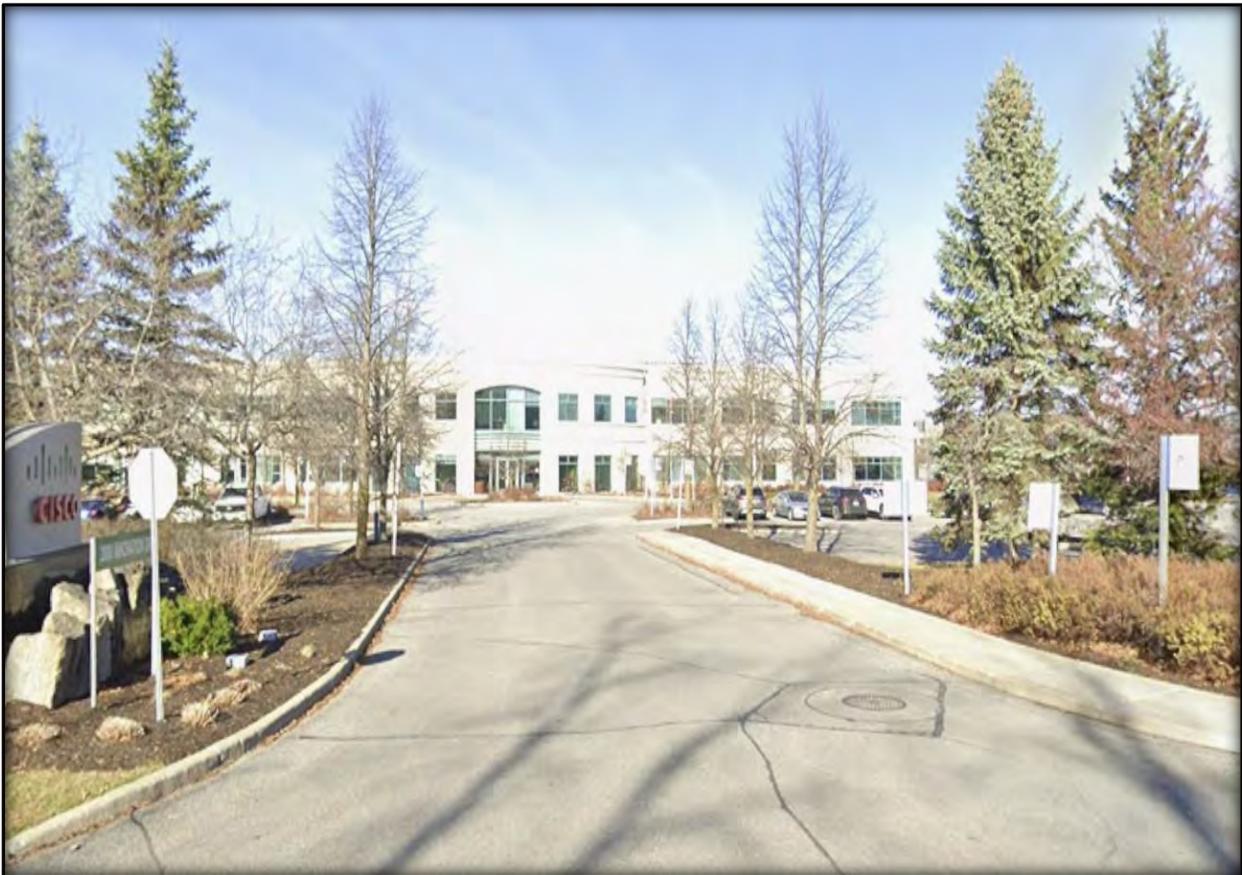


Cisco - 10253303

# Tree Conservation Report

**Cisco Ottawa Campus – 2000 & 3000 Innovation Drive**

December 8, 2025



Cisco Ottawa Development Center  
2000 & 3000 Innovation Drive  
Tree Conservation Report

# Tree Conservation Report

**Cisco Ottawa Development Center – 2000 & 3000 Innovation Drive**

December 2025

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Cisco Ottawa Development Center  
2000 & 3000 Innovation Drive  
Tree Conservation Report

## Version Control (optional)

Revision No.	Reviewed by	Date Issued	Description
000	CL	December 8, 2025	Draft report submitted for Client review.

