Thuja occidentalis* | 14 | 1.Private | 2.4 | Fair | Fair | Fair | 70 | 0 | 3 | 9 | | | | Y | | Against foundation |
| 78 | Norway Spruce | *Picea abies* | 28 | 2. Neighbours | 2.4 | Good | Good | Good | 80 | 0 | 5 | 12 | | | | | | |

## Appendix 2 – Tree Protection Plan (Preview – to be printed to scale)



# Appendix 3 – Hoarding (TPF) Detail



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## Appendix 5 – Glossary of Common Arboricultural Terms

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| Arborist | A professional who possesses the technical competence gained through experience and related training to provide for or supervise the management of trees and other woody plants in residential, commercial, and public landscapes. |
| ANSI A300 | Acronym for American National Standards Institute. In the United States, industry-developed, national consensus standards of practice for tree care. |
| Bark Tracing | Cutting away torn or injured bark to leave a smooth edge. |
| Branch Bark Ridge | Raised strip of bark at the top of a branch union, where the growth and expansion of the trunk or parent stem and adjoining branch push the bark into a ridge. |
| Callus wood | Undifferentiated tissue formed by the cambium, usually as the result of wounding. |
| Clinometer | A device used to calculate the height of trees. |
| Consulting Arborist | An Arboricultural consultant is one of the following:<br>● American Society of Consulting Arborists, Registered Consulting Arborist (ASCA RCA#___)<br>● International Society of Arboriculture, Board Certified Master Arborist (ISA BCMA #_____B)<br>● ISA Certified Arborist/Municipal Specialist in good standing for a minimum of 6 years with 6 years of proven experience in a management role related to arboriculture, and has attested and signed to a code of ethics related to arboriculture (ISA#_____) |
| Compartmentalization | Natural defense process in trees by which chemical and physical boundaries are created that act to limit the spread of disease and decay organisms |
| Critical Root Zone – (CRZ) | Area of soil around a tree where the minimum amounts of roots considered critical to the structural stability or health of the tree are located. CRZ determination is sometimes based on the drip line or a multiple of dbh (12:1, 12cm of ground distance from the trunk for every cm of dbh) but because root growth is often asymmetric due to |

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| | site conditions, on-site investigation is preferred. |
| Daylighting | Also known as Hydro-vac, this is the process by which soil is vacuumed up. In the context of tree care this allows workers to access the soil below the roots without mortal damage to significant roots. |
| Dbh | Acronym for tree diameter at breast height. Measured at 1.4m above ground. |
| Decurrent | Rounded or spreading growth habit of the tree crown. |
| Directional Pruning | Providing clearance by pruning branches that could significantly affect the integrity of utility facilities or other structures, and leaving in place branches that could have little or no effect. |
| Dripline | Imaginary line defined by the branch spread of a single parent or group of plants |
| Excurrent | Tree growth habit characterized by a central leader and a pyramidal crown. |
| Included bark | Bark that becomes embedded in a crotch (union) between branch and trunk or between codominant stems. Causes a weak structure. |
| Lion's Tailing | Poor pruning practice in which an excessive number of branches are thinned from the inside and lower part of specific limbs or a tree crown, leaving mostly terminal foliage. Results in poor branch taper, poor wind load distribution, and higher risk of branch failure. |
| MTPZ | Acronym for Minimum Tree Protection Zone, also known as the Structural Root Zone (SRZ), which is the distance from the tree equal to 6 times the dbh, within which the likelihood of encountering roots that are direct structural supports for the tree. |
| Moment | Rotational force that is created by any line force on a body. The magnitude of a moment is defined as the product of the force magnitude and perpendicular distance from the line of action of the force to the axis that the moment is being calculated about. |
| Mortality Spiral | A sequence of stressful events or conditions causing the decline and eventual death of a tree. |

