City of Hamilton

Tree Management Plan

October 2019

C11-B000941

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City of Hamilton

Tree Management Plan

Mohawk Road EA

Project no C11-B000941

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October 2019

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1. Introduction

CIMA+ has been retained by the City of Hamilton (the City) to review the trees potentially affected by a proposal to widen and urbanize Mohawk Road between Lime Kiln Road/McNiven Road to Filman Road in Ancaster. This report serves as part of the documentation required for the Schedule 'C' Municipal Class Environmental Assessment required for this project, and will help determine the project's potential impacts as well as general recommendations to avoid and/or mitigate tree loss and injury.

2. Limitations

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in the Council of Tree and Landscape Appraisers *Guide for Plant Appraisal, 9th Edition* (2000). These techniques include visual examination of above ground parts of each tree or trees in each group. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year in which the inspection took place.

Since trees are living organisms, their health and vigour continually change over time due to seasonal variations, changes in site conditions, and other factors. For this reason, the assessment presented in this report is valid at the time of inspection, and no guarantee is made about the continued health of trees that are deemed to be in good condition. It is recommended that the trees be re-assessed periodically to identify changes in condition. While every standing tree has the potential for failure and therefore poses some risk, a tree assessment is a good indication of present health and potential problems that could arise in the future.

CIMA+ has prepared this report for the sole use of the client. Any use of this report by a third party, as any decision based on this report, is the singular responsibility of the third party. CIMA+ will not be held responsible for eventual damages towards a third party resulting from decisions taken, or based, on this report.

3. Methodology

An ISA Certified Arborist from CIMA+ conducted a site visit on August 28, 2018 to complete the following inventory and assessment.

Trees and tree groups were located within and adjacent to the existing right-of-way (ROW) and uniquely numbered. Trees were identified, measured, and assessed for condition. The assessment methodology is outlined further below, and follows the tree assessment requirements outlined by the City. The tree inventory table containing this information are included in Appendix A along with drawings TI-1 through TI-3 that show the the locations of the numbered trees and tree groups surveyed.

3.1 Tree Size

Size refers to trunk diameter (caliper or diameter at breast height: DBH) measured in centimetres at 1.4 m above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked to codominant trunks, each trunk was measured or the diameter was measured under the flare and the approximate height of the measurement was noted.

The diameter spread (dripline) of each tree canopy is included to help determine possible injury and branch pruning that may be required as a part of the proposed work.

3.2 Observations

Several structural defects and health problems are included in the Comments section of the tree inventory and assessment table. Following is an explanation of the short forms used in the table:

GR Girdling roots
COD Codominant trunks or codominant leaders
NA Narrow branch angles
INCL Included bark
CRB Crossing branches
MBR Multiple branches from the same point of attachment
DPR Decay at pruning wounds
SMD Small dead branches
ADV Adventitious shoots
LEAN Cardinal direction of lean

These observations are defined below.

Structural defects are often insignificant when a tree is small, but can pose problems when the tree grows larger and the weight of branches put added stress on defects that can cause weakness. Larger trees also have the potential to cause more damage should they fail. The following is an explanation of some of the observations included in the inventory and assessment table, and how they can affect trees over time.

- *Adventitious shoots* are vigorous growth of shoots from pruning cuts, inner branches, or along the trunk that usually occur in response to stress.
- *Codominant leaders* (2 trunks or branches of approximately equal size) often have narrow branch angles, and are associated with weak branch attachment. Strong branch attachments occur between 2 limbs of unequal size with enough space for branch enlargement and formation of a branch bark ridge.
- *Crossing branches* are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.
- *Decay at pruning wounds* can occur when pruning (or other bark-penetrating abrasions) expose a tree's heartwood, which can then be affected by a rot-causing fungi. The decay

can lead to cavities and internal decay, and potentially affect the structural integrity of the tree.

- *Emerald Ash Borer* (EAB) refers to a species of beetle native to East Asia that feeds on all species ash trees *(Fraxinus* spp.*)* during its larval stage. Typical symptoms of infection include heavy seed set, dieback, splitting bark, and adventitious shoots. Almost all infected ash trees will die within a few years of infection.
- *Exposed surface roots* can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.
- *Frass* is the excrement of insect larvae, with an appearance similar to sawdust or small wood chips that can be seen at the base of a tree where wood boring insects are feeding. Frass can be an indicator of internal decay.
- *Fruiting bodies* are often recognized as mushrooms or conks on trees. Presence of fruiting bodies is a positive indicator of wood decay, but depending on the species of the fruiting body, the decay can be of little significance or an indicator of imminent failure. It is important to observe decay fungi during the season in which it is growing to accurately identify the species and consider the potential associated indications of the extent of decay.
- *Girdling roots* are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water, and inhibit structural anchorage.
- *Grapevines and dog-strangling vine* growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight. They also add weight that can make trees more susceptible to breakage during storms.
- *Included bark* is bark that has become embedded in a crotch where limbs join, and causes weakened branch attachments. As the trunk and branch increase in diameter, the bark of each stem in the tight crotch begin to push apart, increasing the likelihood of failure.
- A tree with a *lean* can be more susceptible to windthrow and soil failure*. Self-correcting lean refers* to a natural correction of the lean by development of new growth that counteracts the lean of the trunk to provide a more balanced form.
- *Live crown ratio* is the ratio of the live crown to the overall height of the tree. A low live crown ratio can develop when trees are growing close together in stands, or can be created by pruning or dieback. Low live crown ratio is associated with increased likelihood of failure, depending on the cause and site factors.
- When a tree has *multiple branches from the same point of attachment*, the branches usually have characteristics of weakly attached branches.
- *Narrow branch angles*, especially where there is included bark, can be a problem as trees grow larger because the inner wood is poorly attached.

- *Sapsucker holes* refers to holes in the trunk or branches made by birds in search of insects. This damage is a sign of insects in the tree, and can make trees more susceptible to other infection.
- *Small dead branches* are an indicator of crown dieback and can be an early sign of stress.
- *Suppressed* trees are growing under the canopies of neighbouring trees, which can diminish vigour and affect structural form.
- *Woundwood* is the thickened tissue growing around the edges of a wound. The rate of its development can be a sign of the tree's vigour.

The detailed observations made concerning tree species, size, and condition are included in the tree inventory and assessment table in Appendix A.

