Tree Conservation Report

Prepared For:

CTM Design Services

Site Address:

1440 Prince of Wales Dr
Ottawa, On, K2C 1N6

July 30, 2024
Revised: October 10, 2024
Revised: December 5, 2024

Prepared By:

Clayton Gray

ISA Certified Arborist (ON-2611A)

ISA Tree Risk Assessment Qualified (TRAQ)

Phone: (416) 553-0649 | | Email: Clayton.Gray@Davey.com

Contents

Summary

The following Arborist Report is with respect to the proposed reconstruction of the existing gas station and convenience store at 1440 Prince of Wales Dr, Ottawa, On.

16 trees were assessed on site:

- Private Trees: 16

Due to the extensive scope of work and proposed ground disturbance, **14** trees have planned work in their critical root zones. 9 Trees are recommended for removal, 5 trees are to be injured, and 2 trees are to be preserved.

- 4 trees (#5, 6, 11, and 12) are greater than 10cm diameter and will require a permit for removal.
- 1 tree (#10) is 32 dbh on "private property in the urban area, 1 hectare or less in size" and is therefore a distinctive tree requiring tree replacements at a 2:1 ratio. Therefore **2** replacement trees are required.
    - Locations on site for all 2 trees have been depicted on the TPP and should be native shade growing species.
- 5 Trees (#7, 8, 13, 15, and 16) are greater than 10cm diameter and will require a permit to injure to accommodate the paved asphalt.
    - Excavation for the paved asphalt within the any TPZ to be performed via hand dig, air-spade or low-pressure hydro-vac (below 500psi) under supervision of a Certified Arborist. Roots are to be pruned by a Certified Arborist.

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 client, CTM Design Services to develop an Arborist Report and Tree Protection Plan (TPP) for the Pre Construction Report at 1440 Prince of Wales Dr, Ottawa, On.

An inventory and assessment of all city trees within the scope of the construction project were collected. The Arborist was to document the current condition, size, and location of the trees as they relate to the proposed work. All trees within the scope of the survey were included in an inventory and assessed for protection or removal needs. Small shrubs and forest trees were not surveyed for this report.

Recommendations for tree preservation or removal are provided.

Included with this report are 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, metric measuring tape, and camera.
- All city and privately owned trees and any neighbour owned trees within 6 meters of proposed work were collected in the survey.
- Trees were studied for their proximity to existing and planned structures to determine recommendations or precautions for trees requiring removal or injury.

Observations

- The site was inspected on June 19, 2024, by ISA Certified Arborist Darren Corbelli.
- No evidence of construction was present, and work had not started.
- No material storage or soil compaction within Tree Protection Zones was observed.
- 16 trees were assessed for this report and labeled #1 - #16 in the Tree Protection Action Key (TPAK) and Tree Protection Plan (TPP) included within Appendices 1 and 2.
- 11 trees were in good condition, 5 trees were in fair condition
- For further details and observations, refer to the Tree Protection Action Key (Appendix 1).
- The site is an existing refueling station in a developed area. Aside from the trees discussed in this report, no other natural elements are present on site:
    - None of the following elements are present on site.
    - Surface water features, including vernal pools, wetlands and watercourses;
    - Steep slopes, including valleys and escarpments;
    - Valued woodlots designated as Urban Natural Features or Natural Environment Areas, areas evaluated in the Urban Natural Areas Environmental Evaluation Study (UNAEES), or other areas that meet the criteria used in the UNAEES;
    - Significant woodlands;
    - High quality, specimen trees;
    - Hazardous trees;
    - The presence of riparian woodlots, rare communities or other unique ecological features; and
    - Species at Risk and their habitat.

Discussion

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

Regulatory Context

Under the Tree Protection By-law, the following protected trees cannot be injured or removed without a tree permit from the City:

- All City-owned trees throughout the urban and rural area
- All trees 10 cm or more in diameter at breast height on private properties within the urban area that are subject to a Planning Act application for Site Plan, Plan of Subdivision, or Plan of Condominium
- All trees 10 cm or more in diameter at breast height on private properties within the urban area that are over 1 hectare in size
- All distinctive trees on private properties 1 hectare or less in size, where distinctive trees are defined as:
    - Trees measuring 30 cm or more in diameter at breast height within the inner urban area (urban lands inside the Greenbelt)
    - Trees measuring 50 cm or more in diameter at breast height within the suburban area (urban lands outside the Greenbelt)

The protections on privately owned trees also apply to identified urban expansion or growth areas shown on schedules in the by-law. The areas covered by the various parts of the by-law can also be viewed on geoOttawa under the Forestry heading.