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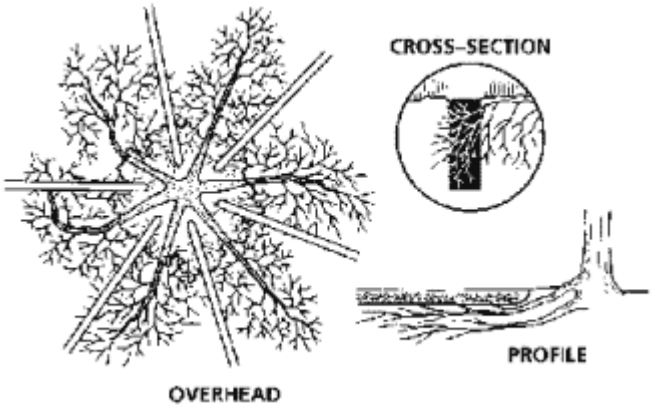
| Mulch | Material that is spread of sometimes sprayed on the soil surface to reduce weed growth, to retain soil moisture and moderate temperature extremes, to reduce compaction from pedestrian traffic or to prevent damage from lawn-maintenance equipment, to reduce erosion or soil spattering onto adjacent surfaces, to improve soil quality through its eventual decomposition, and/or to improve aesthetic appearance of the landscape. Mulch can be composed of chipped, ground, or shredded organic material such as bark, wood, or recycled paper; unmodified organic material such as seed hulls; organic fiber blankets or mats; or inorganic material such as plastic sheeting. |
| Organic Matter | Material derived from the growth (and death) of living organisms. The organic components of the soil. |
| CRZ | Acronym for Critical Root Zone, also known as the Critical Root Zone (see definition above), within which there is a high likelihood of encountering roots that are necessary for the survival for the tree. |
| Project Arborist | The consulting arborist retained to provide all tree preservation recommendations to the project manager or contractors on a given construction project. |
| Qualified Arborist | An arborist who has documented related training (i.e. ISA, MTCU, or equivalent) and on-the-job experience (minimum of 5 years) |
| Radial trenching | Technique for aerating the soil or alleviating compaction around a tree by removing and replacing soil (which may be amended) in trenches (typically 300mm deep and 150mm wide) made in a spoke like pattern (radially from the trunk) in the root zone to improve conditions for root growth.   |

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| Reaction Wood | Wood formed in leaning or crooked stems or on lower or upper sides of branches as a means of counteracting the effects of gravity. |
| Removal Cut | A cut that removes a branch at its point of origin. Collar cut. |
| Reduction Cut | A pruning cut that reduces the length of a branch or stem back to a lateral branch large enough to assume apical dominance. |
| Resistograph® | A brand name of a device consisting of a specialized micro-drill bit that drills into trees and graphs density differences that are used to detect decay. |
| Soft-Scaped | Landscaping practices that do not involved solid or deeply-dug foundations. Patios consisting of slab rocks laid on-top of the soil with minimal excavation and base (less than 10cm) and causing minimal damage to existing tree roots. |
| Static Support System | Cabling system that utilizes rigid materials such as rods and steel cables to limit movement and provide constant support of limbs. |
| Structural cells | Modular system consisting of units of soil and integrated support structures that serve both as a foundation for paved surfaces and a hospitable environment for tree root growth, |
| Structural pruning | Pruning to establish a strong arrangement or system of scaffold branches. |
| Structural Soil™ | Pavement substrate that can be compacted to meet engineering specifications yet remains penetrable be tree roots in the urban environment. Composed of angular crushed stone, clay loam, and hydrogel mixed in a weight ratio of 100:20:0.03. Developed at the Urban Horticulture Institute, Cornell University, Ithaca, NY. |
| Supersonic Air Excavation Techniques (SSAT) | A methodology using a device that directs a jet of highly compressed air to excavate soil. Used within the root zone of trees to avoid or minimizing damage to the roots, or near underground structures such as pipes and wires to avoid or minimize damage to them. |
| Tree Protection Zone (TPZ) | Defined area within which certain activities are prohibited or restricted to prevent or minimize potential injury to designated trees, especially during construction. TPZ is sometimes based on a |

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| | minimum multiple of dbh (e.g. 6:1, 6cm of ground distance from the trunk for 1cm of dbh) |
| Walls | Trees have 4 walls in a process known as compartmentalization.<br>● Wall 1 prevents decay moving up and down in a tree<br>● Wall 2 prevents decay moving inward in a tree<br>● Wall 3 prevents decay moving laterally in a tree<br>● Wall 4 is the new growth formed on the outside of the tree, callus growth. |
| Woundwood | Lignified, differentiated tissues produced on woody plants as a response to wounding. |