3.3 Tree Condition

Each tree was given a subjective rating for trunk integrity, canopy structure, and crown vigour, and an overall health condition rating of Good, Fair, Poor, or Dead. The following is a summary of how the ratings are determined:

- **GOOD (G):** dead branches less than 10%; signs of good compartmentalization on any wounds, no structural defects
- **FAIR(F):** 10-30% dead branches, size or occurrence of wounds present some concerns, minor structural defects
- **POOR (P):** more than 30% dead branches, weak compartmentalization, early leaf drop, presence of insects or disease, major structural defects
- **DEAD (D):** tree shows no signs of life

4. Summary and Recommendations

A total of 162 trees and tree groups were surveyed. Of these, five (5) trees were located on public property that are potential hazards to the public: Trees 29, 31, 32, 33, and 35. These were the only ash trees observed on site, and all are severely affected by Emerald Ash Borer (EAB). They suffer from at least 80% crown dieback, with mostly bare crowns and large scaffold branches overhanging the sidewalk to the north, and in some cases overhanging parked cars on private property to the south. Their DBHs range from 28 to 52 cm, and their spreads from 9 to 12 m. Regardless of the impacts of the proposed project on these trees, their removal is prudent because Ash trees affected by EAB tend to break more easily than other dead trees. See Table A1 and drawings TI-1 to TI-3 in Appendix A for further information about the locations and descriptions of these trees.

4.1 Tree Impacts and Compensation

A total of 58 trees are expected to be injured as a result of the proposed hardscape and/or grading though the TPZs as required for the road reconstruction. Injuries are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

A total of 25 trees are expected to require removal due to conflict with contruction zones along the roadway. Removals are indicated in the tree impacts column of the tree inventory and assessment table in Appendix A.

Wher nothing is indicated in the tree impacts column, the tree is to be retained and no impacted is expected.

Compensation in the form of re-planting on site and/or planting trees elsewhere is required for the loss of 25 individual public trees. This compensation requirement shall be completed during the project detailed design and construction phases.

5. Protected Species

The *Migratory Birds Convention Act*, 1994 protects the nests of migratory birds. Trees to be removed from the site should be removed outside of the migratory bird-nesting window, the timing of which differs regionally across Canada as determined by Environment Canada. Following Environment Canada's guidelines, the window at this site is from April 1 to August 31. Trees may be removed during this restricted period only when trees are inspected for nests of protected bird species by a qualified avian biologist immediately prior to removal.

No protected tree species listed under the Endangered Species Act (2007) were found at this site.

6. Construction Management

The most typical construction damage to trees is root damage from compaction and severance. While the dripline of a tree's canopy is typically thought to be associated with the root area, the root zones can actually extend significantly beyond the dripline of the tree, sometimes up to 2 or 3 times the height of the tree. Some of the trees inventoried are growing close to the edge of the proposed construction and may be at risk of contact with, and damage from, heavy equipment.

Generally, to protect trees, grade changes and construction activities that could cause soil compaction should be kept away from trees as much as possible. If roots will be damaged by excavation equipment, it is better to cut roots cleanly with sharp pruning tools rather than allow them to be torn by large equipment. Clean cuts will help to minimize decay and entry points for disease. If branches are likely to hang in the way of passing equipment, the branches should be pruned by a qualified arborist to avoid tearing and undue injury to the tree.

Equipment and materials should not be stored near trees, and equipment should not be left idling where exhaust could burn foliage.

It is recommended that tree protection fencing be erected following the City's Tree Protection Zone and Tree Hoarding Details around trees at risk of injury. The project design drawings must show the City's Tree Protection Zone Detail as well as the Tree Hoarding Detail and the Tree Preservation Techniques notes as per the City's Public Tree Preservation and Sustainability Policy (attached in Appendix B).

7. Certification and Closure

I certify that all the statements of fact in this assessment are true, complete, and correct to the best of our knowledge and belief, and that they are made in good faith.

I trust that this report meets your needs at this time. If you have any questions, please do not hesitate to contact the undersigned.

Sincerely,

Lisa Cullen, OALA, ISA
ISA Certified Arborist ON-0741A

Attachments:

Appendix A: TI-1 to TI-3 Tree Inventory Drawings (3 pp.) and Tree Inventory Table (5 pp.)

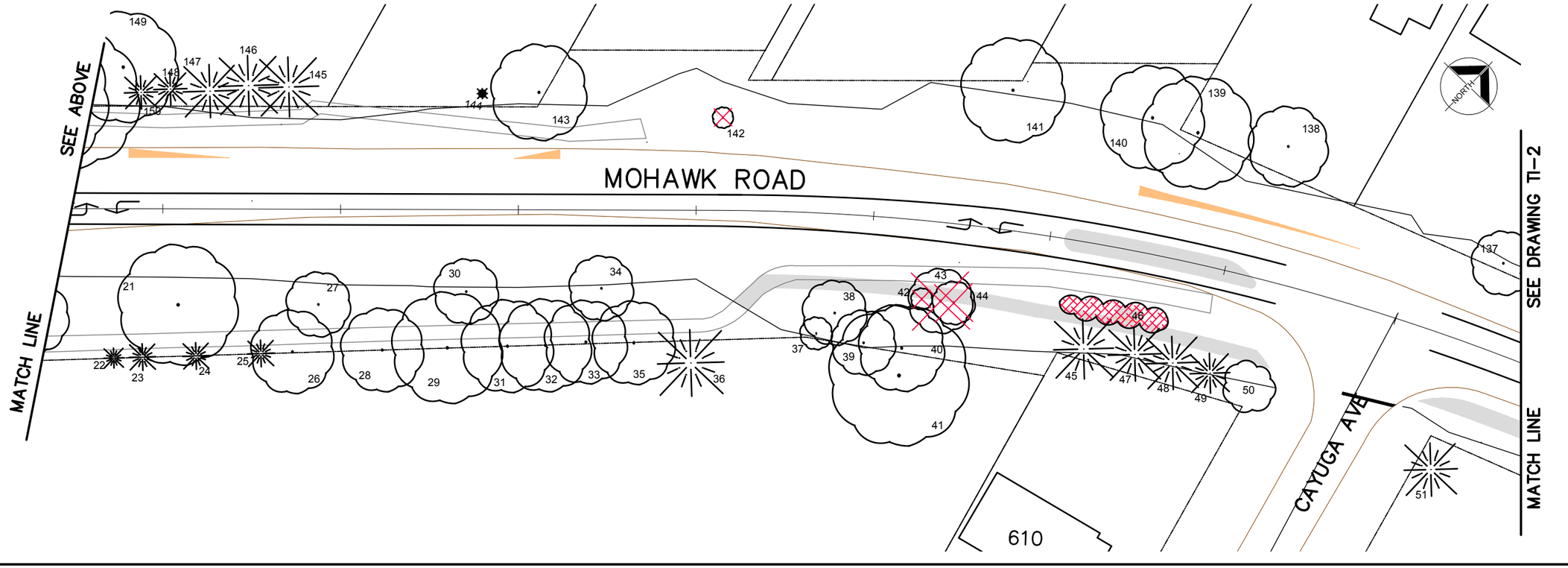
Appendix B: Tree Protection Zone Detail, Tree Hoarding Detail, and Public Tree Preservation & Sustainability Policy

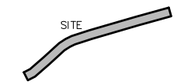
A

Appendix A

Tree Inventory Drawings TI-1 to TI-3

Tree Inventory Table





LEGEND

EXISTING TREES WITH TREE INVENTORY NUMBERS (SEE TREE REPORT)

EXISTING TREES TO BE REMOVED

CIMA+
2nd Floor - 415 Baseline Road West, Bowmanville, ON L1C 5M2
Phone: 905-697-4464 www.cima.ca

IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INFORM THEMSELVES OF THE EXACT LOCATION OF, AND ASSUME ALL LIABILITY FOR DAMAGE TO ALL UTILITIES SERVICES AND STRUCTURES WHETHER ABOVE GROUND OR BELOW GRADE BEFORE COMMENCING THE WORK. SUCH INFORMATION IS NOT NECESSARILY SHOWN ON THE DRAWING, AND WHERE SHOWN, THE ACCURACY CANNOT BE GUARANTEED.

