Arborist Report

Pre-Construction Assessment

Prepared For:

Bicorp Design Group

Site Address:

298 Pretty River Parkway
Collingwood, Ontario
L9Y 4J5

August 28, 2023

Prepared By:

Alex Weegen
Consulting Arborist
Davey Resource Group
Phone: 1(416) 346-6952 | Email: Alex.Weegen@davey.com

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Summary

The following Arborist Report is with respect to the proposed construction at 298 Pretty River Parkway, Collingwood, Ontario. This report serves to document the condition and provide recommendations to preserve trees within and surrounding property in advance of future construction work.

In total, 2 tree was collected and assessed for this report.

1 tree (Tree #2) and can be preserved with the use of Tree Protection Fencing (hoarding). The hoarding is to be installed in locations shown on the Tree Protection Plan (Appendix 2).

1 tree (Tree #1) will be injured due to proposed construction.

- Tree #1, a privately-owned 38cm Colorado Spruce, will be injured by construction within its Minimum Tree Protection Zone (MTPZ). Any digging or excavation in both removal and replacement process are required using Hydro-Vac at low pressure (<500psi), air-spading or hand-digging by Certified Arborist. **Permit for injury is required. Permission for tree injury from tree owner is also required.**

Silt fencing is to be placed at the edge of the hedgerow (unregulated trees under 15cm DBH) near the property boundary to prevent any debris damaging the ecosystem of Pretty River (see Appendix 2 for placement and Appendix 4 for installation details).

Locations of existing trees surveyed for this report have been included within the Tree Protection Plan map, which is to accompany this document.

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, Bicorp Design Group, to develop an Arborist Report and Tree Protection Plan (TPP) for the proposed construction at 298 Pretty River Pkwy, Collingwood, Ontario.

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 construction and access points and pathways, as well as all trees within 6 meters of such areas, including any neighboring lot areas within this scope were surveyed. All trees over 5cm in diameter as well as all city-owned trees within the scope of the survey were included in an inventory and assessed for protection, removal and replacement needs.

Recommendations for tree preservation or removal are to be provided and follow City of Toronto by-laws (Municipal Code Chapter 813).

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 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 client. 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 diameter measuring tape, metric diameter calipers, metric measuring tape, range finder, hypsometer, and camera.
- Photographs included in this report are labeled copies of their originals and may have been cropped for formatting.
- All trees over 15cm within the site property or within 6 meters of planned construction work were collected in the inventory.
- Trees were studied for their proximity to the planned structures to determine recommendations or precautions for trees requiring removal or injury.
- Tree Protection Plan provided in Appendix 2 was developed based on the site plan. All measures are approximate but correctly reflect distances from existing and planned structures.

Observations

- The site was inspected on August 17th 2023 by ISA Certified Arborist® Alex Weegen (ON-1951A)
- Weather condition was approximately 22ºC and sunny.
- No evidence of construction was present, and work had not yet started.
- No material storage or soil compaction within Minimum Tree Protection Zones was observed.
- 2 trees were assessed for this report and labeled #1-2 in the Tree Protection Action Key and Tree Protection Plan included within Appendices 1 and 2.
- **2** trees were in good condition.

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

Discussion

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

Regulatory context

Trees in Collingwood are protected by By-Law No. 2012-084:

> Section 2.1 "No person shall, within the boundaries of the Town of Collingwood, injure or destroy or cause or permit the injury or destruction of the following trees located on a lot with an area of 0.5 hectares or more, without first obtaining a Permit pursuant to this By-law:
> (a) Five (5) or more trees on a lot simultaneously, or the fifth tree or more trees in a given calendar year, each with a DBH between 15 (25) cm and thirty (30) cm;
> (b) A tree with a BDH greater than thirty (30) cm;
> (c) Trees located on municipal property;
> (d) Trees located in a woodland.

Under the by-law, Tree Protection Zones surrounding each tree must be kept free of all construction activity above and below ground. Were any work to be required within the TPZ of a tree protected by the by-law a permit to injure the tree is required by the Town of Collingwood. Any tree protected by the by-law that must be removed to accommodate construction also requires permit approval to proceed. 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. 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.

In addition to the Town of Collingwood, this property falls under the jurisdiction of the Nottawasaga Valley Conservation Authority (see photo below). Nottawasaga Valley Conservation Authority requires permits for the construction of structures within regulated areas, such as the property in this report.