# Appendix 6 – Arborist Qualifications

**Michael Petryk** is an ISA Certified (ON-1691-A) Consulting Arborist for the Davey Resource Group (DRG). He has completed programs in environmental and forest management from Trent University, Sir Sandford Fleming College, and Humber College. Since graduating, he has gained experience working for Conservation Authorities as a resource technician, and private tree companies as a climbing arborist. His work with the DRG has included inventories for the Cities of Niagara, Ottawa, Leduc, and Mississauga, and in writing Urban Forest Management Plans for varies municipalities around Canada.

**Certifications**

International Society of Arboriculture Certified Arborist (ON-1691-A)
Ecosystem Land Classification
Butternut Health Assessor
Ontario Pesticide Applicators License
Tree Risk Assessment Qualification

# Appendix 7 – Photographs

*Figure 1: Tree 1*

*Figure 2: Trees 2 (left) and 3*

*Figure 3: Tree 4*


*Figure 4: Tree 5*


*Figure 5: Tree 6*

*Figure 6: Tree 7*

*Figure 7: Tree 9*

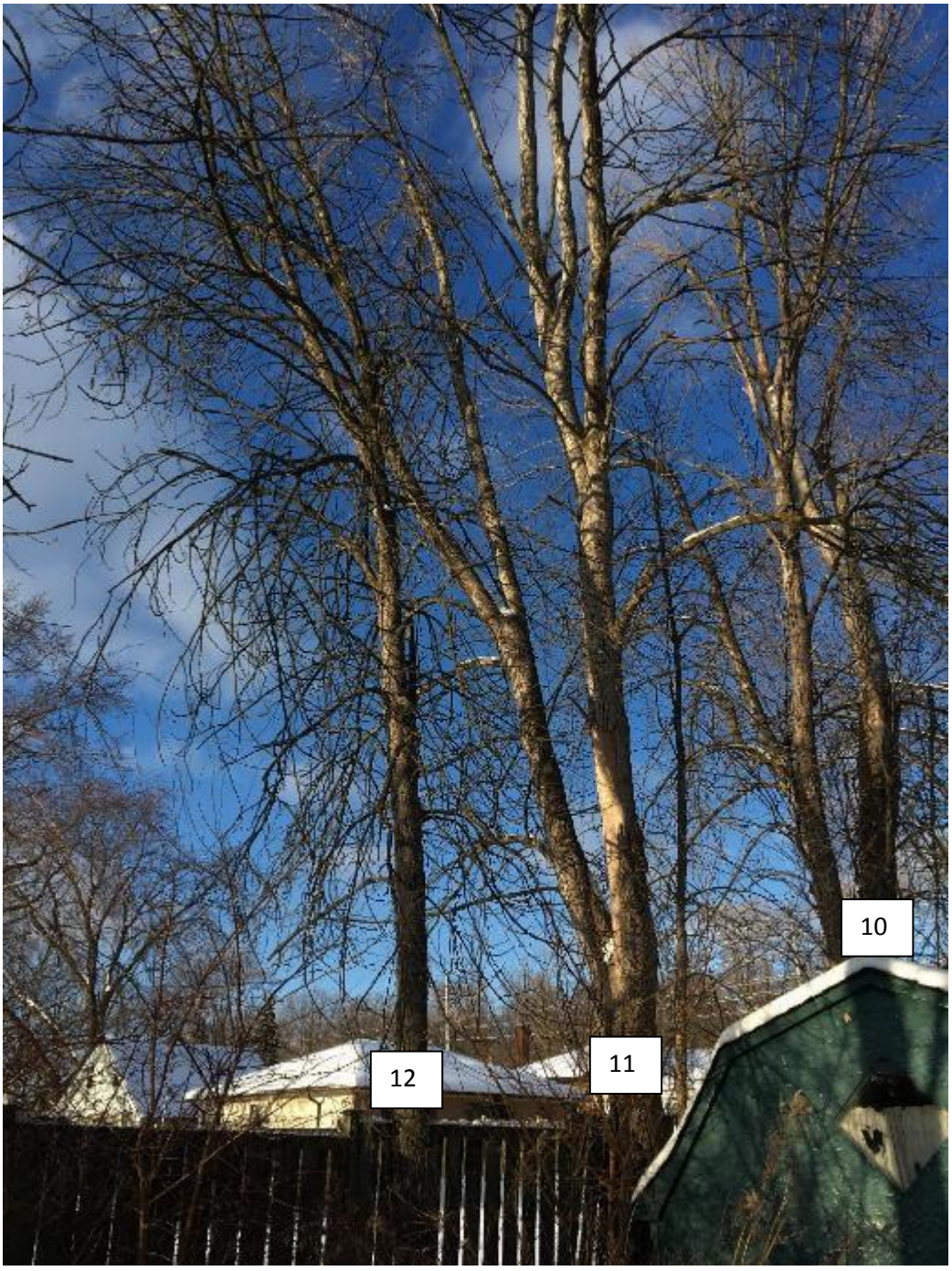


*Figure 8: Tree 10, 11, 12*


*Figure 9: Trees 13 and 14*


*Figure 10: Trees 15 and 16*

*Figure 11: Tree 17*

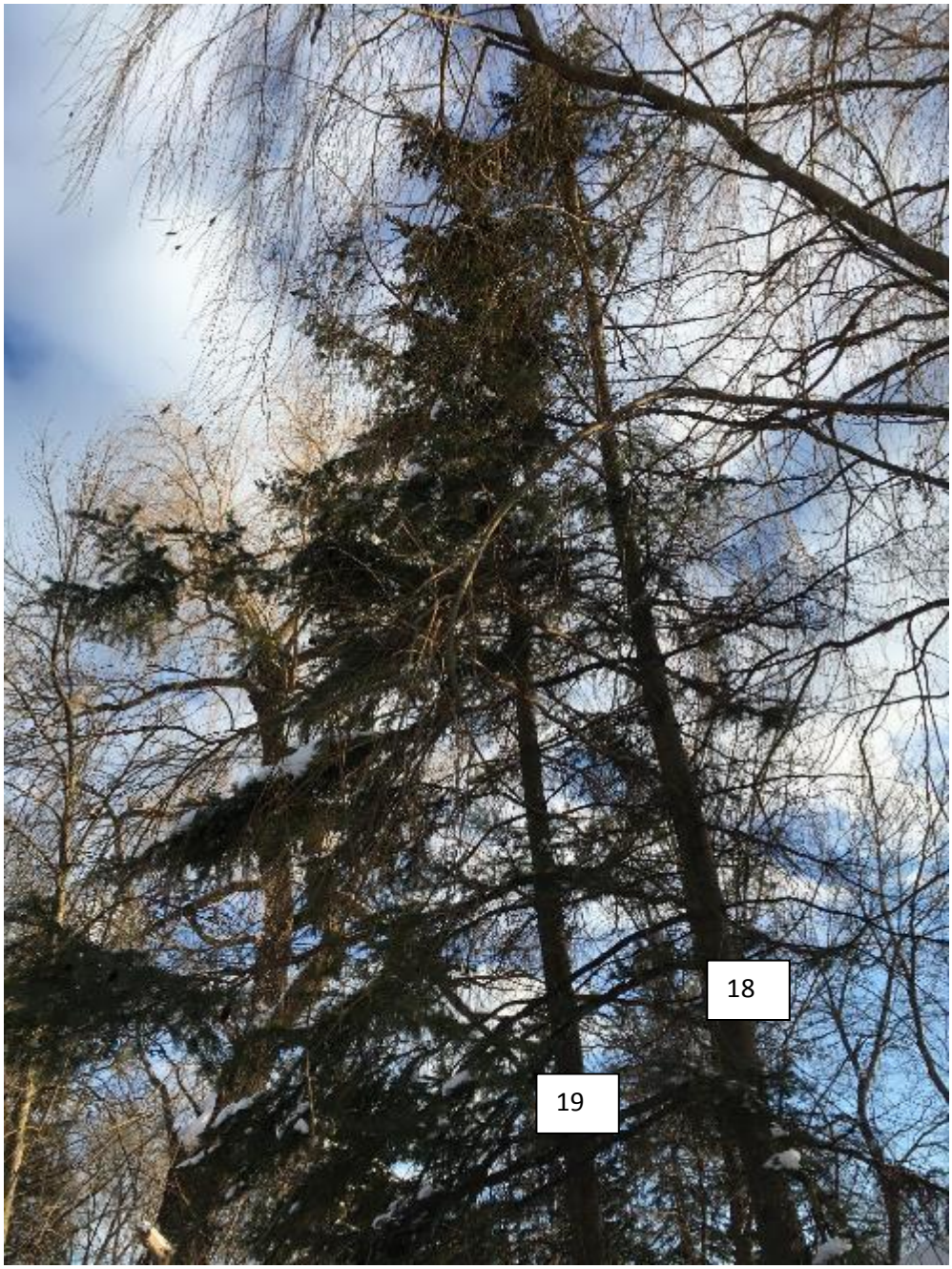


*Figure 12: Trees 18, 19*


*Figure 13: Tree 20*

*Figure 14: Tree 21*

*Figure 15: Tree 22*