WITH THE SOLE EXCEPTION OF THE BENCHMARK(S) SPECIFICALLY DESCRIBED FOR THIS PROJECT, NO ELEVATION INDICATED OR ASSUMED HEREON IS TO BE USED AS A REFERENCE ELEVATION FOR ANY PURPOSE.

ALL DIMENSIONS AND INFORMATION SHALL BE CHECKED AND VERIFIED ON THE JOB AND ANY DISCREPANCIES MUST BE REPORTED TO THE MUNICIPALITY BEFORE COMMENCING THE WORK. DRAWINGS ARE NOT TO BE SCALED.

No.	DATE	BY	ISSUES / REVISIONS

PROJECT:

Mohawk Road
Environmental Assessment from McNiven Road to HWY 403

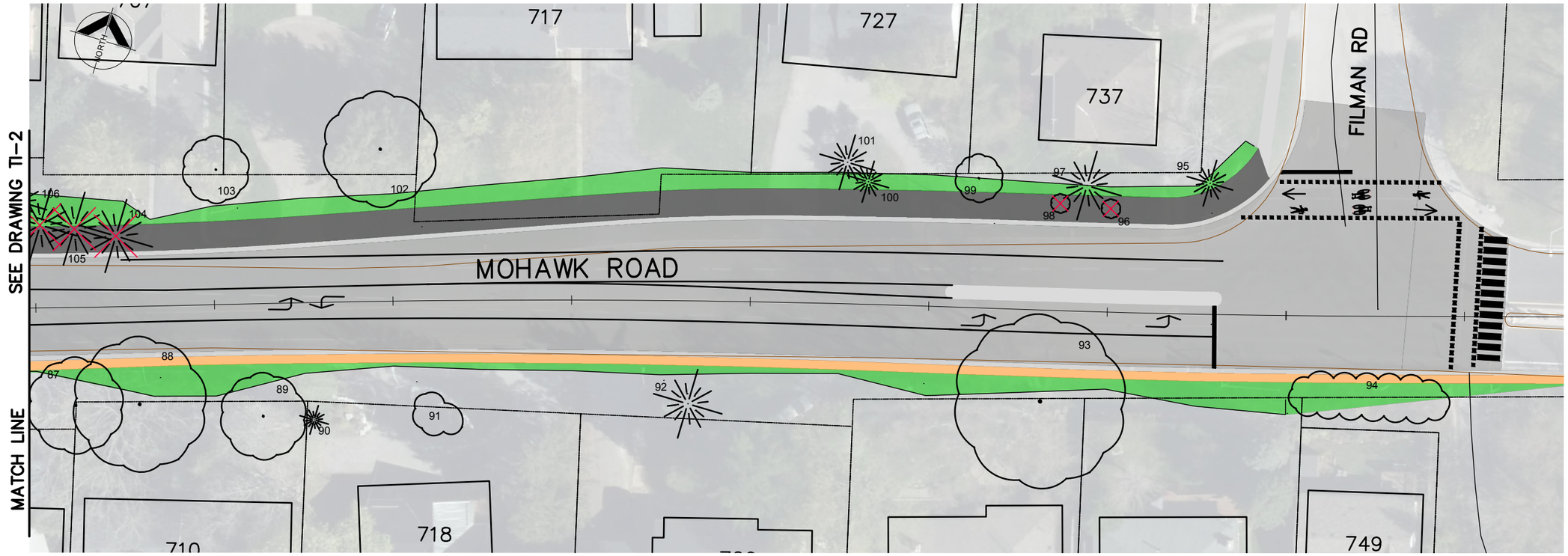
Hamilton, Ontario

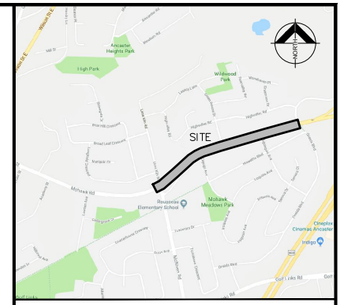
DRAWING:

TREE INVENTORY AND ASSESSMENT

DRAWN BY :	CHECKED BY :	PROJECT
L. MAY	G. BUNKER	B000941
DESIGNED BY :	APPROVED BY :	DRAWING No.
	L. CULLEN	
SCALE :	DATE :	TI-1
1:500	SEPTEMBER 2018	

Z:\Gmc-CIT\Project\GT-GB\B000941-Hamilton_Mohawk-Rousseaux Road EA\400_DRAWINGS\B000941 Mohawk Road - TREE INVENTORY v00r01.dwg





LEGEND

8
9
EXISTING TREES WITH TREE INVENTORY NUMBERS (SEE TREE REPORT)

EXISTING TREES TO BE REMOVED

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No.	DATE	BY	ISSUES / REVISIONS

PROJECT:

Mohawk Road
Environmental Assessment from McNiven Road to HWY 403

Hamilton, Ontario

DRAWING:

TREE INVENTORY AND ASSESSMENT

DRAWN BY : L. MAY	CHECKED BY : G. BUNKER	PROJECT B000941
DESIGNED BY :	APPROVED BY : L. CULLEN	DRAWING No. TI-3
SCALE : 1:500	DATE : SEPTEMBER 2018	

Z:\Dmn=C1\Project\01-GIS\B000941_Hamilton_Mohawk-Rousseaux Road EA\400_DRAWINGS\B000941 Mohawk Road - TREE INVENTORY #00v01.dwg

