



ARBORIST REPORT

GLEN ROAD PEDESTRIAN BRIDGE ENVIRONMENTAL ASSESSMENT STUDY

CITY OF TORONTO

December 7, 2016
Revised: November 3, 2017



Table of Contents

1.0	INTRODUCTION.....	1
2.0	EXISTING CONDITIONS	1
3.0	FIELD OBSERVATIONS	3
4.0	DEFINITIONS	3
5.0	BY-LAWS / PERMITS:	5
5.1	Ravine and Natural Feature Protection By-Law	5
5.2	Tree Injury	5
5.3	City of Toronto Tree Categories	5
5.4	Canada Food and Inspection Agency	5
6.0	DISCUSSION:.....	6
6.1	Assumptions.....	6
6.1.1	<i>Tree Protection Zone (TPZ) Encroachment</i>	6
6.1.2	<i>Tree Injury Assumptions</i>	6
6.1.3	<i>Tree Removal Assumptions</i>	7
6.1.4	<i>Tree Preservation Assumptions</i>	7
6.2	Tree Injury	7
7.5	7	
6.3	Tree Removal.....	7
6.4	Tree Preservation.....	7
7.0	ASH (HAZARD) TREE REMOVAL.....	7
8.0	POTENTIAL MITIGATION MEASURES.....	8
8.1	Hydro-Excavation / Air Spade	8
8.2	Horizontal Root Protection	8
8.3	Invasive Species	9
8.1.1	<i>Buckthorn Management Plan</i>	9
8.4	Additional Mitigation Measures	9
9.0	TREE REMOVALS / INJURY / COMPENSATION	10
10.0	CONCLUSION	10
11.0	PRESERVATION AND PROTECTION RECOMMENDATIONS	10
11.1	By-Laws and Provincial Regulations	11
11.1.1	<i>Ravine and Natural Feature Protection By-law</i>	11
11.1.2	<i>Migratory Bird Protection:</i>	12
11.2	Construction Implementation:.....	12
11.3	Root Pruning Practices:.....	13
11.4	Branch Pruning Practices:.....	13
12.0	LIMITATIONS OF ASSESSMENT.....	14

Tables

Table 1: Tree Inventory and Preservation Chart

List of Drawings

TP-1 to TP-3	Tree Preservation Plans, Notes & Details
S1	Alternative 1: Steel Girder with Two Inclined Steel Legs

1.0 Introduction

WSP Canada Group Limited was retained to undertake the Municipal Class Environmental Assessment (MCEA) Study, and prepare an Environmental Study Report (ESR) to meet the requirements of a Schedule 'C' project. This MCEA study will evaluate opportunities to rehabilitate or replace the existing Glen Road Pedestrian Bridge in its current location or an alternative location.

A public information session was held in September 2016 in which one of the objectives was to obtain input on whether residents and stakeholders would prefer that the bridge be rehabilitated, replaced in a new location or replaced in the same location. Following the PIC, the preferred option has been identified to replace the bridge in its current location. The RFP identified a 'Study Area' from Sherbourne Street to Parliament and Bloor Street East to Dale Ave and a 'Focus Area' within the limits of the existing pedestrian bridge. An inventory of existing vegetation was conducted in the fall of 2016 within the focus area and this report presents a detailed inventory of the existing trees within this area in particular 15m either side of the bridge. Recommendations have been provided for tree protection and tree removals associated with the preferred option.

This report is to be read in conjunction with:

- Table 1: Tree Inventory and Preservation Charts
- Tree Inventory Plans (Sheets TI-1 & TI-2)
- Alternative #1 (Sheet S1)

2.0 Existing Conditions

The Glen Road pedestrian bridge (Morley Callaghan Footbridge) traverses Rosedale Valley Road connecting the neighbourhood of Rosedale to North St. Jamestown. The northern access to the bridge is located at the intersection of Glen Road and Dale Avenue. The south access to the bridge is from two locations: a tunnel located on the south side of Bloor Street East; and a staircase on the north side of Bloor Street East. The bridge in its current form was built in 1973 and measures 3.7m wide, 107m long and 20m high above Rosedale Valley Road. Substantial deterioration was observed in 2014 with emergency repairs conducted in 2015.

The bridge is located within lands designated at the Rosedale Ravine Lands and is subject to the City of Toronto's Ravine and Natural Feature Protection (RNFP) By-law. Side slopes are steepest towards the entry points; generally 2:1 slopes and becoming gentler down the slope towards Rosedale Valley Road; generally 3:1. Existing abutments close to entry points are enclosed with chain link fencing. A stone retaining wall approximately 2-3m is located near the entry point at Bloor Street East. There are sanitary sewer manholes located on the east side of the bridge approximately mid slope to bottom of slope.

Vegetation observed on both sides of the bridge is moderately dense, closed canopy and a mixture of mature native and non-native deciduous trees. Due to the dense canopy formed by the semi-mature to mature trees, the understory is minimal and primarily consists of saplings, small trees and a limited amount of shrubs and groundcovers that can tolerate dense shade. Species composition differs on the north and south sides and therefore will be discussed below in two parts: South Side and North Side.

South Side –Rosedale Valley Drive to Bloor Street East

Vegetation inventoried on the south side, 15m on either side of the bridge is generally closed canopy with a small opening directly under the bridge. Trees consist predominantly of deciduous semi-mature to mature trees, ranging in size from 10 to 91cm DBH, the majority of which are 15 to 25cm DBH. An abundance of Norway Maple (*Acer platanoides*) was observed with the occasional White Ash (*Fraxinus americana*), Horsechestnut (*Aesculus hippocastanum*), Basswood (*Tilia americana*) and Manitoba Maple (*Acer negundo*). To a lesser extent Ironwood (*Ostrya virginiana*), Tree of Heaven (*Ailanthus altissima*), American Elm (*Ulmus americana*), Black Locust (*Robinia pseudoacacia*) and Hawthorn (*Crataegus spp.*) were also observed.

Tree health ranges between good and poor; a majority observed to be in good condition. Signs of decline and defects were observed on a small amount of trees including:

- Deadwood ranging between 10 to >40%;
- Weakly formed unions; poor tree form due to abnormal development of scaffold branches causing injury to other branches;
- Contorted growth;
- Suppression from mature trees blocking sunlight;
- Epicormic shoots;
- Lean;
- Trunk wounds;
- Base cavities;
- Dead stems;
- Damage from growing into hard surfaces such as fences;
- Manholes and exposed roots from soil erosion;
- Symptoms of decline in Ash trees due to the presence of Emerald Ash Borer which included:
 - 'D' shaped holes;
 - Suckering at the base;
 - Woodpecker damage from woodpeckers eating the larvae and;
 - Deadwood in Crown.

North Side – Rosedale Valley Drive to Glen Road

On the north side vegetation was inventoried 15m on either side of the bridge and much like the south side the canopy is dense / closed with a small opening directly under the bridge. Trees consist predominantly of deciduous semi-mature to mature trees, ranging in size from 10 to 78cm DBH, the majority of which are from 15 to 25cm DBH. Norway Maple was found to be abundant with the occasional White Ash, Sugar Maple (*Acer saccharum*), American Elm, Scotch Elm (*Ulmus glabra*), and Basswood. A Rare amount of Ironwood, Horsechestnut, Black Walnut (*Juglans nigra*), Black Cherry (*Prunus serotina*), American Elm (*Ulmus americana*) and Red Oak (*Quercus rubra*) were also observed.

Tree health ranges between good and poor; a majority observed to be in good condition. Signs of decline and defects were observed on a small amount of trees including:

- Deadwood ranging between 10 to >40%;
- Weakly formed unions; poor tree form due to abnormal development of scaffold branches causing injury to other branches;
- Contorted growth;
- Suppression from mature trees blocking sunlight;
- Epicormic shoots;

- Lean;
- Trunk wounds;
- Tar spot on Norway Maple;
- Exposed roots from soil erosion and dead stems;
- Several Ash trees at the bottom of slope have been topped and limbed likely due to the trees succumbing to EAB damage. Ash trees displayed symptoms of decline due to the presence of Emerald Ash Borer which included:
 - 'D' shaped holes;
 - Suckering at the base;
 - Woodpecker damage from woodpeckers eating the larvae and;
 - Deadwood in Crown.

3.0 Field Observations

The field observations were conducted on November 17 & 18, 2016 along the north and south slopes from the bottom of slope adjacent to Rosedale Valley Road and top of slope at the bridge entry points. The limit of the inventory based on the 'Focus Area' was conducted 15m on either side of the centre of the bridge. The purpose of the assessment was to identify species and evaluate the health of vegetation within this limit. Tree information recorded included species >10cm diameter at breast height (DBH), saplings <10cm DBH, dripline radius, location and general health condition. Trees were identified in accordance with the City of Toronto's Ravine and Natural Feature Protection by-law (Toronto Municipal Code, Chapter 658). All trees over 10cm DBH have been tagged with aluminum numbered tree tags affixed to the trunk with a galvanized ¼" roofing nail (i.e.: 524). Trees labelled alphabetically were done so due to inaccessibility (enclosed by fencing at abutments)

A total of 153 trees were assessed for this report (tree tag's 524 to 666 and A to G): Eighty-seven (87) trees (524 to 610 & A to F) on the south side; and fifty-six (56) trees (611 to 666 & G) on the north side. Three hundred and ten (310) saplings (trees <10cm DBH) were observed on both slopes: 162 on the south side; and 148 on the north side.

4.0 Definitions

The following are the definitions of the assessment categories utilized in our tree assessment:

Tree Number	This number refers to the number on the reference plan eg: T-10
Tree Grouping	A tree grouping is more than one (1) tree located within close proximity of other trees with no separation between the canopies.
Species	The botanical and common names are provided for each tree.
DBH	This refers to diameter (in centimetres) at breast height and is measured at 1.3 m above the ground for each tree.

Tree Protection Zone	This refers to the preservation area of the tree to be protected with tree protection measures. No construction activities are to be undertaken within this zone.
Suppressed	Refers to trees that have their crowns completely overtopped by adjacent trees and received limited to very limited sunlight.
Codominant Stem	Stems equal in size and relative importance that make up the overall crown of the tree.
Union	Junction point where two or more stems meet. A 'U' shaped junction indicates a well formed union. A 'V' shaped junction indicates a weakly formed union, whereas stems grow and increase in girth, weak bark called 'included bark' forms within the junction and stems start to push apart causing vertical cracks and loss of structure.
Tree Form	Refers to branches and stems that have formed irregularly often resulting in contorted growth, weak attachments, weakly formed unions and codominant stems. The irregular growth of scaffold (lateral) branches typically leads to damage to other scaffold branches.
Root Zone	Refers to the subterranean area around the tree measured from the trunk to up to 2-3m from the dripline.
Critical Root Zone	The minimum area of the root system necessary to maintain vitality or stability of the tree. Typically this area extends to the drip line of the tree. The severing of one root can cause approximately 5-20% loss of the root system. A reduction of this area by greater than 30% can pose stability concerns for the tree.
<u>Tree Assessment Criteria</u>	
Trunk Integrity (T.I.)	This is an assessment of the trunk for any defects or weaknesses. It is measured on a scale of poor, fair, good.
Canopy Structure (C.S)	This is an assessment of the scaffold branches, unions and the canopy of the tree. This is measured on a scale of poor, fair, good.
Canopy Vigour (C.V.)	This is an assessment of the health of the tree and assesses the amount of deadwood and live growth in the crown as compared to a 100% healthy tree. The size, colour and amount of foliage are also considered in this category. This is measured on a scale of poor, fair, good.
GOOD	Tree displays less than 15% deficiency/defect within the given tree assessment criteria (TI, CS, CV).
FAIR	Tree displays 15%-40% deficiency/defect within the given tree assessment criteria (TI, CS, CV).

POOR

Tree displays greater than 40% deficiency/defect within the given tree assessment criteria (TI, CS, CV).

5.0 By-laws / Permits:

The bridge is solely within the parameters of the City of Toronto's Ravine and Natural Feature Protection by-law and one 'Tree Categories' (Category 4 – see below). The limit of work is also within the Regulated area of the Toronto and Region Conservation Authority. Several Ash trees infested with Emerald Ash Borer (EAB) were observed within the work limits. These trees are subject to the CFIA's guidelines. All by-laws / directives are discussed as follows:

5.1 Ravine and Natural Feature Protection By-Law

The City of Toronto's Ravine and Natural Feature Protection By-law applies to trees of any size within areas designated as 'Ravine'.

