

Arborist Report

Pre-Construction Assessment

Prepared For:

Garner South M.D. Developments Inc.

Site Address:

559 Garner Rd E
Ancaster, ON
L9G 3K9

September 20th, 2022
Updated September 23rd, 2024

Prepared By:



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Summary

The following Arborist Report is with respect to the proposed 6-storey residential housing development at 559 Garner Rd East in Ancaster, ON. The construction site is located in a field bordered by Southcote Rd to the east and Elm Hill Blvd to the west. To the north of the construction site there are neighbour owned trees within an undeveloped wooded area at 509 Southcote Rd, and to the east is a commercial lot at 581 Garner Rd E with no trees present within 6 meters of the development property. The proposed construction includes a single 6-story residential structure, driveways, outdoor seating area, and underground garage. Due to the extent of the underground parking garage as it is currently planned, substantial land clearing will be required that will involve removal of all trees within the property. Nearby trees are located within and outside the footprint of the housing development at 559 Garner Rd E, and on neighbour owned properties to the north of the construction site.

71 trees were assessed within and surrounding the site:

- Privately owned trees at 559 Garner Rd E: **45**
- Neighbour owned trees: **12**
- Boundary trees: **12**
- City-Owned trees: **2**

63 trees are recommended to be removed. **16** trees on the boundary of or within the neighbouring property at 509 Southcote Rd are recommended to be removed to accommodate land clearing and excavation for the underground garage (Trees #50-55, 57-65, 69). These trees require the informed consent of the property owner. **45** trees (#1-43, 46, 68) are on private property at 559 Garner Rd E. These trees were located within the footprint of the proposed apartment building, landscaping, and parking area. **2** trees (#44, 45) are on city property along Southcote Rd. These trees are volunteer-grown Black Walnuts and are under 20cm in diameter. Though they are protected under city by-laws, their removal will not comprise a significant loss from the urban tree canopy. 14 new plantings are proposed within the property and within the boulevards along Southcote and Garner Rd.

5 trees have construction to take place within their Tree Protection Zones (TPZ) and will likely be injured. These trees should be partially protected with Tree Protection Fencing (TPF) installed around their Tree Protection Zones to protect roots to be retained. Low-impact root excavation methods supervised by a Certified Arborist, and root pruning conducted by a Certified Arborist are recommended.

- Tree #48, a 24cm White Cedar (neighbour owned)
- Tree #49, a 24 cm White Spruce (neighbour owned)
- Tree #56, an 85 cm Silver Maple (neighbour owned)
- Tree #66, a 60 cm Silver Maple (neighbour owned)
- Tree #70, a 25 cm White Spruce (neighbour owned)

3 trees are recommended to be fully protected with TPF installed to protect their roots from soil compaction and cutting during construction. Trees were recommended for full protection if no construction is to take place within their Tree Protection Zones. All trees recommended to be protected are located on neighbour owned properties.

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

Introduction

Davey Resource Group (DRG) was retained by the owner, Garner South M.D. Developments Inc., to develop an Arborist Report and Tree Protection/Removal Plan (TPP) for the proposed housing development at 559 Garner Rd East in Ancaster, 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. To account for the spatial scope of work within the site, the location of the planned construction and all trees within 6 meters of it were surveyed. All trees 10 cm in diameter or greater within the scope of the survey were included in an inventory and assessed for protection or removal needs. Small ornamental trees and shrubs were not surveyed for this report.

Recommendations for tree preservation or removal are to be provided.

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 and field observations.

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 on risk may be obtained through a basic or advanced ISA Tree Risk Assessment.

Methods

- Tools used to assess the trees included a metric DBH measuring tape and a camera.
- All trees 10 cm or greater within the property and 6 meters of the property were included.
- Trees were studied for their proximity to existing and planned structures to determine recommendations or precautions for trees requiring removal or injury.
- For multiple trunks at 1.37 m, DBH was calculated using the sum-of-squares method, taking the square root of each squared diameter added together ($DBH = \sqrt{DBH1^2 + DBH2^2 + \text{etc.}}$)
- Trees located on private property at 559 Garner Rd E were tagged with numbered tree tags #1-71 unless already tagged from previous assessments. Trees on neighbour owned properties (Trees #42-71) and trees that were inaccessible due to field conditions were not tagged.

Observations

- The site was inspected on September 13th, 2022 by ISA Certified Arborist Joseph Steinfeld (OH-6403A) at 1:00 P.M. local time.
- Weather conditions were 22°C and sunny.
- During the assessment, no evidence of construction was present, and work had not yet started.
- The site is undeveloped and overgrown with various shrubs and herbaceous plants. Some refuse and rubble was present from prior structures or developments.
- Service wires were located near trees along the west side on Southcote Rd.
- **71** trees were assessed for this report and labeled #1-71 in the Tree Protection Action Key and Tree Protection Plan included within Appendices 1-2. Existing tags were present numbering between #808 and #907 on some trees, which were not tagged during DRG's assessment.
- **36** trees were in good condition, **16** were in fair condition, **11** were in poor condition, and **8** trees were dead during the site assessment.
- Trees #1-43, 46, and 68 are located within the private property of 559 Garner Rd E. The species composition is largely Manitoba Maple dominant, with some Willows and White Ash trees present. These trees are common in secondary succession woodland and are not of significant ecological value for preservation under Ancaster heritage tree by-laws.
- Trees #15 and 40 are a large White Oak and Black Walnut within 559 Garner Rd E. These trees measure 84 and 64cm diameter and quality as Heritage Trees under Ancaster by-laws. Additional permission will be required for their removal. Replacement planting is planned to compensate for these trees.
- Trees #44 and 45 are two Black Walnut trees along the roadway on Southcote Rd on the west side of the property. Both trees are growing as volunteers and are not maintained as street trees.
- Trees #46-67 and 69-71 are located largely along the northern property boundary alongside 509 Southcote Rd and within the closest 6m of the property. These trees are largely comprised of White Spruce which are in mostly fair to dead condition due to being overgrown by larger trees on both properties. Some of the dead trees have fallen over. As a result, some trees were inaccessible for tagging and measuring.
- Trees #48, 49, 56, 66, and 70 are within 509 Southcote Rd and far enough away from the proposed construction to be retained with minor root loss. Low-impact root excavation by means of Hydro-Vac at 500psi or lower is recommended to expose roots for pruning prior to deep excavation for the underground parking garage. Permission of the neighbours will be required. Trees #56 and 66 qualify as Heritage Trees under Ancaster tree preservation by-laws, and additional permits will be required.
- Remaining boundary trees are recommended for removal, mostly due to poor and declining condition, in addition to expected root loss. None of the neighbouring trees to be removed

qualify as heritage trees under Ancaster by-laws.