The by-law also provides protection to all City-owned natural areas by regulating activities that might cause negative impacts. Refer to Part III of the by-law for more information.

Conclusion and Recommendations

Regarding the proposed reconstruction of the existing gas station and convenience store at 1440 Prince of Wales Dr, Ottawa, we assessed 16 trees for protection, injury, or removal.

16 trees were assessed on site:

- Private Trees: 16

Due to the extensive scope of work and proposed ground disturbance, **14** trees have planned work in their critical root zones. 9 Trees are recommended for removal, 5 trees are to be injured, and 2 trees are to be preserved.

- 4 trees (#5, 6, 11, and 12) are greater than 10cm diameter and will require a permit for removal.
- 1 tree (#10) is 32 dbh on “private property in the urban area, 1 hectare or less in size” and is therefore a distinctive tree requiring tree replacements at a 2:1 ratio. Therefore **2** replacement trees are required.
    - Locations on site for all 2 trees have been depicted on the TPP and should be native shade growing species.

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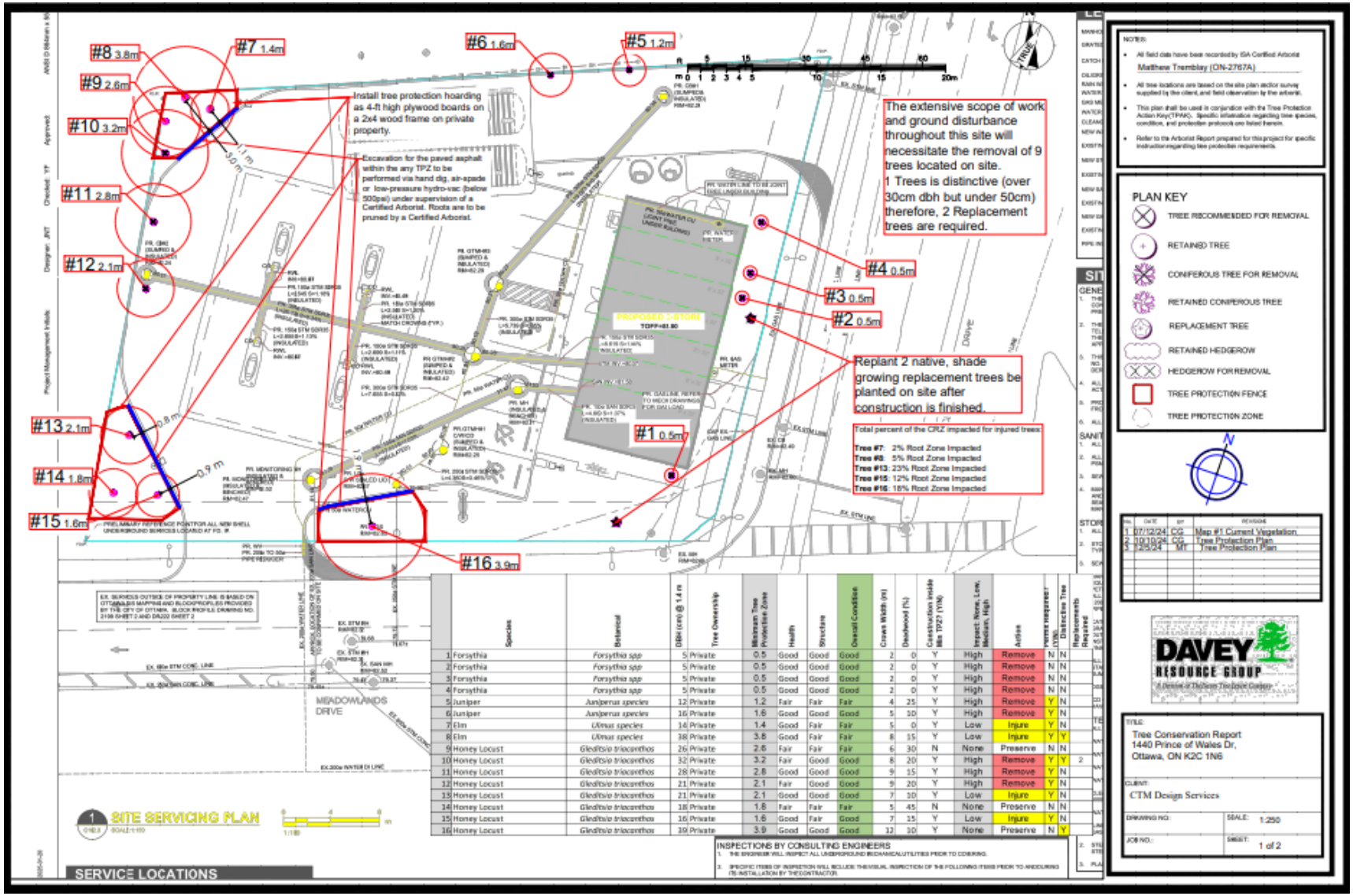
    - Excavation for the paved asphalt within the any TPZ to be performed via hand dig, air-spade or low-pressure hydro-vac (below 500psi) under supervision of a Certified Arborist. Roots are to be pruned by a Certified Arborist.