- *Exact impacts to trees to be confirmed as part of the detailed design stage. At that time, and if required a 'Ravine and Natural Feature Permit Application' will be completed and appended to this report.*

5.2 Tree Injury

The City of Toronto's Tree injury policy is defined as: The minimum tree protection zone not being protected.

- *Exact quantity and impacts to trees to be confirmed as part of the detailed design stage. At that time any trees identified as 'injured' will be included on the 'Ravine and Natural Feature Permit Application'.*

5.3 City of Toronto Tree Categories

Categories as per City of Toronto Arborist Report for Development Applications Form (Refer to Table 1: Tree Inventory & Preservation Charts)

1. Trees with diameters of 30cm or more situated on private property on the subject site.
2. Trees with diameters of 30cm or more situated on private property, within 6m of the subject site.
3. Trees of all diameters situated on City owned parkland within 6m of the subject site.
4. Trees of all diameters situated within lands designated under City of Toronto Municipal code, Chapter 658, Ravine Protection.
5. Trees of all diameters situated within the City road allowance adjacent to the subject site.

5.4 Canada Food and Inspection Agency

Canada Food and Inspection Agency (CFIA) Directive D-03-08: Phytosanitary Requirements to Prevent the Introduction Into and Spread within Canada of the Emerald Ash Borer, *Agrilus planipennis* (*Fairmaire*) applies to Ash (*Fraxinus spp.*) species observed on properties that are located within the Emerald Ash Borer (EAB) Regulated Areas of Canada, prepared by the Canada Food and Inspection Agency (CFIA) and dated February 2017. This area covers all of south and central Ontario and western Quebec. Ash trees that require removal are subject to this directive.

The CFIA restricts the movement of all Ash material including wood, bark, chips or bark chips from being transported outside of the Regulated Area. A Movement Certificate is required by the CFIA for any Ash material leaving the Regulated Area.

Ash are permitted to be chipped on site and/or removed or cut down and removed from site. Chipped Ash material that is to remain on site must be ground or chipped to a size of less than 2.5 cm in any two dimensions. All Ash material chipped or whole that is to be removed from site must be disposed of within the Regulated Areas of Canada. Refer to the following link:

http://www.inspection.gc.ca/DAM/DAM-plants-vegetaux/STAGING/images-images/pestrava_agrpla_ministerial_image1a_1372765048219_eng.jpg

6.0 Discussion:

Trees identified within the limits of work of the Focus Study (15m either of the bridge) were assessed for condition and potential to be retained as part of the preferred option. At the time this report was prepared, information from PIC #2, dated: October 24, 2017 was made available. This report will be included in the Environmental Study Report (ESR).

The preferred option of replacing the bridge in its current location has been determined, although the design has not been completed and the limits of work and methods not yet established. Refer to Alternative 1: Steel Girder with two inclined Steel Legs, Sheet S1. Determinations with respect to tree survival are based on the proposed and existing pier locations. Tree injury, removal, preservation and mitigation measures are based on proximity to the pier, as it is assumed that construction of new piers and removal of old piers may cause some impacts to trees within immediate proximity. All trees are subject to the Ravine and Natural Feature Protection By-Law. All other methods of construction will be determined at the detailed design stage.

This section has been organized to discuss trees per potential impacts based on the assumptions below. Impacts detailed in these subsections are subject to change as the design progresses:

- Tree Injury;
- Tree Removals;
- Tree Preservation;
- Mitigation Measures;

6.1 Assumptions

6.1.1 *Tree Protection Zone (TPZ) Encroachment*

- Reduction to construct bridge abutments and piers.

6.1.2 *Tree Injury Assumptions*

- Tree injury is based on encroachments into the Tree Protection Zone (TPZ) within proximity of the new pier / abutment locations.

6.1.3 *Tree Removal Assumptions*

- Tree removal is based on the degree of excavation / disturbance within the TPZ considering: tree species, size, condition and the amount of critical roots that would be impacted that are vital to sustaining the trees overall health and stability.
- This amount of impact and above is likely to cause a significant and irreversible decline in health of the tree.

6.1.4 *Tree Preservation Assumptions*

- Preservation of trees is considered where an encroachment, excavation or disturbance into the TPZ is expected to be minor or nil and that tree health and stability will not be adversely impacted.
- The implementation of mitigation measures will reduce potential impacts to the tree therefore allowing for the tree to be preserved.

6.2 Tree Injury

Tree injury is considered, where a tree protection zone overlaps the footprint of the existing and proposed pier locations. This is based on the assumption that new piers will require construction and the old piers will be removed. The following five (5) trees will be 'injured':

- New pier location: 591, 612, 617 and 666.
- Existing pier location: 537.

6.3 Tree Removal

The construction of new piers and removal of existing ones is likely to cause significant damage to the root zone of trees within close proximity, in particular for the new piers where excavation would be required to construct the footings. The following trees will require removal:

- Tree #618.

6.4 Tree Preservation

Trees beyond the limits of the proposed and existing piers can be preserved. In particular mature trees in good condition should be preserved where possible. Tree protection fencing and the minimum tree protection zone is to be applied in accordance with the *Cities Tree Protection Policy and Specifications for Construction near Trees*, to be determined at the detailed design stage. In general hoarding to consist of:

- City standard 2.4m height plywood (3/4" thick) to be installed per detail TP-1 on sheet TP-2.

There are semi-mature and mature trees along the ravine slope and in particular within 15m, either side of the existing bridge. The following selected trees are to be preserved where possible:

- Tag #'s 537, 540, 542, 543, 546, 549, 577, 578, 579, 582, 591, 615, 616, 620 to 623, 636, 642, 644, 646, 647, 650, 653, 654, and 661.

7.0 Ash (Hazard) Tree Removal

Emerald Ash Borer (EAB) was observed within the Focus area. The decline of Ash trees as a result of the infestation varied from 'fair' to 'dead'. EAB killed trees are likely to become a 'Hazard' and are more susceptible to wind throw. Some of these trees are within proximity of the pedestrian bridge with branches that overhang the structure, which have the potential to break and cause damage to the bridge

and /or people using it. It is recommended that they be removed to reduce the possibility of becoming a hazard. As such there are 5 Ash trees that have been identified to be removed:

- Tag's 538, 584, 585, 611 and 656

Ash tree removals are to occur within accordance with CFIA regulations (see section 5.0 of this report). Ash tree removals are exempt from requiring a permit and compensation.

8.0 Potential Mitigation Measures

The ravine slopes under the pedestrian bridge are steep and consist of vegetation that ranges from semi-mature to mature trees and a limited amount of immature trees. Some non-native invasive trees including Norway Maple, Manitoba Maple, Buckthorn (along edges only) and Tree of Heaven have established on the slopes. Native vegetation consists of White Ash, Basswood, Ironwood, American Elm, Sugar Maple, Black Walnut and Red Oak. Grape vine has established in the lower canopy of mature trees and has killed some immature trees. To improve the quality of the vegetation along the slope, reduce the impact from potential construction the following mitigation measures are recommended. These measures are subject to change at the detail design stage:

8.1 Hydro-Excavation / Air Spade

Where excavation will occur within Tree Protection Zone (TPZ), hydro-excavation / air spading is recommended to minimize the damage to roots. The following methods are to be applied where hydro-excavation is recommended:

- At the limit of excavation, hydro-excavate to a depth of 150mm along the length of the tree protection zone distance and at a width of 0.5m to expose roots.
- Prune any roots in this area using good arboricultural practices per the guidelines in this report or under the supervision of a Certified Arborist.
- Backfill with excavated material and reinstate to original condition or better.
- Upon completion reinstate tree protection fencing to original location.
- Water trees periodically during construction.
- At the completion of construction, apply 100mm depth shredded bark mulch in a minimum 2m radius around the tree (may vary depending on tree location).

8.2 Horizontal Root Protection

In select locations where excavation will occur well within a tree protection zone, or close to a tree trunk, Horizontal Root Protection in conjunction with hydro-excavation is recommended to reduce the potential for compaction. Root protection is to include:

- Place 4'x8' plywood boards (minimum ¾" thick) length wise within the TPZ between the trunk and limit of excavation.
- Field fit if necessary. Board width and length may vary depending on available space
- Application to be reviewed and approved by the contract administrator prior to installation.
- Boards to be applied on top of a 50mm depth shredded bark mulch base.
- Upon completion, remove boards and spread mulch in a 1m diameter around the trunk and reinstate tree protection fencing to original location.

8.3 Invasive Species

8.1.1 *Buckthorn Management Plan*

A limited amount of Buckthorn was observed along the top of slope adjacent to Bloor Street. These trees are to be removed in conformance with the guidelines and recommendations outlined in the Invasive Common Buckthorn – Best Management Practices in Ontario found on the Ontario Invasive Plant Council website ([http://www.ontarioinvasiveplants.ca/index.php/ manage control](http://www.ontarioinvasiveplants.ca/index.php/manage%20control)). This plan has been developed to ensure that Buckthorn is removed so it does not become re-established after the proposed trails have been completed.

Buckthorn Removal

- Removal to be undertaken in June/July prior to fruit production. This will mitigate any fruits falling to the ground and germinating. If removals cannot be undertaken at this time then late fall between mid-October to mid-November would also be acceptable when surrounding plants are dormant and soil is moist and pliable. The leaves of Buckthorn stay on longer than most trees and shrubs making it easier to identify them in the late fall.
- Plants shall be removed in their entirety including the root system. Plants within the temporary access road limit are to be removed manually and mechanically dependent on size.
- Manual Removal:
 - Seedlings up to 5cm DBH shall be removed by hand, ‘extractigator’ tree puller, and wrench tree pulling tool or other hand held tools. It is recommended that manual removal occur when soil is moist as it will be easier to remove seedlings and their entire root.
- Mechanical Removal:
 - Stems and rootball removed by Bobcat.
- Dispose of off-site.

8.4 Additional Mitigation Measures

- Any roots exposed during grading are to be pruned using good arboricultural practices and per the guidelines in this report.
- Water trees periodically during construction.
- Radial aeration where compaction will occur within reduced TPZ’s. To be determined prior to, during and after construction under the supervision and recommendations of a certified arborist.
- Application of a slow release fertilizer in locations where root pruning will occur and where a hard surface or wall will prevent the growth of roots beyond the dripline. To be determined prior to, during and after construction under the supervision and recommendations of a certified arborist.
- Application of a 100mm depth layer of mulch within work zone outside of the TPZ where hydro-excavation and horizontal root protection are not feasible to prevent compaction.
- Application of planting soil where grade changes will occur and roots will be exposed.
- Remove non-native trees.
- Plant native trees and shrubs to support stabilization of the slope and improve the bio-diversity.

9.0 Tree Removals / Injury / Compensation

The preferred option recommends replacement of the bridge in its current location. Minor impacts related to the construction of piers and removal of existing piers are anticipated. Further removals and injury may occur at the detailed design stage when limits of staging, construction and grading are determined. Refer to the chart below that details the impact assessments made in Subsections 6.2 and 6.3:

Injury and Removal Compensation Chart

Applicable by-law	Trees to be removed	Trees that will be injured	Compensation ratio (Injury)	Replacement trees required
RNFP	1		3:1	3
RNFP		5	1:1	5
Total Compensation				8

10.0 Conclusion

A majority of vegetation found ranges from immature to mature and characterized by a mixture of planted native and non-native urban tolerant species.

A minimal amount of trees are required to be removed as there are few trees located directly under the bridge and within proximity of existing and proposed piers. Given the implementation of the mitigation measures enclosed in this report, including protection of trees beyond the construction and staging limits, significant impacts to trees are not anticipated.

Vegetation has been recommended to be retained and preserved beyond the construction limits. Proposed mitigation measures will minimize the detrimental effects from grading and will help to ensure that the good tree health will continue.

Care should be taken to protect trees to be retained with tree protection fencing as illustrated on the attached plans. Tree protection fencing shall be erected prior to the start of construction and demolition and maintained for the duration of the work. Priority should be given to protecting vegetation that will not be impacted by grading and construction as this vegetation along property lines provides a visual barrier, shade, noise and wind buffer between properties.