# Contents

- 1 Introduction ..... 1**
  - 1.1 Project Location and Site Description..... 1**
  - 1.2 Objective..... 1**
- 2 City of Ottawa Tree Protection By-Law ..... 3**
- 3 Limitations..... 3**
- 4 Methodology ..... 4**
  - 4.1 Tree Size ..... 4**
  - 4.2 Tree Assessment ..... 4**
  - 4.3 Tree Condition ..... 5**
  - 4.4 Tree Ownership..... 5**
  - 4.5 Tree Protection and Impact Analysis ..... 5**
- 5 Existing Conditions ..... 6**
- 6 Proposed Project Description ..... 9**
- 7 Impact Assessment and Recommendations ..... 9**
  - 7.1 Impacts on Trees ..... 9**
- 8 Mitigation Measures and Construction Management ..... 11**
  - 8.1 Tree Removal ..... 11**
  - 8.2 Tree Protection Measures..... 11**
  - 8.3 Branch and Root Pruning ..... 12**
  - 8.4 Tree Planting Recommendations..... 12**
- 9 Permits and Approvals..... 12**
- 10 Summary ..... 13**
- 11 Certification and Closure ..... 13**

## Tables

<b>Table 1: Site Investigations Details .....</b>	<b>6</b>
<b>Table 2: Impact Assessment and Recommendations for Trees on Site.....</b>	<b>8</b>

## Figures

<b>Figure 1: Site Location and Survey Area .....</b>	<b>2</b>
<b>Figure 2: Tree Inventory and Health Condition (Mandatory Map 1 per City of Ottawa, 2021).....</b>	<b>8</b>
<b>Figure 3: Tree Impact Assessment and Recommendations (Mandatory Map 2 per City of Ottawa, 2021)...</b>	<b>10</b>

## Appendices

<b>Appendix A. Appendix A Tree Inventory and Protection Plan, Map 1 and Map 2</b>	
<b>Appendix B. Appendix B City of Ottawa Tree Protection Specification</b>	

# 1 Introduction

Arcadis Canada Inc. (Arcadis) has been retained by Cisco Systems (the 'Client') to prepare a Tree Conservation Report (TCR) for the proposed re-development located at 2000 and 3000 Innovation Drive, on Part Lot 8, Concession 3, in Kanata, ON – within the Urban boundary of the City of Ottawa (the 'Site').

