Corporate Services
Supply Chain Management

ADDENDUM NO. 1

TO WHOM IT MAY CONCERN:

T-675-24
Allendale Long Term Care Home Site Rehabilitation, Milton, Ontario

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This addendum, issued Tuesday, June 25, 2024, must be incorporated into and made part of the above noted Request for Tender Document.

ISSUE #1: ISSUANCE OF INITIAL ASSESSMENT REPORT

An Initial Assessment Report is appended to this Addendum No. 1 outlining the deficiencies as noted in the irrigation system on the 185 Ontario St. S., Milton property.

ISSUE #2: ISSUANCE OF ARBORIST REPORT TREE PRESERVATION PLAN

An Arborist Report (dated January 24, 2024, prepared by Davey Resource Group) for the 185 Ontario St. S., Milton property is appended to this Addendum No. 1.

All other terms and conditions remain the same. This addendum must be acknowledged in the submitted Tender Document.

Michelle Land, Strategic Sourcing Specialist

Regional Municipality of Halton
HEAD OFFICE: 1151 Bronte Rd, Oakville, ON L6M 3L1
905-825-6000 | Toll free: 1-866-442-5866

Allandale Long Term Care Facility
185 Ontario Street South
Milton, Ontario

Attn: Anwar

Anwar,

As per our Technicians recent site visit, following are deficiencies noted in irrigation system:

Zone 1- replace 2 broken Rainbird 5004 Rotors
Zone 2 – replace broken Rainbird 1804 sprayhead
Zone 3- replace 2 broken Rainbird 1804 sprayheads, move sprayhead out of walkway, make sure nozzles are correct for proper coverage
Zone 4 – repair large leak
Zone 5 – raise / lower sprinklers for proper coverage
Zone 6- repair multiply leaks(may need to plow new zone line if pipe compromised)
Zone 7 – repair split in pipe
Zone 8 – OK
Zone 9 – raise / lower rotors, replace 2 Rainbird 5004 rotors, leak by light post towards east end of north strip
Zone 10 – leak at curb / low pressure in zone/possibly swap various nozzles
Zone 11- straighten / lower / raise sprinklers for better coverage
Zone 12 – replace malfunctioning Rainbird 5004 rotor

Arborist Report

Tree Preservation Plan

Prepared For:

Rimkus

Site Address:

185 Ontario St S,
Milton, ON
L9T 2M4

January 24, 2024

Prepared By:

Pawan Paudyal
ISA Certified Arborist (ON-3015A)
Phone: (905) 802-4969 | | Email: pawan.paudyal@Davey.com

©2024 Davey Resource Group. All rights reserved. This document must be used in conjunction with the tree inventory lists, and Tree Preservation Plans with arborist comments (these plans are to be printed on correct size to ensure scalability). This document must be used in whole and with all pages.

Contents

Summary

The following Arborist Report is with respect to the replacement of an existing retaining wall and sidewalk at 185 Ontario St S, Milton. This property is outside the Development Control area of the Niagara Escarpment Plan.
The intent of this report is to provide an assessment of impacts on trees located within and surrounding the property, in accordance with requirements set forth by the Town of Milton for a Tree Preservation Plan. There is currently no construction at present. No Species at Risk were observed.

25 trees were assessed on site:

- Privately owned trees: **23**
- City-owned trees: **2**

4 trees (#5-7 and 25) are recommended to be removed to accommodate the proposed retaining wall and sidewalk. These trees are located within private property. The Town of Milton the subject property bylaw should not apply and requires 1 for 1 compensation for any trees to be removed. We recommend the client plant 4 replacement trees on site once construction is complete.

8 trees (#1-4 and 10-13) have proposed construction activity within their drip lines and are likely to be injured.

