APPENDIX K

ARBORIST REPORT

MORRISON HERSHFIELD

ARBORIST REPORT

Passmore Avenue, (Markham Road to East of State Crown Boulevard) Toronto, Ontario

Prepared by:

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Landscape Architect & ISA Certified Arborist
Morrison Hershfield Limited

Report No. 1160509 December 1, 2017

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1. INTRODUCTION

The purpose of this report is to determine the impact on trees along Passmore Avenue between Markham Road and East of State Crown Boulevard, Toronto, Ontario that may be affected by several upgrades planned for the road. These include but are not limited to turn lanes at Markham Road, possible widening from 2 to 4 lanes, the addition of sidewalks along the reconstructed portions of the road and any other construction activities associated with such undertakings. For the purposes of this report all trees along Passmore Avenue have been surveyed along with any trees within 6m of the right of way. As a result, not all trees in this report are protected under the City of Toronto By-Law 813. This site does not fall into an environmental sensitive area, contain any heritage trees or affect any significant vistas. It is expected that the work will begin in 2016.

PASSMORE AVE. (MARKHAM RD. TO EAST OF STATE CROWN BLVD.) TORONTO, ON.

The assessment presented in this report has been made using accepted standard arboriculture techniques. These techniques include visual examination of above ground parts of each tree. The trees observed were not climbed, probed, 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.

It must be realized that trees are living organisms, and 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. While every standing tree has 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.

Trees that are on private property were assessed if they are close enough to the proposed development site to be affected by construction, or if they are particularly large and it was felt that their presence should be noted.

Trees were identified, sized, and assessed for condition. Each tree was given a condition rating of Excellent, Good, Fair, or Poor. Following is a summary of how the ratings were determined:

E – Excellent	no apparent health problems; good structural form
G – Good	minor problems with health and/or structural form
F – Fair	more serious problems with health and/or structural form
P – Poor	major problems with health and structural form

2. LOCATION AND SURVEY RESULTS

As per the City of Toronto Tree Protection Policy and Specifications for Construction near Trees, Tree Inventory Plans has been provided in **Figure 1 through 3** for the length of Passmore Avenue between Markham Road and East of State Crown Boulevard. Surveyed portions of the road are outlined on the plan and the preferred design solution has been overlaid to illustrate the trees to be impacted. All designated trees have been located via survey of the site conducted August 22nd, 2016. The summary of the observations made concerning species, size and condition for each tree can be found in **Table 1**.

FIGURES 1-3:

Tree Inventory

LEGEND:

CONIFEROUS TREE

DECIDUOUS TREE

2 TREE IDENTIFICATION NUMBER

PREFERRED DESIGN SOLUTION

GENERAL NOTES (SEE CITY OF TORONTO "TREE PROTECTION POLICY AND SPECIFICATIONS FOR CONSTRUCTION NEAR TREES"):

1.) PRIOR TO THE COMMENCEMENT OF ANY SITE ACTIVITY THE TREE PROTECTION BARRIERS SPECIFIED ON THIS PLAN MUST BE INSTALLED AND WRITTEN NOTICE PROVIDED TO URBAN FORESTRY. THE TREE PROTECTION BARRIERS MUST REMAIN IN EFFECTIVE CONDITION UNTIL ALL SITE ACTIVITIES INCLUDING LANDSCAPING ARE COMPLETE. WHERE REQUIRED, SIGNS AS SPECIFIED IN SECTION 4. OF THE CITY OF TORONTO TREE PROTECTION POLICY AND SPECIFICATIONS FOR CONSTRUCTION NEAR TREES, "TREE PROTECTION SIGNAGE" MUST BE ATTACHED TO ALL SIDES OF THE BARRIER. WRITTEN NOTICE MUST BE PROVIDED TO URBAN FORESTRY PRIOR TO THE REMOVAL OF THE TREE PROTECTION BARRIERS.

2.) PRIOR TO SITE DISTURBANCE THE OWNER MUST CONFIRM THAT NO MIGRATORY BIRDS ARE MAKING USE OF THE SITE FOR NESTING. THE OWNER MUST ENSURE THAT THE WORKS ARE IN CONFORMANCE WITH THE MIGRATORY BIRD CONVENTION ACT AND THAT NO MIGRATORY BIRD NESTS WILL BE IMPACTED BY THE PROPOSED WORK.

3.) IT IS THE APPLICANTS' RESPONSIBILITY TO DISCUSS POTENTIAL TREE INJURY OF TREES ON SHARED PROPERTY LINES WITH THEIR NEIGHBOURS. SHOULD SUCH TREES BE INJURED TO THE POINT OF INSTABILITY OR DEATH THE APPLICANT MAY BE HELD RESPONSIBLE FOR REMOVAL AND SUCH ISSUES WOULD BE DEALT WITH IN CIVIL COURT OR THROUGH NEGOTIATION. THE APPLICANT WOULD BE REQUIRED TO REPLACE SUCH TREES TO THE SATISFACTION OF URBAN FORESTRY.

TREE PROTECTION ZONE:

1.) NO CONSTRUCTION ACTIVITY INCLUDING GRADE CHANGES, SURFACE TREATMENTS OR EXCAVATIONS OF ANY KIND IS PERMITTED WITHIN THE AREA IDENTIFIED ON THE TREE PROTECTION PLAN OR SITE PLAN AS A TREE PROTECTION ZONE (TPZ). NO ROOT CUTTING IS PERMITTED. NO STORAGE OF MATERIALS OR FILL IS PERMITTED WITHIN THE TPZ. NO MOVEMENT OR STORAGE OF VEHICLES OR EQUIPMENT IS PERMITTED WITHIN THE TPZ. THE AREA(S) IDENTIFIED AS A TPZ MUST REMAIN UNDISTURBED AT ALL TIMES.

