YORK REGION STREET TREE AND FOREST PRESERVATION GUIDELINES

January 2022

FORESTRY
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York Region

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1.1 Introduction and Purpose

The purpose of the York Region Street Tree and Forest Preservation Guidelines (the "Guidelines") is to direct the successful preservation of existing Region-owned Street Trees and Natural Vegetation within the Regional road allowance.

The Region has made a strong commitment to the preservation and enhancement of green infrastructure, such as Street Trees and Natural Vegetation, through the Regional Official Plan, Streetscaping programs and the Designing Great Streets Guidelines, the Greening Strategy, the York Region Forest Management Plan and various other policies and initiatives. Street Trees and Natural Vegetation needs to be protected from the impacts of Site Disturbance as it can negatively affect their health and longevity, and lead to reduced function and higher maintenance costs.

These Guidelines contain the specifications and details necessary to develop a Region-approved Tree Inventory, Tree Protection Plan, and Arborist Report, and to provide tree compensation calculations. It shall be generally understood that a tree means any species of woody perennial plant, including its root system, which has reached or can reach a height of at least 4.5 metres (m) at physiological maturity.

1.2 Scope

1.2.1 Application of Guidelines and Specifications

The York Region Street Tree and Forest Preservation Guidelines apply where:

- Site Disturbance is proposed in the Regional road allowance and any Region-owned Street Trees and/or Natural Vegetation are situated within 10m or less of the limit of potential Site Disturbance

and/or:

- Site Disturbance is proposed outside of the Regional road allowance and Region-owned Street Trees and/or Natural Vegetation are situated within 10m of the limit of potential Site Disturbance, and/or
- Site Disturbance is proposed outside of the Regional road allowance and Region-owned Street Trees and/or Natural Vegetation are situated more than 10m from the limit of potential Site Disturbance but may be adversely impacted by the proposed Site Disturbance.

These Guidelines, including the specifications and the available standard drawings, supersede all previous York Region tree protection guidelines, specifications and details and all local municipal tree protection guidelines when applied within the Regional road allowance.

As per the above scope, these Guidelines are not in place of or related to tree cutting as described within the York Region Forest Conservation Bylaw (Bill No. 70, Bylaw Number 2013-68). The York Region Forest Conservation Bylaw protects forests in York Region. Under the bylaw, landowners require a permit before they can remove trees from treed areas greater than 0.2 hectares (0.5 acres). A permit must be obtained before any trees are injured or removed. Municipal bylaws shall be reviewed and followed as directed.

1.2.2 Exemption

These Guidelines do not apply to Site Disturbance located wholly outside of the Regional road allowance, provided that Region-owned Street Trees and/or Natural Vegetation will not be adversely impacted by the proposed Site Disturbance. This includes Site Disturbance affecting trees located wholly on federal, provincial, municipal (non-York Region) or private property, or property owned or managed by a Conservation Authority.

1.3 Definitions

For the purpose of these Guidelines (including specifications and standard drawings), the definitions provided below shall apply.

- **Adjacent Lands**: lands owned by property owner(s) other than York Region and directly abutting Region-owned lands.
- **Adverse Impacts**: any activities which may result in short-, medium- or long-term decline in the health, structural condition, stability or other biological or physical characteristics of a tree or Natural Vegetation to be protected.
- **Crown**: the entire mass of foliage and branches growing outward from the trunk of the tree.
- **Conventional Excavation**: excavation undertaken utilizing machinery, such as an auger, backhoe, dozer, excavator, loader, scraper, trencher, or similar equipment.
- **D30** (Diameter at 30cm): diameter of the main stem or stems of a tree, measured in centimetres at 30cm above grade level. D30 measurement will only be recorded for multi-stemmed trees. If a D30 measurement cannot be recorded for a multi-stemmed tree, then a diameter measured below the fork will be recorded and noted.
- **DBH** (Diameter at Breast Height): diameter of the main stem or stems of a tree, measured in centimetres at 1.37m above grade level.
- **Dripline**: the outermost edge of the tree canopy. The dripline of uneven-canopied trees shall be defined by the outermost edge of the widest branches.
- **Encroachment**: entry by personnel, machinery, equipment, or materials into a Tree Protection Zone (TPZ), whether the TPZ is or is not protected behind a barrier, by any means including but not limited to excavation, grade change, storage, staging, or transit, regardless of the degree of Adverse Impacts (if any) sustained by the tree. Encroachment also includes entry into a TPZ to perform tree protection provisions such as canopy clearance pruning, root-sensitive excavation and root pruning, tree stem protection and any other arboricultural maintenance.
- **Forest Edge**: an interface between forested and non-forested ecosystems or areas of natural vegetation, or between two forests of contrasting composition or structure. In practice, a forest edge can be defined as the limit of the continuous canopy or the boundary in canopy composition.
- **Growing Environment**: the above- and below-ground area currently occupied by an existing tree, or areas directly adjacent to an area currently occupied by an existing tree with suitable biophysical characteristics to sustain the growth and development of tree roots, branches, or other component parts of a tree.
- **Guidelines**: unless otherwise noted, the term refers to the York Region Street Tree and Forest Preservation Guidelines (i.e., this document).
- **Natural Vegetation**: any tree or group of trees, irrespective of size, age, or species, which appears to have grown from natural processes such as seed germination or stump or root sprouting, or which was planted through afforestation or reforestation efforts. All forests, wooded areas and naturalized areas within Regional road allowances are to be considered as Natural Vegetation for purposes of these Guidelines.