- Trees #1-4 and 10-13 are expected to be impacted by replacement of an existing retaining wall and sidewalk. Replacement of an existing retaining wall and sidewalk is recommended to be performed with hand-tools within the drip lines of these trees. If root pruning is required, root pruning is recommended to be performed by a Certified Arborist. The retaining wall and sidewalk is to be replaced with topsoil, and all disturbed areas shall be graded and seeded to the satisfaction of the Town of Milton. The impact of injury is low for all trees, and we would expect all trees to maintain their current condition following minor drip line disturbance.
- Tree protection fencing should be installed around Trees #1-4 and 10-13 as shown in the Tree Preservation Plan (Appendix 2) and should be built as per the Town of Milton's Std. No. P-1 Tree Protection Fence detail (Appendix 3).

13 trees (#8-9, and 14-24) are recommended to be preserved with tree protection fencing installed as shown in the Tree Preservation Plan (Appendix 2). The tree protection fence should be built as per the Town of Milton's Std. No. P-1 Tree Protection Fence detail (Appendix 3). No construction activity is proposed within the drip lines of these trees, and they should not be injured. No equipment or material transport or storage is to occur within the drip lines of these trees.

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, Rimkus, to develop an Arborist Report and Tree Preservation Plan (TPP) at 185 Ontario St S, Milton, 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 12 meters of it were surveyed. Trees ≥10 cm DBH on the subject property and trees on neighboring properties 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 phone camera.
- Trees ≥10 cm DBH on the subject property and within 12 meters of planned construction work were included in the inventory.
- Trees were studied for their proximity to existing and planned structures to determine recommendations or precautions for trees requiring removal or injury.
- Tree Protection Zones were plotted on the Tree Protection Plan as existing drip lines indicated by red circles. The measurements shown are the approximate radius of the drip lines.

Observations

- The site was inspected on January 24, 2024, by Davey Resource Group employee Pawan Paudyal.
- During the assessment, no evidence of construction was present, and work had not yet started. No injuries to any trees, nor any construction material storage or soil compaction within Tree Protection Zones was noted during the assessment
- **25** trees were assessed for this report and labeled #1-25 in the Tree Protection Action Key (TPAK) and Tree Protection Plan (TPP) included within Appendices 1-2.
- **24** trees were in good condition and 1 tree was in fair condition.
- Trees #1-15 are located near the west elevation retaining wall. Trees #14-15 belong to the town of Milton.
- Trees #16-25 are located near the east patio retaining wall.

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

The town of Milton does not have a private tree protection bylaw regulating tree injury or removals of privately owned trees. The subject property is located within the Escarpment Protection Area regulated by the Niagara Escarpment Commission (NEC). The NEC requires that a Vegetation Protection Plan be submitted for review and approval before construction can begin.

This report follows all applicable regulations and guidelines for the given area. Recommendations are given following best practices using industry standards. Specifications regarding Tree Protection Zones and Tree Protection Fencing follow the Town of Milton'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).

Milton'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. 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.

Conclusion and Recommendations

To account for the proposed construction at 185 Ontario St S, Milton, we assessed **25 trees** for retention, protection, injury, or removal.

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 (TPAK, 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 that the tree protection fencing align with the specifications outlined in the Tree Preservation Plan (Appendix 2) and adhere to the construction standards outlined in the Town of Milton's Standard No. P-1 Tree Protection Fence detail (Appendix 3).
  - Tree Protection Signage (Appendix 4) must be posted on the fence to indicate that it delineates a tree protection zone.
  - 13 trees (#8-9, and 14-24) are recommended to be preserved with tree protection fencing installed as shown in the Tree Preservation Plan (Appendix 2).
- Trees to be removed are specified with "Remove" in the "Action" column in the TPAK.
  - **4** trees (#5-7 and 25) are recommended to be removed to accommodate the proposed retaining wall and sidewalk. These trees are located within private property. The Town of Milton the subject property bylaw should not apply and requires 1 for 1 compensation for any trees to be removed. We recommend the client plant 4 replacement trees on site once construction is complete.
- Trees to be injured are specified with "Injured" in the "Action" column in the TPAK.
  - **8** trees (#1-4 and 10-13) have proposed construction activity within their drip lines and are likely to be injured.
  - Trees #1-4 and 10-13 are expected to be impacted by replacement of an existing retaining wall and sidewalk. Replacement of an existing retaining wall and sidewalk is recommended to be performed with hand-tools within the drip lines of these trees. If root pruning is required, root pruning is recommended to be performed by a Certified Arborist. The retaining wall and sidewalk is to be replaced with topsoil, and all disturbed areas shall be graded and seeded to the satisfaction of the Town of Milton. The impact of injury is low for all trees, and we would expect all trees to maintain their current condition following minor drip line disturbance.
  - Tree protection fencing should be installed around Trees #1-4 and 10-13 as shown in the Tree Preservation Plan (Appendix 2) and should be built as per the Town of Milton's Std. No. P-1 Tree Protection Fence detail (Appendix 3).