TREE PROTECTION BARRIERS REFER TO OPSD 220.010 IN CONJUNCTION WITH FOLLOWING NOTES:

FOR CITY-OWNED TREES:

1.) TREE PROTECTION BARRIERS FOR TREES SITUATED ON THE CITY ROAD ALLOWANCE WHERE VISIBILITY MUST BE MAINTAINED, CAN BE 1.2M (4FT.) HIGH AND CONSIST OF CHAIN LINK, OR ORANGE PLASTIC WEB SNOW FENCING ON A 2"X 4" WOOD FRAME. ALL SUPPORTS AND BRACING USED TO SECURE THE BARRIER SHOULD BE LOCATED OUTSIDE THE TPZ. ALL SUPPORTS AND BRACING SHOULD MINIMIZE DAMAGE TO ROOTS OUTSIDE THE TPZ. WHERE SOME FILL OR EXCAVATE HAS TO BE TEMPORARILY LOCATED NEAR A TREE PROTECTION BARRIER, PLYWOOD MUST BE USED TO ENSURE NO MATERIAL ENTERS THE TPZ.

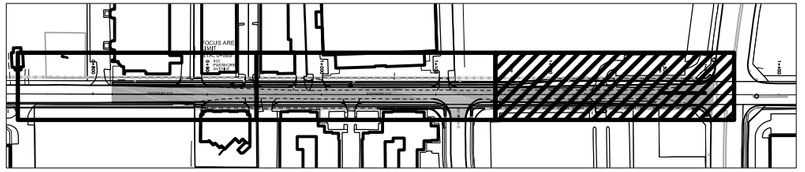
IF THE TPZ NEEDS TO BE REDUCED TO FACILITATE CONSTRUCTION ACCESS, THE TREE PROTECTION BARRIER MUST BE MAINTAINED AT A LESSER DISTANCE AND THE EXPOSED TPZ PROTECTED WITH PLYWOOD AND WOOD CHIPS. THIS MUST FIRST BE APPROVED BY URBAN FORESTRY.

FOR TREES ON PRIVATE PROPERTY SITUATED ON OR ADJACENT TO CONSTRUCTION SITES:

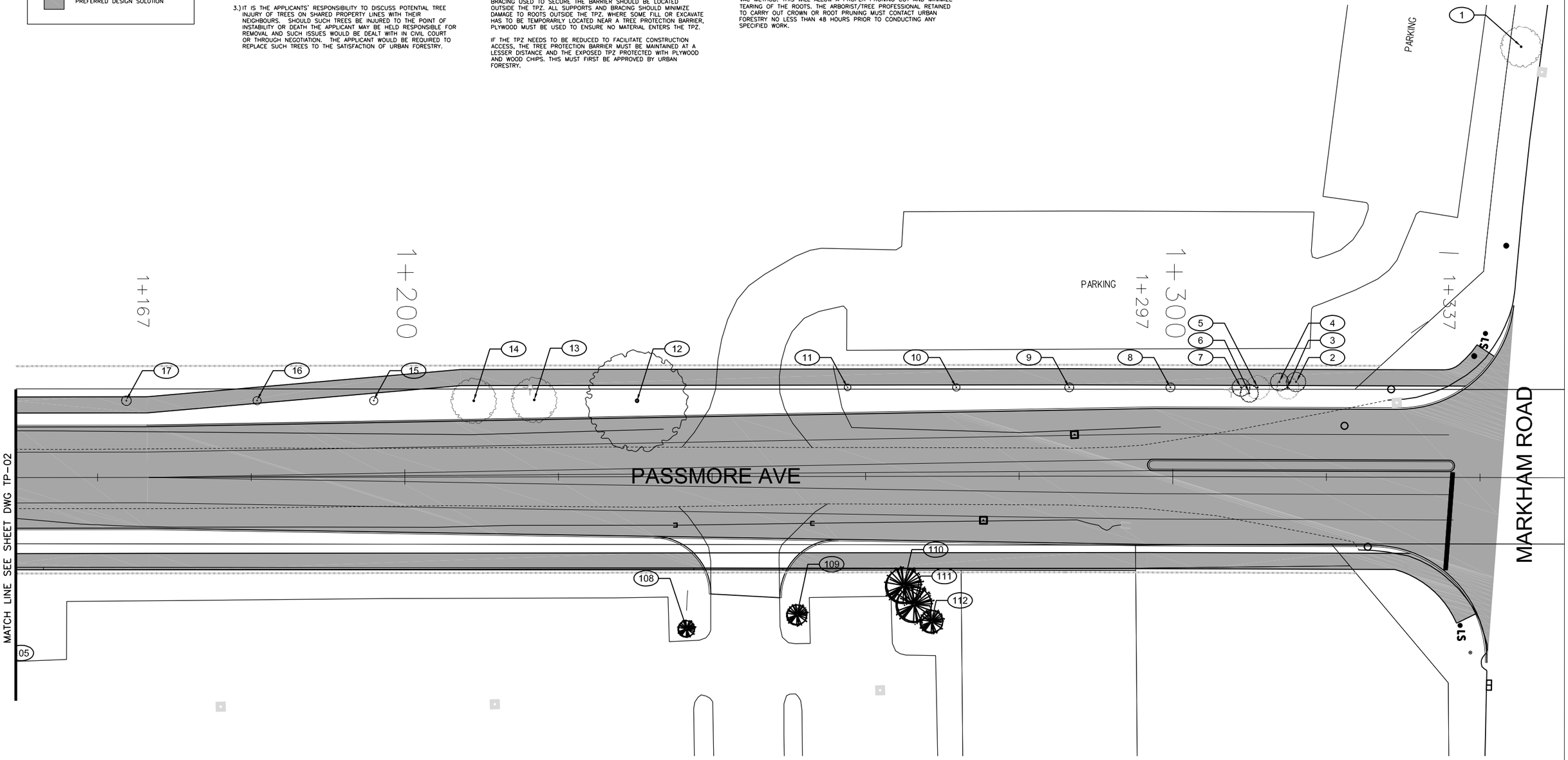
1.) TREE PROTECTION BARRIERS MUST BE INSTALLED AROUND TREES TO BE PROTECTED USING PLYWOOD CLAD HOARDING OR AN EQUIVALENT APPROVED BY URBAN FORESTRY. ALL SUPPORTS AND BRACING TO SAFELY SECURE THE BARRIER SHOULD BE OUTSIDE THE TPZ. ALL SUCH SUPPORTS AND BRACING SHOULD MINIMIZE DAMAGE TO ROOTS OUTSIDE THE TPZ.