- **Qualified Tree Professional**: a person who is:
    - a Registered Professional Forester (R.P.F.) as described in the Professional Foresters Act, 2000, S.O. 2000, c. 18, as amended and registered with the Ontario Professional Foresters Association (O.P.F.A.), and/or
    - a Certified Arborist as certified by the International Society of Arboriculture (I.S.A.), and/or
    - a Registered Consulting Arborist (R.C.A.) as registered with the American Society of Consulting Arborists (A.S.C.A.)
- **Replacement Cost**: The cost incurred by the Region to plant a single street tree, at the Replacement Tree Caliper Size, and to maintain it in good condition and under warranty for 2 years following the year of planting, which typically includes 3 growing seasons.
- **Replacement Tree Caliper Size**: The caliper size of nursery stock that will be used to replace the removed tree (50mm caliper).
- **Site Disturbance**: any undertaking seeking to alter any physical aspects of a site from its existing conditions prior to the undertaking. Site Disturbance includes but is not limited to grade change, excavation, tunneling, trenching, paving, soil compaction or de-compaction, land clearing, alteration of drainage patterns, or other activities that is generally termed construction, site works, land development or similar.
- **Street Tree**: any tree, irrespective of size, age, or species, planted within a Regional road allowance, except where the tree is likely to have been planted through afforestation or reforestation efforts (see Natural Vegetation). A Street Tree may or may not display obvious signs of planting, such as stakes, tree guards, mulch bed or other indicators.
- **Tree Protection**: the implementation and use of plans, measures, methods, and materials to minimize or prevent Adverse Impacts upon existing trees and/or their Growing Environment while achieving project objectives.
- **Tree Protection Zone** (TPZ): a defined area around an existing tree wherein tree protection measures must be implemented if Site Disturbance is planned within the area, or if there is a reasonable likelihood of inadvertent Encroachment of any form into the area during Site Disturbance. The intent of tree protection measures to be undertaken within or at the limit of the TPZ is to prevent or mitigate, to the fullest extent possible, Adverse Impacts associated with Site Disturbance within the TPZ. The size of the TPZ is delineated as a radius measured outward from the base of the tree to be protected and is expressed in metres. The size of the minimum required TPZ is determined by the formula outlined in these Guidelines. The TPZ radius is determined based upon the diameter at breast height (DBH) of the tree's main stem. For multi-stemmed trees, the diameter at 30cm (D30) is used to determine the TPZ radius.
- **York Region** (the "Region"): The Regional Municipality of York or its authorized agent or representative as designated to the Contractor and/or Consultant.

2 GENERAL PROCEDURE

This section describes the general procedure for the preparation, submission, review and implementation of the inventories, plans, reports, specifications, and standard drawings described in these Guidelines.

Prior to commencement of Site Disturbance which may affect Region-owned Street Trees and/or Natural Vegetation and/or other trees (non-Region owned) within 10m of the maximum limits of Site Disturbance, the following shall be prepared:

- Tree Inventory (the “Inventory”): to identify and provide information about individual trees, tree groups or Natural Vegetation communities.
- Tree Protection Plan (the “Plan”): to visually depict locations of inventoried trees, minimum required tree protection zones, proposed Site Disturbance and proposed tree protection measures and materials.
- Arborist Report (the “Report”): to describe, in written form, the tree inventory, proposed Site Disturbance and associated potential Adverse Impacts and effects upon existing trees, and to specify proposed tree protection measures and materials, including proposed Encroachment within the required TPZs.

The Tree Inventory, Tree Protection Plan, and Arborist Reports must be prepared by a Qualified Tree Professional, must be current within 18 months, and must be submitted to the Region for review and approval prior to any Site Disturbance that could impact Region-owned trees. No Site Disturbance that could impact Region-owned trees, as described in these Guidelines, can occur without the prior written approval of the Region.

The Region may, at its sole discretion, approve or reject any or all parts of the Inventory, Plan and/or Report. The Region may also, at its sole discretion, waive any or all parts of the Guidelines. The Region may also, at its sole discretion, impose additional requirements or conditions upon approval of any or all parts of the Inventory, Plan and/or Report. Failure to prepare the documents in accordance with the Region’s Guidelines will result in a default tree condition rating of ‘Good’, equal to 100% for compensation, applied to all trees marked for removal.

2.1 Tree Inventory

This section describes the purpose, required elements and submission process for the Tree Inventory.

2.1.1 Purpose

The purpose of the Tree Inventory is to present, in an easy-to-read format, the numbering, measurement, assessment and description of Region-owned trees and/or Natural Vegetation and other trees located in proximity to the limit of Site Disturbance which may be affected by the proposed Site Disturbance. The inventory will assist the Region in reviewing and assessing the potential Adverse Impacts of proposed Site Disturbance upon existing trees and the appropriateness and effectiveness of proposed tree protection measures.

Region-owned trees must be clearly identified apart from privately-owned trees or trees owned by local municipalities.

2.1.2 Required Elements

The Tree Inventory shall provide the following information for:

- all individual Street Trees located within 10m of the limit of potential Site Disturbance or whose Crown extends into the limit of potential Site Disturbance,
- all individual trees 10cm DBH or greater, and described as Natural Vegetation, and located within 10m of the limit of potential Site Disturbance or whose Crown extends into the limit of potential Site Disturbance,
- groups of trees less than 10cm DBH, and described as Natural Vegetation, and located within 10m of the limit of potential Site Disturbance or whose Crown extends into the limit of potential Site Disturbance,
- all trees 10cm DBH or greater, located on Adjacent Lands, and located within 10m of the limit of potential Site Disturbance or whose Crown extends into the limit of potential Site Disturbance.

For individual trees, the Inventory shall include the following information:

- Tree number – corresponding to numbered tree location points on the Tree Protection Plan.
- Species – including both common name and botanical (scientific) binomial name. If known, cultivar or variety shall be identified.
- Diameter at breast height (DBH) or Diameter at 30cm (D30) for multi-stemmed trees
- Crown diameter – estimated in metres at the widest point of the Crown.
- Condition rating – as described in the 'Condition Rating' table in section 2.1.3., below.
- Tree Protection Zone (TPZ) – the minimum required Tree Protection Zone, in metres. The size of the TPZ shall be determined using the formula outlined in section 3.1., below.
- Ownership – York Region, Local Municipality, Private, etc.
- Proposed Action – Preserve, Transplant, Injure, Remove
- Notes – additional pertinent information regarding the tree, proposed Site Disturbance within the TPZ, hardscape boulevard location, etc.
    - For all trees proposed for removal, the inventory table shall clearly state the reason for the proposed removal; if known, include the proposed change to existing grade if construction grading limits are the reason provided.
    - For all trees proposed for injury, the inventory table shall clearly state the proposed form of Encroachment into the TPZ.
    - For all Street Trees within or adjacent to hardscape boulevards with enhanced streetscape elements, include a short description of the location type (e.g., landscape bed, boulevard planter, center median, tree grate planter, etc.).

For tree groups (i.e., trees less than 10cm DBH and described as Natural Vegetation), the Inventory shall include the following information:

- Tree group number – corresponding to numbered tree group polygons on the Tree Protection Plan.
- Species composition – the approximate distribution, by percentage (%), of the three most commonly-occurring tree species in the tree group. Any species other than the three most commonly occurring species can be listed in the 'Notes' column.
- Tree count – the total number of trees in the tree group

- Condition rating – the overall condition of the tree group, as described in section 2.1.3., below.
- Tree Protection Zone (TPZ) – the minimum required Tree Protection Zone, in metres. The size of the TPZ shall be determined using the formula outlined in section 3.1., below.
- Ownership – York Region, Local Municipality, Private, etc.
- Proposed Action – Preserve, Injure, Remove
- Notes – additional pertinent information regarding the tree group, proposed Site Disturbance, etc.
    - For all trees proposed for removal, the inventory table shall clearly state the reason for the proposed removal; if known, include the proposed change to existing grade if construction grading limits are the reason provided.
    - For all tree groups proposed for injury, the inventory table shall clearly state the proposed form of Encroachment into the TPZ.