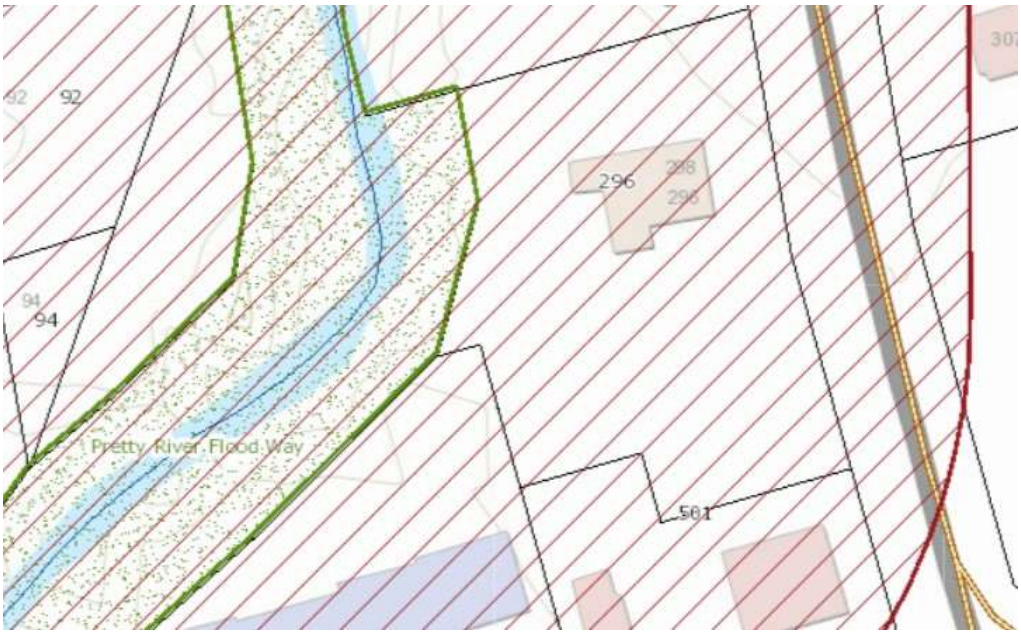

Photo taken from the Nottawasaga Valley Conservation Authority's Interactive Property Map tool.

Tree Protection Hoarding (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. To accomplish this, hoarding (Tree Protection Fencing (TPF)) is to be used on this construction site. The distance from trees that hoarding is installed is typically defined by the dripline pursuant to the city by-law. However, it must be understood that sometimes this distance is not achievable due to infrastructure being too close. In most situations, hoarding does not need to be installed beyond the closest extent of impermeable and/or paved surfaces. It must be further understood the hoarding 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). On most landscapes within a private property, solid plywood hoarding best serves to protect tree trunks from inadvertent damage. However, along city streets and at driveway entrances, it is recommended that high-visibility snow fence be affixed to a wooden beam frame, which allows for proper tree protection while allowing vehicle and pedestrian traffic to maintain visibility through the tree protection zone. Hoarding 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. Problems will arise for tree preservation efforts when anyone removes the hoarding, 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 hoarding to prevent this from happening by utilizing horizontal hoarding 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.

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. The Toronto standard sign format is displayed in Appendix 4 within this report. 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 tree TPZ. At no time are materials, vehicles, traffic or debris to be stacked, staged, or piled inside the hoarding (Tree Protection Fencing). We recommend all materials be staged on the driveway, road or outside of tree TPZs.