11.0 Preservation and Protection Recommendations

The survival rates for trees, which are in proximity to construction, are dependent on the resultant changes to a variety of environmental and anthropogenic factors. These construction activities bring about changes to a variety of environmental features such as the existing microclimate that includes winds, air temperature, soil moisture, amount of available sunlight, soil quality, and the level of the water table. Increased human activities may also damage the structure and/or physiological activities of the

trees. The full effects of the damage may not appear until several years after its occurrence. Thus, it is essential that both vegetative clearing and preservation methods follow the guidelines below. The guidelines are organized into those requirements set out by the *City of Toronto Private Tree By-law* and the *Ravine and Natural Feature Protection By-law* and applicable provincial regulations, and additional recommendations, that are in keeping with good horticultural and construction practices.

11.1 By-Laws and Provincial Regulations

11.1.1 *Ravine and Natural Feature Protection By-law*

- Prior to the commencement of construction, tree protection barriers shall be installed in accordance with the City of Toronto Tree Protection Policy and Specifications for Construction Near Trees, and in accordance with the approved tree protection plans and arborist reports, and must be approved by Urban Forestry.
- Tree protection barriers shall be maintained in good condition and shall not be altered, moved or removed unless and until authorized by Urban Forestry.
- The owner shall notify all contractors and other parties working on site of approved tree protection plans and arborists reports, and shall ensure that all contractors and other parties adhere strictly to the requirements of the tree protection plan.
- The permit shall be posted in a conspicuous location visible from the street, for a period of one day prior to the commencement of the approved tree injury and until such time as the approved tree injury has been completed in accordance with the permit.
- If a permit to injure or remove trees is issued, the work shall be carried out by or under the supervision of an arborist.
- Prior to the commencement of any excavation, roots approved for pruning by Urban Forestry must first be exposed using pneumatic (air) excavation, by hand digging or by using a low pressure hydraulic (water) excavation. This root-sensitive excavation must be undertaken by an experienced operator under the supervision of a qualified and experienced arborist. The water pressure for hydraulic excavation must be low enough that root bark is not damaged or removed. This will allow a proper pruning cut and minimize tearing of the roots. The arborist retained to carry out root pruning must contact Urban Forestry no less than three (3) working days prior to conducting any specified work.
- The following activities are prohibited within a TPZ:
 - demolition, construction, replacement or alteration of permanent or temporary buildings, structures or pathways of any kind;
 - installation of large stones or boulders;
 - altering grade by adding or removing soil or fill, excavating, trenching, topsoil or fill scraping, compacting soil or fill, dumping or disturbance of any kind;
 - storage of construction materials, equipment, wood, branches, leaves, soil or fill, construction waste or debris of any sort;
 - application, discharge or disposal of any substance or chemical that may adversely affect the health of a tree;
 - causing or allowing water or discharge, to flow over slopes or through natural areas;
 - access, parking or movement of vehicles, equipment or pedestrians;
 - cutting, breaking, tearing, crushing, exposing or stripping tree's roots, trunk and branches;
 - nailing or stapling into a tree, including attachment of fences, electrical wires or signs;
 - stringing of cables or installing lights on trees;
 - soil remediation, removal of contaminated fill;

- excavating for directional or micro-tunnelling and boring entering shafts.
- Every precaution must be taken to prevent damage to trees and root systems from damage, compaction and contamination resulting from the construction to the satisfaction of Urban Forestry. The Contractor must report immediately to Urban Forestry any accidental/unforeseen damage to trees such as broken limbs and damage to roots so that the damage can be assessed and mitigated as deemed appropriate by Urban Forestry.

Ravine and Natural Feature Protection:

Urban Forestry, Park, Forestry and Recreation
355 Lesmill road
Toronto, Ontario
M3B 2W8

11.1.2 *Migratory Bird Protection:*

- Nesting migratory birds are protected under the Migratory Birds Conservation Act, MBCA (1994) and Regulations.
- No work is permitted to proceed that would result in the destruction of nests or eggs, or the wounding or killing of birds species protected under the MBCA and / or Regulations under that Act. It is the responsibility of the proponent and/or contractor to ensure compliance with the MBCA. Guidance for assessing potential risk of MBCA contravention and other relevant information is found on Environment Canada's website:

<http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=1B16EAFB-1>.

- In general, it is recommended that activities which could result in an MBCA contravention be conducted outside of the area-specific "Regional Nesting Period". See nesting period and calendars here:

<http://www.ec.gc.ca/paom-itmb/default.asp?lang=En&n=4F39A78F-1>.

- If works are proposed within that Regional Nesting Period, the proponent must demonstrate due diligence, including an evaluation of risk (per Environment Canada guidelines at the referenced web links) and appropriate avoidance / mitigation measures. This is a site specific analysis based on habitat, species recorded / expected and potential risk due to activities.

11.2 Construction Implementation:

- Prior to construction, a site meeting shall be held with the Contractor and Contract Administrator to review the clearing limits and confirm the installation location for the temporary tree protection fence.
- Tree protection barriers shall be clearly staked in the field and approved by Urban Forestry prior to construction to ensure correct positioning of fencing and avoid unnecessary disturbance.
- To avoid root zone impacts on trees to be retained, excavated material shall not be stored against the tree protection barrier.
- Inspection of the tree protection fencing, including photographic records and deficiency notes, shall be undertaken by the site supervisor and submitted to Urban Forestry prior to the commencement of construction, during construction and after construction is completed.
- 100-200mm of organic amendment and 500-750mm of wood chip mulch shall be applied to the area within the dripline of trees to be retained in parking islands within the subject property to retain moisture and promote survival. Upon completion of construction, all but 100mm of excess mulch shall be removed.

- All removals should be felled into the work area to ensure that damage does not occur to the trees within the tree preservation zone. Upon completion of the tree removals, all felled trees are to be removed from the site, and all brush chipped. All brush, roots and wood debris should be shredded into pieces that are smaller than 25 mm in size to ensure that any insect pests that could be present within the wood are destroyed.

11.3 Root Pruning Practices:

- All approved root pruning is to take place by or under the supervision of an arborist and in accordance with the Toronto Tree Protection Specifications.
- Pruned root ends shall be neatly and squarely trimmed and the area shall be backfilled with clean native fill as soon as possible to prevent desiccation and promote root growth.
- The exposed roots shall not be allowed to dry out and an appropriate watering schedule shall be undertaken (e.g. water bi-weekly to field capacity between June 1st and September 15th) so that the roots maintain optimum soil moisture during construction and backfilling operations.
- Backfilling shall occur immediately and shall be with clean uncontaminated topsoil from an approved source. It is recommended that texture of backfill be coarser than existing soils, and that backfill comes into clean contact with existing soils (remove air pockets, sod, etc.)

11.4 Branch Pruning Practices:

- All limbs damaged or broken during the course of construction should be pruned cleanly, utilizing by-pass secateurs in accordance with approved horticultural practices. Should there be a potential risk of transfer of disease from infected to non-infected trees; tools must be disinfected after pruning each tree by dipping in methyl hydrate. This practice is particularly important during periods of tree stress and when pruning many members of the same genera, within which a disease could be spread quickly (i.e., Verticillium Wilt on Maples or Fireblight on genera of the Rosaceae family).
- All pruning cuts should be made to a growing point such as a bud, twig or branch, cut just outside the branch collar (the swollen area at the base of the branch that sometimes has a bark ridge), and perpendicular to the branch being pruned rather than as close to the trunk as possible. This minimizes the site of the wound. No stubs should be left. Poor cut location, poor cut angle and torn cuts are not acceptable.
- Extensive pruning is best completed before plants break dormancy. Pruning should be limited to the removal of no more than one third (1/3) of the total bud and leaf bearing branches. Pruning should include the careful removal of:
 1. deadwood,
 2. branches that are weak, damaged, diseased and those which will interfere with construction activity,
 3. secondary leaders of conifers,
 4. trunk and root suckers,
 5. trunk waterspouts, and
 6. tight V-shaped or weak crotches (included unions).
- Any branches that overhang the work area and require pruning are to be pruned using good arboricultural practices utilizing by-pass secateurs in accordance with approved horticultural practices and/or American National Standard (ANSI) A300 (Part 1) – 2008 Pruning.
- The Contractor must report immediately any damage to trees such as broken limbs, damage to roots, or wounds to the main trunk or stem systems so that the damage can be assessed immediately.

12.0 Limitations of Assessment

It is our policy to attach the following clause regarding limitations. We do this to ensure that the client is aware of what is technically and professionally realistic in retaining trees.

The assessment of the trees presented in this report has been made using accepted arboricultural techniques. These include a visual examination of all the above ground parts of the tree for structural defects, scars, external indications of decay such as fungal fruiting bodies, evidence of attack by insects, discoloured foliage, the condition of any visible root structures, the degree and direction of lean (if any), the general condition of the trees and the surrounding site, and the proximity of property and people. Except where specifically noted, the trees were not cored, probed or climbed and there was no detailed inspection of the root crowns involving excavations.

Notwithstanding the recommendations and conclusions made in this report, it must be recognized that trees are living organisms, and their health and vigour constantly change over time. They are not immune to changes in site conditions or seasonal variations in the weather conditions.

While reasonable efforts have been made to ensure that the subject trees are healthy, no guarantees are offered, or implied, that these trees or any of their parts will remain standing. It is both professionally and practically impossible to predict with absolute certainty the behaviour of any single tree or its component parts under all circumstances. Inevitably, a standing tree will always pose some level of risk. Most trees have the potential for failure under adverse weather conditions, and the risk can only be eliminated if the tree is removed.

Although every effort has been made to ensure that this assessment is reasonably accurate, the trees should be re-assessed periodically. The assessment presented in this report is valid at the time of inspection.

WSP CANADA GROUP LIMITED



Peter McNamara, BA
Landscape Designer | ISA Certified Arborist ON-1140A

TABLE 1

Tree Inventory & Preservation Charts

Table 1: Tree Inventory and Preservation Charts

Project: Toronto - Glen Road Pedestrian Bridge				Field Work Completed By: Peter McNamara and Zeev Rajman										
Date of Field Work: November 17 & 18, 2016				Weather: 17 & 18 degrees, sunny								Conditions: G=Good, F=Fair, P=Poor, D=Dead		
Tree Assessment Criteria:						Tree Condition								
TI - Trunk Integrity: assessment of the trunk for any defects or weaknesses.						Good: tree displays less than 15% deficiency/defect within the given tree assessment criteria (TI,CS,CV)								
CS - Canopy Structure: assessment of scaffold branches, unions and canopy						Fair: tree displays 15-40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)								
CV - Canopy vigour: assessment of the health of the tree, based on deadwood & live growth in crown						Poor: tree displays greater than 40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)								
Legend:														
<div>Trees to be Preserved / Retained</div>				<div>Tree Location</div>				<div>Ash Tree Removal</div>						
<div>Trees to be Removed</div>				<div>Tree Injury</div>				<div>Trees to be pruned</div>						
Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
South Side: Between Rosedale Valley Road and Bloor Street														
524	Acer platanoides	Norway Maple	1	14		G	G	G	3	RNFP	4			bottom of slope
525	Acer platanoides	Norway Maple	1	14,25		F	G	G	3	RNFP	4			Union
526	Acer platanoides	Norway Maple	1	12		G	G	G	3	RNFP	4			Suppressed by 528 & 529
527	Acer platanoides	Norway Maple	1	9,17		G	G	G	3	RNFP	4			
528	Acer platanoides	Norway Maple	1	22		F	G	G	5	RNFP	4			Slight lean
529	Acer platanoides	Norway Maple	1	21		G	G	G	6	RNFP	4			Slight lean
530	Acer platanoides	Norway Maple	1	26		G	G	G	5	RNFP	4			
531	Acer platanoides	Norway Maple	1	12,3		G	G	G	4	RNFP	4			
532	Acer platanoides	Norway Maple	1	9,23		G	G	G	5	RNFP	4			
533	Acer platanoides	Norway Maple	1	14		G	G	G	5	RNFP	4			
534	Acer platanoides	Norway Maple	1	12		F	G	G	5	RNFP	4			Growing on concrete foundation of manhole
535	Acer platanoides	Norway Maple	1	9,23		G	G	G	6	RNFP	4			
536	Acer platanoides	Norway Maple	1	10		G	G	G	4	RNFP	4			
537	Acer platanoides	Norway Maple	1	91		F	G		10	RNFP	4		Preserve / Injure	Union
538	Fraxinus americana	White Ash	1	41		G	G	P	7	RNFP	4		Remove	EAB
539	Acer platanoides	Norway Maple	1	17		G	G	G	5	RNFP	4			
540	Aesculus hippocastanum	Horse Chestnut	1	32		G	G		5	RNFP	4		Preserve	Epicormic shoots
541	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4			
542	Acer platanoides	Norway Maple	1	32		G	G	G	5	RNFP	4		Preserve	
543	Tilia americana	Basswood	1	72		G	G	G	12	RNFP	4		Preserve	