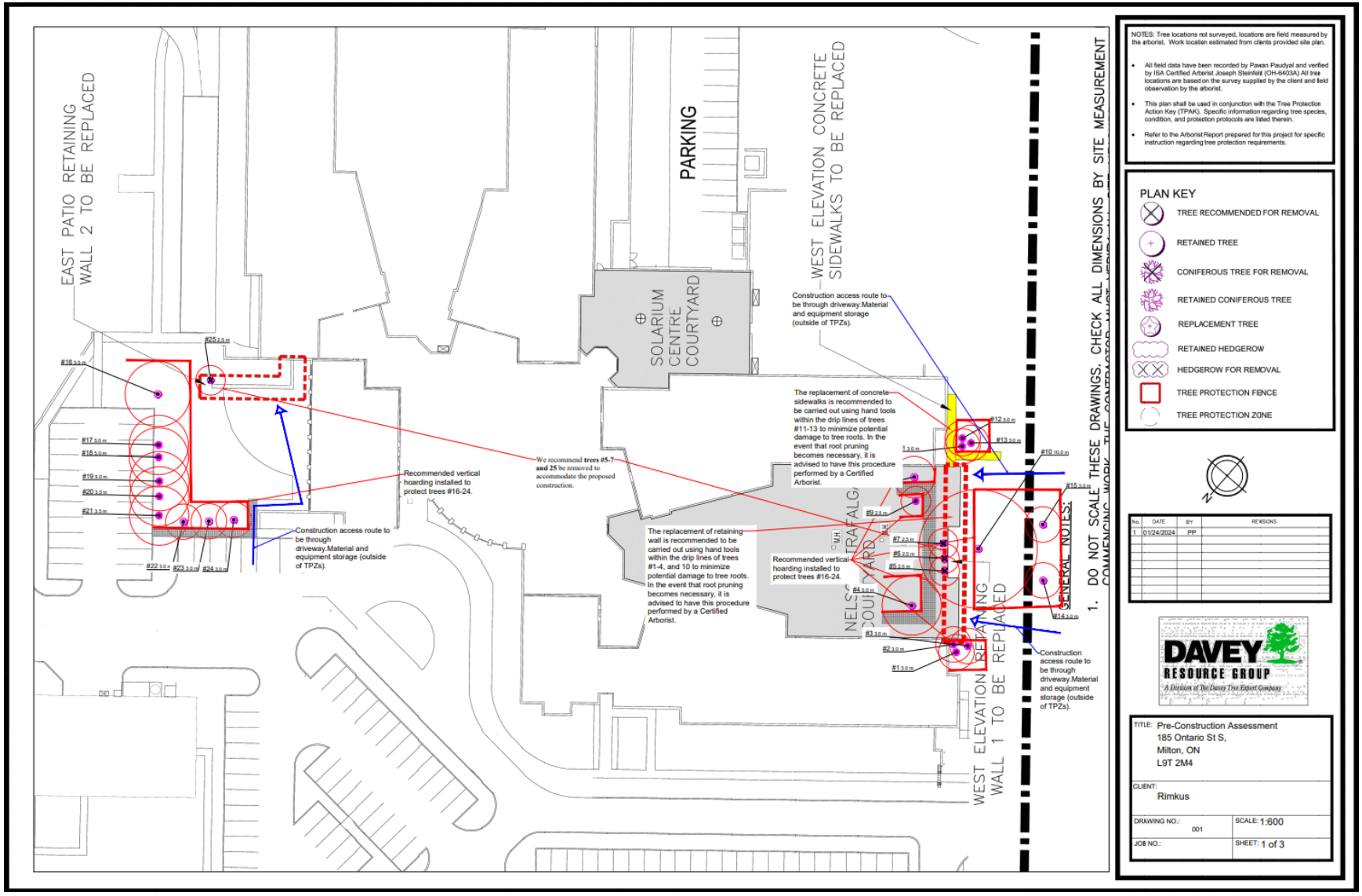
No construction activity is proposed within the drip lines of these trees, and they should not be injured. No equipment or material transport or storage is to occur within the drip lines of these trees.