## 1.1 Project Location and Site Description

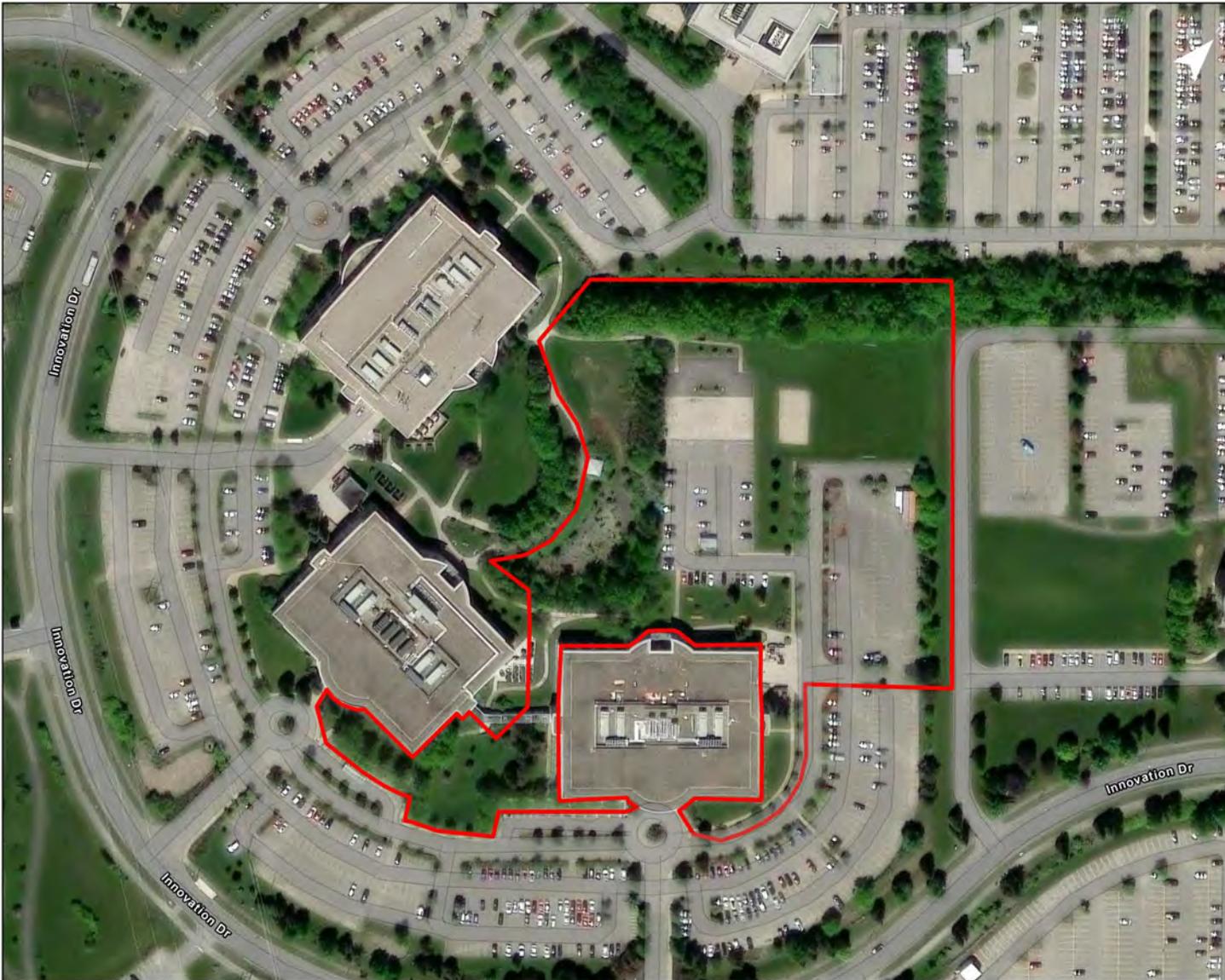
The subject property occupies approximately 7.6 hectares in total within the Kanata North Business Park, a prominent technology hub in Ottawa. The Site is located on the south-west corner of the lands encircled by Innovation Drive, east of the Richcraft Recreation Complex and west of Hines Road. The Site fronts on to Innovation Drive with side and rear lot lines abutting neighbouring industrial buildings along Innovation Drive. The subject property consists of two interconnected, two-storey office and laboratory buildings developed in the late 1990s or early 2000s; one located at 2000 Innovation Drive, and one located at 3000 Innovation Drive. The buildings are primarily used for office, research, and development functions, and include ancillary spaces such as computing laboratories, storage areas, and electrical and mechanical rooms. Exterior features include extensive asphalt-surfaced parking areas, landscaped grassed margins, and a sports field. The subject property is fully serviced by the City of Ottawa's municipal water, sanitary sewer, stormwater, hydro, and telecommunications infrastructure.

The topography is flat, and the Site is heavily landscaped with hundreds of planted trees and shrubs surrounding the buildings. A naturalized strip of deciduous trees is situated at the northwestern extents of the Site, and there is a parkette in the center of the Site with multiple seating areas and various deciduous and coniferous trees plantings. The Site is surrounded by additional general industrial development to the north, east and west, and forested vacant land to the south.