For further details and observations, refer to the Tree Protection Action Key (Appendix 1).

Discussion

To preserve and protect trees, proper recommendations must be followed and abided by the client for the duration of the project.

Regulatory context

All tree removals as part of new development are to be permitted at the discretion of the city forestry staff as part of site plan approval, so long as proper tree protection planning is undertaken during the process.

Specifications regarding Tree Protection Zones and Tree Protection Fencing follow the City of Hamilton's Tree Protection Guidelines.

Tree Protection Zones

Tree Protection Zones (TPZ) surrounding each tree are defined by the tree's drip line and must be kept free of all construction activity above and below ground. 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 a by-law and may result in fines or a stop-work order.

Tree Protection Fencing (Appendix 3)

It is in the best interest of the client to take every precaution possible to minimize damage to trees where work is taking place, and to avoid any unnecessary injury to trees outside of work areas. On this construction site, Tree Protection Fencing (TPF) is recommended to protect trees from soil compaction and root cutting. TPF should be placed a minimum of one meter from the drip line/TPZ of a tree. However, it must be understood that sometimes this distance is not achievable due to infrastructure being too close. In most situations, TPF does not need to be installed beyond the closest extent of impermeable and/or paved surfaces. It must be further understood the TPF distance sometimes must accommodate a larger TPZ (than the typical MTPZ distance) due to a limited root growing area/volume (this area is typically defined by the project arborist).

Hamilton's Tree Protection Guidelines states that paige wire farm fencing is the standard form of Tree Protection Fencing. Snow fencing is not acceptable. TPF locations will be indicated on the Tree Protection Plan (Appendix 2) which has been included in this report but will be printed to-scale for use on-site and in permit applications. Within the scope of this project, TPF is recommended to be established around all trees at variable distances indicated on the tree

protection plan. These distances may be achieved across softscapes and hardscapes surrounding all trees, protecting their Tree Protection Zones. Problems will arise for tree preservation efforts when anyone removes the TPF, even temporarily. It takes one instance of soil compaction from a heavy machine for roots to suffer from air and water deprivation and for the tree to become stressed. It is imperative to install and maintain in good condition the TPF to prevent this from happening by utilizing horizontal TPF whenever necessary.

Root Pruning

Similar to pruning the upper canopy of the tree, roots are best removed (if needed) via target pruning practices and not by being torn off. Using mechanical tools or excavation equipment to remove or prune roots often leaves ragged edges, stripped bark, or splintered tissue. These surfaces are difficult for a tree to heal over and provide a high surface area for potential decay pathogens (bacteria, fungus, insects), to enter a tree. Minimizing the cross section of pruned roots allows for the most efficient recovery for the tree. Roots that are larger in diameter than 20% of its parent trunk's DBH are structurally integral to a tree and must be pruned with discretion. Safe excavation of roots must be done using non-invasive means such as low-pressure Hydro-Vac or Air Spade when preparing for deep excavation, or hand digging when preparing for shallow hardscape works or landscaping. Root pruning is recommended to be carried out by a licensed professional, such as an ISA Certified Arborist. Cut roots should be backfilled and watered before they have a chance to dry out.

Tree Protection Signage

It is recommended for the client to affix Tree Protection Signs to Tree Protection Fencing. A sign must be posted on the fence to indicate that it delineates a Tree Protection Zone. The signage should remain in place and in good repair throughout construction. An example standard sign format is displayed in Appendix 4 within this report.

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 Tree Protection Fencing.

Replanting and Compensation

To ensure existing tree cover is maintained, the City requires 1 for 1 compensation for any trees to be removed. If it is not possible to replant trees on site (i.e. no space), Cash-in-lieu will be provided to the City to plant trees elsewhere. Within the scope of this project, numerous trees are recommended for removal. However, of the 63 trees to be removed, most trees are either in Poor or Dead condition (17 trees) or are undesirable species excepted under Ancaster tree preservation by-laws such as Willow, Siberian Elm, Norway Maple, or Manitoba Maple in fair to good condition (23 trees). This leaves 23 trees of ecological value to be removed from the property. With 14 large shade trees proposed for planting, additional compensation should be required.

Conclusion

71 trees were collected in the inventory and assessment for this report.

63 trees are recommended to be removed.

- **16** trees on the boundary of or within neighbouring property at 509 Southcote Rd (#50-55, 57-65, 69). are recommended to be removed to accommodate deep excavation just inside the property line for underground garage construction. Permission of the neighbouring landowner will be required.
- **45** trees are on private property at 559 Garner Rd E (Trees #1-43, 46, 68).
- **2** trees are within the city-owned boulevard along Southcote Rd (#44, 45)

5 trees have construction to take place within their Tree Protection Zones (TPZ) and will likely be injured. These trees should be partially protected with Tree Protection Fencing (TPF) installed around their Tree Protection Zones to protect roots to be retained. Low-impact root excavation methods supervised by a Certified Arborist, and root pruning conducted by a Certified Arborist are recommended.

- Tree #48, a 24cm White Cedar (neighbour owned)
- Tree #49, a 24 cm White Spruce (neighbour owned)
- Tree #56, an 85 cm Silver Maple (neighbour owned)
- Tree #66, a 60 cm Silver Maple (neighbour owned)
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3 trees are recommended to be fully protected with TPF installed to protect their roots from soil compaction and cutting during construction. All trees recommended to be protected are located on neighbour owned properties

Excavation will encompass the entirety of the property in order to construct the footings, underground garage, and substructure of the proposed development. Due to the extensive scope of earthworks, all existing vegetation, and all soil underlying it, will be removed from site and disposed of at a proper location. This includes any existing invasive weeds such as Japanese Knotweed, which are of concern to the city with regard to its removal from this site.