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

Appendix 1 – Tree Protection Action Key (TPAK)

	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Zone	Health	Structure	Overall Condition	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Impact: None, Low, Medium, High	Action	Permit Required? (Y/N)	Distinctive Tree	Replacements Required
1	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
2	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
3	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
4	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
5	Juniper	*Juniperus species*	12	Private	1.2	Fair	Fair	Fair	4	25	Y	High	Remove	Y	N	
6	Juniper	*Juniperus species*	16	Private	1.6	Good	Good	Good	5	10	Y	High	Remove	Y	N	
7	Elm	*Ulmus species*	14	Private	1.4	Good	Fair	Fair	5	0	Y	Low	Injure	Y	N	
8	Elm	*Ulmus species*	38	Private	3.8	Good	Fair	Fair	8	15	Y	Low	Injure	Y	Y	
9	Honey Locust	*Gleditsia triacanthos*	26	Private	2.6	Fair	Fair	Fair	6	30	N	None	Preserve	N	N	
10	Honey Locust	*Gleditsia triacanthos*	32	Private	3.2	Fair	Good	Good	8	20	Y	High	Remove	Y	Y	2
11	Honey Locust	*Gleditsia triacanthos*	28	Private	2.8	Good	Good	Good	9	15	Y	High	Remove	Y	N	
12	Honey Locust	*Gleditsia triacanthos*	21	Private	2.1	Fair	Good	Good	9	20	Y	High	Remove	Y	N	
13	Honey Locust	*Gleditsia triacanthos*	21	Private	2.1	Good	Good	Good	7	10	Y	Low	Injure	Y	N	
14	Honey Locust	*Gleditsia triacanthos*	18	Private	1.8	Fair	Fair	Fair	5	45	N	None	Preserve	N	N	
15	Honey Locust	*Gleditsia triacanthos*	16	Private	1.6	Good	Fair	Good	7	15	Y	Low	Injure	Y	N	
16	Honey Locust	*Gleditsia triacanthos*	39	Private	3.9	Good	Good	Good	12	10	Y	Low	Injure	Y	Y	