2.1.3 Tree Condition Rating

The following condition ratings shall be considered the Region's standard for tree assessments to be utilized in the Inventory. The percentage listed, in relation to the condition rating, are used to determine the required compensation as described in section 2.4 of these Guidelines.

Condition Rating	Percentage	Criteria
Good	100%	Growth occurs mostly as extensions from the terminal bud with little epicormic branching. Shoot growth usually exceeds 10cm. Full, symmetrical crown. No sign of active decay, chronic or acute insect attack, large open wounds, tissue necrosis, dieback, or chlorotic foliage, not leaning, falling or about to be uprooted.
Satisfactory	80%	Growth occurs mostly as extensions from the terminal bud. Epicormic branching may be heavy providing that the growth is healthy and abundant. May have a partially leaved or disfigured crown (>74% crown density), combined with a few dead branches or limbs, or small open wounds and small trunk tissue necrosis. Tree health will likely not decline further in the next 5 years.
Potential trouble	60%	Growth occurs mostly as epicormic branching or basal sprouts. Usually no growth from terminal buds. New growth may be thin with small buds showing lack of vigour. May improve or decline in health over the next 5 years. May have a partially leaved or disfigured crown (50-74% crown density). These trees usually have a combination of problems which may include poor form or lean, chronic, or acute insect attack, small trunk tissue necrosis, small stem scars, twig dieback, dead branches, exposed roots, or root ball, and/or animals burrowing in to rooting area. Infection may be present in its early stages.
Declining	40%	Declining in health. Crowns have significant twig dieback and dead branches. Usually describes trees having large trunk tissue necrosis, large stem scars. Foliage discolouration is often associated with this condition as is moderate to heavy top dieback and epicormic branching (<50% crown density). Chronic fungal infection or insect infestation may be present. These trees may require major corrective pruning, or replacement.
Death imminent	20%	Symptoms as in Declining but more acute. Will likely die within 5 years. Will require replacement or removal.
Dead	0%	No leaves, brittle twigs, dry buds.

2.1.4 Submission

The Inventory shall be displayed in a tabular format, with table columns corresponding to the required elements described in the 'Required Elements' sub-section. Refer to Appendix A for a tree inventory template.

The Inventory shall be presented as a table on the Tree Protection Plan (as described in section 2.2., below) and shall also be included as an appendix to the Arborist Report.

For all projects, a preliminary Inventory shall be submitted with the initial design submission (30% design submission). The preliminary Inventory must identify tree numbers, species, DBH, crown diameter, condition, ownership, and minimum required Tree Protection Zone (TPZ). Subsequent submissions of the tree inventory shall describe proposed actions and tree protection measures and shall be submitted with the 60% design submission. The Tree Inventory shall be revised as necessary, and each revision shall be submitted to the Region for review.

2.2 Tree Protection Plan

This section describes the purpose, required elements and submission process for the Tree Protection Plan.

2.2.1 Purpose

The Tree Protection Plan is a drawing or series of drawings intended to overlay tree and Natural Vegetation group location and preservation information atop the proposed site disturbance plan. Its purpose is to visually depict the potential impacts of Site Disturbance upon existing trees and facilitate an assessment of the potential impacts and adequacy of proposed tree protection measures. Typically, the Plan can be overlaid atop project construction plans depicting the proposed Site Disturbance to create a separate Plan drawing or drawings.

2.2.2 Required Elements

The Tree Protection Plan shall include all information necessary to accurately assess the potential impacts of proposed Site Disturbance upon existing trees and the adequacy of proposed tree protection measures to mitigate these impacts. Failure to provide such information may result in rejection and revisions may be required.

In addition to basic plan elements (e.g., legend, key plan, title block, property lines, grading, etc.) outlined in the York Region Site Plan Requirements, Road Design Guidelines, Water and Wastewater Design Guidelines and Standards and/or other relevant York Region or local municipality guidelines, the Plan shall include and depict:

- Final property lines and easements both temporary and permanent. Show and label the ultimate right-of-way line using a bold line type.
- Location points of all inventoried trees and Natural Vegetation groups, labeled with tree/group number corresponding to the tree inventory. Individual tree locations shall be surveyed by an Ontario Land Surveyor (OLS) in all instances where other site elements are required to be professionally surveyed.
- The location of Natural Vegetation groups shall be estimated, and the outer edge of the group Dripline shall be shown on the plan.
- Dashed circle denoting the minimum required Tree Protection Zone (TPZ) for every inventoried tree to be removed, measured as a radius from the tree location centre point. The TPZ for Natural Vegetation groups to be removed shall be determined by the outermost trees in the group.

- Solid circle denoting the minimum required TPZ for every inventoried tree to be preserved, measured as a radius from the tree location centre point. The TPZ for Natural Vegetation groups to be preserved shall be determined by the outermost trees in the group.
- The tree inventory table, as described in section 2.1.
- Trees proposed for removal, to be delineated with a clear '×' symbol through the location point.
- Trees proposed for transplanting, to be delineated with a clear 'T' symbol through the location point of the existing tree. The proposed transplanting location point, if situated within the limits of the project site, shall be delineated as "T-X", where 'X' denotes the tree inventory number corresponding to the tree to be transplanted. A dashed circle denoting the minimum required Tree Protection Zone (TPZ) for the transplanted tree, as described above, shall be drawn around the proposed transplanting location point, and the transplanted tree shall be protected in the typical manner. Transplanting shall be undertaken in the dormant season wherever feasible.
- Trees proposed for injury, to be delineated with a hatched pattern across the area of injury. This shall indicate either Crown or root Encroachment and shall be reflected in the Tree Inventory table and described in the Arborist Report.
- Location and detail of all proposed Site Disturbances, including but not limited to grade change, excavation, materials storage, work staging and site access, etc.
- Location of proposed Natural Vegetation preservation, where Site Disturbance is proposed within an area of Natural Vegetation.
- Location of proposed tree protection measures, including but not limited to: TPZ barriers, root-sensitive excavation and root pruning, root zone compaction protection, and/or other measures.
- Standard drawings of proposed tree protection measures including all York Region typical details (NHF-400 series drawings).
- Detailed legend, visually differentiating all the above requirements.