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.

- Trees to be protected are specified with “Protect” in the “Action” column in the Tree Protection Action Key (Appendix 1).
 - We recommend the client install and properly maintain tree protection fencing (Appendix 3) around trees to be protected prior to and during construction work.
 - We recommend the fencing be built of paige wire farm fencing following the City of Hamilton Tree Protection Guidelines and specifications detailed in Appendix 3.
 - Tree Protection Signage (Appendix 4) must be posted on the fence to indicate that it delineates a tree protection zone.
- Trees to be removed are specified with “Remove” in the “Action” column in the Tree Protection Action Key (Appendix 1).
 - We recommend the client remove trees prior to the start of construction.
 - Trees #1-46, and 68 are to be removed from the site property due to required grading throughout their root zones, pending approval of the site plan by the City of Hamilton
 - Trees #15 and 40 qualify as “Heritage Trees” under Town of Ancaster by-laws and require additional permission for removal. These trees are located within the proposed construction and cannot be alternatively protected. It is recommended that the client request permission to remove these trees, and provide sufficient compensation for their removal.
 - Trees #50-55, 57-65, and 69 are to be removed due to being dead and/or planned severe root loss from deep excavation for construction. Removal of these trees requires informed consent from the property owners at 509 Southcote Rd.
- Trees likely to be injured are specified with “Injure” in the “Action” column in the Tree Protection Action Key (Appendix 1).
 - We recommend the client protect these trees with Tree Protection Fencing prior to the start of construction.
 - For Trees #48, 49, 56, 66, and 70, we recommend root excavation by low-pressure hydro vac supervised by a Certified Arborist to minimize the damage to the health and structure of the trees. Once roots are excavated, root pruning required is to be conducted by a Certified Arborist in order to minimize severance of anchor roots, which provide upright support for the tree. An Arborist should be present on site at all times when work is within the TPZ.
 - We recommend the client obtain the informed consent of neighbouring property owners prior to injuring these neighbour-owned trees
- We recommend all materials storage be kept outside of neighbouring TPZs at all times during construction
- We recommend the client satisfy City of Hamilton replanting requirements by planting the

planned 12 shade trees on and surrounding site at 559 Garner Rd E once development is complete. If it is not possible to replant required additional trees on site (i.e. no space), Cash-in-lieu must be provided to the City to plant trees elsewhere. All trees to be planted must be of native species. Any planned non-native plantings are to be substituted with native plantings.

- We recommend the client perform all removals outside of the migratory bird nesting season (May through August). Any removals during nesting season must first have a qualified professional certify that no nesting bird species are present.
- We recommend that the trees to be retained with injury be re-assessed one year after root pruning, and again one year after completion of construction. Any unexpected decline in condition is to be monitored and treated with fertilizer and vertical mulching. Permanent reduction in condition is not expected, as all trees to be retained with injury are not expected to sustain impacts across more than 20% of their root areas.

Appendix 1 – Tree Protection Action Key (TPAK)