Tree No.	Species (Common name)	Species (Botanical name)	Size (DBH, cm)	Spread (dia., m)	Publicly Owned (Y/N)	Biological Health	Structural Condition	Tree Impacts (I)njure / (R)emove	gr	cod	na	incl	crb	mbr	dpr	smd	adv	lean	Comments / Recommendations
1	Honey Locust	Gleditsia triacanthos	23	8	N	G	F											N	Overhangs sidewalk
2	Honey Locust	Gleditsia triacanthos	30	9	N	G	G												Overhangs sidewalk
3	Austrian Pine	Pinus nigra	28	8	N	G	G												Overhangs sidewalk
4	Littleleaf Linden	Tilia cordata	39	9	N	G	F		x	2	x	x		x					Overhangs sidewalk by 2 m; pruned for pedestrian passage
5	Gray dogwood	Cornus racemosa	11	2	Y	F	F												50% dieback; trunk damage; pruned for pedestrian passage
6	Littleleaf Linden	Tilia cordata	43	9	N	G	G												Pruned for pedestrian passage
7	Gray dogwood	Cornus racemosa	10	2	Y	F	G										x		Pruned for pedestrian passage
8	Norway Maple	Acer platanoides	42	10	Y	G	G		x	2.5									Pruned for pedestrian passage
9	Littleleaf Linden	Tilia cordata	36	9	Y	G	G	I	x										Pruned for pedestrian passage
10	Austrian Pine	Pinus nigra	37	8	Y	G	G	I											30% dieback; overhangs sidewalk by 2 m
11	Austrian Pine	Pinus nigra	36	8	Y	F	G	I											30% dieback; overhangs sidewalk by 2 m
12	Austrian Pine	Pinus nigra	26	4.5	N	P	F											S	80% dieback; 2 crooks in trunk; overhangs sidewalk
13	Black Locust	Robinia pseudoacacia	24	9	Y	G	G	I		2									
14	Norway Maple	Acer platanoides	40	10	N	G	G			3				x					Overhangs sidewalk by 1 m
15	Hackberry	Celtis occidentalis	25	9	Y	G	G	I											
16	Colorado Spruce	Picea pungens	29	6	Y	G	G												Overhangs sidewalk; 40% dieback
17	Colorado Spruce	Picea pungens	34	6	Y	G	G												Overhangs sidewalk; 40% dieback
18	Colorado Spruce	Picea pungens	30	6	Y	G	G												Overhangs sidewalk; 40% dieback
19	Colorado Spruce	Picea pungens	27	7	Y	G	G												Overhangs sidewalk; 30% dieback
20	Black Locust	Robinia pseudoacacia	21	8	Y	G	G			2									Cultivar
21	Black Walnut	Juglans nigra	59	13	Y	G	G	I											Overhangs road by 2 m
22	Colorado Spruce	Picea pungens	16	3	Y	G	G												Suppressed by Tree 21
23	Colorado Spruce	Picea pungens	25	3	Y	G	G												
24	Colorado Spruce	Picea pungens	25	4	Y	G	G												
25	Colorado Spruce	Picea pungens	29	4	Y	G	G												
26	Honey Locust	Gleditsia triacanthos	34	9	Y	G	G												Overhangs sidewalk by 4 m
27	Hackberry	Celtis occidentalis	22	6	Y	G	F											N	Suppressed by Tree 26
28	Honey Locust	Gleditsia triacanthos	35	9	Y	G	G												Overhangs sidewalk by 4 m
29	Ash	Fraxinus sp.	52	12	Y	P	F			3									EAB; 90% dieback; overhangs sidewalk by 4 m; potentially hazardous tree due to poor condition and proximity to pedestrians (north side) and parked vehicles (south side)
30	Black Locust	Robinia pseudoacacia	25	7	Y	G	G	I										N	
31	Ash	Fraxinus sp.	42	10	Y	P	G												EAB; 80% dieback; overhangs sidewalk by 3 m
32	Ash	Fraxinus sp.	32	10	Y	P	F			3									EAB; 90% dieback; overhangs sidewalk by 1 m
33	Ash	Fraxinus sp.	38	9	Y	D	F			3							x		EAB; basal shoots only; overhangs sidewalk by 1 m; potentially hazardous tree due to poor condition and proximity to pedestrians (north side) and parked vehicles (south side)
34	Hackberry	Celtis occidentalis	24	6	Y	G	G	I										N	

Tree No.	Species (Common name)	Species (Botanical name)	Size (DBH, cm)	Spread (dia., m)	Publicly Owned (Y/N)	Biological Health	Structural Condition	Tree Impacts (I)njure / (R)emove	gr	cod	na	incl	crb	mbr	dpr	smd	adv	lean	Comments / Recommendations
35	Ash	Fraxinus sp.	28	9	Y	P	F			3									EAB; 90% dieback; potentially hazardous tree due to poor condition and proximity to pedestrians (north side) and parked vehicles (south side)
36	Austrian Pine	Pinus nigra	40	10	N	G	G												
37	Siberian Elm	lmus pumila	18	3	Y	G	G											N	
38	Black Walnut	Juglans nigra	19	6	Y	G	G	I											Overhangs sidewalk
39	Sugar Maple	Acer saccharum	15	6	Y	G	G												
40	Black Walnut	Juglans nigra	22	8	Y	G	G												
41	Black Walnut	Juglans nigra	47	13	N	G	G												
42	White Elm	lmus americana	7	2	Y	P	F	R										N	Virginia creeper climbing throughout canopy
43	Siberian Elm	lmus pumila	31	6	Y	F	G	R											Grapevine and Virginia creeper throughout canopy
44	Siberian Elm	lmus pumila	55	9	Y	G	G	R											Grapevine and Virginia creeper throughout canopy
45	Norway Spruce	Picea abies	55	9	Y	G	G	I											Grapevine and Virginia creeper throughout canopy
46	Group		46	1	Y	G	G	R											Hedge: 7 cedars 1 m wide and 3 m tall
47	White Spruce	Picea glauca	31	8	Y	G	G	I											
48	White Spruce	Picea glauca	24	8	Y	G	G	I											
49	White Spruce	Picea glauca	18	6	Y	G	G	I											
50	Siberian Elm	lmus pumila	12 to 35	3 to 7	Y	F-G	F-G	I											6 volunteer trees in corner with following DBHs: 12, 24, 25, 28, 33, 35
51	Red cedar	Juniperus virginiana	34	8	N	G	G												Each co-dominant stem topped at 5 m and 7 m
52	Colorado Spruce	Picea pungens	11	3	N	G	G												
53	Colorado Spruce	Picea pungens	28	5	Y	G	G												
54	Apple	Malus sp.	20, 21, 27	7	Y	G	G			0.5									
55	Silver Maple	Acer saccharinum	132	16	Y	G	P-F	I		2									Large cavity at 2 m height; smartweed growing in crotch; overhangs whole road at 4 m height
56	Colorado Spruce	Picea pungens	38	6	Y	G	G												90% dieback
57	Colorado Spruce	Picea pungens	37	6	Y	F	G												60% dieback
58	Colorado Spruce	Picea pungens	34	6	Y	G	G												30% dieback
59	Colorado Spruce	Picea pungens	41	6	Y	G	G												20% dieback
60	Group		9 to 11	3	Y	G	G												Colorado spruce: 5 trees 3 m wide, 4 m tall
61	Norway Maple	Acer platanoides	52	10	Y	G	G	I		1.5									
62	False cypress	Chamaecyparis sp.	27	6	N	G	G												Landscape specimen
63	Colorado Spruce	Picea pungens	50	9	Y	G	G												
64	Colorado Spruce	Picea pungens	39	8	Y	G	G												
65	Group		8 to 12	2	Both	G	G												Hedge: cedars 2 m wide and 3 m tall; extends onto public property
66	White birch	Betula papyrifera	47	12	Y	G	G	I											Hydro service 2 m into canopy
67	Norway Maple	Acer platanoides	76	12	Y	G	G	I	x	2									
68	White birch	Betula papyrifera	20, 45	10	N	G	G			base									
69	Norway Maple	Acer platanoides	60	10	N	G	G			1.4									DBH measured at 1 m