Refer to **Figure 1** on the following page to view the Site Location.

## 1.2 Objective

This Tree Conservation Report (TCR) follows the *City of Ottawa Tree Conservation Report Guidelines* (City of Ottawa, 2021), which required a site visit to identify trees larger than 10 cm in diameter that could be impacted by the project. Information on the individual trees and tree groupings, their species, size (diameter-at-breast height, dbh) and health were recorded. The TCR summarizes the results, identifies the ownership of the trees, and based on the current design plans provides commentary on which trees could be retained and those that are recommended to be pruned or removed. This information is depicted on the mandatory Map 1 and Map 2 of the TCR, as per the guidelines. In the paragraphs below, we have outlined the field methodology and findings of the tree inventory. This report will help determine the project's potential impact on existing trees and provide general recommendations to avoid and/or mitigate tree loss and injury.



<b>Legend</b> — Site	
Scale: 1:1,550 0 15 30 60 90 120 Meters	
Project Name: <b>Cisco OTT Campus: Tree Conservation Report</b>	
Title: <b>Site and Study Area</b>	
Prepared By: <b>ARCADIS</b> Design & Consultancy for natural and built assets	
Project: 30270525	<b>Figure: 1</b>
Date: 12/8/2025	

## 2 City of Ottawa Tree Protection By-Law

The Site is located within the City of Ottawa's Tree Protection By-law No. 2020-340 (January 1, 2021) limits. The intent of this By-Law is to respect the protection of municipal trees and municipal natural areas in the City of Ottawa and trees on private property in the urban area of the City of Ottawa.

Under the Tree Protection By-law, the following protected trees cannot be injured or removed without a tree permit from the city:

- *All City-owned trees throughout the urban and rural area.*
- *All trees 10 cm or more in diameter at breast height on private properties within the urban area that are subject to a Planning Act application for Site Plan, Plan of Subdivision, or Plan of Condominium.*
- *All trees 10 cm or more in diameter at breast height on private properties within the urban area that are over 1 hectare in size.*
- *All distinctive trees on private properties 1 hectare or less in size, where distinctive trees are defined as:*
  - *Trees measuring 30 cm or more in diameter at breast height within the City's inner urban area.*
  - *Trees measuring 50 cm or more in diameter at breast height within the City's suburban area.*

The Tree Protection By-law requires permits to be obtained before City-owned trees or protected privately owned trees are removed. It also sets out requirements for compensation to be provided when trees are removed, so that they can be replaced.

A Tree Conservation Report (TCR) is required as a part of the application package for all Plans of Subdivision, Site Plan Control Applications, Common Elements Condominium Applications, and Vacant Land Condominium Applications where there is a tree of 10 centimeters in diameter or greater on the site and/or if there is a tree on an adjacent site that has a Critical Root Zone (CRZ) extending onto the development site. The purpose of the TCR is to demonstrate how tree cover will be retained and protected on the Site, including mature trees, stands of trees, and hedgerows, using a design with nature approach. A design with nature approach incorporates the natural features of a site into the design and engineering of a proposed development. The TCR also shows which trees must be removed on the site to accommodate the proposed development.

## 3 Limitations

The assessment presented in this report has been made using accepted standard arboriculture techniques as outlined in Chapter 4 (Data Collection) of the *Council of Tree and Landscape Appraisers Guide for Plant Appraisal, 10th Edition, Second Printing (2020)*. The trees observed were not climbed, cored, or dissected, and excavation for detailed root crown inspection was not performed. Since some symptoms may only be present seasonally, the extent of observations that can be made may be limited by the time of year the inspection took place.