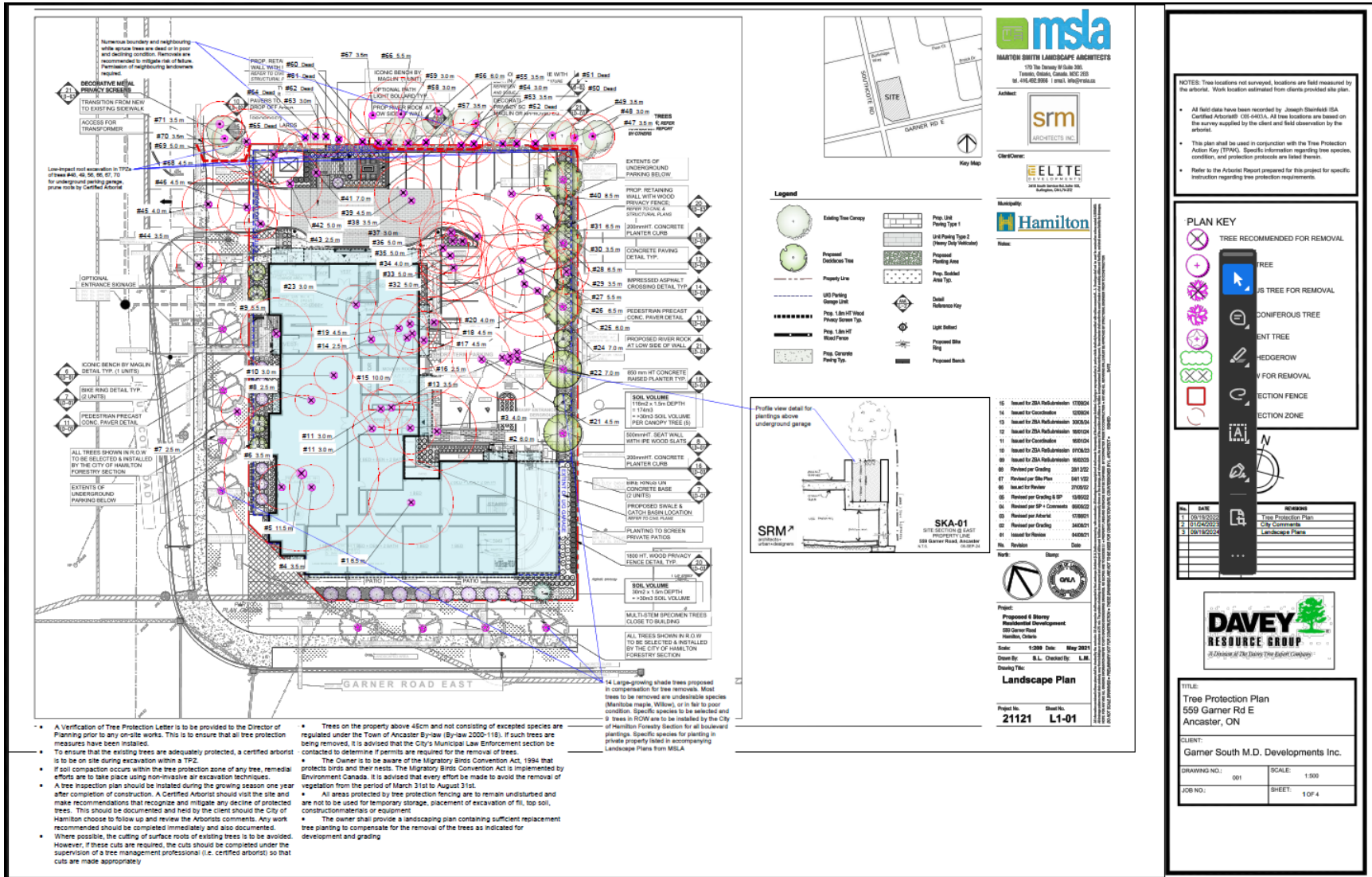
Tree Map Number	Tree Tag Number	Species	Botanical	DBH (cm) @ 1.37 m	Tree Ownership	Health	Structure	Overall Condition	Crown Width (m)	Tree Height (m)	Deadwood (%)	TPZ – Dripline +1m	Construction inside Min TPZ	Construction Impact (None, Low, Medium, High)	Action	Observations and Recommendations
1	836	Manitoba Maple	<i>Acer negundo</i>	49	Private	Good	Fair	Good	11	9	0	6.5	Y	H	Remove	Multi-stem (34, 27, 23cm); not protected under by-law
2	837	Manitoba Maple	<i>Acer negundo</i>	54	Private	Poor	Poor	Poor	10	8	55	6	Y	H	Remove	Multi-stem (41, 25, 25cm); overgrown with vines; dead leader; not protected under by-law
3	3	Downy Hawthorn	<i>Crataegus mollis</i>	33	Private	Good	Good	Good	6	6	10	4	Y	H	Remove	Multi-stem (18, 15, 13, 12, 10, 10cm); some deadwood
4	907	Norway Maple	<i>Acer platanoides</i>	18	Private	Good	Poor	Fair	5	7	0	3.5	Y	H	Remove	suppressed underneath Tree #5
5	905	Weeping Willow	<i>Salix babylonica</i>	174	Private	Good	Fair	Fair	21	16	10	11.5	Y	H	Remove	multi-stem (142, 100cm) dead limbs; broken 30cm branch; cavities; Not protected under by-law
6	6	Black Walnut	<i>Juglans nigra</i>	10	Private	Good	Good	Good	5	5	0	3.5	Y	H	Remove	
7	808	White Ash	<i>Fraxinus americana</i>	11	Private	Poor	Fair	Poor	3	6	20	2.5	Y	H	Remove	Emerald Ash Borer (EAB)
8	N/A	White Ash	<i>Fraxinus americana</i>	10	Private	Fair	Good	Fair	3	7	0	2.5	Y	H	Remove	EAB; inaccessible for tagging
9	809	Siberian Elm	<i>Ulmus pumila</i>	38	Private	Good	Good	Good	9	13	5	5.5	Y	H	Remove	
10	10	Catalpa	<i>Catalpa speciosa</i>	6	Private	Good	Good	Good	4	3	0	3	Y	H	Remove	Multi-stems (5, 4cm)
11	835	White Ash	<i>Fraxinus americana</i>	15	Private	Good	Good	Good	4	7	0	3	Y	H	Remove	
12	12	White Ash	<i>Fraxinus americana</i>	14	Private	Good	Good	Good	4	6	5	3	Y	H	Remove	
13	13	Black Cherry	<i>Prunus serotina</i>	54	Private	Poor	Poor	Poor	5	8	55	3.5	Y	H	Remove	Multiple dead leaders; dying
14	14	White Ash	<i>Fraxinus americana</i>	10	Private	Good	Fair	Good	3	4	0	2.5	Y	H	Remove	suppressed by Tree #15
15	830	White Oak	<i>Quercus rubra</i>	84	Private	Fair	Good	Good	18	14	15	10	Y	H	Remove	small dead leaders; Protected under Ancaster Heritage Tree by-law
16	N/A	White Elm	<i>Ulmus americana</i>	12	Private	Good	Poor	Fair	3	5	0	2.5	Y	H	Remove	suppressed by Tree #15
17	829	Manitoba Maple	<i>Acer negundo</i>	35	Private	Good	Poor	Fair	7	15	0	4.5	Y	H	Remove	heavy lean
18	827	Manitoba Maple	<i>Acer negundo</i>	24	Private	Good	Good	Good	7	12	5	4.5	Y	H	Remove	