*Figure 16: Tree 23-27*


*Figure 17: Tree 28-30*


*Figure 18: Trees 31-34*

*Figure 19: Trees 31-34 Alternate view*


*Figure 20: Tree 35 and 36*

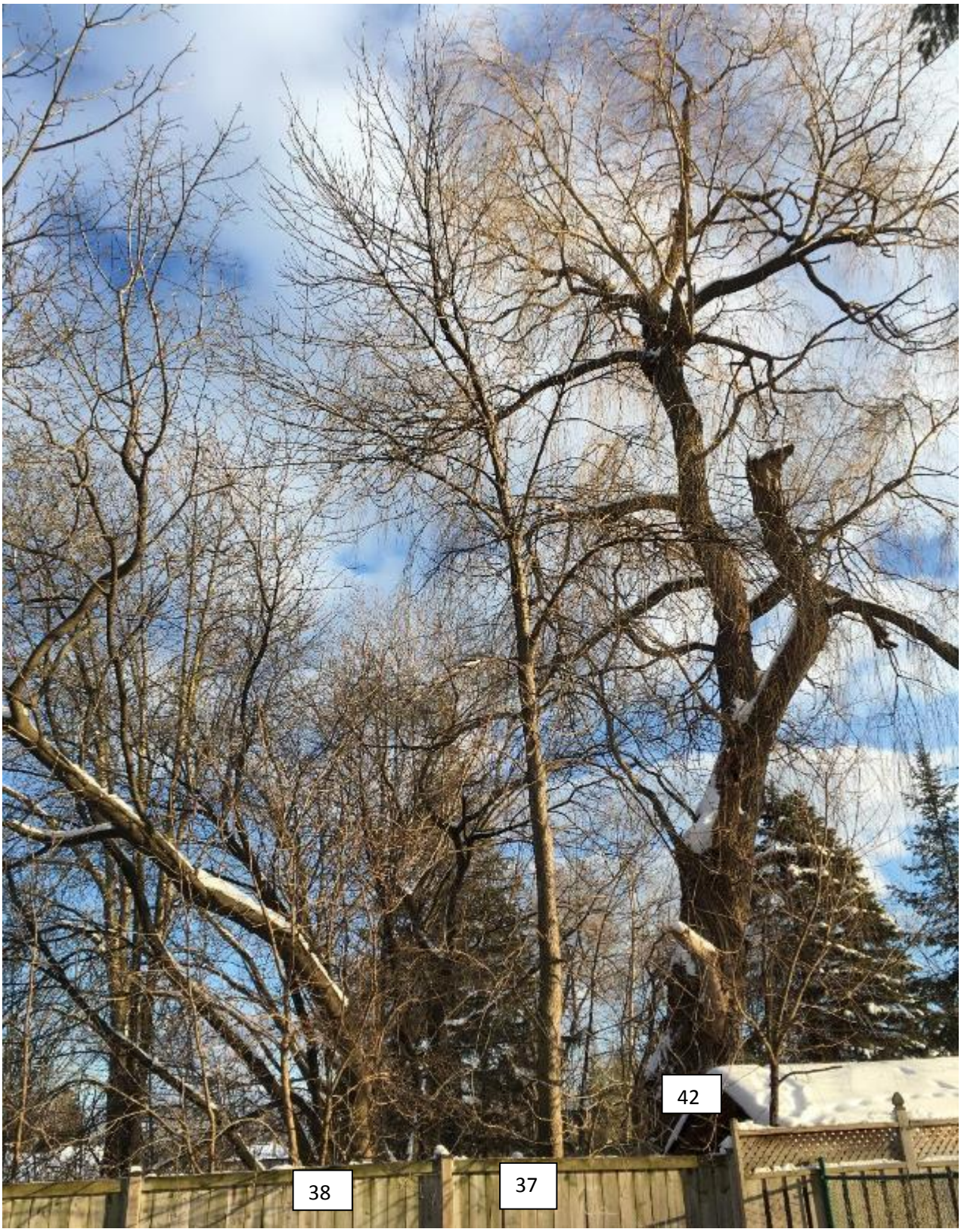


*Figure 21: Trees 37, 38, 42*


*Figure 22: Tree 39*


*Figure 23: Tree 40, 41*


*Figure 24: Trees 45 and 46*


*Figure 25: Trees 47 and 48*


*Figure 26: Trees 49 and 50*


*Figure 27: Trees 51-54*

*Figure 28: View of trees 54 (far right) to 70 (Far left)*


*Figure 29: Tree 73*


*Figure 30: Tree 75 and 76*

*Figure 31: Tree 76*

*Figure 32: Tree 77, White Cedar*

## Conditions of Assessment Agreement

This Conditions of Assessment Agreement is made pursuant to and as a provision of Davey Resource Group, a division of The Davey Tree Expert Co. of Canada, Limited ("Davey"), providing tree assessment services as agreed to between the parties, the terms and substance of which are incorporated in and made a part of this Agreement (collectively the "Services").

Trees are living organisms that are subject to stress and conditions and which inherently impose some degree or level of risk. Unless a tree is removed, the risk cannot be eliminated entirely. Tree conditions may also change over time even if there is no external evidence or manifestation. In that Davey provides the Services at a point in time utilizing applicable standard industry