2.2.3 Submission

Tree Protection Plan drawings shall be prepared on the same size sheets and to the same scale as the project Construction Plan, Landscape Plan and/or other relevant project plans. Notwithstanding the above, the Tree Protection Plan scale shall not exceed 1:500. All measurements shown on Tree Protection Plan drawings shall use the metric system.

The Tree Protection Plan shall be labeled with a unique discipline designator (e.g., TPP), and all drawings, shall be labelled using sequential numbers (e.g., TPP-1, TPP-2, etc.).

A preliminary Plan shall be submitted with the initial design submission (30% design submission). Subsequent submissions of the Tree Protection Plan shall be submitted with the 60% and 90% design submission, to be updated to reflect any project changes, and in response to York Region's Natural Heritage and Forestry review and comment.

2.3 Arborist Report

This section describes the purpose, required elements and submission process for the Arborist Report.

2.3.1 Purpose

The purpose of the Arborist Report is to describe, in detail, the proposed Site Disturbance, potential Adverse Impacts upon trees, findings of the Tree Inventory, required and recommended tree protection measures, and tree removal compensation (if required). The Report shall also clearly state the reason for proposed tree removals and shall demonstrate that alternatives to removal were considered in the project design process. Any proposed Encroachment shall also be described in detail.

2.3.2 Required Elements

The Arborist Report shall be a written report and shall be prepared by a Qualified Tree Professional. The Arborist Report shall include the following elements:

- **Title page** describing the project (e.g., site plan reference or development name) and its location (e.g., municipal address, lot, etc.)
- **Contact information and professional qualification details** (e.g., ISA Certified Arborist number) of the Qualified Tree Professional preparing the report and contact information of the client retaining the professional services
- **Introduction** generally describing the proposed works and the structure and purpose of the Arborist Report (include the date the report was created and the date the trees were inspected; must be current within 18 months from submission)
- **Methodology statement** describing the field observations, tree inventory attributes and tree assessment methodologies employed
- **Detailed description** and/or list of:
    - Proposed Site Disturbances in relation to existing trees
    - Trees to be preserved
    - Trees to be injured (including trees requiring arboricultural maintenance including Crown or root Encroachment)
    - Trees to be removed, including a clearly stated reason for the proposed removal and demonstration that alternatives to removal were considered
    - Trees to be transplanted
    - Trees posing elevated level of risk
    - Trees of special concern (species at risk, such as Juglans cinerea [Butternut] and others noted by the Ministry of Environment, Conservation and Parks)
    - Natural Vegetation preservation
    - Impacts to enhanced streetscaped boulevards
- **Specifications and recommendations**, including details and notes (as necessary) for required and/or recommended (proposed) tree protection measures for trees and/or Natural Vegetation, including methods to protect enhanced streetscaping boulevards.
- **Compensation for tree removals**, in accordance with the Guidelines and utilizing the most current compensation rate. A detailed table, specifically for Region assets, shall be provided.
- **Concluding remarks** summarizing the content of the Arborist Report, including a summary table of Region trees to preserve, injure, transplant and/or remove.

- **Photographs**, to depict the site and trees proposed for removal; may be provided as an appendix to the Arborist Report.
- **Tree Inventory**, as described above, to be provided as an appendix to the Arborist Report.

2.3.3 Submission

The Arborist Report shall be prepared for the 60% design review submission. The Arborist Report shall be revised accordingly to reflect any revisions to proposed Site Disturbances and tree protection measures throughout the project planning process and shall be finalized for the 90% design review submission. The Arborist Report shall be submitted together with the Tree Inventory (to be included as an appendix to the Arborist Report) and the Tree Protection Plan.

2.4 Tree Compensation

Compensation is required for the removal of trees on the Regional road allowance to preserve canopy cover and to realize no net loss of canopy. Compensation may be provided in the form of replacement plantings, through payment of equivalent compensation value or a combination of both.

The number of replacement trees is calculated as follows:

$$\text{Number of replacement trees} = \left(\left(\frac{\text{DBH of tree to be removed}}{\text{Replacement Tree Caliper Size}}\right) * \text{Condition rating}\right)$$

Refer to section 2.1.3 for tree condition ratings and their respective percentages. Replacement trees must be planted in accordance with the Region's standards and specifications for street tree planting. Replacement Tree Caliper Size for Regional street trees is 50mm (5cm).

Landscape plans and replacement plantings, not described in these Guidelines, also undergo a design review and inspections process with York Region Natural Heritage and Forestry. Visit www.york.ca/standards for more information.

Compensation value is calculated as follows:

$$\text{Compensation Value (\$)} = (\text{Number of replacement trees}) * \text{Replacement Cost}$$

The Replacement Cost for a given tree is based on the Region's cost for planting a street tree and maintaining it in good condition and under warranty for 2 years following the year of planting, which typically includes 3 growing seasons. Additional compensation may be required for impacts to supporting infrastructure (e.g., soil cells, tree grates, irrigation, etc.) in more urban areas. Visit www.york.ca/standards or contact the Region for the current Replacement Cost.

Certain tree species are exempt from compensation. Exempt trees include Tree-of-Heaven (Ailanthus altissima), European/black alder (Alnus glutinosa), Russian olive (Elaeagnus angustifolia), any tree of the genus ash (Fraxinus sp.) not under an Emerald Ash Borer treatment program, and any tree of the genus buckthorn (Rhamnus sp.).

Refer to Appendix B for a sample tree removal compensation table.

3 TREE PROTECTION SPECIFICATIONS

This section of the York Region Street tree and Forest Preservation Guidelines outlines standard specifications for typical tree protection measures, including:

- Tree Protection Zone (TPZ)
- Tree Protection Zone (TPZ) barriers
- Tree Protection Zone (TPZ) signage
- Canopy clearance pruning
- Root zone compaction protection
- Root-exploratory excavation
- Root-sensitive excavation and root pruning
- Tree stem protection
- Sediment protection
- Tree removal
- Soil decompaction and restoration
- Natural Vegetation preservation

3.1 Tree Protection Zone (TPZ)

The Tree Protection Zone (TPZ) is a defined area around an existing tree wherein tree protection measures must be implemented if Site Disturbance is planned within the area, or if there is a reasonable likelihood of inadvertent Encroachment of any form into the area during Site Disturbance. The intent of tree protection measures to be undertaken within or at the limit of the TPZ is to prevent or mitigate, to the fullest extent possible, Adverse Impacts associated with Site Disturbance within the TPZ.