Tree No.	Species (Common name)	Species (Botanical name)	Size (DBH, cm)	Spread (dia., m)	Publicly Owned (Y/N)	Biological Health	Structural Condition	Tree Impacts (I)njure / (R)emove	gr	cod	na	incl	crb	mbr	dpr	smd	adv	lean	Comments / Recommendations
70	Group		NA	NA	Y	G	G	R (partial)											Planting bed bordered in stone: 2 Colorado spruce (3 m x 4 m tall / x 5 m tall); 1 cedar; 1 Japanese maple (3 m wide x 3 m tall; co-dominant with DBHs of 5 and 7 cm)
71	Crabapple	Malus sp.	10	5	Y	G	G												
72	Silver Maple	Acer saccharinum	109	12	Y	F	F	I		base		x			x				Overhangs half of road; cavity at 1 m with frass
73	Colorado Spruce	Picea pungens	26	7	Y	G	G	I											
74	Colorado Spruce	Picea pungens	31	7	Y	G	G	I											
75	Silver Maple	Acer saccharinum	96	12	N	G	G	I		3									Hydro service throughout canopy
76	Fir	Abies sp.	11	1.5	Y	G	G	I											
77	Colorado Spruce	Picea pungens	11	2	Y	G	G	I											
78	Fir	Abies sp.	11	1	Y	G	G	R											
79	Catalpa	Catalpa speciosa	7	2	Y	G	G												Pruned to small tree form
80	White Spruce	Picea glauca	28	6	Y	G	F	R											Pruned for hydro wires
81	White Spruce	Picea glauca	13	4	Y	G	F	R											Topped at 3 m height
82	White Spruce	Picea glauca	21	6	Y	G	F	R											Pruned for hydro wires
83	White Spruce	Picea glauca	27	6	Y	G	F	R											Pruned for hydro wires
84	White Spruce	Picea glauca	20	6	Y	G	F	R											Pruned for hydro wires
85	White Spruce	Picea glauca	30	6	Y	G	F	R											Pruned for hydro wires
86	White Spruce	Picea glauca	30	6	Y	G	F	R											Pruned for hydro wires
87	Black Walnut	Juglans nigra	71	10	N	G	G	I											Entire crown unbalanced to south
88	Black Walnut	Juglans nigra	96	14	N	G	G	I											Entire crown unbalanced to south
89	Black Locust	Robinia pseudoacacia	70	9	N	G	G												8 cm DBH Manitoba maple leaning against trunk
90	Colorado Spruce	Picea pungens	15	2.5	N	G	G												Topped at 6 m
91	Group		NA	NA	Both	G	G												Planting bed: weeping spruce, Japanese maple, columnar juniper, cedar, yucca, boxwood, sedum, daisy
92	Colorado Spruce	Picea pungens	32	6	Y	G	G												
93	Silver Maple	Acer saccharinum	186	18	Y	F	F	I		2		x				x			DBH measured at base; 2 m tall mountain ash growing out of crotch; pruning around hydro lines; overhangs whole road; frass and rot in crotch
94	Group		2 to 12	3	Y	G	G												Staghorn sumac and grapevine
95	White Cedar	Thuja occidentalis	28	4	Y	G	G	I											
96	European beech	Fagus sylvatica	9	2	Y	G	G	R											
97	Austrian Pine	Pinus nigra	8	15	Y	G	G	I											
98	European beech	Fagus sylvatica	3, 10	2	Y	G	G	R		0.5									
99	Cherry	Prunus sp.	24	5	Y	G	G	I											
100	Norway Spruce	Picea abies	18	4.5	Y	G	G	I											
101	Jack Pine	Pinus banksiana	31	6	N	G	G												20% dieback; sapsucker holes
102	Norway Spruce	Picea abies	86	12	N	G	G												
103	Sugar Maple	Acer saccharum	53	7	N	F	F			3									Major trunk split from previous co-dominant stem failure; leader topped; unbalanced crown
104	White Spruce	Picea glauca	24	8	Y	G	G	R											

Tree No.	Species (Common name)	Species (Botanical name)	Size (DBH, cm)	Spread (dia., m)	Publicly Owned (Y/N)	Biological Health	Structural Condition	Tree Impacts (I)njure / (R)emove	gr	cod	na	incl	crb	mbr	dpr	smd	adv	lean	Comments / Recommendations
105	White Spruce	Picea glauca	24	8	Y	G	G	R											In a raised landscape bed
106	White Spruce	Picea glauca	27	8	Y	G	G	R											
107	White Spruce	Picea glauca	15	6	Y	G	G												
108	White Spruce	Picea glauca	17	6	Y	G	G	R											
109	White Spruce	Picea glauca	16	6	Y	G	G												
110	Norway Spruce	Picea abies	21	7	Y	G	G	R											
111	Norway Spruce	Picea abies	32	8	Y	G	G												
112	Norway Maple	Acer platanoides	74	14	N	G	G	I		1.5									
113	Norway Maple	Acer platanoides	68	14	N	G	G	I		1.5									
114	Silver Maple	Acer saccharinum	75	11	N	G	G			3		x							
115	European Beech	Fagus sylvatica	59	11	N	G	G												
116	Tree of heaven	Ailanthus altissima	9, 10, 12, 13	6	N	G	G	I											4 co-dominant stems
117	Siberian Elm	lmus pumila	29	8	Y	G	G	R		3									
118	Siberian Elm	lmus pumila	29	6	Y	G	G	R											
119	Colorado Spruce	Picea pungens	6	2	Y	G	G												
120	Colorado Spruce	Picea pungens	6	2	Y	G	G												Wounds on trunk with wound wood
121	Siberian Elm	lmus pumila	24	6	Y	G	F	R		1.5									
122	Siberian Elm	lmus pumila	35	7	Y	G	G	R		1.2									
123	Norway Spruce	Picea abies	40	10	Y	G	G	I											Overhangs half of road
124	Norway Spruce	Picea abies	43	10	Y	G	G	I											Overhangs half of road
125	European beech	Fagus sylvatica	88	13	N	G	G	I											Overhangs road by 1 m
126	Norway Spruce	Picea abies	51	10	N	G	G	I											Overhangs half of road
127	Norway Spruce	Picea abies	29	5	N	F	F	I											60% dieback
128	Black Walnut	Juglans nigra	44	13	N	G	F	I											Overhangs half of road
129	Silver Maple	Acer saccharinum	68	6	N	G	F	I		3				x	x	x			2 cavities at 2 m height; weeping wounds
130	Colorado Spruce	Picea pungens	45	6	Y	G	G	I											
131	Silver Maple	Acer saccharinum	112	16	Y	G	F	I		2									
132	Siberian Elm	lmus pumila	115	10	N	G	G	I		1									Overhangs half of road; DBH measured at 0.5 m
133	Norway Spruce	Picea abies	46	7	N	G	G	I											
134	Silver Maple	Acer saccharinum	116	13	N	G	F	I		2				x					DBH measured at 0.5 m height; overhangs whole road; Dryad's Saddle (Polyporus s uamosus) fruiting body present in old pruning site cavity - white rot likely limited to site (not a cause for removal)
135	Colorado Spruce	Picea pungens	63	9	N	G	G	I											
136	Colorado Spruce	Picea pungens	67	8	N	G	G	I		7									
137	Manitoba Maple	Acer negundo	40	8	N	G	P	I		0.5								N	Volunteer; DBH measured at base
138	European larch	Larix decidua	61	10	N	G	G												
139	Red oak	uercus rubra	68	14	Y	G	G	I										S	Overhangs half of road; hydro wires through canopy
140	Black Walnut	Juglans nigra	56	13	Y	G	G	I											Overhangs road by 1 m
141	Black Walnut	Juglans nigra	64	13	Y	G	G	I							x				
142	Serviceberry	Amelanchier sp.	9, 7, 6, 5	2.5	Y	G	G	R											Multistem - 4 stems; 2 m tall; specimen in yard