Appendix 1 – Tree Protection Action Key (TPAK)

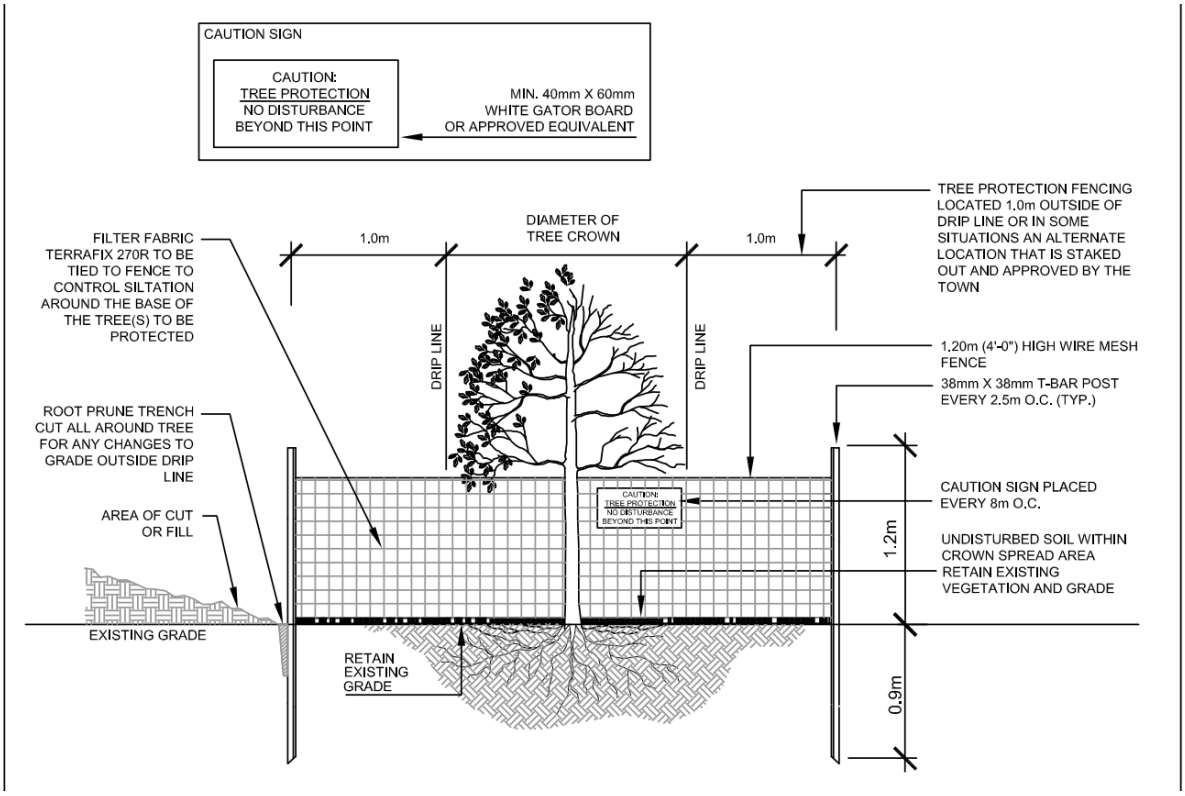
Tree Map Number	Inventory name	Botanical	DBH (cm) @ 1.4 m	Tree Ownership	Minimum Tree Protection Distance (m)	Health	Structure	Overall Condition	Tree Height (m)	Crown Width (m)	Live Crown Ratio (%)	Deadwood (%)	Construction inside Min TPZ? (Y/N)	Construction Impact (None, Low, Medium, High)	Action	Recommendations and Observation
1	blue spruce	*Picea pungens*	35	Private	3.0	G	G	G	10	4	70	0	Y	Low	Injure	Retaining wall re-construction at and above grade, minor root impacts; hand-digging for excavation below grade in TPZ
2	blue spruce	*Picea pungens*	30	Private	3.0	G	G	G	10	4	70	0	Y	Low	Injure	Retaining wall re-construction at and above grade, minor root impacts; hand-digging for excavation below grade in TPZ
3	blue spruce	*Picea pungens*	28	Private	3.0	G	G	G	10	4	70	0	Y	Low	Injure	Retaining wall re-construction at and above grade, minor root impacts; hand-digging for excavation below grade in TPZ
4	norway maple	*Acer platanoides*	26	Private	5.0	G	G	G	10	8	70	0	Y	Low	Injure	Retaining wall re-construction opposite walkway on edge of TPZ; hand-digging with root pruning by certified arborist in TPZ
5	blue spruce	*Picea pungens*	14	Private	2.5	G	G	G	5	3	100	0	Y	High	Remove	Removal required to re-build retaining wall
6	cedar	*Thuja occidentalis*	14	Private	2.5	G	G	G	5	3	100	0	Y	High	Remove	Removal required to re-build retaining wall
7	norway spruce	*Picea abies*	10	Private	2.5	G	G	G	4	3	100	0	Y	High	Remove	Removal required to re-build retaining wall
8	apple	*Malus species*	15	Private	3.5	G	G	G	6	5	70	0	N	None	Preserve	
9	nootka cypress	*Chamaecyparis nootkatensis*	10	Private	2.5	G	G	G	5	3	100	0	N	None	Preserve	
10	willow	*Salix species*	197	Private	10.0	G	G	G	30	18	70	0	Y	Low	Injure	Retaining wall re-construction at and above grade, minor root impacts; hand-digging for excavation below grade in TPZ