Conclusion and Recommendations

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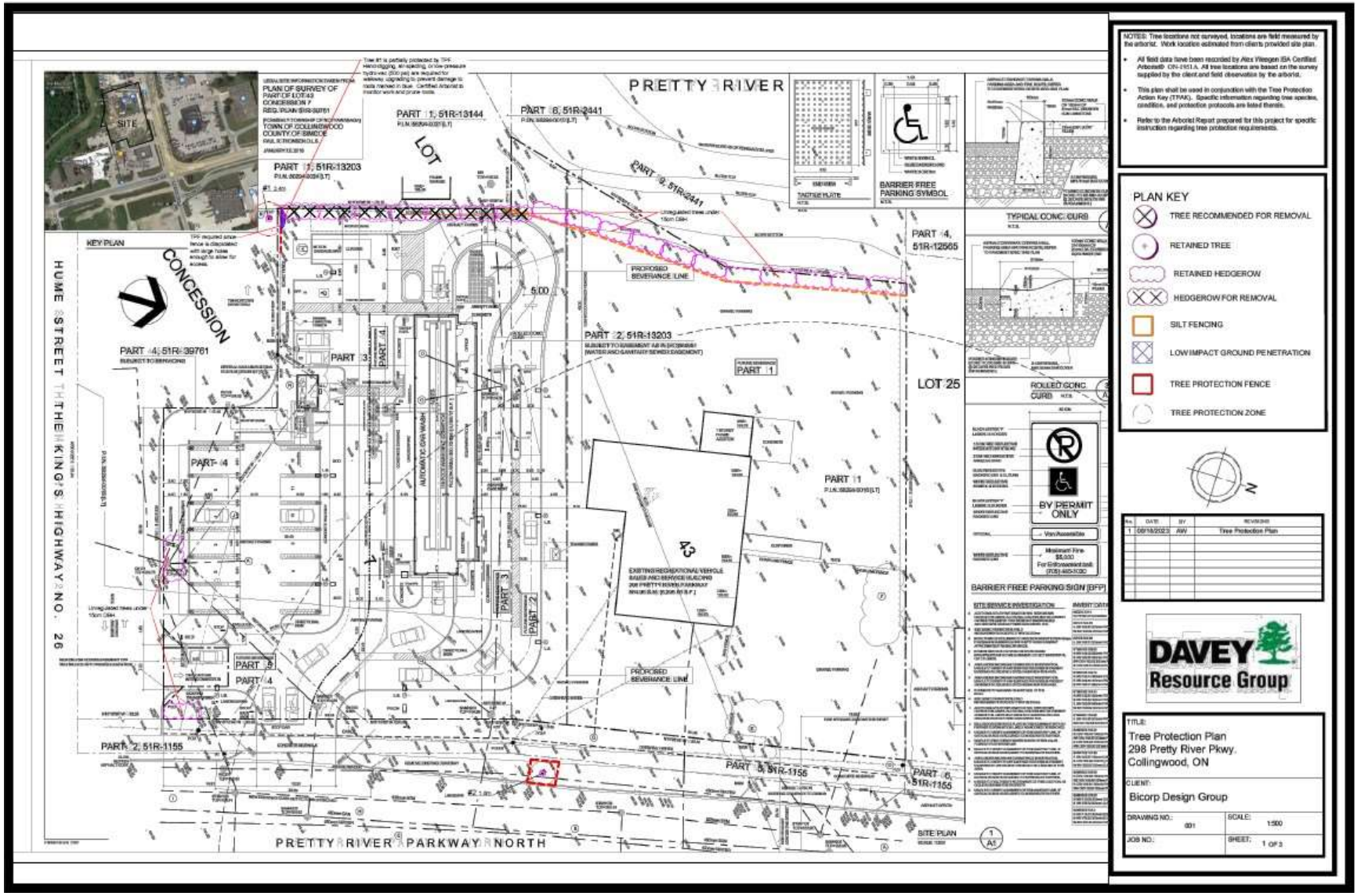
Silt fencing is to be placed at the edge of the hedgerow (unregulated trees under 15cm DBH) near the property boundary to prevent any debris damaging the ecosystem of Pretty River (see Appendix 2 for placement and Appendix 4 for installation details).

Locations of existing trees surveyed for this report have been included within the Tree Protection Plan map, which is to accompany this document.