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Legend:														
Trees to be Preserved / Retained		Tree Location				Ash Tree Removal								
Trees to be Removed		Tree Injury				Trees to be pruned								
Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
544	Acer platanoides	Norway Maple	1	14		G	G	G	4	RNFP	4			
545	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4			
546	Robinia pseudoacacia	Black Locust	1	14,46		F	G	F	7	RNFP	4		Preserve	10-30% dieback, lean, one dead stem (small one)
547	Acer platanoides	Norway Maple	1	12		G	G	G	5	RNFP	4			Suppressed by 546
548	Ostrya virginiana	Ironwood	1	10		G	G	G	3	RNFP	4			
549	Robinia pseudoacacia	Black Locust	1	44		G	F		7	RNFP	4		Preserve	Contorted
550	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4			
551	Acer negundo	Manitoba Maple	1	22		F	G	G	5	RNFP	4			Lean
A	Acer negundo	Manitoba Maple	4	2@11 2<10		F	F	G	2-3	RNFP	4			Lean, form. Inaccessible, enclosed by chain link fencing
552	Acer platanoides	Norway Maple	1	15		F	F	G	5	RNFP	4			Leaning on fence,
553	Acer negundo	Manitoba Maple	1	34		F	F		6	RNFP	4			Leaning on fence over bridge
554	Ostrya virginiana	Ironwood	1	14		F	F	G	5	RNFP	4			Leaning on fence, form
B	Acer negundo	Manitoba Maple	1	±12		F	F	G	3	RNFP	4			Inaccessible, enclosed with chain link fencing
555	Acer platanoides	Norway Maple	1	14		G	G	G	4	RNFP	4			
556	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4			
557	Acer platanoides	Norway Maple	1	12		F	G	G	3	RNFP	4			Trunk wound
558	Acer negundo	Manitoba Maple	1	15		F	F	G	5	RNFP	4			Lean, form, cavity
559	Acer platanoides	Norway Maple	1	13		G	G	G	3.5	RNFP	4			
560	Acer platanoides	Norway Maple	1	10		G	G	G	3.5	RNFP	4			
C	Ostrya virginiana	Ironwood	1	10		G	G	G	3	RNFP	4			Did not measure or tag due to syringes in area.
561	Acer platanoides	Norway Maple	1	20		G	G	G	5	RNFP	4			

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Legend:														
<div></div> Trees to be Preserved / Retained		<div></div> Tree Location			<div></div> Ash Tree Removal									
<div></div> Trees to be Removed		<div></div> Tree Injury			<div></div> Trees to be pruned									
Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
562	<i>Acer negundo</i>	Manitoba Maple	1	20		F	F	G	6	RNFP	4			Lean, form
563	<i>Acer platanoides</i>	Norway Maple	1	18		G	G	G	4	RNFP	4			
564	<i>Acer platanoides</i>	Norway Maple	1	11		G	G	G	2	RNFP	4			
565	<i>Acer negundo</i>	Manitoba Maple	1	19		F	F	F	5	RNFP	4			20-40% dieback, growing into fence, form, lean
566	<i>Ostrya virginiana</i>	Ironwood	1	17		G	G	G	5	RNFP	4			
567	<i>Acer negundo</i>	Manitoba Maple	1	14,12		F	F	F	4	RNFP	4			Form, one stem dead (smaller), lean
D	<i>Acer platanoides</i>	Norway Maple	1	±15		G	G	G	4	RNFP	4			Inaccessible, enclosed by chain link fencing
E	<i>Acer platanoides</i>	Norway Maple	1	±10		G	G	G	3	RNFP	4			Inaccessible, enclosed by chain link fencing
F	<i>Tilia americana</i>	Basswood	1	±15		G	G	G	4	RNFP	4			Inaccessible, enclosed by chain link fencing
568	<i>Acer platanoides</i>	Norway Maple	1	25		G	G	G	5	RNFP	4			
569	<i>Ailanthus altissima</i>	Tree of Heaven	1	11,11,10		F	G	G	4	RNFP	4			Union
570	<i>Acer negundo</i>	Manitoba Maple	1	17		F	F	G	5	RNFP	4			Lean, form
571	<i>Acer negundo</i>	Manitoba Maple	1	21		F	F	G	5	RNFP	4			Lean, form
572	<i>Acer platanoides</i>	Norway Maple	1	12		G	G	G	3	RNFP	4			
573	<i>Ostrya virginiana</i>	Ironwood	1	10		G	G	G	3	RNFP	4			
574	<i>Acer platanoides</i>	Norway Maple	1	11		G	G	G	3	RNFP	4			
575	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	3	RNFP	4			
576	<i>Acer platanoides</i>	Norway Maple	1	18		G	G	G	4.5	RNFP	4			
577	<i>Aesculus hippocastanum</i>	Horse Chestnut	1	33		G	G		6	RNFP	4		Preserve	Suppressed by 578
578	<i>Tilia americana</i>	Basswood	1	32		G	G		6	RNFP	4		Preserve	Suppressed by 577
579	<i>Ulmus americana</i>	American Elm	1	32		G	G		6	RNFP	4		Preserve	

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Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
580	<i>Acer platanoides</i>	Norway Maple	1	21		G	G	G	5	RNFP	4			
581	<i>Acer platanoides</i>	Norway Maple	1	18		G	G	G	4	RNFP	4			
582	<i>Aesculus hippocastanum</i>	Horse Chestnut	1	20,31		G	F		5	RNFP	4		Preserve	Suckers, form, one daed stem (small)
583	<i>Acer platanoides</i>	Norway Maple	1	12		G	G	G	4	RNFP	4			
584	<i>Fraxinus americana</i>	White Ash	1	31		G	G	P	7	RNFP	4		Remove	EAB
585	<i>Fraxinus americana</i>	White Ash	1	72		G	G	P	1-2	RNFP	4		Remove	EAB, branches over bridge
586	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	3.5	RNFP	4			
587	<i>Acer platanoides</i>	Norway Maple	1	12,54		F	G		10	RNFP	4			
588	<i>Acer platanoides</i>	Norway Maple	1	14		G	G	G	5	RNFP	4			
589	<i>Acer platanoides</i>	Norway Maple	1	11		F	G	G	3	RNFP	4			Lean
590	<i>Acer platanoides</i>	Norway Maple	1	11		G	G	G	3	RNFP	4			
591	<i>Acer platanoides</i>	Norway Maple	1	31		G	G	G	8	RNFP	4		Preserve / injure	
592	<i>Acer platanoides</i>	Norway Maple	1	18		G	G	G	4	RNFP	4			
593	<i>Acer platanoides</i>	Norway Maple	1	17		G	G	G	4	RNFP	4			
594	<i>Acer platanoides</i>	Norway Maple	1	12		G	G	G	3.5	RNFP	4			
595	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	3.5	RNFP	4			
596	<i>Acer platanoides</i>	Norway Maple	1	21		G	G	G	6	RNFP	4			
597	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	4	RNFP	4			
598	<i>Acer platanoides</i>	Norway Maple	1	16		G	G	G	5	RNFP	4			
599	<i>Ostrya virginiana</i>	Ironwood	1	23		G	G	G	3	RNFP	4			
600	<i>Crataegus spp.</i>	Hawthorn	1	22		F	F	G	5	RNFP	4			Union, form

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Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
601	<i>Acer platanoides</i>	Norway Maple	1	11		F	G	G	3	RNFP	4			Trunk wound
602	<i>Ostrya virginiana</i>	Ironwood	1	14		G	G	G	4	RNFP	4			
603	<i>Acer platanoides</i>	Norway Maple	1	17		G	G	G	4.5	RNFP	4			
604	<i>Acer platanoides</i>	Norway Maple	1	16		G	G	G	4	RNFP	4			
605	<i>Acer platanoides</i>	Norway Maple	1	15,5		G	G	G	4	RNFP	4			
606	<i>Acer platanoides</i>	Norway Maple	1	11		G	G	G	3.5	RNFP	4			
607	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	3	RNFP	4			
608	<i>Acer platanoides</i>	Norway Maple	1	10		G	G	G	3	RNFP	4			
609	<i>Acer platanoides</i>	Norway Maple	1	14		G	G	G	4	RNFP	4			
610	<i>Acer platanoides</i>	Norway Maple	1	17		G	G	G	5	RNFP	4			
North Side: Between Rosedale Valley Road and Dale Avenue														
611	<i>Fraxinus americana</i>	White Ash	1	10		G	G	P	2	RNFP	4		Remove	EAB, suppressed by 612
612	<i>Acer platanoides</i>	Norway Maple	1	11		G	G	G	2	RNFP	4		Injure	Suppressed by 611
613	<i>Acer platanoides</i>	Norway Maple	1	16		G	G	G	3.5	RNFP	4			
614	<i>Acer platanoides</i>	Norway Maple	1	7,21		G	G	G	5	RNFP	4			
615	<i>Acer platanoides</i>	Norway Maple	1	36		G	G		6	RNFP	4		Preserve	All branches on one side
616	<i>Acer platanoides</i>	Norway Maple	1	41		G	G		7	RNFP	4		Preserve	Dead Ash 15cm leaning on tree
617	<i>Ulmus americana</i>	American Elm	1	18		G	G	G	3	RNFP	4		Injure	
618	<i>Ulmus americana</i>	American Elm	1	24		G	G	P	1.5	RNFP	4		Remove	Leader cut @6m ht., sucker growth
619	<i>Acer saccharum</i>	Sugar Maple	1	16		G	G	G	3	RNFP	4			On slope, exposed roots
620	<i>Acer platanoides</i>	Norway Maple	1	48		G	G		6	RNFP	4		Preserve	

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						TI	CS	CV						
621	Acer platanoides	Norway Maple	1	34		G	G	G	7	RNFP	4		Preserve	
622	Acer saccharum	Sugar Maple	1	44		G	G		6	RNFP	4		Preserve	One dead branch
623	Acer saccharum	Sugar Maple	1	67		G	G		7	RNFP	4		Preserve	
624	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4			
625	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4			
626	Acer platanoides	Norway Maple	1	18		G	G	G	5	RNFP	4			
627	Acer platanoides	Norway Maple	1	29		G	G	G	7	RNFP	4			
628	Acer platanoides	Norway Maple	1	29		G	G	G	6	RNFP	4			
629	Acer platanoides	Norway Maple	1	23		G	G	G	7	RNFP	4			
630	Acer platanoides	Norway Maple	1	28		G	F	G	6	RNFP	4			Contorted growth
631	Acer platanoides	Norway Maple	1	21		G	G	G	5	RNFP	4			
632	Acer platanoides	Norway Maple	1	22		G	G	G	5	RNFP	4			
633	Acer platanoides	Norway Maple	1	25		G	G	G	5	RNFP	4			Tar spots
634	Ulmus glabra	Scotch Elm	1	27		F	F	G	4	RNFP	4			Lean towards bridge, form, trunk wound, exposed roots, sap
635	Aesculus hippocastanum	Horse Chestnut	1	25		F	F	G	4	RNFP	4			Lean to bridge, form
636	Tilia americana	Basswood	1	38		G	G		5	RNFP	4		Preserve	within grassed area adjacent to Dale Avenue
637	Acer platanoides	Norway Maple	1	35		G	G		6	RNFP	4			Competing with 636. Within grassed area, adjacent to Dale Ave
638	Acer platanoides	Norway Maple	1	14		G	F	F	4	RNFP	4			Form, within grassed area, adjacent to Dale Ave
639	Acer platanoides	Norway Maple	1	15		G	G	G	4	RNFP	4			within grassed area adjacent to Dale Avenue
640	Juglans nigra	Black Walnut	1	12		G	G	G	3	RNFP	4			within grassed area adjacent to Dale Avenue
641	Juglans nigra	Black Walnut	1	11		F	G	G	3	RNFP	4			Lean, within grassed area adjacent to Dale Avenue