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

## 4 Methodology

Two site visits were completed on September 5, 2025, and November 20, 2025, to assess the trees within the proposed impact areas. Tree locations and associated unique identification numbers were provided in the topographic survey completed by a certified Ontario Land Surveyor on (add date of survey), and all trees on Site were identified, measured, and assessed for condition. Information collected on the individual trees included:

- Species
- Diameter at breast height (DBH)
- Approximate crown spread
- Condition

The Tree Inventory and Assessment Table containing this information is included in **Appendix A**. Mandatory Map 1 as per City of Ottawa, 2021, is displayed below and depicts the locations of the numbered trees assessed. The assessment methodology is outlined in the sections below.

### 4.1 Tree Size

Size refers to trunk diameter at breast height (DBH or caliper) measured in centimeters (cm) at 1.4 meters (m) above the ground. Where trees had more than one trunk from the base, the size of each trunk was recorded. Where trees forked into codominant trunks the diameter was measured at the narrowest point below the fork.

### 4.2 Tree Assessment

The assessment involved a visual examination of the above-ground parts of each tree. The crown, trunk, and root structure of each tree were observed and assessed noting any abiotic and/or biotic disorders as well as structural defects present. Several structural defects and health problems were observed and are included in the Tree Inventory and Assessment Table (**Appendix A**). The following list provides an explanation of the short forms used in the table of the deficiencies observed on Site:

- DB - Dieback refers to the ends of branches dying, which is often associated with root problems.
- CRB - Crossing branches are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.
- MBR – When a tree has multiple branches from the same point of attachment, the branches usually have characteristics of weakly attached branches.
- ADV – Adventitious shoots refer to vigorous growth of shoots from pruning cuts, inner branches, or along the trunk that usually occur in response to stress.
- EXR - Exposed surface roots can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.
- FC - Frost cracking is a winter injury caused by temperature fluctuations on bark and inner wood when the sun warms a tree trunk and then temperatures drop quickly, causing splitting of the bark that can extend into the wood below. Frost cracking can be associated with snow reflection and southwest-facing trunk exposures and particularly affects young trees and species with thin bark.

- GR - Girdling roots are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water and inhibit structural anchorage.
- MEC - Mechanical Damage is a generalized term to describe damage to vegetation from using equipment and from weather related events. Damage to vegetation from equipment can be simple carelessness or incorrect use of the equipment.
- BNL - Broken / No Leader occurs if the central leader is broken, damaged or very weak, or has a dead terminal bud.
- VI - Cucumber vine, grapevines and dog-strangling vine growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight and restricting growth. They also add weight that can make trees more susceptible to breakage during storms.
- UC - Unbalanced Crown is a tree's crown that is much more extensive in one direction than another, often due to competition from the crown of a nearby tree or exposure.

### 4.3 Tree Condition

Each tree was given an overall health condition rating of: Excellent, Good, Fair, Poor, or Dead. The following is a summary of how the ratings are determined:

- VERY GOOD: No apparent health problems; good structural form.
- GOOD: Minor problems with health and/or structural form.
- FAIR: Significant problems with health and/or structural form.
- POOR: Major problems with health and structural form.
- DEAD: Dead.

### 4.4 Tree Ownership

All the trees inventoried are located on private property owned by the Client. No impact is expected to any of the trees not located within the subject property.

### 4.5 Tree Protection and Impact Analysis

Using data collected during the tree inventory and assessment, drawings showing the tree locations (collected through topographic survey), and the proposed development footprint and anticipated area of impact, a tree impact analysis was completed, resulting in recommendations to Retain, Prune and Protect, or Remove trees. The proposal is to construct a new accessory building for the existing technology industry building located at 2000 Innovation Drive to provide the required energy supply to the building, as well as additional landscaping features. We understand that Landscape Plans being developed for the Site will minimize the requirement for tree removals, with efforts to integrate landscape improvements without impact on existing trees on the Site.