Tree Map Number	Tree Tag Number	Species	Botanical	DBH (cm) @ 1.37 m	Tree Ownership	Health	Structure	Overall Condition	Crown Width (m)	Tree Height (m)	Deadwood (%)	TPZ – Dripline +1m	Construction inside Min TPZ	Construction Impact (None, Low, Medium, High)	Action	Observations and Recommendations
19	825	Manitoba Maple	<i>Acer negundo</i>	28	Private	Good	Good	Good	7	13	5	4.5	Y	H	Remove	
20	832	Manitoba Maple	<i>Acer negundo</i>	22	Private	Fair	Poor	Poor	6	5	15	4	Y	H	Remove	overgrown with vines
21	838	Black Walnut	<i>Juglans nigra</i>	23	Private	Good	Good	Good	7	10	0	4.5	Y	H	Remove	Multi-stem (12, 10, 8, 8cm)
22	22	Staghorn Sumac	<i>Rhus typhina</i>	19	Private	Good	Good	Good	12	6	0	7	Y	H	Remove	Large sumac cluster
23	826	Black Walnut	<i>Juglans nigra</i>	17	Private	Good	Good	Good	4	8	0	3	Y	H	Remove	
24	24	Manitoba Maple	<i>Acer negundo</i>	55	Private	Poor	Poor	Poor	12	10	25	7	Y	H	Remove	Growing out of rubble pile; not protected under by-law
25	25	Manitoba Maple	<i>Acer negundo</i>	32	Private	Fair	Poor	Fair	10	8	0	6	Y	H	Remove	leaning heavily
26	846	Manitoba Maple	<i>Acer negundo</i>	31	Private	Fair	Fair	Fair	11	12	0	6.5	Y	H	Remove	overgrown with vines
27	845	Manitoba Maple	<i>Acer negundo</i>	32	Private	Fair	Fair	Fair	9	13	0	5.5	Y	H	Remove	overgrown with vines
28	28	Manitoba Maple	<i>Acer negundo</i>	56	Private	Fair	Fair	Good	11	17	15	6.5	Y	H	Remove	not protected under by-law
29	849	Manitoba Maple	<i>Acer negundo</i>	14	Private	Good	Fair	Good	5	7	0	3.5	Y	H	Remove	
30	30	Sugar Maple	<i>Acer saccharum</i>	11	Private	Good	Good	Good	5	7	10	3.5	Y	H	Remove	
31	841	Manitoba Maple	<i>Acer negundo</i>	33	Private	Poor	Poor	Poor	11	12	60	6.5	Y	H	Remove	Broken trunk
32	822	Manitoba Maple	<i>Acer negundo</i>	31	Private	Good	Poor	Fair	8	8	25	5	Y	H	Remove	leaning heavily
33	823	Manitoba Maple	<i>Acer negundo</i>	27	Private	Good	Fair	Good	8	7	5	5	Y	H	Remove	
34	824	Manitoba Maple	<i>Acer negundo</i>	24	Private	Good	Fair	Good	6	9	10	4	Y	H	Remove	
35	820	Manitoba Maple	<i>Acer negundo</i>	25	Private	Good	Fair	Good	8	11	15	5	Y	H	Remove	
36	818	Manitoba Maple	<i>Acer negundo</i>	19	Private	Good	Fair	Good	8	8	10	5	Y	H	Remove	
37	821	Manitoba Maple	<i>Acer negundo</i>	11	Private	Good	Fair	Good	4	8	5	3	Y	H	Remove	
38	817	White Ash	<i>Fraxinus americana</i>	16	Private	Poor	Good	Poor	5	9	10	3.5	Y	H	Remove	EAB

Tree Map Number	Tree Tag Number	Species	Botanical	DBH (cm) @ 1.37 m	Tree Ownership	Health	Structure	Overall Condition	Crown Width (m)	Tree Height (m)	Deadwood (%)	TPZ – Dripline +1m	Construction inside Min TPZ	Construction Impact (None, Low, Medium, High)	Action	Observations and Recommendations
39	816	Manitoba Maple	<i>Acer negundo</i>	22	Private	Good	Fair	Good	7	8	15	4.5	Y	H	Remove	
40	843	Black Walnut	<i>Juglans nigra</i>	64	Private	Good	Good	Good	15	21	10	8.5	Y	H	Remove	Protected under Ancaster Heritage Tree by-law
41	814	Manitoba Maple	<i>Acer negundo</i>	53	Private	Fair	Fair	Fair	12	11	30	7	Y	H	Remove	Multi-stem (42, 27, 18cm); deadwood; not protected under by-law
42	N/A	Willow	<i>Salix spp.</i>	35	Private	Poor	Poor	Poor	8	12	20	5	Y	H	Remove	Multi-stem (26, 23cm) Fallen tree; dead leaders; overgrown
43	N/A	Black Walnut	<i>Juglans nigra</i>	11	Private	Good	Good	Good	3	5	0	2.5	Y	H	Remove	
44	N/A	Black Walnut	<i>Juglans nigra</i>	19	City	Good	Good	Good	5	7	0	3.5	Y	H	Remove	Multi-stem (14, 13cm)
45	N/A	Black Walnut	<i>Juglans nigra</i>	22	City	Good	Good	Good	6	8	0	4	Y	H	Remove	Multi-stem (13, 13, 11cm)
46	N/A	Manitoba Maple	<i>Acer negundo</i>	17	Private	Fair	Poor	Poor	7	4	15	4.5	Y	H	Remove	Fallen over; growing sprouts; inaccessible
47	N/A	White Spruce	<i>Picea glauca</i>	30	Neighbour	Good	Good	Good	5	8	0	3.5	N	N	Protect	
48	N/A	White Cedar	<i>Thuja occidentalis</i>	24	Neighbour	Good	Fair	Good	4	8	0	3	Y	L	Injure	Multi-stem (18, 16cm); Transformer pad to be located in TPZ; minor impact; arborist supervision and root pruning during hand-digging or low-impact excavation
49	N/A	White Spruce	<i>Picea glauca</i>	24	Neighbour	Good	Good	Good	5	8	10	3.5	Y	L	Injure	Transformer pad to be located in TPZ; minor impact; arborist supervision and root pruning during hand-digging or low-impact excavation
50	N/A	White Spruce	<i>Picea glauca</i>	24	Boundary	Dead	Poor	Dead	3	9	100	2.5	Y	H	Remove	Dead; remove
51	N/A	White Spruce	<i>Picea glauca</i>	26	Boundary	Dead	Poor	Dead	4	10	100	3	Y	H	Remove	Dead; remove
52	N/A	White Spruce	<i>Picea glauca</i>	18	Boundary	Dead	Poor	Dead	1	9	100	1.5	Y	H	Remove	Dead; remove
53	N/A	White Spruce	<i>Picea glauca</i>	30	Boundary	Fair	Fair	Fair	5	10	25	3.5	Y	H	Remove	Severe injury expected from land clearing; remove
54	N/A	White Spruce	<i>Picea glauca</i>	16	Boundary	Poor	Fair	Fair	4	8	35	3	Y	H	Remove	crowded by other trees; Severe injury expected from land clearing; remove