Unless approved by the Region or its designate and mitigated through the implementation of specified tree protection measures (i.e., Encroachment to facilitate arboricultural maintenance), the following activities shall be strictly prohibited within the TPZ prior to, during and following Site Disturbance:

- Installation or attachment of any items to the tree
- Operation of equipment or machinery
- Storage of equipment, machinery, or materials
- Access by any personnel
- Placement of trailers, temporary buildings, or structures
- Flushing, storage or dumping of fuels, chemicals, or other contaminants
- Stockpiling of soil
- Digging, trenching, or excavation
- Change to existing grade

The size of the TPZ is delineated as a radius measured outward from the base of the tree to be protected and is expressed in metres. The TPZ radius is determined based upon the diameter at breast height (DBH) of the tree's main stem. For multi-stemmed trees, the diameter at 30cm (D30) is used to determine the TPZ radius.

Depending on the tree and its Growing Environment, the Region may determine that a larger TPZ above the minimum is required.

3.1.1 Size of TPZ (trees <24cm DBH)

To ensure suitable conditions for future root development and tree growth, special provisions must be made to protect both the existing roots of small trees (trees 24cm DBH or less) and their future rooting areas. Therefore, a minimum Tree Protection Zone (TPZ) radius of 2.4m must be provided for any tree 24cm DBH or less, irrespective of its size or age.

Where a TPZ radius of 2.4m cannot be provided on all sides of the tree, the TPZ shall be sized to enclose and protect a minimum of 20m^2 of soil. If the minimum area cannot be effectively protected, measures to prevent or mitigate the adverse effects of Site Disturbance, such as root-sensitive excavation and root pruning, shall be proposed and implemented. Any proposed encroachment must be reviewed and approved by Natural Heritage and Forestry.

Example: What is the minimum required TPZ for a 7cm DBH tree?

The tree's DBH is less than 24cm DBH. The minimum required TPZ for any tree less than 24cm DBH is 2.4m. Therefore, the radius of the tree's minimum required TPZ is 2.4m.

3.1.2 Size of TPZ (trees >25cm DBH)

For trees 25cm DBH or greater, the extent of the TPZ is determined by the following formula:

$$\text{TPZ (m)} = \frac{\text{DBH (cm) x 10}}{100}$$

In other words, 10cm of protection must be provided for every centimetre of trunk diameter at breast height for trees 24cm DBH or greater.

Example: What is the minimum required TPZ for a 43cm DBH tree?

The tree's DBH is 43cm. 43cm multiplied by 10 is 430cm, or 4.3m.
Therefore, the radius of the tree's minimum required Tree Protection Zone (TPZ) is 4.3m.

3.1.3 Enhanced Streetscape Boulevards

Planting in the form of Street Trees, shrubs and perennials are often an integral part of streetscape design on Regional roadways in highly urban environments which contain significant amounts of hardscaping. Street Trees may be planted in tree grate planters where roots and soil volumes are located under sidewalks, multi-use paths and other in-boulevard infrastructure. Street Trees, shrubs and/or perennials may be planted in landscaped beds, boulevard planters or centre medians. In these environments, special consideration is needed to protect the integrity of the Street Trees, surrounding landscapes, their supporting infrastructure, and their Growing Environment.

Adverse impacts to Street Trees, shrubs, and perennials in established urban streetscapes may require additional restoration works to match existing boulevard conditions and design standards. Custom tree protection measures are to be included and described in the Arborist Report, including but not necessarily limited to restoration of enhanced streetscaping boulevard elements, drainage infrastructure and soil volume. Contact York Region Natural Heritage and Forestry for more information.

3.2 Tree Protection Zone (TPZ) Barriers

Unless otherwise approved by the Region or its designate, a vertical Tree Protection Zone (TPZ) barrier shall be installed around every tree to be preserved, including trees preserved with proposed injury.

Refer to standard drawing NHF-400 Tree Protection Zone Barrier.

3.2.1 Location – Single Tree

A vertical barrier or barriers shall be installed at the outer limit of the minimum required Tree Protection Zone (TPZ) for each tree to be preserved and shall enclose the entire TPZ. The locations of TPZ barriers shall be clearly identified on the Tree Protection Plan. If the barrier cannot be installed at the limit of the minimum required TPZ due to site constraints, the distance to which the barrier is proposed to be installed shall be clearly specified in the Arborist Report and Tree Inventory and the location of the barrier shall be shown on the Tree Protection Plan.

3.2.2 Location – Group of Trees

Where the TPZs of two or more trees overlap or where two or more trees are in otherwise close proximity to each other and are not separated by impermeable, paved, or other hard surfaces, TPZ barriers shall enclose the minimum required TPZ of each tree as well as the area between the trees, even if this area extends beyond the minimum required TPZ. The intent of this approach is to maximize the protection of available rooting space between trees and, wherever possible, protect contiguous groups of trees.

3.2.3 Installation Procedure

The TPZ barrier shall be installed prior to the commencement of any Site Disturbance, including tree removals. Site Disturbance shall not commence until the installation of all TPZ barriers has been completed and has been verified and approved by the Region or its designate.

3.2.4 Materials

Unless otherwise specified and approved by the Region or its designate, two types of TPZ barrier shall be considered acceptable, including:

- Framed construction fencing
- Solid hoarding

Framed construction fencing is the primary method for TPZ barrier construction. Solid hoarding shall be installed where there is a likelihood of fill or other material being piled against the TPZ barrier, or where heavy machinery is to be operated near the TPZ barrier.

3.2.5 Construction Method

Framed construction fencing and solid hoarding TPZ barriers shall be supported by a frame constructed of solid wood 2×4s, to be secured using appropriately sized wood screws only. Metal T-bars or similar materials shall not be used for frame construction. Nails, ties, staples, or other fasteners shall not be used to attach frame sections. The height of the frame shall measure a minimum of 1.2m (4 feet), and the width of individual frame sections shall not exceed 2.4m (8 feet). The frame shall enclose the entire Tree Protection Zone, unless otherwise approved by the Region or its designate. A taller frame may be required by York Region. The frame shall be supported by diagonal 2×4 support legs installed inside the TPZ, secured to the frame using wood screws, and secured to the ground using an appropriately sized wooden stake installed a minimum of 125mm into the ground. A minimum of 1 support leg shall be installed per 2.4m (8 feet) of linear TPZ barrier distance, or per frame section. If necessary, corner bracing shall be installed between adjacent faces of the TPZ barrier to provide additional stability.