B

Appendix B

Tree Protection Zone Detail,

Tree Hoarding Detail, and

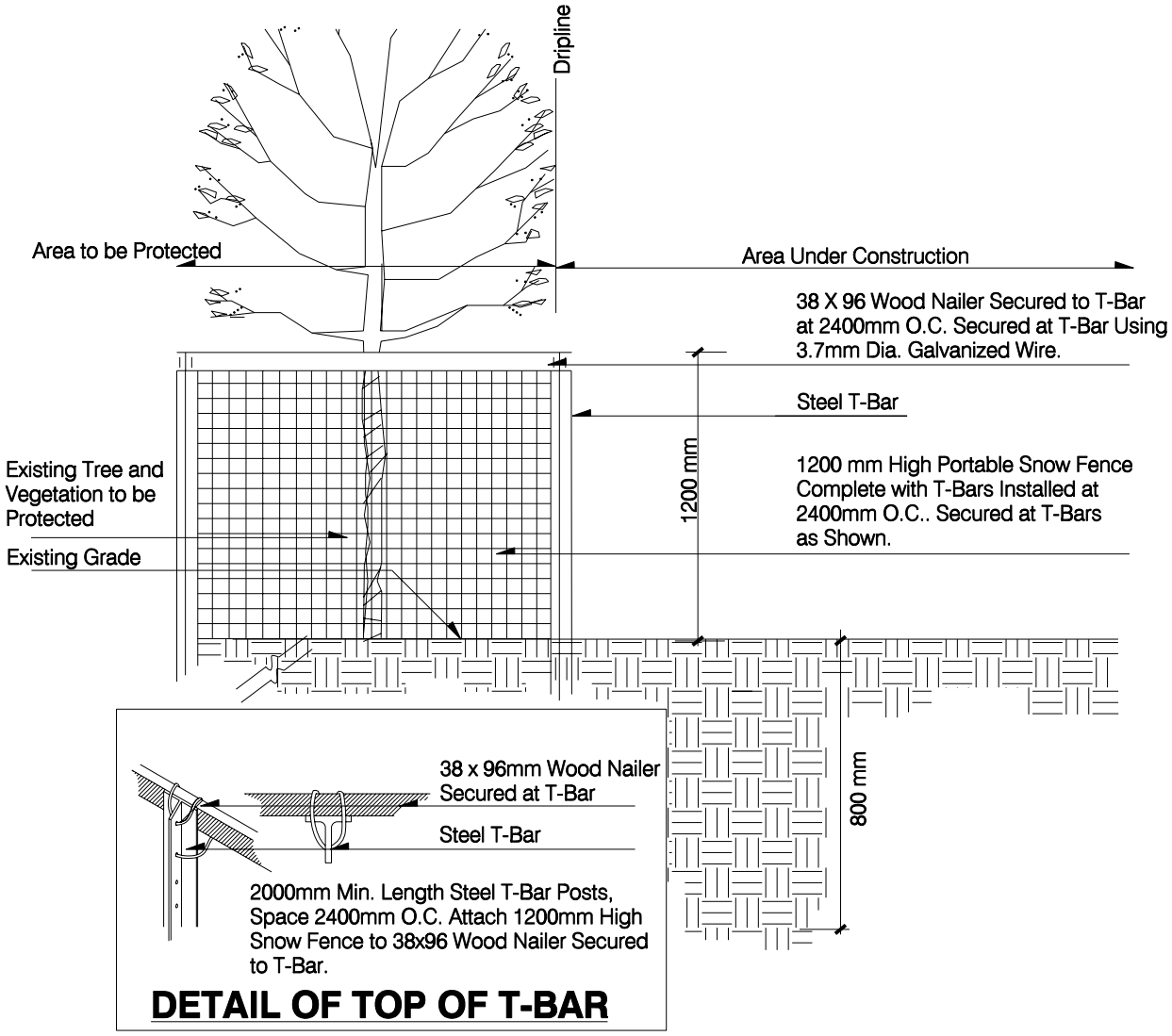
Public Tree Preservation & Sustainability Policy

Tree Protection Zone

All trees situated on City property are protected under provisions of City by-laws.
In order to protect trees within or near a construction site you must consider the following:

Use the chart below to determine the Tree Protection Zone.

Deliniate or fence off the Tree Protection Zone by means appropriate to the project.
e.g. caution tape for short duration, snow fencing or plywood hoarding for longer



SECTION

NOTES:

1. Attachment of Fence to Trees to be Preserved is Not Allowed.
2. Ensure Fence is Located Beyond the Drip Line of Trees to be Preserved.
3. Fencing to be Installed Prior to Start of Construction and Remain in Place Until the Completion of All Work.