ARBORICULTURAL WORK:

1.) ANY ROOTS OR BRANCHES WHICH EXTEND BEYOND THE TPZ INDICATED ON THIS PLAN WHICH REQUIRE PRUNING, MUST BE PRUNED BY A QUALIFIED ARBORIST OR OTHER TREE PROFESSIONAL AS APPROVED BY URBAN FORESTRY. ALL PRUNING OF TREE ROOTS AND BRANCHES MUST BE IN ACCORDANCE WITH GOOD ARBORICULTURAL STANDARDS. ROOTS LOCATED OUTSIDE THE TPZ THAT HAVE RECEIVED APPROVAL FROM URBAN FORESTRY TO BE PRUNED MUST FIRST BE EXPOSED BY HAND DIGGING OR BY USING A LOW PRESSURE HYDRO VAC METHOD. THIS WILL ALLOW A PROPER PRUNING CUT AND MINIMIZE TEARING OF THE ROOTS. THE ARBORIST/TREE PROFESSIONAL RETAINED TO CARRY OUT CROWN OR ROOT PRUNING MUST CONTACT URBAN FORESTRY NO LESS THAN 48 HOURS PRIOR TO CONDUCTING ANY SPECIFIED WORK.



KEY MAP N.T.S



DIGITAL INFORMATION	No.	DATE	REVISIONS	INITIAL	SIGNED

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CERTIFIED ARBORIST ISA

MATTHEW HOOKER
ON-1641A

MORRISON HERSHFIELD
CONSULTANTS

PASSMORE AVE TREE INVENTORY

DESIGN	M.P.H.	DRAWN	D.Y.	CHECKED	M.P.H.	CONTRACT No. 116050900
SCALE:	1:250			DRAWING NUMBER	TP-01	SHEET
DATE:	SEPTEMBER 21, 2016					

CADD FILE NAME: K:\Proj\1140939\13 Arborist Report\Drawings\TREE PLANS
LAST UPDATED: 2015-05-07
PRINTED: 2015-05-07 4:45PM

LEGEND:

CONIFEROUS TREE

DECIDUOUS TREE

2 TREE IDENTIFICATION NUMBER

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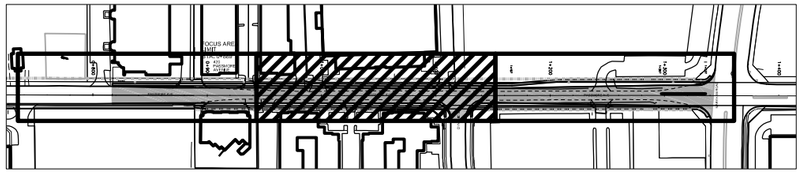

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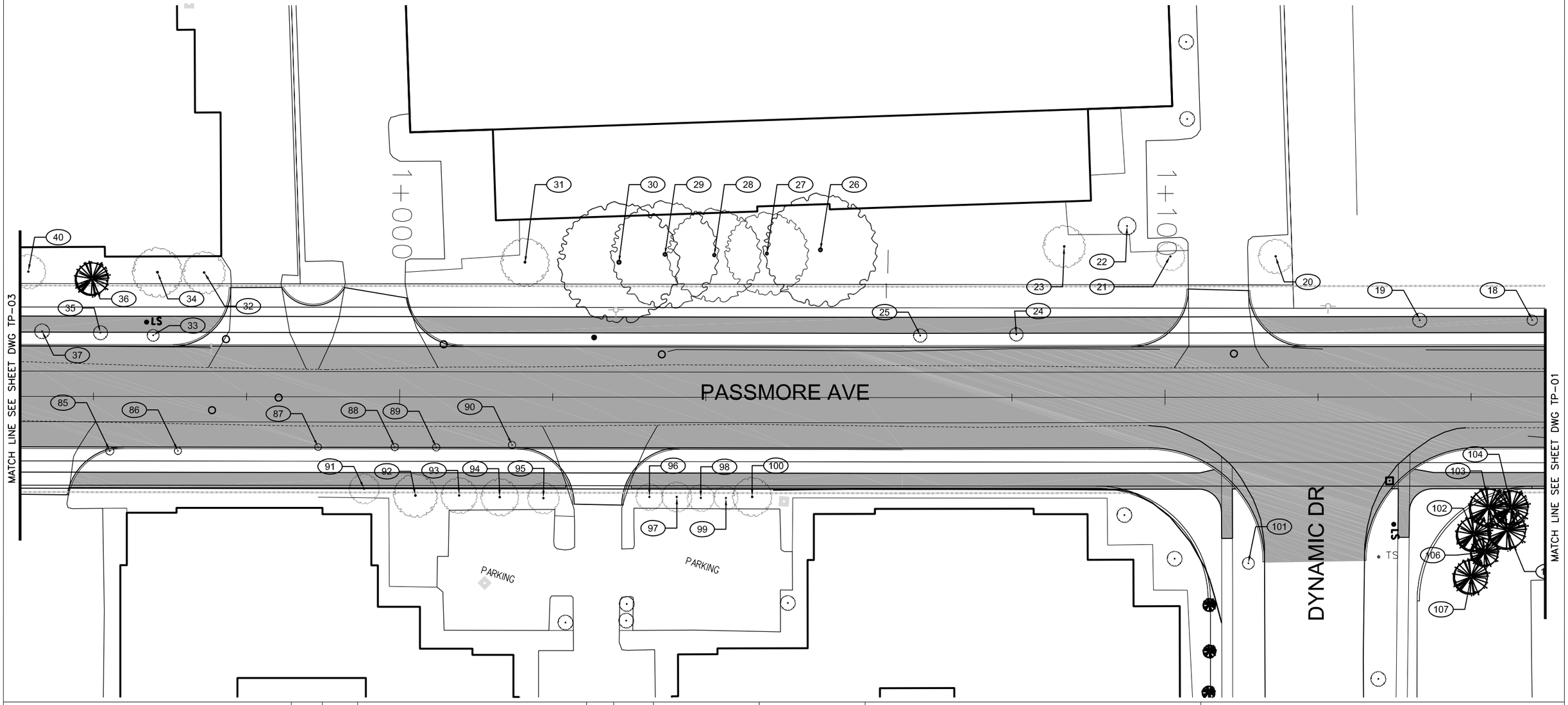