Orange construction safety fencing shall be secured and tightly stapled to the outside of the TPZ barrier frame to construct the framed construction fencing TPZ barrier type. Other fencing materials (e.g., chicken wire, green snow fence, etc.) shall not be used.

Plywood or oriented strand board (OSB) sheathing with a minimum thickness of 3/8” shall be affixed using wood screws to the outside of the TPZ barrier frame to construct the solid hoarding TPZ barrier type. Nails, staples, or other fasteners shall not be used.

3.2.6 Signage

Signage, as specified in these Guidelines, shall be installed on at least two sides of the TPZ barrier and/or every 10m on contiguous TPZ barriers.

3.2.7 Maintenance and Inspection

TPZ barriers shall remain in place and in good working order and appearance throughout the duration of Site Disturbance until completion of all works. TPZ barriers shall not be moved, modified, or relocated at any time without the approval of the Region or its designate.

TPZ barriers shall be inspected by a Qualified Tree Professional, or a person designated to do so by the Region once weekly or on a schedule approved by the Region or its designate. Any deficiencies shall be noted in writing and any TPZ barriers found to be in substandard condition shall be repaired, modified, or replaced as necessary within 48 hours of receiving notification to do so.

3.3 Tree Protection Zone (TPZ) Signage

TPZ signage shall be installed on at least two sides of the TPZ barrier and/or every 10m on contiguous TPZ barriers, as outlined below.

Refer to standard drawing NHF-401 Tree Protection Zone Signage.

3.3.1 Content

The TPZ barrier informational signage shall bear the York Region logo, clearly identify the TPZ area, provide contact information for York Region Environmental Services Department, Natural Heritage and Forestry Division, and display the following text:

TREE PROTECTION ZONE (TPZ)

PLEASE NOTE THAT **ANY**:
GRADE CHANGE
DUMPING
STORAGE
UNAUTHORIZED ENTRY
TREE INJURY OR REMOVAL
DISTURBANCE OF ANY KIND

IS **STRICTLY PROHIBITED** WITHIN THIS TPZ.

THIS TPZ BARRIER SHALL NOT BE DAMAGED OR MOVED.

PLEASE REPORT ANY ENTRY INTO THIS ZONE TO NATURAL HERITAGE AND FORESTRY:
Access York
1-877-464-9675 ext.73000
accessyork@york.ca

Typical TPZ barrier information signage, showing acceptable formatting and layout, is found in the standard drawing NHF-401 Tree Protection Zone Signage.

3.3.2 Materials and Installation

TPZ signage shall be installed on at least two sides of the TPZ barrier. The distance between signs shall not exceed 10m on any one side of the TPZ barrier.

Signage shall be constructed of white corrugated plastic or equivalent durable material measuring no less than 400mm (height) × 600mm (width).

On the framed construction fencing TPZ barrier type, signage shall be installed utilizing plastic zip ties, wire tie or similar durable material in a manner that prevents tearing of the barrier fence.

On the solid hoarding TPZ barrier type, signage shall be installed using a wood screw and washer combination to prevent tearing of the signage material.

3.4 Canopy Clearance Pruning

Where there is a likelihood of injury of scaffold branches due to contact by construction equipment, and where re-routing construction equipment is not feasible due to Site Disturbance requirements, canopy clearance pruning may be required.

Region approved pruning must be undertaken by an ISA Certified Arborist or an Ontario College of Trades 444A Arborist or Arborist Apprentice only; no other trades personnel are permitted to prune trees. Any proposed pruning must be described in the Arborist Report and must be approved by the Region or its designate prior to undertaking of pruning.

3.5 Root Zone Compaction Protection

Root zone compaction protection must be installed wherever traffic, access, storage, or other at-grade TPZ Encroachment is planned, anticipated or likely within minimum required TPZs or other areas to be protected. Any TPZ Encroachment must be permitted in writing by York Region or its designate.

Depending upon the intensity of the Encroachment, Light, Moderate or Heavy root zone compaction protection may be required, as specified below.

Refer to standard drawing NHF-404 Root Zone Compaction Protection.

3.5.1 Light Root Zone Compaction Protection

Where limited non-vehicular access in the TPZ is anticipated (e.g., occasional foot traffic, wheelbarrow), the Light Root Zone Compaction Protection specification shall be implemented, as described below:

- Installation of permeable geotextile over area to be protected
- Installation of a minimum of 150mm of wood chip mulch over area of potential impact
- Optional: installation of ¾” plywood over mulch (to facilitate movement over mulch, if required)

3.5.2 Moderate Root Zone Compaction Protection

Where more frequent non-vehicular access or occasional light vehicle (e.g., pickup truck) access across the TPZ is anticipated, the Moderate Root Zone Compaction Protection specification shall be implemented, as described below:

- Installation of staked-down permeable geotextile over area of potential impact
- Installation of a minimum of 200mm of wood chip mulch over geotextile
- Installation of ¾” plywood over mulch

3.5.3 Heavy Root Zone Compaction Protection

In areas where regular vehicle access or similar impacts are anticipated in the TPZ, the Heavy Root Zone Compaction Protection specification shall be implemented, as described below:

- Installation of staked-down permeable geotextile over area of potential impact
- Installation of 100mm of clear stone over geotextile
- Installation of permeable geotextile over stone layer
- Installation of a minimum of 150mm of wood chip mulch over geotextile
- Installation of ¾” plywood or steel plate over mulch

3.6 Root-Exploratory Excavation

Root-exploratory excavation may be required where potential Adverse Impacts upon tree roots within TPZs may be difficult to accurately determine prior to any proposed Conventional Excavation. Prior written approval of the Region is required before any root-exploratory excavation may be undertaken.

The purpose of root-exploratory excavation is to visually determine the extent of existing tree roots within an area of proposed excavation without damaging the roots, thereby enabling the opportunity to relocate excavation and preserve the tree's roots and rooting area if potential Adverse Impacts are considered too severe and tree removal is not acceptable.

Root-exploratory excavation shall be undertaken utilizing pneumatic soil excavation (e.g., Air Spade or similar) or hydro-vac excavation. Excavation equipment shall be set to a sufficiently low pressure to avoid damage to root bark.

To expose roots for the purpose of exploratory excavation, a trench approximately 200mm wide and 1.0m deep (or maximum depth of proposed excavation, whichever is lesser) shall be excavated in the area of proposed Site Disturbance utilizing the above-noted methods. Exposed roots shall be examined by a Qualified Tree Professional and/or the Region. If significant structural roots (roots greater than 60mm [2.5"]) in diameter or an abundance of fine roots are encountered, the proposed excavation may need to be relocated as recommended by the Qualified Tree Professional and approved by the Region or its designate, or alternative excavation measures (e.g., tunneling) may need to be implemented. The excavated trench must be backfilled using native soil immediately following root-exploratory excavation if proposed excavation is to be relocated.