Hamilton
PUBLIC WORKS

City of Hamilton
Public Works Department

TREE HOARDING - STREETS

DIMENSIONS SHOWN ARE IN MILLIMETRES UNLESS OTHERWISE NOTED (N.T.S.)	DATE January 2007	REV No	FORMERLY: OSD 1100.01	HAMILTON STD No PK-1100.01

CITY OF HAMILTON

PUBLIC WORKS DEPARTMENT
ENVIRONMENTAL SERVICES DIVISION
Forestry and Horticulture Section

POLICY

POLICY NO:
SUBJECT: Public Tree Preservation and Sustainability Policy

ISSUED BY THE DIRECTOR OF ENVIRONMENTAL SERVICES: August 10, 2015
(Subsection 7(b), Public Tree Protection By-law 15-125)
EFFECTIVE DATE: August 10, 2015
UPDATED: May 29, 2017

REPLACES THE FOLLOWING POLICIES:
(Subsection 36(1), Public Tree Protection By-law 15-125)

Tree Removal, Tree Preservation & Protective Measures for Trees Affected by Construction, Street Tree Planting – Planning & Design, Street Tree Planting – New Developments, Reforestation – Municipally Owned Lands
(received by Council on May 28, 2008)
City of Hamilton Street Tree Planting Policy - Rural Roadways

1. Introduction

The purpose of the Public Tree Preservation and Sustainability Policy (the "Policy") is to support the continued growth and development of the urban forest. The Policy sets out the following:

(a) the requirements for work to be performed on, in or around a public tree or to plant a tree on road allowance within or outside the urban boundary and rural settlement areas;
(b) the administration of requests/permits for such work; and
(c) the criteria that may be applied by the Director to any assessment he or she makes with respect to the condition of a tree.

2. Application

The Policy will be applied in conjunction with City of Hamilton Public Tree By-law 15-125 (the "Public Tree By-law"). The Policy applies where work is to be performed by an individual or entity and is not subject to a *Planning Act* process. Schedule "B", "Criteria for Assessing the Condition of Trees", may be applied by the Director to any assessment he or she makes with respect to the condition of a tree.

Where the work affects significant public trees or large numbers of public trees, the Director may inform Council or seek its approval with respect to the implementation of the Policy.

Schedule “A”, “Retention and Protective Requirements”, and Schedule “B”, “Criteria for Assessing the Condition of Trees” are attached to and form part of this Policy.

3. Definitions

In addition to the definitions found in the Public Tree By-law, the following definitions shall apply for the purposes of this Policy:

“**Permit**” means a permit issued by the Director for work performed on, in or around a public tree and may be part of another City approval process, for example for the installation of a driveway;

“**Permit Holder**” means a person who applies for and receives a Permit; and

“**Planting Request**” means a request to have a tree planted on road allowance within or outside the urban boundary and rural settlement areas.

4. Permit Applications

(1) Prior to a person performing any work on, in or around a public tree, an application for a Permit shall be submitted to the Director. An application shall include:

(a) the name and contact information of the applicant, and any applicable corporation information;
(b) the applicable Permit fee;
(c) identification of the proposed location where the work will be undertaken and completed;
(d) a description of how the work will be completed so as to retain and protect public trees in accordance with Schedule “A”;
(e) photographs and/or sketches with notes or other indicators that set out the following:

(ii) property lines;
(iii) work to be undertaken and completed;
(iv) the location of all public trees;
(v) any proposed grade changes;

(f) evidence of Commercial General Liability insurance satisfactory to the Director, if requested;
(g) a signed release and indemnity form satisfactory to the Director, if requested; and
(h) any other supporting documentation as required by the Director with respect to the work to be undertaken and completed or the Permit to be issued.

(2) All reasonable efforts shall be made to avoid the removal of public trees. However, if the removal of one or more public trees is unavoidable, the application shall include, for each public tree:

(a) the reasons for the removal;

(b) the species;

(c) the diameter breast height measurement; and

(d) photographs.

In addition, before the Permit may be issued, the applicant shall pay the replacement cost for any public trees to be removed once informed of the amount by the Director.

5. Permit Review

A completed application, including the applicable fees and supporting documentation, will be reviewed by the Director who may consider the following criteria when making a decision on whether to issue a Permit:

(a) species, size, location of the public trees where the work will be undertaken and completed;
(b) overall health of any public trees which may be affected by the work; and
(c) any impact of the work on the surrounding environment.

6. Permit Issuance

(1) The Director may, in his or her discretion, issue, issue with, or refuse to issue a Permit.

(2) The Director may issue the Permit with conditions under subsection 6(1) if he or she has reason to believe, having regard any work performed by the applicant in the past, the application and any other information that the Director considers relevant, that conditions are required for the work to be undertaken and completed in accordance with this Policy, the Public Tree By-law, any other City policies or by-laws and any federal or provincial regulations or statutes relating to trees.

(3) In imposing conditions on a Permit, the Director may include conditions in respect of, but not limited to:

(a) specifics in relation to the location and type of work;

(b) requirements in relation to reporting to the Director about the work;

(c) a requirement that all public trees to be retained be noted on a plan and fully protected prior to the work commencing;

(c) where a public tree is being removed, a requirement that, instead of the replacement cost being paid, the public tree be replaced by a tree of a similar species at the expense of the Permit Holder;

(e) such other conditions as the Director considers necessary to ensure that the work is undertaken and completed in accordance with this Policy, the Public Tree By-law, any other City policies or by-laws and any federal or provincial regulations or statutes relating to trees.

(4) The Director may refuse to issue a Permit under subsection 6(1) if he or she has reason to believe, having regard to any work performed by the applicant in the past, the application and any other information that the Director considers relevant that the work, with or without the imposition of conditions on the Permit, will not be undertaken and completed in accordance with this Policy and the Public Tree By-law, any other City policies or by-laws and any federal or provincial regulations or statutes relating to trees.

(6) A Permit is only valid for the term approved by the Director and shall expire on the last day of the term as set out in the Permit.

(7) A Permit is the property of the City and shall not be transferred without the written permission of the Director.

7. Permit Compliance

(1) Following the issuance of a Permit, site inspections may be performed by the Director at any time to ensure compliance with the conditions of the Permit.

(3) A Permit Holder shall comply with the Public Tree By-law and all of the conditions of the Permit and this Policy;

(4) Failure to comply with the Public Tree By-law or any condition of a Permit or this Policy may result in the revocation of the Permit by the Director, or the refusal by the Director to approve a further application for a Permit from a Permit Holder;

(5) Upon the refusal of an application or the revocation of a Permit, the applicant or the Permit Holder shall not commence or complete any part of the work set out in the application or the Permit.

(6) If a public tree is deemed by the Director to have died or declined within 24 months of the expiry of the Permit as a result of non-compliance with the Permit including any conditions imposed, the Permit Holder may be charged in accordance with the Public Tree By-law. In addition, the public tree may be removed by the Director and replaced with a tree of the same or substantially similar value and the Permit Holder shall be responsible for the removal cost and replacement cost.

8. Planting Requests

(1) A request to have one or more trees planted on road allowance within or outside the urban boundary and rural settlement areas shall be submitted by the owner or occupier of the property lot which abuts the road allowance (residential, agricultural, industrial, institutional, and commercial) to the Director.