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SCALE:	1:250			DRAWING NUMBER	TP-02	SHEET
DATE:	SEPTEMBER 21, 2016					

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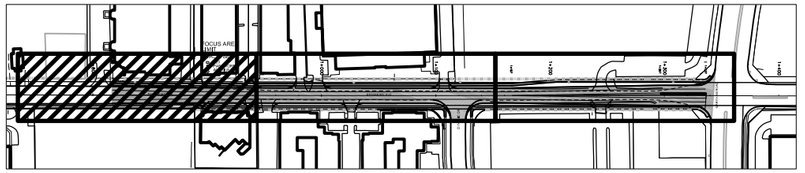

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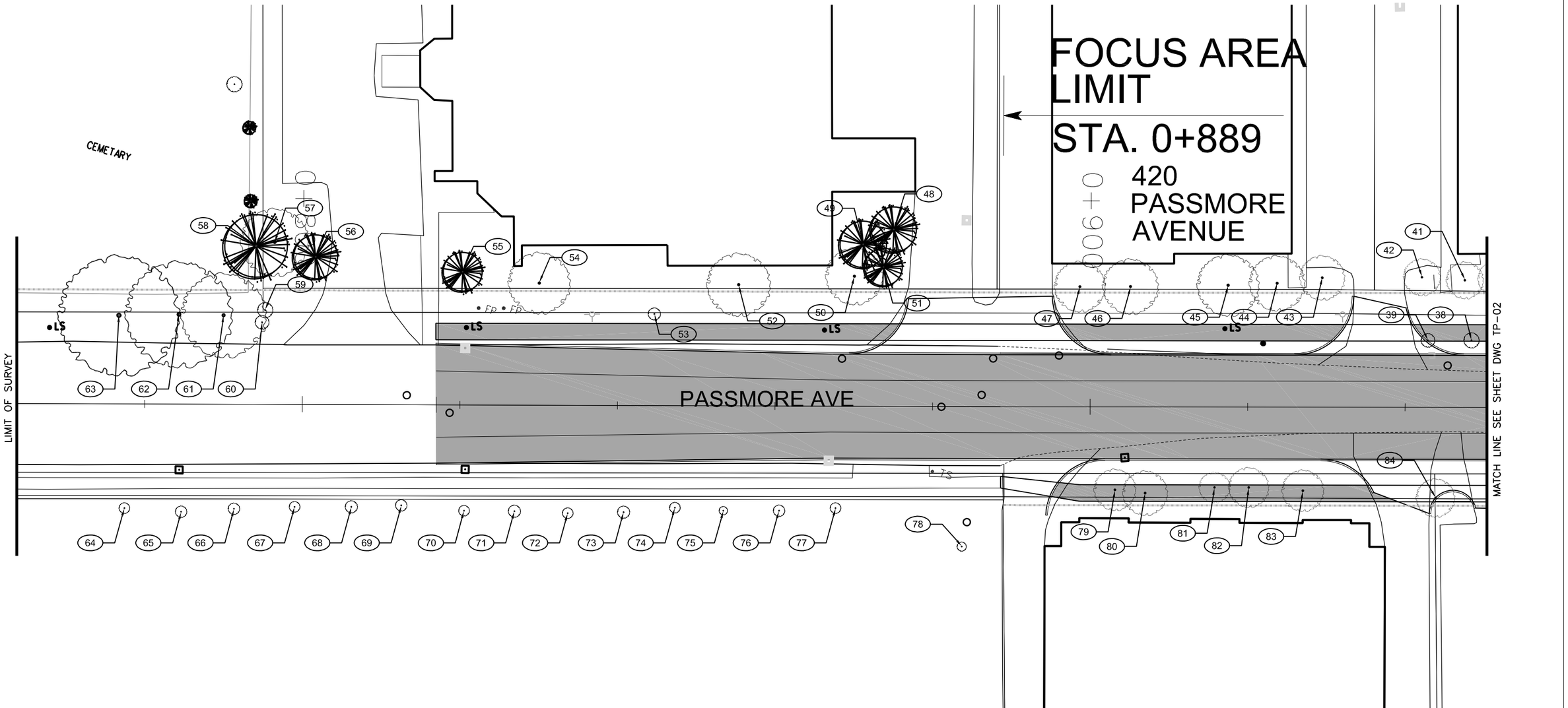

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TREE INVENTORY

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LAST UPDATED: 2015-05-07
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TABLE 1:

Arborist Survey Results

General Location	Tree #	Category	Botanical Name	Common Name	Rating	DBH (cm)	Notes
North Side of Passmore Avenue	1	5	Quercus rubra	Red Oak	G	27	
North Side of Passmore Avenue	2	5	Crataegus sp.	Hawthorn	G	13	2 Stems
North Side of Passmore Avenue	3	5	Crataegus sp.	Hawthorn	G-F	15	2 Stems, One Stem Broken
North Side of Passmore Avenue	4	5	Crataegus sp.	Hawthorn	G	12	
North Side of Passmore Avenue	5	5	Crataegus sp.	Hawthorn	G	16	
North Side of Passmore Avenue	6	5	Crataegus sp.	Hawthorn	G	12	2 Stems
North Side of Passmore Avenue	7	5	Crataegus sp.	Hawthorn	G	12	2 Stems, Suckering
North Side of Passmore Avenue	8	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	6	
North Side of Passmore Avenue	9	5	Aesculus Flava	Ohio Buckeye	G	6	Minor Wounds at Base of Trunk
North Side of Passmore Avenue	10	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F	5	50% Crown Die-Back
North Side of Passmore Avenue	11	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.5	
North Side of Passmore Avenue	12	5	Acer saccharum	Sugar Maple	G-F	67	
North Side of Passmore Avenue	13	5	Ulmus americana	American Elm	G	30	
North Side of Passmore Avenue	14	5	Crataegus sp.	Hawthorn	G	30	Heavy Suckering
North Side of Passmore Avenue	15	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	5.5	
North Side of Passmore Avenue	16	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	5.5	
North Side of Passmore Avenue	17	5	Aesculus Flava	Ohio Buckeye	G-F	6.5	Trunk Split
North Side of Passmore Avenue	18	5	Robinia pseudoacacia	Black Locust	G	7	Small Clump of Stems all <7cm
North Side of Passmore Avenue	19	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F-P	9.5	2 Large Wounds on Trunk
North Side of Passmore Avenue	20		Acer plataniodes 'Crimson King'	Crimson King Maple	G	23	
North Side of Passmore Avenue	21		Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	19	
North Side of Passmore Avenue	22		Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	12.5	
North Side of Passmore Avenue	23		Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	28	
North Side of Passmore Avenue	24	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	9	
North Side of Passmore Avenue	25	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	9	
North Side of Passmore Avenue	26	2	Betula pendula 'Dalecarlica'	Cut Leaf Birch	G	75	
North Side of Passmore Avenue	27	2	Betula pendula 'Dalecarlica'	Cut Leaf Birch	G	55	
North Side of Passmore Avenue	28	2	Betula pendula 'Dalecarlica'	Cut Leaf Birch	G	62	Tag#0503
North Side of Passmore Avenue	29	2	Betula pendula 'Dalecarlica'	Cut Leaf Birch	G-F	71	Tag#0504
North Side of Passmore Avenue	30	2	Betula pendula 'Dalecarlica'	Cut Leaf Birch	F	80	Fungal Growth Indicating Decay
North Side of Passmore Avenue	31	2	Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	32	
North Side of Passmore Avenue	32		Tilia americana	Linden	G	28	
North Side of Passmore Avenue	33	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	8	
North Side of Passmore Avenue	34	2	Tilia americana	Linden	G	33	
North Side of Passmore Avenue	35	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	9.5	
North Side of Passmore Avenue	36		Picea glauca	Colorado Spruce	G	26	
North Side of Passmore Avenue	37	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	10	
North Side of Passmore Avenue	38	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	10	
North Side of Passmore Avenue	39	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	9	

General Location	Tree #	Category	Botanical Name	Common Name	Rating	DBH (cm)	Notes
North Side of Passmore Avenue	40		Tilia americana	Linden	G	23	
North Side of Passmore Avenue	41		Tilia americana	Linden	G	24	
North Side of Passmore Avenue	42		Tilia americana	Linden	G	24	
North Side of Passmore Avenue	43		Tilia americana	Linden	G	29	
North Side of Passmore Avenue	44	2	Tilia americana	Linden	G	36	
North Side of Passmore Avenue	45	2	Tilia americana	Linden	G	40	
North Side of Passmore Avenue	46	2	Tilia americana	Linden	G-F	36	
North Side of Passmore Avenue	47	2	Tilia americana	Linden	G	33	
North Side of Passmore Avenue	48		Pinus nigra	Austrian Pine	G-F	36	
North Side of Passmore Avenue	49	2	Pinus nigra	Austrian Pine	G	37	
North Side of Passmore Avenue	50	2	Pinus nigra	Austrian Pine	G-F	30	Being Shaded Out
North Side of Passmore Avenue	51	2	Acer platanoides 'Crimson King'	Crimson King Maple	G	37	Closed Wound at Base of Trunk
North Side of Passmore Avenue	52	2	Acer platanoides 'Crimson King'	Crimson King Maple	G	41	
North Side of Passmore Avenue	53	5	Amelanchier laevis	Serviceberry	G-F	8	3 Stems
North Side of Passmore Avenue	54	2	Acer platanoides 'Crimson King'	Crimson King Maple	G	40	
North Side of Passmore Avenue	55	2	Pinus nigra	Austrian Pine	G	31	
North Side of Passmore Avenue	56	2	Pinus resinosa	Red Pine	G	35	
North Side of Passmore Avenue	57	2	Acer negundo	Manitoba Maple	G	44	
North Side of Passmore Avenue	58	2	Thuja occidentalis	White Cedar	G-F	50	2 Stems
North Side of Passmore Avenue	59	5	Acer saccharum	Sugar Maple			Dead Stump
North Side of Passmore Avenue	60	5	Amelanchier laevis	Serviceberry	G	9	
North Side of Passmore Avenue	61	5	Acer saccharum	Sugar Maple	G-F	55	10% Die-Back
North Side of Passmore Avenue	62	5	Acer saccharum	Sugar Maple	F	69	Main Leader is Dead
North Side of Passmore Avenue	63	5	Acer saccharum	Sugar Maple	G-F	78	Main Leader is Dead
South Side of Passmore Avenue	64		Quercus rubra	Red Oak	G	7	20% Die-Back
South Side of Passmore Avenue	65		Quercus rubra	Red Oak	G	7.5	
South Side of Passmore Avenue	66		Quercus rubra	Red Oak	G	7.5	
South Side of Passmore Avenue	67		Quercus rubra	Red Oak	G	7	
South Side of Passmore Avenue	68		Acer rubrum	Red Maple	G	8	
South Side of Passmore Avenue	69		Acer rubrum	Red Maple	G	7.5	
South Side of Passmore Avenue	70		Acer rubrum	Red Maple	G	7	
South Side of Passmore Avenue	71		Acer rubrum	Red Maple	G	8	
South Side of Passmore Avenue	72		Acer rubrum	Red Maple	G	7	
South Side of Passmore Avenue	73		Acer rubrum	Red Maple	G	8	
South Side of Passmore Avenue	74		Acer saccharum	Sugar Maple	G	7	
South Side of Passmore Avenue	75		Acer freemanii	Freeman Maple	G-F	5.5	Large Wound on Trunk
South Side of Passmore Avenue	76		Acer freemanii	Freeman Maple	G-F	7.5	20% Die-Back
South Side of Passmore Avenue	77		Quercus rubra	Red Oak	G	7	
South Side of Passmore Avenue	78		Ginkgo biloba	Maiden Tree	G	6	