Table 1: Tree Inventory and Preservation Charts

Project: Toronto - Glen Road Pedestrian Bridge					Field Work Completed By: Peter McNamara and Zeev Rajman									
Date of Field Work: November 17 & 18, 2016					Weather: 17 & 18 degrees, sunny								Conditions: G=Good, F=Fair, P=Poor, D=Dead	
Tree Assessment Criteria: TI - Trunk Integrity: assessment of the trunk for any defects or weaknesses. CS - Canopy Structure: assessment of scaffold branches, unions and canopy CV - Canopy vigour: assessment of the health of the tree, based on deadwood & live growth in crown						Tree Condition Good: tree displays less than 15% deficiency/defect within the given tree assessment criteria (TI,CS,CV) Fair: tree displays 15-40% deficiency/defect within the given tree assessment criteria (TI,CS,CV) Poor: tree displays greater than 40% deficiency/defect within the given tree assessment criteria (TI,CS,CV)								
Legend: <div><div>Trees to be Preserved / Retained</div><div>Trees to be Removed</div></div>			<div><div>Tree Location</div><div>Tree Injury</div></div>			<div><div>Ash Tree Removal</div><div>Trees to be pruned</div></div>								
Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Dripline Radius	Tree Location / By-Law	City of Toronto Category	Tree Protection Zone	Recommendation	Remarks
						TI	CS	CV						
642	<i>Prunus serotina</i>	Black Cherry	1	52		G	G		10	RNFP	4		Preserve	
643	<i>Acer platanoides</i>	Norway Maple	1	35		G	G		6	RNFP	4			Exposed roots
644	<i>Quercus rubra</i>	Red Oak	1	78		G	G		12	RNFP	4		Preserve	
645	<i>Acer platanoides</i>	Norway Maple	1	28		G	G	G	6	RNFP	4			
646	<i>Acer saccharum</i>	Sugar Maple	1	29		G	F	G	7	RNFP	4		Preserve	One stem @10m ht dying.
647	<i>Acer saccharum</i>	Sugar Maple	1	42		G	G		6	RNFP	4		Preserve	
648	<i>Acer platanoides</i>	Norway Maple	1	27		G	G		5	RNFP	4			
649	<i>Ulmus americana</i>	American Elm	1	18		G	G	G	5	RNFP	4			Exposed roots
G	<i>Ulmus glabra</i>	Scotch Elm	1	28		G	G	G	5	RNFP	4			Inaccessible, enclosed by chain link fence
650	<i>Acer saccharum</i>	Sugar Maple	1	52		G	G		12	RNFP	4		Preserve	
651	<i>Ulmus glabra</i>	Scotch Elm	1	11		G	G	G	4	RNFP	4			
652	<i>Acer platanoides</i>	Norway Maple	1	31		G	G		7	RNFP	4			
653	<i>Ulmus glabra</i>	Scotch Elm	1	67		G	G		12	RNFP	4		Preserve	
654	<i>Acer saccharum</i>	Sugar Maple	1	34		G	G		8	RNFP	4		Preserve	
655	<i>Acer platanoides</i>	Norway Maple	1	15		G	G	G	4	RNFP	4			
656	<i>Fraxinus americana</i>	White Ash	1	61		G	G	P-D	9	RNFP	4			EAB, dripline overhangs bridge
657	<i>Acer platanoides</i>	Norway Maple	1	9,12		G	G	G	3	RNFP	4			
658	<i>Acer platanoides</i>	Norway Maple	1	42		P	G	F-P	7	RNFP	4			Trunk wound cavity, decay
659	<i>Ulmus americana</i>	American Elm	1	10		G	G	G	3	RNFP	4			
660	<i>Ulmus americana</i>	American Elm	1	11		G	G	G	2.5	RNFP	4			
661	<i>Juglans nigra</i>	Black Walnut	1	29		G	G	G	6	RNFP	4		Preserve	

[illegible]

LIST OF DRAWINGS

Tree Preservation Plans (TP-1 to TP-3)

DESIGNED	PM	DRAWN	PM	CHECKED	LSN
SCALE 1 : 250			DATE NOV. 2016		
PROJECT NUMBER 32.16026.000.463				DWG. NUMBER TP- 1	

Table 1: Tree Inventory and Preservation Charts															
Project: Toronto - Glen Road Pedestrian Bridge			Field Work Completed By: Peter McEneaney and Zeev Rajman												
Date of Field Work: November 17 & 18, 2016			Weather: 17 & 18 degrees, sunny												
Tree #	Botanical Name	Common Name	No.	DBH (cm)	Height (m)	Tree Condition			Original Rating	Tree Location / By Law	City of Toronto Category	Tree Protection on Zone	Recommendation	Conditions: G=Good, F=Fair, P=Poor, D=Dead	Remarks
						TI	CS	CV							
South Side: Between Rosedale Valley Road and Bloor Street															
524	Acer platanoides	Norway Maple	1	14		G	G	G	3	RNFP	4				bottom of slope
525	Acer platanoides	Norway Maple	1	14.25		F	G	G	3	RNFP	4				Union
526	Acer platanoides	Norway Maple	1	12		G	G	G	3	RNFP	4				Suppressed by 528 & 529
527	Acer platanoides	Norway Maple	1	9.57		G	G	G	3	RNFP	4				
528	Acer platanoides	Norway Maple	1	22		F	G	G	5	RNFP	4				Slight lean
529	Acer platanoides	Norway Maple	1	21		G	G	G	6	RNFP	4				Slight lean
530	Acer platanoides	Norway Maple	1	26		G	G	G	5	RNFP	4				
531	Acer platanoides	Norway Maple	1	12.3		G	G	G	4	RNFP	4				
532	Acer platanoides	Norway Maple	1	9.23		G	G	G	5	RNFP	4				
533	Acer platanoides	Norway Maple	1	14		G	G	G	5	RNFP	4				
534	Acer platanoides	Norway Maple	1	12		F	G	G	5	RNFP	4				Growing on concrete foundation of manhole
535	Acer platanoides	Norway Maple	1	9.23		G	G	G	6	RNFP	4				
536	Acer platanoides	Norway Maple	1	10		G	G	G	4	RNFP	4				
537	Acer platanoides	Norway Maple	1	91		F	G		10	RNFP	4				Preserve / Injure Union
538	Fraxinus americana	White Ash	1	41		G	G	P	7	RNFP	4				Remove EAB
539	Acer platanoides	Norway Maple	1	17		G	G	G	5	RNFP	4				
540	Aesculus hippocastanum	Horse Chestnut	1	32		G	G	G	5	RNFP	4				Preserve Epicormic shoots
541	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
542	Acer platanoides	Norway Maple	1	32		G	G	G	5	RNFP	4				Preserve
543	Tilia americana	Basswood	1	72		G	G	G	12	RNFP	4				Preserve
544	Acer platanoides	Norway Maple	1	14		G	G	G	4	RNFP	4				
545	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
546	Robinia pseudoacacia	Black Locust	1	14.46		F	G	F	7	RNFP	4				Preserve 10-30% dieback, lean, one dead stem (small area)
547	Acer platanoides	Norway Maple	1	12		G	G	G	5	RNFP	4				Suppressed by 546
548	Ostrya virginiana	Ironwood	1	10		G	G	G	3	RNFP	4				
549	Robinia pseudoacacia	Black Locust	1	44		G	G	F	7	RNFP	4				Preserve Contorted
550	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4				
551	Acer negundo	Manitoba Maple	1	22		F	G	G	5	RNFP	4				Lean
A	Acer negundo	Manitoba Maple	4	20/11 2x10		F	F	G	2-3	RNFP	4				Lean, form, inaccessible, enclosed by chain link fencing
552	Acer platanoides	Norway Maple	1	15		F	F	G	5	RNFP	4				Leaning on fence,
553	Acer negundo	Manitoba Maple	1	34		F	F		6	RNFP	4				Leaning on fence over bridge
554	Ostrya virginiana	Ironwood	1	14		F	F	G	5	RNFP	4				Leaning on fence, form
B	Acer negundo	Manitoba Maple	1	±12		F	F	G	3	RNFP	4				Inaccessible, enclosed with chain link fencing
555	Acer platanoides	Norway Maple	1	14		G	G	G	4	RNFP	4				
556	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
557	Acer platanoides	Norway Maple	1	12		F	G	G	3	RNFP	4				Trunk wound
558	Acer negundo	Manitoba Maple	1	15		F	F	G	5	RNFP	4				Lean, form, cavity
559	Acer platanoides	Norway Maple	1	13		G	G	G	3.5	RNFP	4				
560	Acer platanoides	Norway Maple	1	10		G	G	G	3.5	RNFP	4				
C	Ostrya virginiana	Ironwood	1	10		G	G	G	3	RNFP	4				Did not measure or tag due to syringes in area.
561	Acer platanoides	Norway Maple	1	20		G	G	G	5	RNFP	4				
562	Acer negundo	Manitoba Maple	1	20		F	F	G	6	RNFP	4				Lean, form
563	Acer platanoides	Norway Maple	1	18		G	G	G	4	RNFP	4				
564	Acer platanoides	Norway Maple	1	11		G	G	G	2	RNFP	4				
565	Acer negundo	Manitoba Maple	1	19		F	F	F	5	RNFP	4				20-40% dieback, growing into fence, form, lean
566	Ostrya virginiana	Ironwood	1	17		G	G	G	5	RNFP	4				
567	Acer negundo	Manitoba Maple	1	14.12		F	F	F	4	RNFP	4				Form, one stem dead (smaller), lean
D	Acer platanoides	Norway Maple	1	±15		G	G	G	4	RNFP	4				Inaccessible, enclosed by chain link fencing
E	Acer platanoides	Norway Maple	1	±10		G	G	G	3	RNFP	4				Inaccessible, enclosed by chain link fencing
F	Tilia americana	Basswood	1	±15		G	G	G	4	RNFP	4				Inaccessible, enclosed by chain link fencing
568	Acer platanoides	Norway Maple	1	25		G	G	G	5	RNFP	4				
569	Alnus ulmifolia	Tree of Heaven	1	11.1,1.10		F	G	G	4	RNFP	4				Union
570	Acer negundo	Manitoba Maple	1	17		F	F	G	5	RNFP	4				Lean, form
571	Acer negundo	Manitoba Maple	1	21		F	F	G	5	RNFP	4				Lean, form
572	Acer platanoides	Norway Maple	1	12		G	G	G	3	RNFP	4				
573	Ostrya virginiana	Ironwood	1	10		G	G	G	3	RNFP	4				
574	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4				
575	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
576	Acer platanoides	Norway Maple	1	18		G	G	G	4.5	RNFP	4				
577	Aesculus hippocastanum	Horse Chestnut	1	33		G	G	G	6	RNFP	4				Preserve Suppressed by 578
578	Tilia americana	Basswood	1	32		G	G	G	6	RNFP	4				Preserve Suppressed by 577
579	Ulmus americana	American Elm	1	32		G	G	G	6	RNFP	4				Preserve
580	Acer platanoides	Norway Maple	1	21		G	G	G	5	RNFP	4				
581	Acer platanoides	Norway Maple	1	18		G	G	G	4	RNFP	4				
582	Aesculus hippocastanum	Horse Chestnut	1	20.31		G	F		5	RNFP	4				Preserve Suckers, form, one dead stem (small)
583	Acer platanoides	Norway Maple	1	12		G	G	G	4	RNFP	4				
584	Fraxinus americana	White Ash	1	31		G	G	P	7	RNFP	4				Remove EAB
585	Fraxinus americana	White Ash	1	72		G	G	P	1-2	RNFP	4				Remove EAB, branches over bridge
586	Acer platanoides	Norway Maple	1	10		G	G	G	3.5	RNFP	4				
587	Acer platanoides	Norway Maple	1	12.54		F	G		10	RNFP	4				
588	Acer platanoides	Norway Maple	1	14		G	G	G	5	RNFP	4				
589	Acer platanoides	Norway Maple	1	11		F	G	G	3	RNFP	4				Lean
590	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4				
591	Acer platanoides	Norway Maple	1	31		G	G	G	8	RNFP	4				Preserve / Injure
592	Acer platanoides	Norway Maple	1	18		G	G	G	4	RNFP	4				
593	Acer platanoides	Norway Maple	1	17		G	G	G	4	RNFP	4				
594	Acer platanoides	Norway Maple	1	12		G	G	G	3.5	RNFP	4				
595	Acer platanoides	Norway Maple	1	10		G	G	G	3.5	RNFP	4				
596	Acer platanoides	Norway Maple	1	21		G	G	G	6	RNFP	4				
597	Acer platanoides	Norway Maple	1	10		G	G	G	4	RNFP	4				
598	Acer platanoides	Norway Maple	1	16		G	G	G	5	RNFP	4				
599	Ostrya virginiana	Ironwood	1	23		G	G	G	3	RNFP	4				
600	Cotonegus spp.	Hawthorn	1	22		F	F	G	5	RNFP	4				Union, form
601	Acer platanoides	Norway Maple	1	11		F	G	G	3	RNFP	4				Trunk wound
602	Ostrya virginiana	Ironwood	1	14		G	G	G	4	RNFP	4				
603	Acer platanoides	Norway Maple	1	17		G	G	G	4.5	RNFP	4				
604	Acer platanoides	Norway Maple	1	16		G	G	G	4	RNFP	4				
605	Acer platanoides	Norway Maple	1	15.5		G	G	G	4	RNFP	4				
606	Acer platanoides	Norway Maple	1	11		G	G	G	3.5	RNFP	4				
607	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
608	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4				
609	Acer platanoides	Norway Maple	1	14		G	G	G	4	RNFP	4				
610	Acer platanoides	Norway Maple	1	17		G	G	G	5	RNFP	4				