practices, any conclusions and recommendations provided are relevant only to the facts and conditions at the time the Services are performed. Given that Davey cannot predict or otherwise determine subsequent developments, Davey will not be liable for any such developments, acts, or conditions that occur including, but not limited to, decay, deterioration, or damage from any cause, insect infestation, acts of god or nature or otherwise.

Unless otherwise stated in writing, assessments are performed visually from the ground on the above-ground portions of the tree(s). However, the outward appearance of trees may conceal defects. **Therefore, to the extent permitted by law, Davey does not make and expressly disclaims any warranties or representations of any kind, express or implied, with respect to completeness or accuracy of the information contained in the reports or findings resulting from the Services beyond that expressly contracted for by Davey in writing, including, but not limited to, performing diagnosis or identifying hazards or conditions not within the scope of the Services or not readily discoverable using the methods applied pursuant to applicable standard industry practices.** Further, Davey's liability for any claim, damage or loss caused by or related to the Services shall be limited to the work expressly contracted for.

In performing the Services, Davey may have reviewed publicly available or other third- party records or conducted interviews, and has assumed the genuineness of such documents and statements. Davey disclaims any liability for errors, omissions, or inaccuracies resulting from or contained in any information obtained from any third- party or publicly available source.

Except as agreed to between the parties prior to the Services being performed, the reports and recommendations resulting from the Services may not be used by any other party or for any other purpose. The undersigned also agrees, to the extent permitted by law, to protect, indemnify, defend and hold Davey harmless from and against any and all claims, demands, actions, rights and causes of action of every kind and nature, including actions for contribution or indemnity, that may hereafter at any time be asserted against Davey or another party, including, but not limited to, bodily injury or death or property damage arising in any manner from or in any way related to any disclaimers or limitations in this Agreement.

By accepting or using the Services, the customer will be deemed to have agreed to the terms of this Agreement, even if it is not signed.

Acknowledged by:

Name of Customer: _____

Authorized Signature: _____

Date: _____