General Location	Tree #	Category	Botanical Name	Common Name	Rating	DBH (cm)	Notes
South Side of Passmore Avenue	79	5	Acer plataniodes 'Crimson King'	Crimson King Maple	F-P	27	60% Die-Back
South Side of Passmore Avenue	80	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	29	
South Side of Passmore Avenue	81	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	20	
South Side of Passmore Avenue	82	5	Acer plataniodes	Norway Maple	G-F	26	10% Die-Back
South Side of Passmore Avenue	83	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G-F	27	10% Die-Back
South Side of Passmore Avenue	84	5	Acer plataniodes	Norway Maple	G-F	25	
South Side of Passmore Avenue	85	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	5.5	
South Side of Passmore Avenue	86	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.8	
South Side of Passmore Avenue	87	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.6	
South Side of Passmore Avenue	88	5	Aesculus Flava	Ohio Buckeye	P	5	Main Leader is Dead, Suckering at Base
South Side of Passmore Avenue	89	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F-P	5	Main Leader is Dead, Suckering at Base
South Side of Passmore Avenue	90	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	G-F	5	
South Side of Passmore Avenue	91	5	Acer plataniodes	Norway Maple	G	20	
South Side of Passmore Avenue	92		Acer plataniodes	Norway Maple	G-F	29	
South Side of Passmore Avenue	93		Acer plataniodes	Norway Maple	G-F	24	
South Side of Passmore Avenue	94		Acer plataniodes	Norway Maple	G-F	25	
South Side of Passmore Avenue	95		Acer plataniodes	Norway Maple	F-P	21	50% Die-Back
South Side of Passmore Avenue	96		Acer plataniodes	Norway Maple	F	18	40% Die-Back
South Side of Passmore Avenue	97		Acer plataniodes	Norway Maple	G-F	20	
South Side of Passmore Avenue	98		Acer plataniodes	Norway Maple	G-F	18	
South Side of Passmore Avenue	99		Acer plataniodes	Norway Maple	G	16	Birds Nest
South Side of Passmore Avenue	100		Acer plataniodes	Norway Maple	G	26	
South Side of Passmore Avenue	101		Tilia cordata	Little Leaf Linden	G	8	
South Side of Passmore Avenue	102		Pinus nigra	Austrian Pine	G	27	
South Side of Passmore Avenue	103	2	Pinus nigra	Austrian Pine	G	30	
South Side of Passmore Avenue	104		Pinus nigra	Austrian Pine	G	27	
South Side of Passmore Avenue	105	2	Pinus nigra	Austrian Pine	G	30	
South Side of Passmore Avenue	106		Pinus nigra	Austrian Pine	G	22	
South Side of Passmore Avenue	107		Pinus nigra	Austrian Pine	G	27	
South Side of Passmore Avenue	108		Picea glauca	Colorado Spruce	F	13	Die-Back
South Side of Passmore Avenue	109		Picea glauca	Colorado Spruce	G	16	
South Side of Passmore Avenue	110		Picea glauca	Colorado Spruce	G	28	
South Side of Passmore Avenue	111		Picea glauca	Colorado Spruce	F-P	28	Die-Back
South Side of Passmore Avenue	112		Picea glauca	Colorado Spruce	G	18	

1 - >30cm on private property on subject site

2 - >30cm on private property within 6m of subject site

3 - All trees on City Parkland within 6m Subject Site

4 - All trees within City Ravine and/or Designated Natural Feature

5 - All trees within City road allowance adjacent to site

3. SUMMARY OF TREE INVENTORY AND CONDITION

The following is the initial impact based on the initial preliminary plan for four lane road widening. Given the limited cover on the roots system additional trees may be significantly impacted for grading beyond the direct road and sidewalk improvements on the south side of Passmore Avenue. During development of the preliminary design and then in the subsequent detailed design adjustments will be considered to address impacts including trees. Detail design will determine the exact number of trees impacted given these and the other TPZ and other constraints.

Area 1 – North Side of Passmore Avenue

- Area comprised of 63 trees in a variety of growing conditions
- Species include *Acer sp.* (Maple), *Gymnocladus sp.* (Kentucky Coffee Tree), *Pinus sp.* (Pine), *Crataegus sp.* (Hawthorn), *Ulmus sp.* (Elm), *Aesculus* sp. (Buckeye), *Gleditsia sp.* (Locust), *Robinia* sp. (Black Locust), *Betula* sp. (Birch), *Amelanchier sp.* (Serviceberry), *Thuja sp.* (Cedar), *Tilia sp.* (Linden), *Picea sp.* (Spruce) and *Quercus sp.* (Oak)
- The majority of these trees are in good to fair condition, less than 10% are damaged/stressed or have structural problems
- The preferred design is not anticipated to impact any trees in this area as grading will be limited and no sidewalk will be installed as part of this project.
- In the future, when the City decides that the north sidewalk and boulevard works will be warranted, these future works would affect a minimum of 26 of these trees, requiring them to be removed

Area 2 – South Side of Passmore Avenue

- Area comprised of 49 trees in a variety of growing conditions
- Species include *Acer sp.* (Maple), *Gymnocladus sp.* (Kentucky Coffee Tree), *Pinus sp.* (Pine), *Aesculus* sp. (Buckeye), *Gleditsia sp.* (Locust), *Tilia sp.* (Linden), *Picea sp.* (Spruce), *Ginkgo sp*. (Maiden Tree) and *Quercus sp.* (Oak)
- The majority of these trees are in good to fair condition, less than 10% are damaged/stressed or have structural problems
- The preferred design would affect a minimum of 22 of these trees, requiring them to be removed

4. MITIGATION DURING CONSTRUCTION

There are many social, economic, and environmental benefits associated with large trees in a community, including aesthetics, increased property value, improved air quality, and food and shelter for birds and other wildlife. Generally the trees on this site represent a variety of species and different planting conditions. The trees adjacent to the road right of ways add to the pedestrian and road environment. Wherever possible, efforts should be made to preserve them.