3.7 Root-Sensitive Excavation and Root Pruning

Where excavation is required within a TPZ, and it is determined that the extent of root loss associated with the proposed excavation is not likely to result in significant tree decline, mortality or loss of rooting stability, root-sensitive excavation and root pruning shall be undertaken prior to Conventional Excavation.

The purpose of root-sensitive excavation and root pruning is to enable tree roots to be cleanly severed and to prevent root damage in the un-excavated area through tearing, fracturing or breakage caused by conventional excavation equipment.

Refer to standard drawing NHF-403 Root-Sensitive Excavation and Root Pruning.

3.7.1 Root-Sensitive Excavation

Root-sensitive excavation shall be undertaken utilizing pneumatic soil excavation (e.g., Air Spade or similar) or hydro-vac excavation. Root-sensitive excavation shall be undertaken by excavating a trench approximately 200mm wide and 1.0m deep (or maximum depth of proposed excavation, whichever is greater) along the edge of the area to be excavated. The trench shall be set as far from the base of the tree as possible, and shall extend, at minimum, along the entire length of the proposed excavation within the minimum required TPZ.

3.7.2 Root Pruning

Following root-sensitive excavation and prior to Conventional Excavation, all exposed roots shall be properly pruned by a Qualified Tree Professional. Root pruning shall be undertaken in the following manner:

- Exposed roots shall be pruned back to the face of trench wall to be retained (i.e., the back face of the trench). No roots greater than 60mm (2.5”) in diameter shall be pruned without authorization of the Region or its designate.
- All roots must be pruned with clean and sharp hand tools only. Shovels, picks, or other construction tools shall not be used to prune roots. Wound dressings or pruning paint shall not be used to cover the ends of any cut.
- Roots should be pruned in a similar fashion as branches, taking care to maintain the integrity of the root bark ridge, where present. Roots should be pruned back to a lateral root at least one third of the diameter; root stubs must not be left upon completion of root pruning.
- Prolonged exposure of tree roots must be avoided. All pruned roots should be covered with soil or excavated trenches should be backfilled with native material as soon as possible following root pruning.
- If Conventional Excavation is not scheduled to occur immediately after root-sensitive excavation and root pruning, the trench should be backfilled. The TPZ barrier should be set to the limit of the trench to ensure that excavation does not extend beyond the limit of root pruning.
- Conventional Excavation must not encroach beyond the back face of the trench and limit of root pruning to prevent further damage to pruned roots.
- The Qualified Tree Professional must submit a written summary and photographic documentation of what has been completed to the Region once root pruning is complete.

3.8 Tree Stem Protection

In areas where TPZ Encroachment is approved in writing by the Region or its designate and where there is a reasonable possibility of accidental impact upon the main stem or scaffold branches of a tree to be preserved, tree stem protection shall be installed. Tree stem protection is not intended to be considered an alternative to the installation of appropriate TPZ barriers and shall only be used when no alternatives are practicable.

Tree stem protection shall be constructed in the following manner:

- Entire main stem shall be tightly triple-wrapped in burlap to a minimum height of 2.4m (8’)
- Entire main stem shall be clad with 2x4s to a minimum height of 2.4m (8’), secured with wire.
- Alternative materials, such as plywood on a 2x4 frame, may be approved by the Region or its designate.
- Stem protection greater than the minimum 2.4m (8’) height may be required by the Region or its designate.
- Similar protection of significant scaffold limbs may be required by the Region. If required, such protection shall only be installed by an ISA Certified Arborist or an Ontario College of Trades 444A Arborist or Arborist Apprentice.

Refer to standard drawing NHF-405 Tree Stem Protection.

3.9 Sediment Protection

Where silt barrier (sediment control) fencing or other sediment control measures are required, they shall conform to the Region’s standards and practices. Where siltation fencing is proposed to be installed along the outside edge of a TPZ barrier, it shall be installed utilizing a ‘no-dig’ method. Please contact the Region for the most current acceptable standards and practices for sediment control.

3.10 Tree Removal

All reasonable efforts shall be made to minimize the number of tree removals. Tree removals shall not be undertaken without written approval of the Region. When tree removal is necessary, the following procedures shall be implemented:

- Tree(s) designated for removal must be clearly marked in field with the letter 'R' using orange or red high-visibility spray paint at DBH height (1.37m) and at the base of the stem (stump height).
- TPZ barriers shall be installed on trees to be retained prior to tree removal unless barriers would directly interfere with undertaking approved tree removal. In this situation, a Qualified Tree Professional must be onsite during removals.
- Root zone compaction protection shall be installed if vehicles and/ or large equipment used for tree removal (e.g., bucket truck, woodchipper) will encroach upon minimum required TPZs of trees to be retained.
- Approved tree removals shall be carried out prior to other Site Disturbance and in such a manner as to prevent Site Disturbance and damage to trees to be retained.

3.11 Soil Decompaction and Restoration

If there is clear visual evidence of soil compaction (e.g., rutting, vehicle tracks, bare ground, etc.) within the minimum required TPZ of a tree to be preserved following Site Disturbance, soil decompaction shall be undertaken within the affected area. Depending upon the severity and extent of soil compaction, acceptable methods to reduce soil compaction may include one or more of the following:

- Aeration and fracturing of compacted soil using a pneumatic excavation tool (e.g., Air Spade, Supersonic Air Knife, or similar).
- Incorporation of minimum 50mm layer of 1:1 mixture of composted wood chip mulch and coarse sand to a minimum depth of 200mm (8") across the entire compacted area. The surface of area to be de-compacted shall be loosened with the pneumatic excavation tool prior to spreading of compost/sand mixture. The mixture shall then be spread over the area and incorporated through 'tilling in' with the pneumatic excavation tool.
- Installation of wood chip mulch to a depth of 150mm, after setting, starting 100mm from the base of the stem, and extending around the entire circumference of the tree to at least the limit of the compacted area.
- A written summary and photographic documentation of what has been completed for soil decompaction and restoration must be submitted to the Region when complete.

The proposed soil decompaction method shall be clearly described in writing and approved by the Region or its designate prior to its undertaking.

3.12 Natural Vegetation Preservation

Where the maximum limits of potential Site Disturbance extend into an area of existing Natural Vegetation, preservation measures may be required to mitigate Adverse Impacts.