Table 1: Tree Inventory and Preservation Charts														
Project: Toronto - Glen Road Pedestrian Bridge			Field Work Completed By: Peter McNamee and Zeev Rajman											
Date of Field Work: November 17 & 18, 2016			Weather: 17 & 18 degrees, sunny											
Tree #	Botanical Name	Common Name	No.	DBH [cm]	Height (m)	Tree Condition			Original Rating	Tree Location / By-Law	City of Toronto Category	Tree Protect on Zone	Recommendation	Comments
						TI	CS	CV						
North Side: Between Rosedale Valley Road and Dale Avenue														
611	Fraxinus americana	White Ash	1	10		G	G	P	2	RNFP	4		Remove	EAB, suppressed by 612
612	Acer platanoides	Norway Maple	1	11		G	G	G	2	RNFP	4			
613	Acer platanoides	Norway Maple	1	16		G	G	G	3.5	RNFP	4			Suppressed by 611
614	Acer platanoides	Norway Maple	1	7.21		G	G	G	5	RNFP	4			
615	Acer platanoides	Norway Maple	1	36		G	G	G	6	RNFP	4		Preserve	All branches on one side
616	Acer platanoides	Norway Maple	1	41		G	G	G	7	RNFP	4		Preserve	Dead Ash 15cm leaning on tree
617	Ulmus americana	American Elm	1	18		G	G	G	3	RNFP	4		Injure	
618	Ulmus americana	American Elm	1	24		G	G	P	1.5	RNFP	4		Remove	Leader cut @6m HL, sucker growth
619	Acer saccharum	Sugar Maple	1	16		G	G	G	3	RNFP	4			On slope, exposed roots
620	Acer platanoides	Norway Maple	1	48		G	G	G	6	RNFP	4		Preserve	
621	Acer platanoides	Norway Maple	1	34		G	G	G	7	RNFP	4		Preserve	
622	Acer saccharum	Sugar Maple	1	44		G	G	G	6	RNFP	4		Preserve	One dead branch
623	Acer saccharum	Sugar Maple	1	67		G	G	G	7	RNFP	4		Preserve	
624	Acer platanoides	Norway Maple	1	11		G	G	G	3	RNFP	4			
625	Acer platanoides	Norway Maple	1	10		G	G	G	3	RNFP	4			
626	Acer platanoides	Norway Maple	1	18		G	G	G	5	RNFP	4			
627	Acer platanoides	Norway Maple	1	29		G	G	G	7	RNFP	4			
628	Acer platanoides	Norway Maple	1	29		G	G	G	6	RNFP	4			
629	Acer platanoides	Norway Maple	1	23		G	G	G	7	RNFP	4			
630	Acer platanoides	Norway Maple	1	28		G	F	G	6	RNFP	4			Consumed growth
631	Acer platanoides	Norway Maple	1	21		G	G	G	5	RNFP	4			
632	Acer platanoides	Norway Maple	1	22		G	G	G	5	RNFP	4			
633	Acer platanoides	Norway Maple	1	25		G	G	G	5	RNFP	4			Ten tops
634	Ulmus glabra	Scotch Elm	1	27		F	F	G	4	RNFP	4			Lean towards bridge, form, trunk wound, exposed roots, sap
635	Aesculus hippocastanum	Horse Chestnut	1	25		F	F	G	4	RNFP	4			Lean to bridge, form
636	Tilia americana	Basswood	1	38		G	G	G	5	RNFP	4		Preserve	within grassed area adjacent to Dale Avenue
637	Acer platanoides	Norway Maple	1	35		G	G	G	6	RNFP	4			Competing with 636. Within grassed area, adjacent to Dale Ave
638	Acer platanoides	Norway Maple	1	14		G	F	F	4	RNFP	4			Form, within grassed area, adjacent to Dale Ave
639	Acer platanoides	Norway Maple	1	15		G	G	G	4	RNFP	4			within grassed area adjacent to Dale Avenue
640	Juglans nigra	Black Walnut	1	12		G	G	G	3	RNFP	4			within grassed area adjacent to Dale Avenue
641	Juglans nigra	Black Walnut	1	11		F	F	G	3	RNFP	4			lean, within grassed area adjacent to Dale Avenue
642	Prunus serotina	Black Cherry	1	52		G	G	G	10	RNFP	4		Preserve	
643	Acer platanoides	Norway Maple	1	35		G	G	G	6	RNFP	4			Exposed roots
644	Quercus rubra	Red Oak	1	78		G	G	G	12	RNFP	4		Preserve	
645	Acer platanoides	Norway Maple	1	28		G	G	G	6	RNFP	4			
646	Acer saccharum	Sugar Maple	1	29		G	F	G	7	RNFP	4			One stem @ 10m ht dying
647	Acer saccharum	Sugar Maple	1	42		G	G	G	6	RNFP	4		Preserve	
648	Acer platanoides	Norway Maple	1	27		G	G	G	5	RNFP	4			
649	Ulmus americana	American Elm	1	18		G	G	G	5	RNFP	4			Exposed roots
650	Ulmus glabra	Scotch Elm	1	28		G	G	G	5	RNFP	4			Inaccessible, enclosed by chain link fence
651	Acer saccharum	Sugar Maple	1	52		G	G	G	12	RNFP	4		Preserve	
652	Ulmus glabra	Scotch Elm	1	11		G	G	G	4	RNFP	4			
653	Acer platanoides	Norway Maple	1	31		G	G	G	7	RNFP	4			
654	Ulmus glabra	Scotch Elm	1	67		G	G	G	12	RNFP	4		Preserve	
655	Acer saccharum	Sugar Maple	1	34		G	G	G	8	RNFP	4		Preserve	
656	Acer platanoides	Norway Maple	1	15		G	G	G	4	RNFP	4			
656	Fraxinus americana	White Ash	1	61		G	G	P-D	9	RNFP	4			EAB, dipslope overhangs bridge
657	Acer platanoides	Norway Maple	1	9.12		G	G	G	3	RNFP	4			
658	Acer platanoides	Norway Maple	1	42		P	G	F-P	7	RNFP	4			Trunk wound early decay
659	Ulmus americana	American Elm	1	10		G	G	G	3	RNFP	4			
660	Ulmus americana	American Elm	1	11		G	G	G	2.5	RNFP	4			
661	Juglans nigra	Black Walnut	1	29		G	G	G	6	RNFP	4		Preserve	
662	Acer platanoides	Norway Maple	1	15.6		G	G	G	2	RNFP	4			
663	Acer platanoides	Norway Maple	1	18		G	G	G	5	RNFP	4			
664	Ulmus americana	American Elm	1	11		G	F	G	2	RNFP	4			Consumed
665	Ulmus americana	American Elm	1	18		G	G	G	4	RNFP	4			
666	Ulmus americana	American Elm	1	22		G	G	G	5	RNFP	4		Injure	

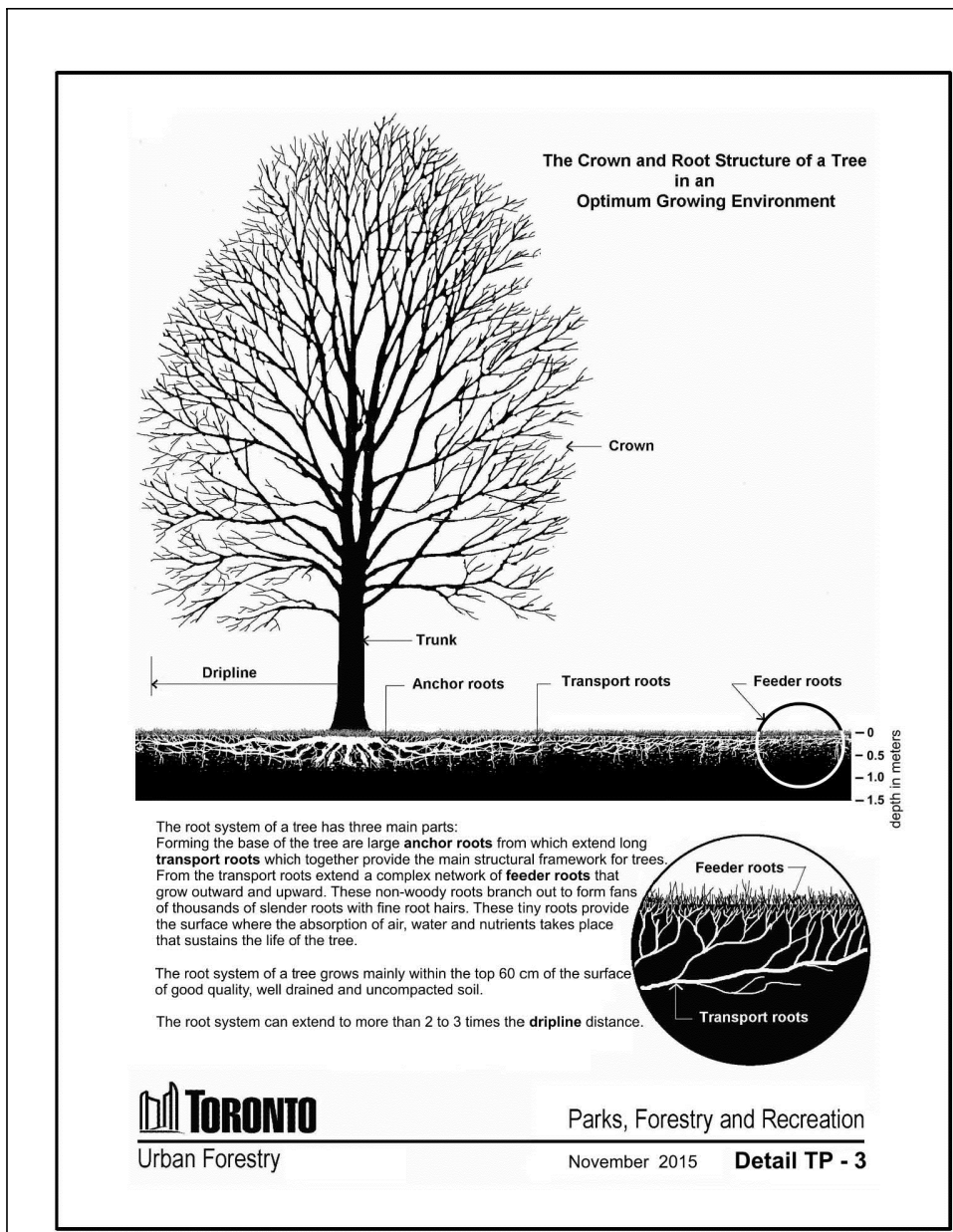


Figure 1: Urban Forestry Detail TP-3

July 2016

2. Protecting Trees

There are a number of steps that can be taken to protect trees prior to, during and after any construction project. Hiring an arborist should be the first step. An arborist can advise on current tree maintenance requirements and determine the impact the proposal will have on trees and the surrounding natural environment.