Tree Map Number	Inventory name	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	Recommendations and Observation
11	blue spruce	*Picea pungens*	26	Private	3.0	G	G	G	8	4	100	0	Y	Low	Injure	Sidewalk re-construction within grade inside TPZ; removal of existing walkway surfaces by hand tools, no mechanical excavation; hand digging for removal, placement of new substrate, root pruning by arborist
12	blue spruce	*Picea pungens*	20	Private	3.0	G	G	G	8	4	100	0	Y	Low	Injure	Sidewalk re-construction within grade inside TPZ; removal of existing walkway surfaces by hand tools, no mechanical excavation; hand digging for removal, placement of new substrate, root pruning by arborist
13	blue spruce	*Picea pungens*	19	Private	3.0	G	G	G	6	4	100	0	Y	Low	Injure	Sidewalk re-construction within grade inside TPZ; removal of existing walkway surfaces by hand tools, no mechanical excavation; hand digging for removal, placement of new substrate, root pruning by arborist
14	norway maple	*Acer platanoides*	18	City	3.0	G	G	G	6	4	65	0	N	None	Preserve	
15	norway maple	*Acer platanoides*	10	City	3.0	F	G	F	4	4	65	0	N	None	Preserve	Dead Branches
16	honey locust	*Gleditsia triacanthos*	35	Private	5.5	G	G	G	15	9	75	0	N	None	Preserve	
17	austrian pine	*Pinus nigra*	34	Private	5.0	G	G	G	8	8	75	0	N	None	Preserve	
18	austrian pine	*Pinus nigra*	30	Private	5.0	G	G	G	10	8	75	0	N	None	Preserve	
19	austrian pine	*Pinus nigra*	29	Private	5.0	G	G	G	9	8	75	0	N	None	Preserve	
20	austrian pine	*Pinus nigra*	25	Private	3.5	G	G	G	5	5	75	0	N	None	Preserve	
21	austrian pine	*Pinus nigra*	25	Private	3.5	G	G	G	5	5	75	0	N	None	Preserve	
22	apple	*Malus species*	15	Private	3.0	G	G	G	4	4	75	0	N	None	Preserve	
23	apple	*Malus species*	14	Private	3.0	G	G	G	4	4	75	0	N	None	Preserve	
24	apple	*Malus species*	14	Private	3.0	G	G	G	4	4	75	0	N	None	Preserve	
25	manitoba maple	*Acer negundo*	10	Private	2.5	G	G	G	4	3	75	0	N	None	Remove	Removal required to re-build retaining wall