Wherever possible, Site Disturbance should be directed entirely outside of areas of Natural Vegetation.

However, where Encroachment into areas of Natural Vegetation is necessary, the Inventory, Plan and Report shall:

- Describe, as outlined in these Guidelines, the location, species, size, and condition of areas of Natural Vegetation
- Provide a detailed assessment of the potential direct and indirect Adverse Impacts of the proposed works upon areas of Natural Vegetation.
- Demonstrate that alternative options and designs which minimize the potential Adverse Impacts upon areas of Natural Vegetation were considered and describe why such options cannot be implemented.
- Outline proposed measures to minimize and/or mitigate potential Adverse Impacts upon areas of Natural Vegetation, as described below.

The Inventory, Plan and Report addressing Natural Vegetation preservation shall be prepared and submitted in the same manner as described in the preceding sections of these Guidelines.

The following preservation measures may be required to be implemented to minimize and/or mitigate potential direct and indirect Adverse Impacts upon areas of Natural Vegetation:

- Trees within areas of Natural Vegetation shall be protected in the same manner as trees described in these Guidelines. Appropriate tree protection measures, such as tree protection barriers, root-sensitive excavation and root pruning, or others, shall be implemented as necessary to minimize and/or mitigate potential Adverse Impacts upon trees to be preserved.
- Site drainage shall be assessed and, unless necessary, shall not be altered to significantly change drainage patterns or moisture regimes of retained areas of Natural Vegetation.
- Wherever possible, working easements, materials and equipment storage areas, or other areas of disturbance shall be located outside of areas of Natural Vegetation, or shall be directed towards areas of relatively low vegetation density, poor vegetation quality, or similar areas as approved by the Region or its designate.
- Wherever feasible, stumps of trees removed within the area of Natural Vegetation shall be flush cut to above ground level to promote suckering regeneration. Wherever feasible, for desirable species, stumps shall not be grubbed out or otherwise removed to allow for groundcover regeneration and regeneration from the soil seed bank.
- Wherever Site Disturbance will result in the creation of a new Forest Edge, a ‘pre-stressing’ plan shall be developed, approved by the Region or its designate, and implemented a minimum of 2 years prior to undertaking the Site Disturbance. Pre-stressing may involve selective removal of Natural Vegetation to promote native shrub and tree seedling growth within the new proposed Forest Edge. Pre-stressing will help to buffer the retained vegetation from potentially adverse edge effects such as salt spray, increased wind and light penetration, temperature fluctuation, and others. Invasive species management may also be required as part of Forest Edge ‘pre-stressing’.
- Unless visibly contaminated with foreign materials (e.g., oil, sluice, etc.) or known to be infected with a communicable plant pathogen, woody material removed from the area of Natural Vegetation shall be finely chipped on-site and shall be spread into the retained area of Natural Vegetation. The depth of spread wood chip material shall not exceed 50mm and shall not inhibit plant growth and regeneration. Some larger woody material (e.g., partial downed logs, high stumps) should also be retained, wherever feasible, to provide wildlife habitat features.

- Restoration planting of trees and shrubs may be required along a newly created Forest Edge. Planting plans should specify a diversity of native tree and shrub species compatible with the existing area of Natural Vegetation. Planting plans should replicate natural Forest Edge conditions, with smaller plant material on the outside of the Forest Edge and larger material further away from the edge. Species should also be tolerant of the anticipated environmental conditions (e.g., salt spray) along the newly created Forest Edge. Native species should be used.
- Newly created Forest Edges and otherwise impacted areas of Natural Vegetation should be monitored as outlined in a monitoring plan approved by the Region or its designate. The survival and condition of planted material should be monitored, and supplemental watering or mulching should be implemented as required. Where necessary, vegetation control measures such as removal, mulching, or herbicide application may be required.

4 STANDARD DRAWINGS

York Region has six (6) standard drawings that must be included on the Tree Protection Plan and within the Arborist Report. All drawings must be clearly legible and detail keys shall be provided, where applicable.

For the most current standard drawings, visit www.york.ca/standards.

- NHF-400 Tree Protection Zone Barrier
- NHF-401 Tree Protection Zone Signage
- NHF-402 Standard Tree Protection Notes
- NHF-403 Root-Sensitive Excavation and Root Pruning
- NHF-404 Root Zone Compaction Protection
- NHF-405 Tree Stem Protection

APPENDIX A – TREE INVENTORY TEMPLATE

Tree #	Species	Common Name	DBH (cm)	Crown diameter (m)	Condition Rating	Tree Protection Zone (m)	Ownership	Proposed Action[1]	Notes

[1] Proposed Action column shall be completed for the 60% design review submission.

APPENDIX B – SAMPLE TREE REMOVAL COMPENSATION TABLE

Notes: Replacement Tree Size is 5 (50mm caliper). The cost of a deciduous replacement tree is $909.11. The cost of a coniferous replacement tree is $834.36

Tree #	Species	Common Name	DBH (cm)	Condition Rating [1]	% [1]	Number of Replacement Trees (calculated) [2]	Number of Replacement Trees (rounded)	Compensation Value ($) [3]
1	Acer saccharinum	Silver maple	20	Potential Trouble	0.6	2.4	2	$1,818.22
2	Acer rubrum	Red maple	5	Good	1.0	1	1	$909.11
3	Picea glauca	White spruce	5	Good	1.0	1	1	$834.36
4	Catalpa speciosa	Northern catalpa	36	Satisfactory	0.8	5.76	6	$5,454.66
5	Syringa reticulata	Ivory silk	18	Dead	0	0	0	$0.00
6	Picea glauca	White spruce	34	Declining	0.4	2.72	3	$2,503.08
7	Acer saccharinum	Silver maple	40	Satisfactory	0.8	6.4	6	$5,454.66
8								
9								
10								
						Required Replacement Trees	19	$16,974.09
						Proposed deciduous trees[5]	8	($7,272.88)
						Proposed coniferous trees[5]	3	($2,503.08)
						Required Financial Compensation		$7,198.13

[1] Refer to Section 2.1.3. within these Guidelines

[2] Number of replacement trees = $\left(\left(\frac{\text{DBH of tree to be removed}}{\text{Replacement Tree Caliper Size}}\right) * \text{Condition rating}\right)$

[3] Compensation Value ($) = $(\text{Number of replacement trees}) * \text{Replacement Cost}$

[4] Visit www.york.ca/standards or contact the Region for the most current Replacement Cost. Sample provided above shows 2022 Replacement Costs.

[5] Total number of replacement plantings provided within the Regional road allowance based on final landscape plan.