(2)(a) One request per year may be submitted for each property lot which abuts road allowance. The upset allocation for each property lot per year is 10 trees where space permits, with a maximum allocation for each property lot of 30 trees within a ten year period;

(b) The allocation for trees per property lot which abuts road allowance, including the ten year period allocation, shall be calculated separately from any special Forestry and Horticulture Section tree canopy management plans that have been approved to address infestations such as the Emerald Ash Borer and/or the Asian Long-horned Beetle.

(3) The Forestry and Horticulture Section:

(a) Provides all trees to be planted. Requesters are not permitted under any circumstances to source their own trees for planting.

(b) Determines the size, number, and species of trees to be provided. A Forestry staffer person will assist the requestor with tree selection.

(c) Plants the trees.

(d) May plant trees within the road allowance on its own initiative without a request from an adjacent property owner or occupier.

(4) Trees are provided on a first-come first-serve basis, subject to the availability of funding.

(5) Once trees are planted, requesters:

a) Shall water each tree one time every two days until the tree is established.
b) Shall monitor trees for insect and disease infestations, as well as signs of decline.
c) May fertilize the trees once per year in the autumn, using a slow release nitrogen fertilizer, to encourage growth. Fertilization should not be performed within the first year of planting, as there may be negative impacts to the root system.
d) Shall report any problems with, or noticeable changes to, the tree to the Forestry and Horticulture Section immediately.

9.0 Development Related Planting

(1) Plant material shall be specified:

a) As per City of Hamilton current planting list, and may be determined by the City.
b) To not be coniferous.
c) To be planted by the City of Hamilton, or contractor on behalf of the City.
d) Promote diversity with no single species making up more than 20% of the total street tree population, where the development includes 20 or more tree plantings.
e) To have a minimum caliper of 50mm at time of planting.
f) To conform to the current City of Hamilton Standards for Planting within the Public Right of Way.

(2) The layout of new trees in residential development:

a) Shall be within the road allowance, one tree per standard lot.
b) Shall be within the road allowance, three trees per corner lot.
c) Shall be paid to the City as cash-in-lieu of tree planting, as per the City's current approved User Fees rates.
d) Shall be spaced a minimum of 8 meters and maximum of 10 meters apart where proposed along non-residential frontage, such as park blocks.

(3) The layout of new trees in non-residential development:

a) Shall be within the road allowance.
b) Shall be paid to the City as cash-in-lieu of tree planting, as per the City's current approved User Fees rates.
c) Shall be spaced a minimum of 8 meters and maximum of 10 meters apart where proposed along non-residential frontage.

(4) The Forestry and Horticulture Section may plant trees within the road allowance in new developments on its own initiative without a request or approval from an adjacent property owner or occupier.

10. Fees

All fees in this Policy, including the removal cost and the replacement cost, are as set in the City's User Fees and Charges By-law or as approved by City Council from time to time.

Schedule “A”

Retention and Protective Requirements

The following retention and protective requirements shall be met by all Permit Holders when carrying out work in or around a public tree.

1. All public trees to be retained at the location shall be tagged and fully protected with fencing or other protective measures as set out in the Permit.

2. The requirements for a tree protection zone shall be completed prior to the commencement of the work to the satisfaction of the Director.

3. Tree protection zones may be expanded as determined by the Director while the work is being undertaken.

4. Public trees located within a tree protection zone and any other public tree as determined by the Director shall remain undisturbed and protected as required by the Director.

5. The storage of building materials, structures or equipment is not permitted within a tree protection zone.

6. Surplus soil, equipment, vehicles, tools, debris or materials shall not be placed over the root systems of public trees within a tree protection zone or any other area as set out in the Permit.

7. No contaminants or toxic materials shall be dumped or flushed anywhere within the location.

8. Tree roots typically spread well beyond the dripline of trees, up to 3.5 times the dripline radius, and are located predominantly within the top 30 cm of soil. As this area may not be within a tree protection zone, activity should be kept to a minimum to prevent root damage and soil compaction. Where root systems of trees are exposed or damaged by construction work, the Director shall be advised before the roots are trimmed neatly and the area back-filled with topsoil.

9. Equipment shall not compact soil over the root zone of public trees. To avoid damage to public trees that are to be retained and protected, access routes shall be established away from tree protection zones. All access routes, regardless of how temporary, shall be identified and approved by the Director before the commencement of the work.

10. Any tunneling, torpedoing, digging or trenching within the dripline of any public tree is not permitted unless otherwise set out in a Permit. If such work is permitted in a Permit, it shall be carried out so as to minimize root injury and avoid soil compaction.

11. The cutting of surface roots of a public tree is not permitted unless otherwise set out in a Permit.

12. Disturbing original grades around public trees in the tree protection zone is not permitted.

13. The placement, deposit, or storage of any stone, brick, sand, concrete, soil or any other material or equipment which may impede the free passage of water, air, or nutrients to the public tree is not permitted.

14. No cables or ropes of any type shall be wrapped around or installed in or on any public trees.

15. The attaching of signs or fencing, or the making of survey markings or paint to a public tree is not permitted.

16. All vegetation within the tree protection zone, including trees, shrubs and grasses, shall be watered, fertilized and maintained.

17. New sidewalks, paving or asphalting shall allow 1.5 m^2 of breathing space for tree roots, and shall include such construction materials such as interlocking stone, rubber mats and steel grating to allow for this breathing space.

18. Individually planted trees in new sidewalks installations shall include 21m^3 of soil and a grouping of 2 or more trees in a soil bed shall include 16m^3 of soil per tree.

Schedule “B”

Criteria for Assessing the Condition of Trees

The condition of both public and private trees may be assessed by the Director under the Public Tree By-law: for example when considering the need to correctively prune or remove a public or a private tree that interferes with or is likely to interfere with a highway.

In addition, from time to time, the Director may assess the condition of a private tree for corrective pruning or removal by the City (upon the owner giving permission to enter and waiving liability) that serves the purpose of a public tree: for example when the tree acts as a boulevard tree even though it is less than 50% on City property.

All assessments are based on the potential impact of failure on vehicular or pedestrian traffic and/or structures and/or other static features, the “target area”. The lower the frequency of use of the target area, the fewer potential consequences resulting from a failure of the tree or a component part. The following criteria may be applied by the Director to any such assessment.

1. **Structural condition**
    a. Condition of tree shell wall including thinning, cracks, cavities , decay
    b. Condition of tree branches including dead branches, weak branch unions
    c. Condition of tree base including leaning, root failure, soil mounding
    d. Condition of tree crown including no fine twigs, peeling bark
    e. Changes in soil / site
    f. Adequate soil volume to sustain the health and vigour of the tree
    g. Any defect of any tree component part

2. **Biological condition**
    a. Level of infestation of a pest concerns
    b. Level of infestation of disease concerns
    c. Overall health and vigour of the tree

3. **Urban suitability**
    a. Species characteristics including the growth rate and hardiness
    b. Location including soil type and/or grade
    c. Visual obstruction of any traffic signals or signs and/or other obstruction of a highway
    d. Adequate soil volume to sustain the health and vigour of the tree

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