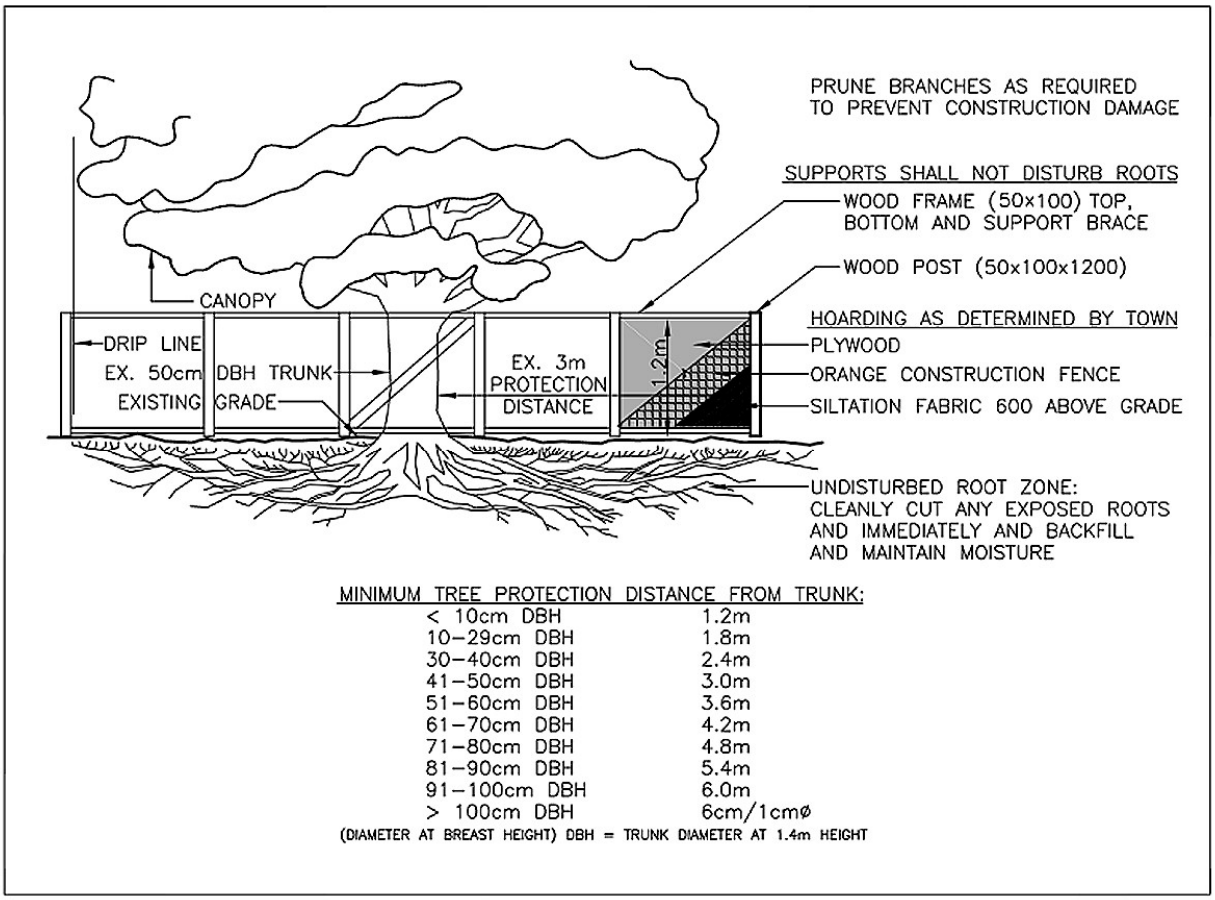
Appendix 1 – Tree Protection Action Key

Tree Map Number	Species	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Permit Required? (Y/N)	Notes and Recommendations
1	Spruce, Colorado	*Picea pungens*	38	Neighbour	2.4	Fair	Good	Good	10	5	100	20	Y	Low	Injure	Y	Tree #1 is partially protected by TPF. Hand-digging, air-spading, or low-pressure hydro-vac (500 psi) are required for walkway upgrading to prevent damage to roots marked in blue. Certified Arborist to monitor work and prune roots. TPF required since fence is dilapidated with large holes enough to allow for access.
2	Linden, spp.	*Tilia spp.*	16	City	2.4	Fair	Good	Good	4	3	50	20	N	None	Preserve	N	Protect with TPF.