An inventory of trees on subject and adjacent properties that may be impacted by the proposed work should be prepared in accordance with the City tree by-laws so that the project can be designed with tree protection in mind. A tree protection plan prepared by an arborist will identify the location, species, size and condition of all trees within the area of consideration, identify the extent of injury where applicable and outline proposed tree protection measures for the trees identified for protection.

The area of consideration for trees protected under the Private Tree By-law (Municipal Code, Chapter 813, Article III) includes the entire area of site disturbance, including construction related traffic and material storage, and extends 5m beyond the limit of site disturbance. For trees protected under Ravine and Natural Feature Protection By-law (Municipal Code, Chapter 658), the area of consideration includes the area of site disturbance and 12m area beyond.

The following chart provides the required distances for determining a minimum tree protection zone (TPZ) for trees located on a City street, in parks and on private property subject to Private Tree By-law and for trees located in areas regulated under the Ravine and Natural Feature Protection By-law. The minimum tree protection zones are based on the diameter of the tree. While these guidelines provide minimum protection distances for the anchor and transport roots of a tree, there can still be significant loss of the feeder roots beyond the established tree protection zone. Feeder roots are responsible for water and nutrient absorption and gas exchange. For this reason, Urban Forestry may require a TPZ larger than the minimum, depending on the tree and the surrounding environment.

Trunk Diameter (DBH) ¹	Minimum Protection Distances Required ² City-owned and Private Trees	Minimum Protection Distances Required ³ Trees in Areas Protected by the Ravine and Natural Feature Protection By-law
<10cm	1.2 m	Whichever of the two is greater: The drip line ⁴ or 1.2 m
10 - 29 cm	1.5 m	The drip line or 3.5 m
30 - 40 cm	2.4 m	The drip line or 4.8 m
41 - 50 cm	3.0 m	The drip line or 6.0 m
51 - 60 cm	3.5 m	The drip line or 7.2 m
61 - 70 cm	4.2 m	The drip line or 8.4 m
71 - 80 cm	4.8 m	The drip line or 9.6 m
81 - 90 cm	5.4 m	The drip line or 10.8 m
91 - 100 cm	6.0 m	The drip line or 12.0 m
>100 cm	6 cm protection for each 1 cm diameter	12cm protection for each 1 cm diameter or the drip line ⁵

Table 1: Minimum Tree Protection Zone (TPZ) Determination

July 2016

¹Diameter at breast height (DBH) measurement of tree stem taken at 1.4 metres (m) above the ground.
²Minimum Tree Protection Zone distances are to be measured from the outside edge of the tree base.
³Diameter (30 cm) at which trees qualify for protection under the Private Tree By-law.
⁴The drip line is defined as the area beneath the outer most branch tips of a tree.
⁵Converted from ISA Arborists' Certification Study Guide, general guideline for tree protection barriers of 1 foot of diameter from the stem for each inch of stem diameter.

The diagram below shows how the TPZ is determined:

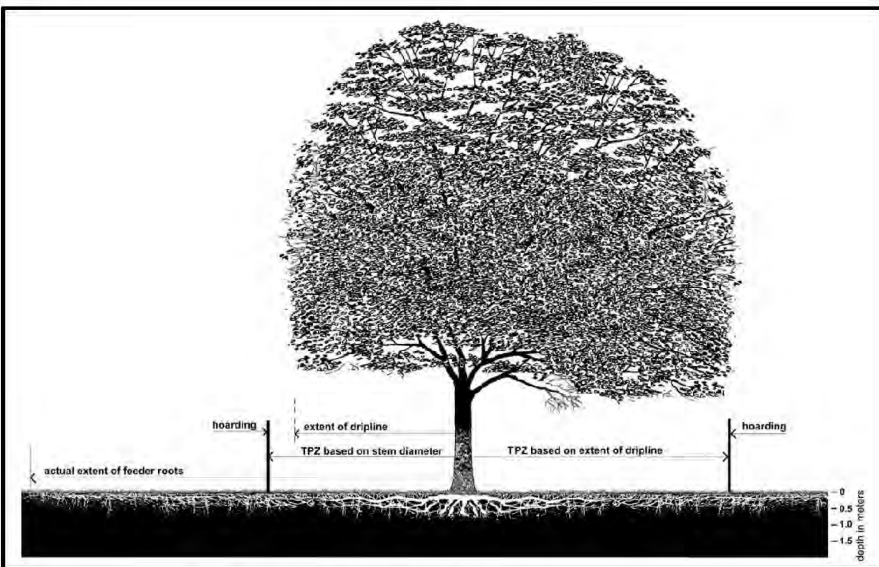


Figure 2: Minimum Tree Protection Zone (TPZ) Determination

In some cases, disturbances in the TPZ may be unavoidable, in which case, the TPZ must be adjusted in consultation with the arborist and Urban Forestry. In these situations, it may be necessary to implement other tree protection measures such as horizontal root protection as noted in section 3 of this document.

In addition to establishing and creating tree protection zones, it may be necessary to implement other protective measures, such as adding mulch to the root zone, aeration of the soil, pruning for deadwood or removing limbs that may be impacted by construction activity. This is also the time to determine the location where new trees can be planted to complement the construction project and help with the renewal and growth of the urban forest.

Prior to commencing with any excavation, roots approved for pruning by Urban Forestry must first be exposed using pneumatic (air) excavation, by hand digging or by using a low pressure hydraulic (water) excavation. This exploratory excavation must be undertaken by an experienced operator under the supervision of a qualified and experienced arborist. The water pressure for hydraulic excavation must be low enough that root bark is not damaged or

July 2016

Prohibited Activities Within a TPZ

Except where authorized by Urban Forestry, any activity which could result in injury or destruction of a protected tree or natural feature, or alteration of grade within a Ravine and Natural Feature Protection (RNFP) area, is prohibited within a TPZ, including, but not limited to, any of the following examples:

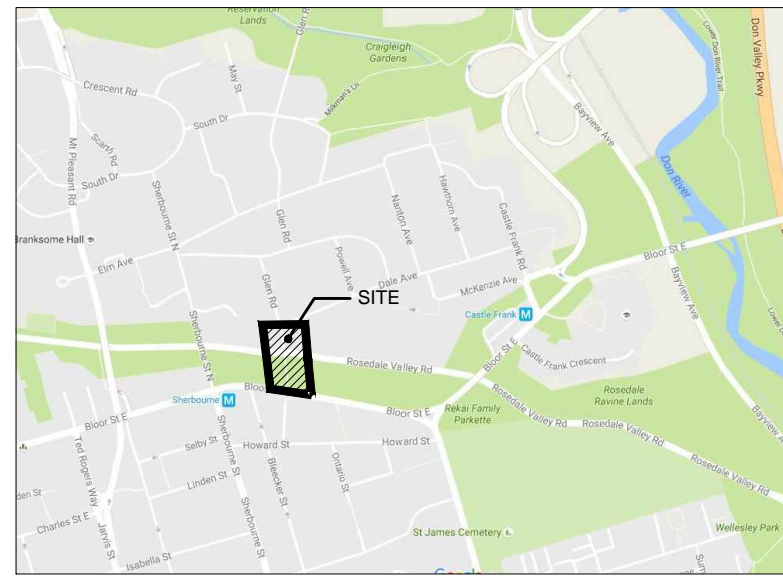
- demolition, construction, replacement or alteration of permanent or temporary buildings or structures, parking pads, driveways, sidewalks, walkways, paths, trails, dog runs, pools, retaining walls, patios, decks, terraces, sheds or raised gardens
- installation of large stones or boulders
- altering grade by adding or removing soil or fill, excavating, trenching, topsoil or fill scraping, compacting soil or fill, dumping or disturbance of any kind
- storage of construction materials, equipment, wood, branches, leaves, soil or fill, construction waste or debris of any sort
- application, discharge or disposal of any substance or chemical that may adversely affect the health of a tree e.g. concrete sludge, gas, oil, paint, pool water or backwash water from a swimming pool
- causing or allowing water or discharge, to flow over slopes or through natural areas
- access, parking or movement of vehicles, equipment or pedestrians
- cutting, breaking, tearing, crushing, exposing or stripping tree's roots, trunk and branches.
- nailing or stapling into a tree, including attachment of fences, electrical wires or signs
- stringing of cables or installing lights on trees
- soil remediation, removal of contaminated fill
- excavating for directional or micro-tunnelling and boring entering shafts

The above mentioned prohibitions are for area(s) designated as a TPZ. If possible, these prohibitions should also be implemented outside the TPZ in areas where tree roots are located. The roots of a tree can extend from the trunk to approximately 2-3 times the distance of the drip line.

July 2016

8

KEY MAP



NOTE:
• FOR A DETAILED DESCRIPTION OF TREE SPECIES, SIZE, CONDITION AND RECOMMENDATIONS, REFER TO THE TREE INVENTORY AND PRESERVATION CHARTS ON SHEET TP-2 AND TABLE 1: TREE INVENTORY AND PRESERVATION CHARTS IN THE ARBORIST REPORT PREPARED BY WSP CANADA GROUP LIMITED, DATED: DECEMBER 7, 2016 AND REVISED: NOVEMBER 3, 2017.
• REFER TO THE ARBORIST REPORT FOR SPECIFIC RECOMMENDATIONS, PROTECTIVE AND MITIGATION MEASURES.

No.	REVISIONS	BY	DATE	APPR.
2	REVISED PER CITY COMMENTS	PM	2017.11.03	—
1	ISSUED FOR DRAFT REVIEW	PM	2016.12.07	—

ALL PREVIOUS ISSUES OF THIS DRAWING ARE SUPERSEDED

CLIENT

CITY OF TORONTO

MUNICIPALITY

CITY OF TORONTO

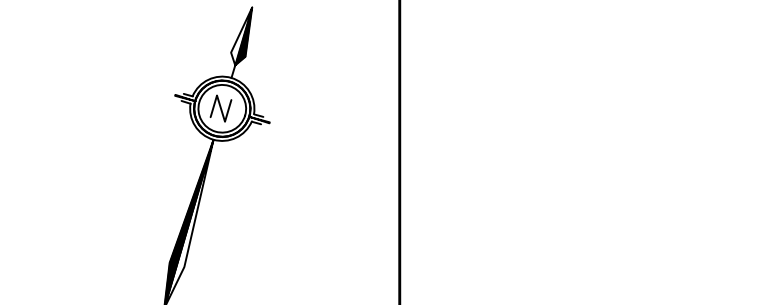
PROJECT TITLE

GLEN ROAD PEDESTRIAN BRIDGE

SHEET TITLE

TREE PRESERVATION DETAILS

wsp 100 Commerce Valley Dr. West
Thornhill, Ont. L3T 0A1
Tel (905) 882-1100
Fax (905) 882-0055
www.mmm.ca



DESIGNED	PM	DRAWN	PM	CHECKED	LSN
SCALE	NTS	DATE	NOVEMBER 2016		
PROJECT NUMBER	32.16026.000.463	DWG. NUMBER	TP- 3		

3. Tree and Site Protection Measures

The following are examples of specific tree and site protection measures that may be required by Urban Forestry:

- Plywood tree protection hoarding (minimum 19mm or 3/4"), or equivalent barriers, as approved by Urban Forestry, shall be installed in locations as detailed in an Urban Forestry approved Tree Protection Plan. Tree protection barriers must be made of 2.4m (8ft) high plywood hoarding or equivalent as approved by Urban Forestry. Height of hoarding may be less than 2.4m (8ft), to accommodate tree branches that may be lower, or as approved by Urban Forestry. Within a City road allowance where visibility is a consideration, 1.2m (4ft) high orange plastic web snow fencing on a 38 x 89mm (2" x 4") frame should be used. The detail on tree protection barrier construction is shown on Figure 4 in section 7 of this document
- In specific situations where the required full minimum tree protection zone (TPZ) cannot be provided, a horizontal (on grade) root protection, designed by a qualified professional such as arborist or landscape architect, may be considered, subject to approval by Urban Forestry. Urban Forestry's objective is zero soil compaction within the tree protection zone, therefore best efforts must be made to achieve this objective using materials and best practices available that minimize the vertical loading and spread the loading horizontally.
- Any area designated for stockpiling of excavated soil must be outside of TPZs and be enclosed with sediment control fencing. Sediment control fencing shall be installed in the locations as indicated in an Urban Forestry approved Tree Protection Plan. The sediment control fencing must be installed to Ontario Provincial Standards (OPSD-219.130 - see Section 7, Figure 5) and to the satisfaction of Urban Forestry. When feasible, the sediment control fencing can be attached to the tree protection barrier as shown in Figure 6. Sediment control fencing near trees shall be constructed as per detail shown on Figure 6 of this document

4. Tree Protection Signage



Tree Protection Zone (TPZ)

All construction related activities, including grade alteration, excavation, soil compaction, any materials or equipment storage, disposal of liquid and vehicular traffic are NOT permitted within this TPZ.