Tree Map Number	Tree Tag Number	Species	Botanical	DBH (cm) @ 1.37 m	Tree Ownership	Health	Structure	Overall Condition	Crown Width (m)	Tree Height (m)	Deadwood (%)	TPZ – Dripline +1m	Construction inside Min TPZ	Construction Impact (None, Low, Medium, High)	Action	Observations and Recommendations
55	N/A	White Spruce	<i>Picea glauca</i>	22	Boundary	Fair	Fair	Good	5	11	15	3.5	Y	H	Remove	leaning; Severe injury expected from land clearing; remove
56	N/A	Silver Maple	<i>Acer saccharinum</i>	85	Neighbour	Good	Good	Good	10	18	10	6	Y	L	Injure	estimated DBH; land clearing and parking lot construction on edge of TPZ; arborist supervision and root pruning during hand-digging or low-impact excavation
57	N/A	White Spruce	<i>Picea glauca</i>	22	Boundary	Fair	Fair	Fair	5	9	25	3.5	Y	H	Remove	Severe injury expected from land clearing; remove
58	N/A	White Spruce	<i>Picea glauca</i>	16	Boundary	Fair	Fair	Fair	4	8	30	3	Y	H	Remove	Severe injury expected from land clearing; remove
59	N/A	White Spruce	<i>Picea glauca</i>	15	Boundary	Poor	Poor	Poor	4	7	40	3	Y	H	Remove	Suppressed by fallen trees; Severe injury expected from land clearing; remove
60	N/A	White Spruce	<i>Picea glauca</i>	14	Boundary	Dead	Poor	Dead	3	7	75	2.5	Y	H	Remove	Dead; remove
61	N/A	White Spruce	<i>Picea glauca</i>	34	Boundary	Dead	Poor	Dead	2	10	100	2	Y	H	Remove	falling onto other trees; remove
62	N/A	White Spruce	<i>Picea glauca</i>	21	Neighbour	Dead	Poor	Dead	3	8	100	2.5	Y	H	Remove	dead; fallen over
63	N/A	White Spruce	<i>Picea glauca</i>	18	Neighbour	Fair	Poor	Poor	4	7	30	3	Y	M	Remove	impacted by blowdown; further injury from land clearing; remove
64	N/A	White Spruce	<i>Picea glauca</i>	20	Neighbour	Dead	Poor	Dead	2	7	95	2	Y	L	Remove	falling over, dead; remove
65	N/A	White Spruce	<i>Picea glauca</i>	21	Neighbour	Dead	Poor	Dead	1	7	100	1.5	Y	L	Remove	falling over, dead; remove
66	N/A	Silver Maple	<i>Acer saccharinum</i>	60	Neighbour	Good	Good	Good	9	17	0	5.5	Y	L	Injure	estimated DBH; land clearing and parking lot construction on edge of TPZ; arborist supervision and root pruning during hand-digging or low-impact excavation
67	N/A	White Spruce	<i>Picea glauca</i>	24	Neighbour	Fair	Fair	Fair	5	9	15	3.5	N	N	Protect	
68	N/A	Manitoba Maple	<i>Acer negundo</i>	24	Private	Good	Fair	Good	7	9	5	4.5	Y	H	Remove	Multi-stem (18, 16cm)
69	N/A	Manitoba Maple	<i>Acer negundo</i>	30	Boundary	Good	Good	Good	8	10	0	5	Y	H	Remove	Severe injury expected from land clearing; remove
70	N/A	White Spruce	<i>Picea glauca</i>	25	Neighbour	Fair	Fair	Fair	5	10	5	3.5	Y	L	Injure	estimated DBH; inaccessible, wetland; land clearing and parking lot construction on edge of TPZ; arborist supervision and root pruning during hand-digging or low-impact excavation
71	N/A	Manitoba Maple	<i>Acer negundo</i>	20	Neighbour	Good	Good	Good	5	8	10	3.5	N	N	Protect	overgrown with vines

Appendix 2 – Tree Protection Plan (Preview – To be Printed to Scale)



Appendix 3 – Tree Appraisal Values

This appraisal is being completed to meet the City of Hamilton’s requirements for assessing neighbouring or boundary trees being impacted by a construction proposal. All that require permits to injure or remove must be evaluated based on the most recent International Society of Arboriculture’s Guide for Plant Appraisal.

Tree valuation was determined on a tree per basis using the Trunk Formula Method developed in the current standard practice “Guide for Plant Appraisal, 10th Ed.” Developed by the Council of Tree & Landscape Appraisers and published by the International Society of Arboriculture.

Tree Appraisal Background

The tree valuation calculation, theory and assumptions have been extracted from the following multiple sources:

- Guide for Plant Appraisal, 10th Ed.” Developed by the Council of Tree & Landscape Appraisers. This provides the theory and foundation to the Trunk Formula Method (TFM) used in the individual tree appraisal determination.
- Values were referenced from Humber Nurseries (Deciduous trees were sourced as the largest commonly available stock, approximately 5 cm dbh, (60mm caliper) or closest match from available species. Conifers were sourced as the largest commonly available stock, approximately 200 cm tall (closest to approximately 5 cm dbh).

The Trunk Formula Method (TFM) calculation extracted from the two sources of theory and application literature is explained below:

$$\text{Value} = \text{Basic Tree Cost} * \text{Depreciation} (\text{Functional Limitations} * \text{External Limitations} * \text{Condition Rating})$$