Trees not slated for removal should be protected and maintained. Trees rate G (Good Condition) are likely to have good longevity with minimal maintenance, and should be preserved where reasonable, as long as problems noted are not likely to cause significant future problems. Trees rated F (Fair Condition) would require significant pruning and/or may need to be monitored for changes in health that could cause them to become hazardous. Depending on the proximity to future infrastructure and other potential targets, and the extent of the disturbance that will occur around the trees, they may not be worth preserving. Trees rated P (Poor Condition) should not be preserved.

Impacts to Trees

The expected impacts to the trees are the direct impact to 22 trees, which would likely be displaced by the proposed roadway and the sidewalk on the south side. The trees expected to be directly impacted are shown in the table below. Of these 22, the majority are in generally good condition.

As well, there would likely be impacts to the remaining adjacent trees by disturbance to the root systems and potentially to the above-ground portions. The detailed design will determine the exact number of trees impacted given these and other constraints.

On the north side, grading will be limited to tie the proposed north side curb and gutter to the existing surface to minimize impacts. No sidewalk or boulevard works will be constructed as part of this project. In the future, when development warrants the installation of a sidewalk on the north side, the expected impacts to the trees are the direct impact to 26 trees, which would likely be displaced by the proposed north sidewalks and boulevard construction. The trees expected to be directly impacted are shown in the table below. Of these 26, the majority are in generally good condition.

TABLE 2: POTENTIALLY DIRECTLY IMPACTED TREES

General Location	Tree #	Category	Botanical Name	Common Name	Rating	DBH (cm)
North Side of Passmore Avenue	2	5	Crataegus sp.	Hawthorn	G	13
North Side of Passmore Avenue	3	5	Crataegus sp.	Hawthorn	G-F	15
North Side of Passmore Avenue	4	5	Crataegus sp.	Hawthorn	G	12
North Side of Passmore Avenue	5	5	Crataegus sp.	Hawthorn	G	16
North Side of Passmore Avenue	6	5	Crataegus sp.	Hawthorn	G	12
North Side of Passmore Avenue	7	5	Crataegus sp.	Hawthorn	G	12
North Side of Passmore Avenue	8	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	6
North Side of Passmore Avenue	9	5	Aesculus Flava	Ohio Buckeye	G	6
North Side of Passmore Avenue	10	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F	5
North Side of Passmore Avenue	11	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.5
North Side of Passmore Avenue	12	5	Acer saccharum	Sugar Maple	G-F	67
North Side of Passmore Avenue	13	5	Ulmus americana	American Elm	G	30
North Side of Passmore Avenue	14	5	Crataegus sp.	Hawthorn	G	30
North Side of Passmore Avenue	15	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	G	5.5
North Side of Passmore Avenue	16	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	5.5
North Side of Passmore Avenue	17	5	Aesculus Flava	Ohio Buckeye	G-F	6.5
North Side of Passmore Avenue	18	5	robina	Black Locust	G	7
North Side of Passmore Avenue	19	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F-P	9.5
North Side of Passmore Avenue	33	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	8
North Side of Passmore Avenue	35	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	9.5
North Side of Passmore Avenue	37	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	10
North Side of Passmore Avenue	38	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	10
North Side of Passmore Avenue	39	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	9
North Side of Passmore Avenue	53	5	Amelanchier laevis	Serviceberry	G-F	8
South Side of Passmore Avenue	79	5	Acer plataniodes 'Crimson King'	Crimson King Maple	F-P	27
South Side of Passmore Avenue	80	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	29
South Side of Passmore Avenue	81	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G	20

General Location	Tree #	Category	Botanical Name	Common Name	Rating	DBH (cm)
South Side of Passmore Avenue	82	5	Acer plataniodes	Norway Maple	G-F	26
South Side of Passmore Avenue	83	5	Acer plataniodes 'Crimson King'	Crimson King Maple	G-F	27
South Side of Passmore Avenue	84	5	Acer plataniodes	Norway Maple	G-F	25
South Side of Passmore Avenue	85	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	5.5
South Side of Passmore Avenue	86	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.8
South Side of Passmore Avenue	87	5	Gymnocladus dioicus	Kentucky Coffee Tree	G	4.6
South Side of Passmore Avenue	88	5	Aesculus Flava	Ohio Buckeye	P	5
South Side of Passmore Avenue	89	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	F-P	5
South Side of Passmore Avenue	90	5	Gleditsia triacanthos var. inermis	Thornless Honeylocust	G-F	5
South Side of Passmore Avenue	91	5	Acer plataniodes	Norway Maple	G	20
South Side of Passmore Avenue	92		Acer plataniodes	Norway Maple	G-F	29
South Side of Passmore Avenue	93		Acer plataniodes	Norway Maple	G-F	24
South Side of Passmore Avenue	94		Acer plataniodes	Norway Maple	G-F	25
South Side of Passmore Avenue	95		Acer plataniodes	Norway Maple	F-P	21
South Side of Passmore Avenue	96		Acer plataniodes	Norway Maple	F	18
South Side of Passmore Avenue	97		Acer plataniodes	Norway Maple	G-F	20
South Side of Passmore Avenue	98		Acer plataniodes	Norway Maple	G-F	18
South Side of Passmore Avenue	99		Acer plataniodes	Norway Maple	G	16
South Side of Passmore Avenue	100		Acer plataniodes	Norway Maple	G	26

1 - >30cm on private property on subject site

2 - >30cm on private property within 6m of subject site

3 - All trees on City Parkland within 6m Subject Site

4 - All trees within City Ravine and/or Designated Natural Feature

5 - All trees within City road allowance adjacent to site

Construction Management

There are many trees which could be potentially be impacted because of their proximity to proposed site alterations. The following recommendations are intended to minimize damage to trees.