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



Appendix 3 – Hoarding (TPF) details

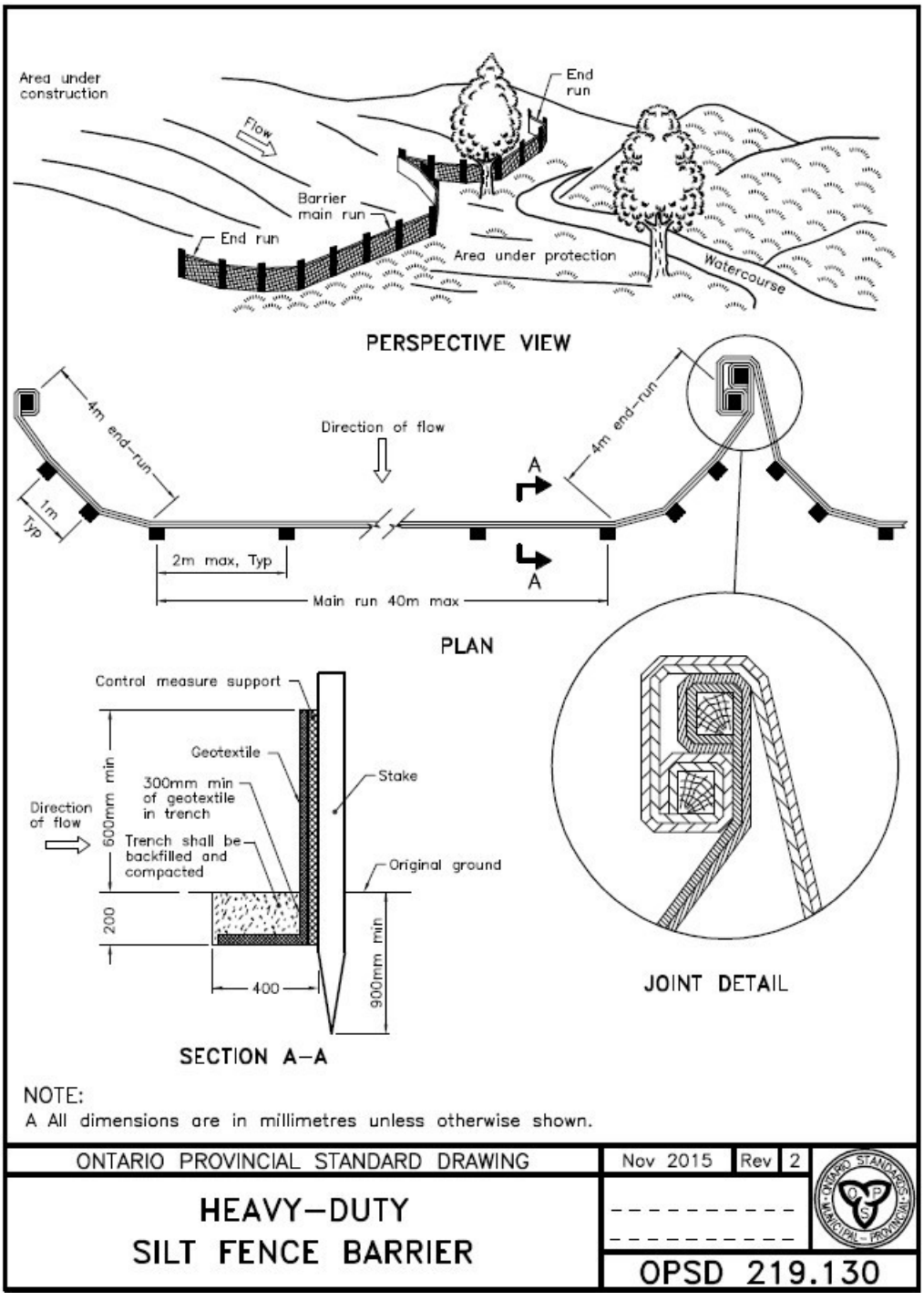


MINIMUM TREE PROTECTION DISTANCE FROM TRUNK:

< 10cm DBH	1.2m
10–29cm DBH	1.8m
30–40cm DBH	2.4m
41–50cm DBH	3.0m
51–60cm DBH	3.6m
61–70cm DBH	4.2m
71–80cm DBH	4.8m
81–90cm DBH	5.4m
91–100cm DBH	6.0m
> 100cm DBH	6cm/1cmø

(DIAMETER AT BREAST HEIGHT) DBH = TRUNK DIAMETER AT 1.4m HEIGHT

Appendix 4 – Silt Fencing Detail



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
10. Town of Collingwood, 2012. By-law No. 2012-084 of the Corporation of the Town of Collingwood.
11. Nottawasaga Valley Conservation Authority, 2023. Do I need a permit?

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 siteconditions, 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 affectthe integrity of utility facilities or other structures, and leaving in placebranches 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.
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 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. • 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 as a response to wounding.

Appendix 7 – Arborist Qualifications

Alex Weegen is a Consulting Arborist with Davey Resource Group. They have obtained a Bachelor of Science in Ecology focusing on resource conservation from the University of Guelph, and later completed a Master of Forest Conservation at University of Toronto. They have over 9 years of varied work experience in forestry, urban forestry, arboriculture, tree inventory and tree risk assessment.

Certifications

- International Society of Arboriculture Certified Arborist® (ON-1951A)
- International Society of Arboriculture Tree Risk Assessment Qualification (TRAQ)
- Registered Professional Forester in training (#2558)
- Certified Ontario Tree Marker

Appendix 8 – Photographs


Photo 1: Tree #1.


Photo 2: Tree #2.


Photo 3: Hedgerow of unregulated trees below 15cm DBH.

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: _____