This tree protection barrier must remain in good condition and must not be removed or altered without authorization of City of Toronto, Urban Forestry.

Concerns or inquiries regarding this TPZ can be directed to:
311 or 311@toronto.ca

Figure 3: Tree Protection Sign

July 2016

7. Tree Protection Plan Details

The following diagrams provide details for tree protection barriers and sediment protection barriers:

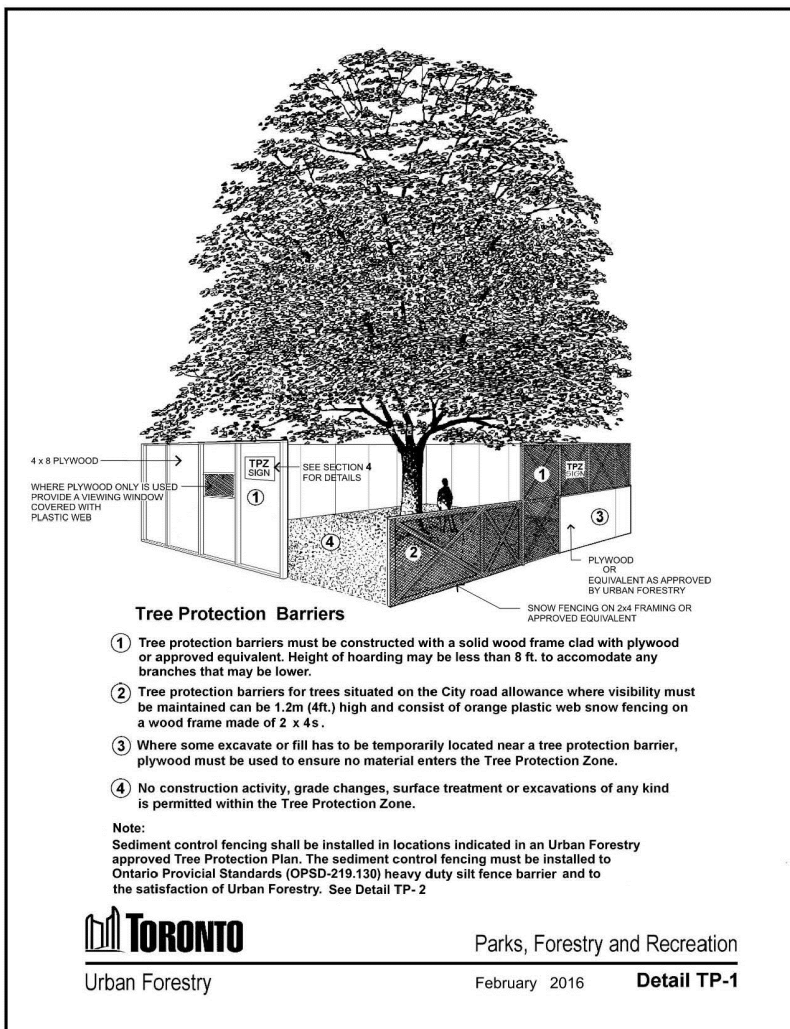


Figure 4: Urban Forestry Detail TP-1

July 2016

13

Any person who contravenes any provision of the City's tree protection by-law is guilty of an offence.

More information on tree protection and permit application forms for tree removal and injury are available on Urban Forestry web page at www.toronto.ca/trees.

For additional information regarding the removal or injury of trees protected under City by-laws, please call 311.

9. Tree Guarantee Deposits

Tree Protection Guarantee

Urban Forestry may request a tree protection guarantee to secure the protection of trees that may be impacted by work on city streets, or to secure the satisfaction of all conditions of permit issuance. Tree protection guarantees held by the City shall only be released by the City provided that all construction activities are complete, compliance with all permit terms and conditions has been verified, there has been no encroachment into the minimum tree protection zone (TPZ) and the trees are healthy and in a state of vigorous growth.

Where Urban Forestry has confirmed an unauthorized encroachment into the TPZ or the terms and conditions of a permit have not been complied with, Urban Forestry will retain the guarantee until satisfactory compliance.

It is the applicant's responsibility to submit a written request to Urban Forestry for the refund of the tree protection guarantee deposit as soon as construction and landscaping is completed.

Tree Planting Security

Urban Forestry may request a tree planting security deposit in an amount equal to the cost of planting and maintenance for two (2) years in order to ensure compliance with approved landscape or replanting plans. The security deposit may be held by the City after the planting of the trees for a period of two (2) years and shall be released by the City provided that the trees have been maintained, are healthy and in a state of vigorous growth upon inspection, two (2) years after planting. It is the applicant's responsibility to advise Urban Forestry that trees have been planted in accordance with approved plans, in order that the two (2) year maintenance period begin.

Prior to release by the City, any dead/dying trees must be replaced, deadwood and sucker growth should be pruned, and mulch should be topped up where necessary. If stakes and ties were used, they must be removed within one (1) year. Any encroachments are to be removed prior to assumption, including walkways, timbers or bricks that result in increased height of soil or mulch around the trees, and lights in trees.

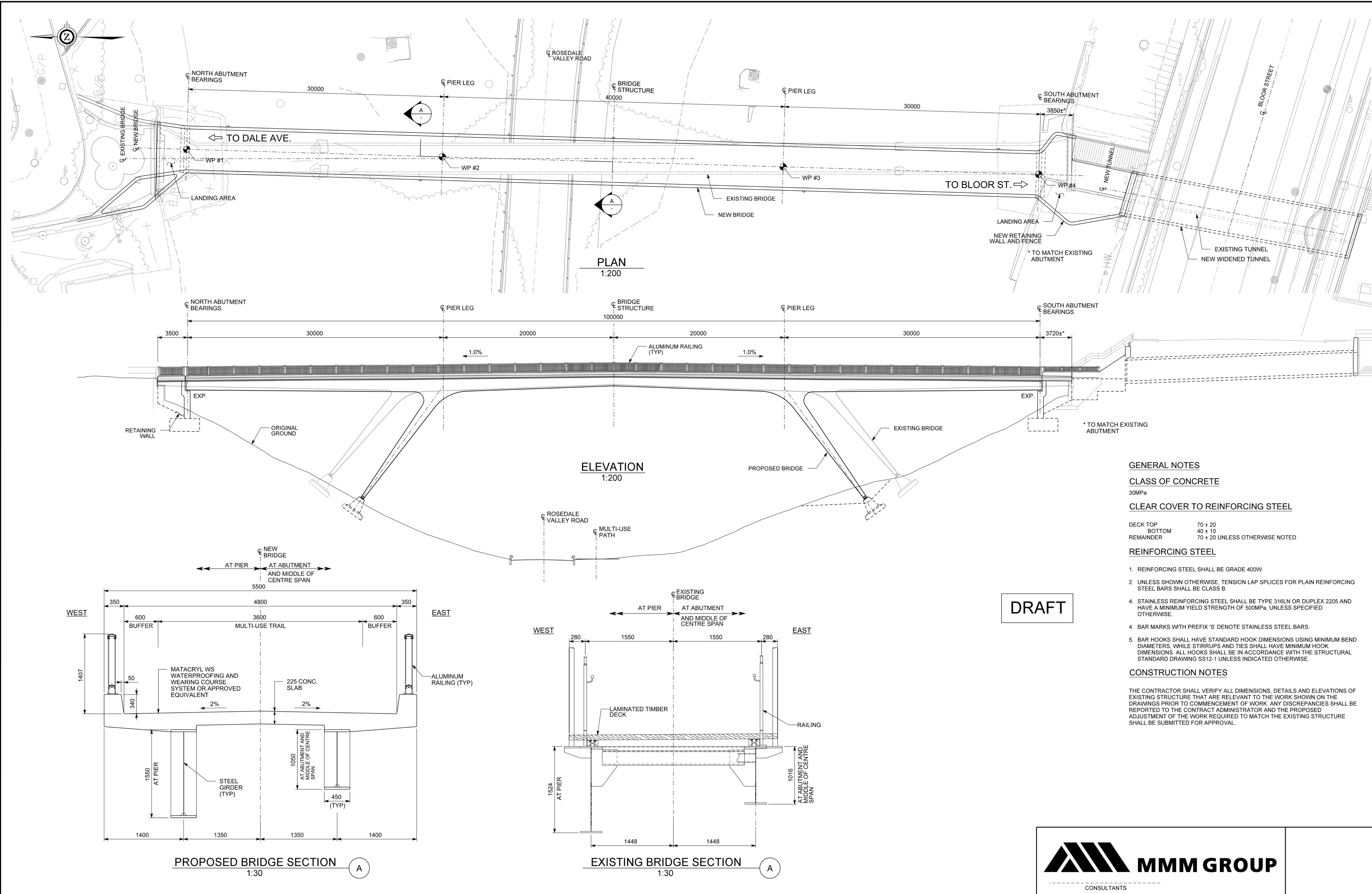
It is the applicant's responsibility to submit a written request to Urban Forestry for the refund of a Tree Guarantees Deposit, two (2) years after the completion of all construction activity and/or two (2) years after tree planting. This request should be made during the growing season, not while

July 2016

16

LIST OF DRAWINGS

Alternative 1: Steel Girder with Two Inclined Steel Legs (S1)



GENERAL NOTES

CLASS OF CONCRETE

30MPa

CLEAR COVER TO REINFORCING STEEL

DECK TOP	70 ± 20
BOTTOM	40 ± 10
REMAINDER	70 ± 20 UNLESS OTHERWISE NOTED

REINFORCING STEEL

1. REINFORCING STEEL SHALL BE GRADE 400W.
2. UNLESS SHOWN OTHERWISE, TENSION LAP SPLICES FOR PLAIN REINFORCING STEEL BARS SHALL BE CLASS B.
4. STAINLESS REINFORCING STEEL SHALL BE TYPE 316LN OR DUPLEX 2205 AND HAVE A MINIMUM YIELD STRENGTH OF 500MPa, UNLESS SPECIFIED OTHERWISE.
4. BAR MARKS WITH PREFIX 'S' DENOTE STAINLESS STEEL BARS.
5. BAR HOOKS SHALL HAVE STANDARD HOOK DIMENSIONS USING MINIMUM BEND DIAMETERS. WHILE STIRRUPS AND TIES SHALL HAVE MINIMUM HOOK DIMENSIONS. ALL HOOKS SHALL BE IN ACCORDANCE WITH THE STRUCTURAL STANDARD DRAWING SS12-1 UNLESS INDICATED OTHERWISE.

CONSTRUCTION NOTES

THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, DETAILS AND ELEVATIONS OF EXISTING STRUCTURE THAT ARE RELEVANT TO THE WORK SHOWN ON THE DRAWINGS PRIOR TO COMMENCEMENT OF WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE CONTRACT ADMINISTRATOR AND THE PROPOSED ADJUSTMENT OF THE WORK REQUIRED TO MATCH THE EXISTING STRUCTURE SHALL BE SUBMITTED FOR APPROVAL.



GLEN ROAD SOUTH PEDESTRIAN BRIDGE

ALTERNATIVE 1: STEEL GIRDER WITH TWO INCLINED STEEL LEGS

PRELIMINARY GENERAL ARRANGEMENT

DESIGN	K. YUSEK	DRAWN	G. LI	CHECKED	M. NIE	CONTRACT No.	
SCALE:	AS NOTED			DRAWING NUMBER		SHEET	
DATE:	JULY, 2017					S1	

Toronto Engineering & Construction Services

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EASTON GORDEN, P.ENG.
ACTING MANAGER,
ENGINEERING & CONSTRUCTION SERVICES
LINEAR OF STRUCTURES

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