Where,

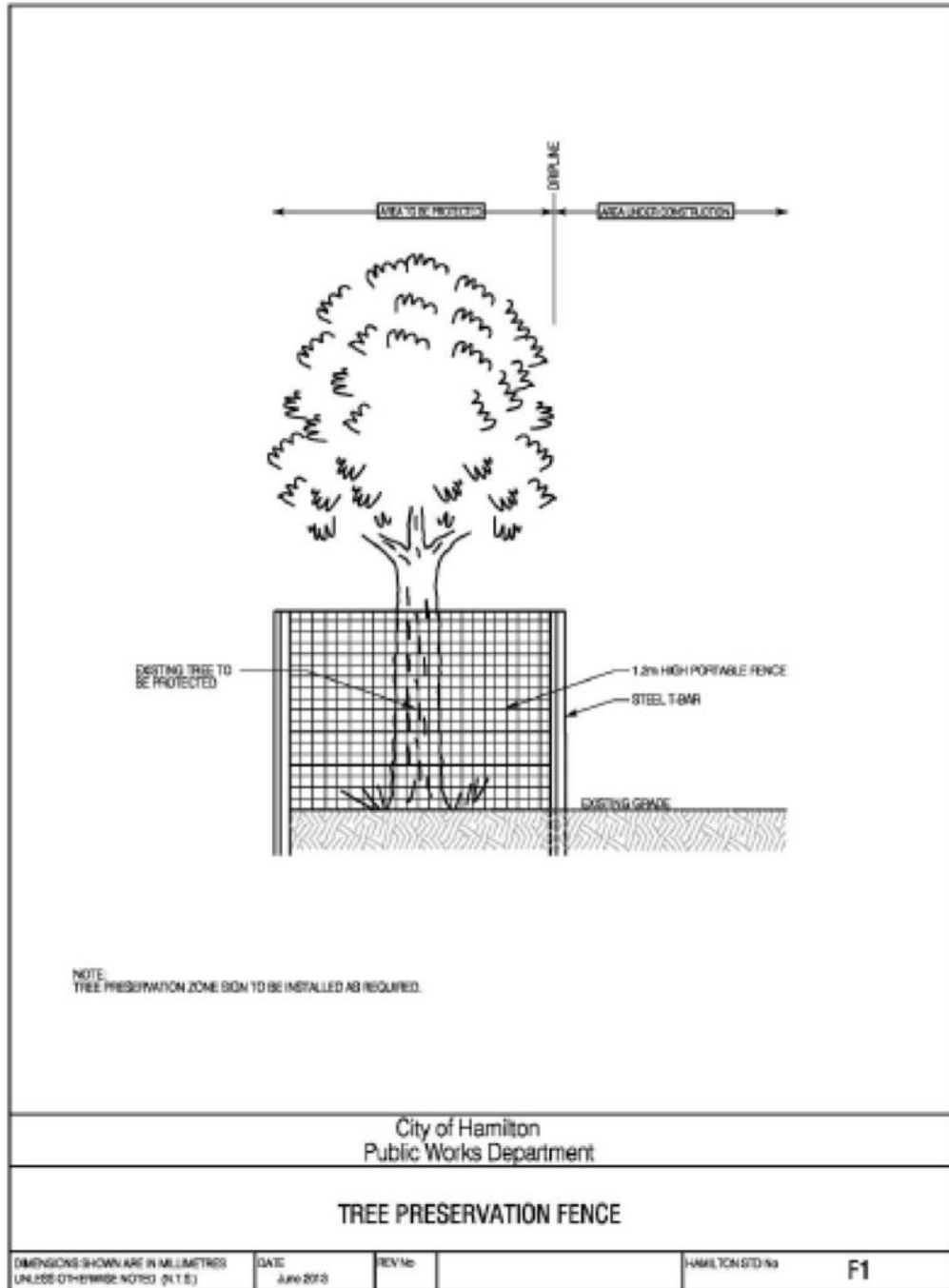
$$\text{Basic Tree Cost} = \text{Replacement Cost} + (\text{Base Price per Area} * (\text{Difference in Adjusted Trunk Area and Adjusted Trunk Replacement Area}))$$

Tree Appraisal Chart:


Tree #	Common Name	Botanical	CONDITION	DBH	Functional Limitations	Condition Rating	External Limitations	Replacement Trunk Size (cm)	Replacement Tree Cost	Installation Cost	Replacement Trunk Area (cm ²)	Appraised Trunk Area	Appraised Trunk Increase	Appraised Value
47	White Spruce	<i>Picea glauca</i>	Good	30	0.5	0.8	0.6	6	\$370	\$150	28.27	706.5	678.23	\$2,343.67
48	White Cedar	<i>Thuja occidentalis</i>	Good	24	0.5	0.8	0.6	6	\$230	\$150	28.27	455.3	427.03	\$980.08
49	White Spruce	<i>Picea glauca</i>	Good	24	0.5	0.8	0.6	6	\$370	\$150	28.27	452.16	423.89	\$1,544.88
50	White Spruce	<i>Picea glauca</i>	Dead	24	0.5	0	0.6	6	\$370	\$150	28.27	452.16	423.89	\$0.00
51	White Spruce	<i>Picea glauca</i>	Dead	26	0.5	0	0.6	6	\$370	\$150	28.27	530.66	502.39	\$0.00
52	White Spruce	<i>Picea glauca</i>	Dead	18	0.5	0	0.6	6	\$370	\$150	28.27	254.34	226.07	\$0.00
53	White Spruce	<i>Picea glauca</i>	Fair	30	0.5	0.5	0.6	6	\$370	\$150	28.27	706.5	678.23	\$1,464.80
54	White Spruce	<i>Picea glauca</i>	Fair	16	0.5	0.5	0.6	6	\$370	\$150	28.27	200.96	172.69	\$472.47
55	White Spruce	<i>Picea glauca</i>	Good	22	0.5	0.8	0.6	6	\$370	\$150	28.27	379.94	351.67	\$1,318.06
56	Silver Maple	<i>Acer saccharinum</i>	Good	85	0.5	0.8	0.9	6	\$370	\$150	28.27	5671.625	5643.35	\$26,906.15
57	White Spruce	<i>Picea glauca</i>	Fair	22	0.5	0.5	0.6	6	\$370	\$150	28.27	379.94	351.67	\$823.79
58	White Spruce	<i>Picea glauca</i>	Fair	16	0.5	0.5	0.6	6	\$370	\$150	28.27	200.96	172.69	\$472.47
59	White Spruce	<i>Picea glauca</i>	Poor	15	0.5	0.2	0.6	6	\$370	\$150	28.27	176.625	148.35	\$169.88
60	White Spruce	<i>Picea glauca</i>	Dead	14	0.5	0	0.6	6	\$370	\$150	28.27	153.86	125.59	\$0.00
61	White Spruce	<i>Picea glauca</i>	Dead	34	0.5	0	0.6	6	\$370	\$150	28.27	907.46	879.19	\$0.00
62	White Spruce	<i>Picea glauca</i>	Dead	21	0.5	0	0.6	6	\$370	\$150	28.27	346.185	317.91	\$0.00
63	White Spruce	<i>Picea glauca</i>	Poor	18	0.5	0.2	0.6	6	\$370	\$150	28.27	254.34	226.07	\$230.90
64	White Spruce	<i>Picea glauca</i>	Dead	20	0.5	0	0.6	6	\$370	\$150	28.27	314	285.73	\$0.00
65	White Spruce	<i>Picea glauca</i>	Dead	21	0.5	0	0.6	6	\$370	\$150	28.27	346.185	317.91	\$0.00
66	Silver Maple	<i>Acer saccharinum</i>	Good	60	0.5	0.8	0.9	6	\$370	\$150	19.63	2826	2806.37	\$19,363.11
67	White Spruce	<i>Picea glauca</i>	Fair	24	0.5	0.5	0.6	6	\$370	\$150	19.63	452.16	432.53	\$1,356.39
69	Manitoba Maple	<i>Acer negundo</i>	Good	30	0.5	0.8	0.6	5	\$300	\$150	19.63	706.5	686.87	\$2,699.34
70	White Spruce	<i>Picea glauca</i>	Fair	25	0.5	0.5	0.6	6	\$370	\$150	19.63	490.625	471.00	\$1,465.15
71	Manitoba Maple	<i>Acer negundo</i>	Good	20	0.5	0.8	0.6	5	\$300	\$150	19.63	314	294.37	\$1,259.71
													TOTAL	\$62,870.84