The most typical construction damage to trees is root damage through compaction and severance and damage to the trunk. Root loss can impact trees through compromising structural integrity and through restriction of nutrient uptake. Trees that are very large are more susceptible to construction damage.

The feeder roots of a mature tree can typically grow out from the trunk up to 3 times the height of the tree. Roots tend not to grow in compacted soil where there is little air space, such as under sidewalks and roads. Most roots are found in the upper 30cm of soil. Protecting the feeder roots is important to ensure that nutrient uptake is not restricted. Diminished root function can lead to death of branches or of the entire tree, but these symptoms can take several years to become evident.

The City of Toronto prescribes Tree Protection Zones (TPZ), which is the minimum distance where tree protection is to be put in place so that so that no construction activity of any kind will impact the trees. The distances are based on the DBH and are shown in Table 3 below.

TABLE 3: Tree Protection Zones

Trunk Diameter (DBH) (1)	Minimum Protection Distances Required
	Whichever of the two is greater:
< 10 cm	The drip line (3) or 1.2 m
10 – 30 cm	The drip line or 3.6 m
31 – 40 cm	The drip line or 4.8 m
41 – 50 cm	The drip line or 6.0 m
51 – 60 cm	The drip line or 7.2 m
61 – 70 cm	The drip line or 8.4 m
71 – 80 cm	The drip line or 9.6 m
81 – 90 cm	The drip line or 10.8 m
91 – 100 cm	The drip line or 12.0 m
> 100 cm	12 cm protection for each 1 cm diameter (4) or the drip line

In order to protect species not required for removal due to the proposed project, the following mitigations measures should be carried out:

- No materials or equipment shall be stored or operated within the TPZ of the tree;
- Do not attach any signs, notices or posters to any tree;

- Do not raise or lower the existing grade within the TPZ more than 5 centimeters without approval from the Contract Administrator;

- Do not damage the root system, trunk or branches of any tree; if any roots are encountered during excavation, they shall be cut off cleanly

- All exposed roots of trees to be retained shall be covered in a minimum of 5 cm of firm moist soil within 24 hours of exposure

- Any exhaust fumes from all equipment shall not directed towards any tree's canopy

- For branches that are likely to be damaged by construction equipment, it is better to remove them before construction so that bark is not torn and wounds are not more extensive than absolutely necessary. All pruning should be carried out according to accepted arboriculture practices.

- Orange snow fencing should be erected at the perimeter of the TPZ of all trees to be protected to ensure machinery is not operated and no materials are stockpiled within the TPZ

5. LANDSCAPE RECOMMENDATIONS

Planting Technique

For trees to be planted following construction, it is important to ensure they are properly planted. All rope should be removed at the time of planting, and the top portion of the wire basket and burlap should be cut away. If this is not done, it can lead to wicking of water away from the root ball, and girdling of the roots. Also, do not pile mulch against the trunks of trees. This can create a place for rodents to nest and increase the chance of the trunk being girdled by rodent nibbling the bark. Excessive mulch against the bark can also lead to trunk decay. While mulch can be very beneficial for trees, it should not be applied not more than 150mm deep, and it should be kept back from the trunk.

Future Planting

Trees that are removed during construction should be replaced where space is available.

The trees growing along Passmore Avenue are of varying age and species. The proposed development provides an ideal time to plant additional trees to build on the diversity of tree age and species. Species diversity is important to consider when choosing trees. No more than about 10% of one genus should be used, so that if a virulent disease or serious insect problem impacts a particular species, the majority of the trees will remain unaffected. For example, Ash trees (*Fraxinus* spp.) are not recommended at this time because of concerns about the Emerald Ash Borer.

Enhanced tree planting help to improve air quality and enhances the aesthetics of the property and adjacent roadways. Replacement planting should include native tree species with tolerance to urban conditions.

6. CERTIFICATION

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

Matthew Hooker – I.S.A. Certified Arborist #ON1641A

APPENDIX A: Site Photo Record

		
Tree #1	Tree #2-7	Tree #8
		
Tree #9	Tree #10	Tree #11

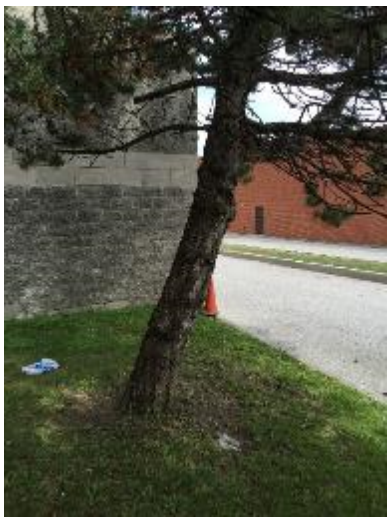
		
Tree #12	Tree #13-14	Tree #15
		
Tree #16	Tree #18	Tree #19

		
Tree #24-25	Tree #21-22	Tree #23
		
Tree #26	Tree #27	Tree #28

		
Tree #29	Tree #30	Tree #32
		
Tree #33	Tree #34	Tree #35

		
Tree #36	Tree #37	Tree #38
		
Tree #39	Tree #40	Tree #41

		
Tree #42	Tree #43	Tree #44
		
Tree #45	Tree #46	Tree #47

		
Tree #48	Tree #49	Tree #50, #52 in Background
		
Tree #51	Tree #53	Tree #54

		
Tree #55	Tree #56, #57 and #58 in Background	Tree #59-60
		
Tree #61	Tree #62	Tree #63

		
Tree #64-77, Looking West	Tree #78	Tree #79
		
Tree #80	Tree #81	Tree #82

		
Tree #84	Tree #85	Tree #86
		
Tree #87	Tree #89	Tree #90

		
Tree #91	Tree #92	Tree #93
		
Tree #94	Tree #95	Tree #96

		
Tree #97	Tree #98	Tree #99
		
Tree #100	Tree #101	Tree #102

		
Tree #103	Tree #105	Tree #106
		
Tree #107	Tree #109	Tree #110

		
Tree #111	Tree #112	