Appendix 2 – Tree Protection Plan (Preview – to be printed to scale from separate PDF)



Appendix 3 – Tree Protection Fencing Detail



NOTES:

1. TREE PROTECTION FENCING AND ASSOCIATED FILTER FABRIC IS TO BE MAINTAINED IN GOOD WORKING ORDER THROUGHOUT CONSTRUCTION PERIOD UNTIL APPROVAL TO REMOVE THE FENCING IS OBTAINED BY THE TOWN OF MILTON.

2. EXISTING TREES SHALL BE PROPERLY PROTECTED WITHIN THE DRIP LINE WITH WIRE MESH FENCING AS PER THE APPROVED LANDSCAPE PLAN UNTIL SUBSTANTIAL PERFORMANCE OR REPLACEMENT WITH A PERMANENT FENCE.

3. STEEL T-BAR TO HAVE MIN. 2.5 m O.C. SPACING.

4. MAINTAIN EXISTING GRADE WITHIN DRIP LINE OF ALL TREES TO BE PRESERVED.

5. PRUNE DEAD WOOD ONLY AS DIRECTED BY TOWN. DO NOT PRUNE LEADERS.

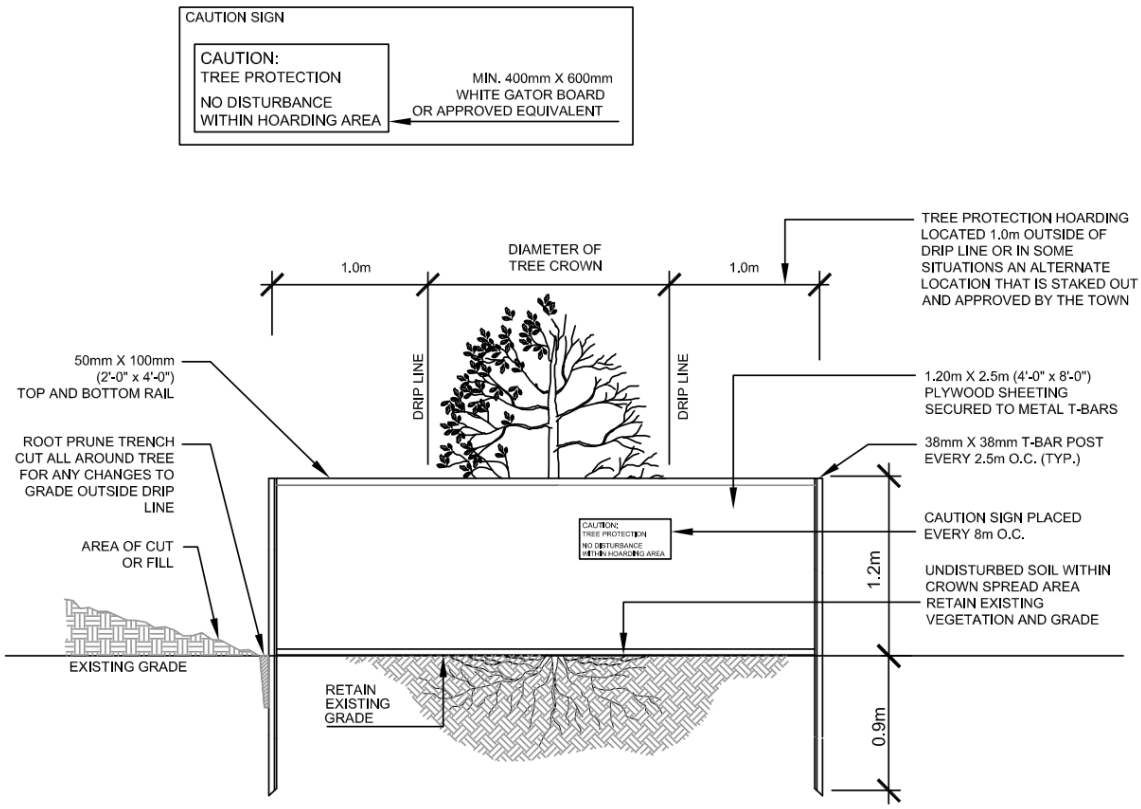
6. WATERING AND FERTILIZING PROGRAM SHALL BE MAINTAINED TO THE SATISFACTION OF THE TOWN.