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



	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Zone	Health	Structure	Overall Condition	Crown Width (m)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Impact: None, Low, Medium, High	Action	Trees requested?	Distinctive Tree	Replacements Required
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3	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
4	Forsythia	*Forsythia spp*	5	Private	0.5	Good	Good	Good	2	0	Y	High	Remove	N	N	
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10	Honey Locust	*Gleditsia triacanthos*	32	Private	3.2	Fair	Good	Good	8	20	Y	High	Remove	Y	Y	2
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14	Honey Locust	*Gleditsia triacanthos*	18	Private	1.8	Fair	Fair	Fair	5	45	N	None	Preserve	N	N	
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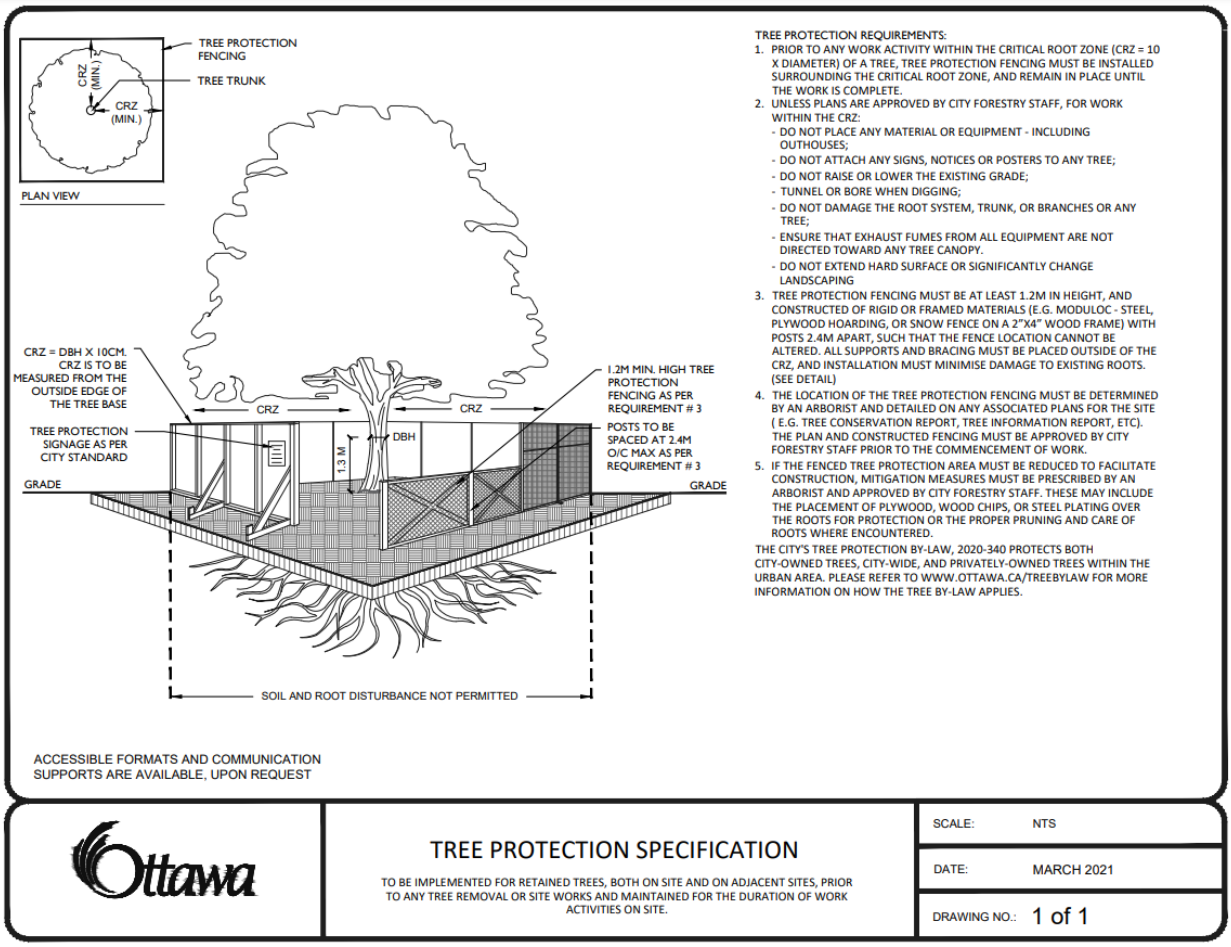
16	Honey Locust	*Gleditsia triacanthos*	39	Private	3.9	Good	Good	Good	12	10	Y	None	Preserve	N	Y	

Appendix 3 – Hoarding (TPF) Detail



Appendix 4 – Recommended Replacement Trees

American Beech
American Chestnut
American Elm
Balsam Poplar
Basswood
Bitternut Hickory
Black Cherry
Black Oak
Black Walnut
Bur Oak
Eastern White Pine
Northern Hackberry
Pin Cherry
Pin Oak
Red Maple
Red Mulberry
Red Oak
Shagbark Hickory
Sugar Maple
Swamp White Oak
Sycamore
Tamarack
Tulip Tree
White Oak

Appendix 5 – 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 6 – 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: • 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 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.
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 involve 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 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. ● Wall 1 prevents decay from moving up and down in a tree. ● Wall 2 prevents decay from moving inward in a tree. ● Wall 3 prevents decay from 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 7 – Arborist Qualifications

Clayton Gray is an ISA certified arborist with over ten years in arboriculture and forestry related fields. Prior to his work at the Davey Resource Group, he attended Humber College's Urban Forestry program in 2018 and had been head climber and foreman at Westwood Tree Care in Burlington for several years. Prior to this he worked on a street tree maintenance contract for the City of Toronto with Davey Tree. He has a lifetime goal to plant one million trees by hand, he is over halfway there.

Certifications

International Society of Arboriculture Certified Arborist (ON-2611A)

ISA Tree Risk Assessment Qualification (TRAQ)

Appendix 8 – Photographs

Tree 1 Forsythia

Tree 2 &3 Forsythia

Tree 4 Forsythia

Tree 5 Juniper

Tree 6 Juniper

Tree 7 Elm

Tree 8 Elm

Tree 9 Honey Locust

Tree 10 Honey Locust

Tree 11 Honey Locust

Tree 12 Honey Locust

Tree 13 Honey Locust

Tree 14 Honey Locust

Tree 15 Honey Locust

Tree 16(Honey Locust)

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 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: _____