Appendix 4 – Tree Protection Fencing Detail

Tree Preservation Fencing



Appendix 5 – Tree Protection Zone Sign Detail

Tree Protection Zone 

No grade change, storage of materials or equipment is permitted within this area. This tree protection barrier must not be removed without the written authorization of the City of Hamilton Report any contraventions to

Contact Name-Davey Resource Group Tel No. (647) 465-4901
Unauthorized removal of the tree protection barrier or other contraventions may result in prosecution.

Laminated and Posted in visible areas along Tree Protection Fencing
To Remain in Good Repair throughout Construction

Appendix 6 – References

1. ISA, 2001-2011. Best Management Practices, Books 1-9, Companion publications to ANSI A300 Standards for Tree Care
2. Dujesiefken, Dr. Dirk, 2012. Director of the Institute for Tree Care in Germany, The CODIT Principle, research presented on cambial regrowth on trees after injury at the Annual ISA Conference in Kingston Ontario
3. Sinclair and Lyon, 2005. Diseases of Trees and Shrubs, Second Edition
4. ISA, 2010. Glossary of Arboricultural Terms
5. Neely and Watson, ISA, 1994 and 1998. The Landscape Below Ground 1 and 2
6. Matheny and Clark, ISA, 1994. A Photographic Guide to the Evaluation of Hazard Trees in Urban Areas, 2nd Edition
7. Matheny and Clark, ISA 1998. Trees and Development, A Technical Guide to Preservation of Tree During Land Development
8. PNW-ISA, 2011. Tree Risk Assessment in Rural Areas and Urban/Rural Interface, Version 1-5
9. Todd Hurt & Bob Westerfield, 2005. Tree Protection During Construction and Landscaping Activities

Appendix 7 – Glossary of Common Arboricultural Terms

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: <ul style="list-style-type: none"> American Society of Consulting Arborists, Registered Consulting Arborist (ASCA RCA#___) International Society of Arboriculture, Board Certified Master Arborist (ISA BCMA #___B) 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 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 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 of which the moment is being calculated.
Mortality Spiral	A sequence of stressful events or conditions causing the decline and eventual death of a tree.
Mulch	Material that is spread or 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.
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 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. <ul style="list-style-type: none"> ● Wall 1 prevents decay moving up and down in a tree ● Wall 2 prevents decay moving inward in a tree ● Wall 3 prevents decay moving laterally in a tree ● Wall 4 is the new growth formed on the outside of the tree, callus growth.
Woundwood	Lignified, differentiated tissues produced on woody plants after wounding.

Appendix 8 – Arborist Qualifications



Joseph Steinfeld is a Consulting Arborist with Davey Resource Group. His formal education includes a Bachelor of Science in Ecology, Evolution, and Natural Resources with a focus in Forest and Landscape Ecology from Rutgers, the State University of New Jersey. Mr Steinfeld has ten years of varied work experience in the forestry, arboriculture, and ecological assessment fields. Mr. Steinfeld has worked with DRG for over four years as an Inventory Arborist, Asian Longhorned Beetle Damage Surveyor, Urban Forester, Site Manager, and Consulting Arborist.

Certifications

International Society of Arboriculture Certified Arborist (OH-6403A)
ISA Tree Risk Assessment Qualification (TRAQ)

Appendix 9 – Photographs



Figure 1: Trees #1-6 generally from right to left, viewed from Garner Rd.



Figure 2: Shrubs and sumacs on the east side of 559 Garner Rd E.



Figure 3: Base of Tree #1 showing overgrown invasive weeds (Japanese knotweed)



Figure 4: Base of Tree #5, with #4 in foreground



Figure 5: View looking east from Southcote Rd at trees #7-20 (generally right to left)



Figure 6: View of the base of Tree #15 with Manitoba maple volunteers throughout



Figure 7: View of trees #24-30 growing from rubble pile in northeast end of property.



Figure 8: Base of Tree #40 with trees #45-50 from right to left in background.



Figure 9: Trees #44 and 45 at right and left in boulevard along Southcote Rd, looking southeast.



Figure 10: Trees #51-65 from right to left along north property boundary. Most trees in poor or dead condition and recommended for removal. Trees #56 and 66 in background to be preserved with minor injury during excavation.



Figure 11: Trees #68-71 in inaccessible thicket overgrown with vines at northwest corner of property.

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: _____