7. THE COST OF REPLACING DEAD AND SEVERELY DAMAGED TREES, AS DETERMINED BY THE TOWN, SHALL BE BORNE BY THE DEVELOPER AND/OR GENERAL CONTRACTOR. THE SPECIES AND SIZE(S) MUST BE APPROVED BY THE TOWN.

8. ENSURE POSITIVE DRAINAGE AWAY FROM THE FENCED AREA.

9. NO STORAGE OF MATERIALS OR GRADE CHANGES ARE TO OCCUR WITHIN THE FENCED AREA.

TOWN OF MILTON	Scale: N.T.S.	MILTON
	Date: JUNE 2018	
TREE PROTECTION FENCING	Std. No. P - 1	



NOTES:

1. TREE PROTECTION HOARDING IS TO BE MAINTAINED IN GOOD WORKING ORDER THROUGHOUT CONSTRUCTION PERIOD UNTIL APPROVAL TO REMOVE HOARDING IS OBTAINED BY THE TOWN OF MILTON.

2. EXISTING TREES SHALL BE PROPERLY PROTECTED WITHIN THE DRIP LINE WITH HOARDING AS PER THE APPROVED LANDSCAPE PLAN UNTIL SUBSTANTIAL PERFORMANCE OR REPLACEMENT WITH A PERMANENT FENCE.

3. STEEL T-BAR TO HAVE MIN. 2.5m O.C. SPACING.

4. MAINTAIN EXISTING GRADE WITHIN DRIP LINE OF ALL TREES TO BE PRESERVED.

5. PRUNE DEAD WOOD ONLY AS DIRECTED BY TOWN. DO NOT PRUNE LEADERS.

6. WATERING AND FERTILIZING PROGRAM SHALL BE MAINTAINED TO THE SATISFACTION OF THE TOWN.

7. THE COST OF REPLACING DEAD AND SEVERELY DAMAGED TREES, AS DETERMINED BY THE TOWN, SHALL BE BORNE BY THE DEVELOPER AND/OR GENERAL CONTRACTOR. THE SPECIES AND SIZE(S) MUST BE APPROVED BY THE TOWN.

8. ENSURE POSITIVE DRAINAGE AWAY FROM THE HOARDING AREA.

9. NO STORAGE OF MATERIALS OR GRADE CHANGES ARE TO OCCUR WITHIN THE HOARDING AREA.

TOWN OF MILTON	Scale: N.T.S.	MILTON
	Date: JUNE 2018	
TREE PROTECTION HOARDING	Std. No. P - 2	

Appendix 4 – 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 5 – 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 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 after wounding.

Appendix 7 – Photographs

Trees #1-3

Tree #4

Tree #5

Tree #6

Tree #7

Tree #8

Tree #9

Tree #10

Trees #11-13

Tree #14

Tree #15

Tree #16

Trees #17-21

Trees #22-24

Tree #25

East patio retaining wall.