The Critical Root Zone (CRZ) was determined using the *City of Ottawa Tree Conservation Report Guidelines* (City of Ottawa, 2021). The CRZ is established as 10 cm from the trunk of a tree for every cm of trunk DBH. The minimum CRZ of each tree canopy is illustrated on Mandatory Map 2 as per City of Ottawa, 2021 (displayed in **Figure 3** below) to help determine possible injury and branch pruning that may be required. The Comments section of the Tree Inventory and Assessment Table (**Appendix A**) also includes notes about tree form and canopy location that can help determine any pruning that may be required to accommodate construction equipment.

Tree Impact and associated recommendations (Retain, Prune and Protect, or Remove) have been determined and is described in Section 7, as well as included in the Tree Inventory and Assessment Table (**Appendix A**) and displayed on **Figure 3**.

For all trees to be retained, tree protection fencing must be installed to separate trees from the work area. Tree protection fencing must be installed no closer to the trunk than the Critical Root Zone but should be placed as far as possible from the tree.

## 5 Existing Conditions

The dates, timing, and environmental conditions at the time of the assessments are presented below in **Table 1**.

*Table 1: Site Investigations Details*

Date	Start/End Time	Survey Intent	Weather Conditions
2025/09/05	0930-1430	Visual assessment of all trees ≥10 cm dbh on-site	Temperature: 16°C Cloud cover / Precipitation: Mixed sun/clouds, Light wind.
2025/11/20	1030-1530	Visual assessment of all trees ≥10 cm dbh in adjacent areas	Temperature: 2°C Cloud cover / Precipitation: Clear skies, Light wind

The are no surface water features on Site apart from the roadside ditches on the perimeter of Innovation Drive. There was no standing water present or indication of inundation in these areas during either site visit. There are no wetlands or watercourses on Site or in adjacent areas.

The Site is flat with no presence of steep slopes, valleylands or escarpments. There are no valued woodlands designated as Urban Natural Features or Natural Environment Areas, or significant woodlands on or adjacent the Site. There are no riparian woodlots, rare communities, or other unique ecological features (i.e., Provincially Significant Wetlands, unevaluated wetlands).

Majority of the subject lands where the building envelope is planned consist of paved parking areas surrounded by office / laboratory buildings. The narrow band of trees in the northwestern extents is dominated by deciduous tree species generally in good health. The community parkette in the center of the Site has numerous trees and shrub, and herbaceous plants species that are well taken care of and provide a peaceful naturalized space for the business park members to enjoy. The adjacent lands to the north, east and west are surrounded by additional industrial development, and the lands to the south are comprised of vacant forested lands.

A total of 101 individual trees and four groups were assessed as part of this inventory. The condition of the trees on Site ranged from Very Good to Poor, approximately 85% of which were in Very Good to Good condition. The most common species are Honey-Locust (46%), Norway maple (8%), Little Leaf Linden (8%), and White Spruce (7%).

Cisco Ottawa Development Center  
2000 & 3000 Innovation Drive  
Tree Conservation Report

There are 33 trees that meet the definition of a 'Distinctive Tree' as per Tree Protection By-law No. 2020-340 (any tree located on private property with a DBH of 30 cm or greater, within the inner urban area). Trees 52B0B and 52B11 are Distinctive trees that require removal based on the current design plans.



## 6 Proposed Project Description

Cisco is proposing the construction of a new standalone building on the subject property with a total area of approximately 800 m<sup>2</sup>. The primary purpose of the new facility is to provide essential cooling, power, mechanical, and electrical, and telecom infrastructure that supports ongoing and future operations in the computing labs at existing building (i.e., OTTAWA 1) located at 2000 Innovation Drive. The proposed development protects a large amount of soft landscaping areas, including providing opportunities for planting new trees, as well as opportunities for outdoor on-site amenities and gathering places for staff on-site, including an outdoor patio and relocated volleyball court.

This project also involves anti-ramming requirements and landscape design for the ground floor labs at OTTAWA 1 and OTTAWA 2.

## 7 Impact Assessment and Recommendations

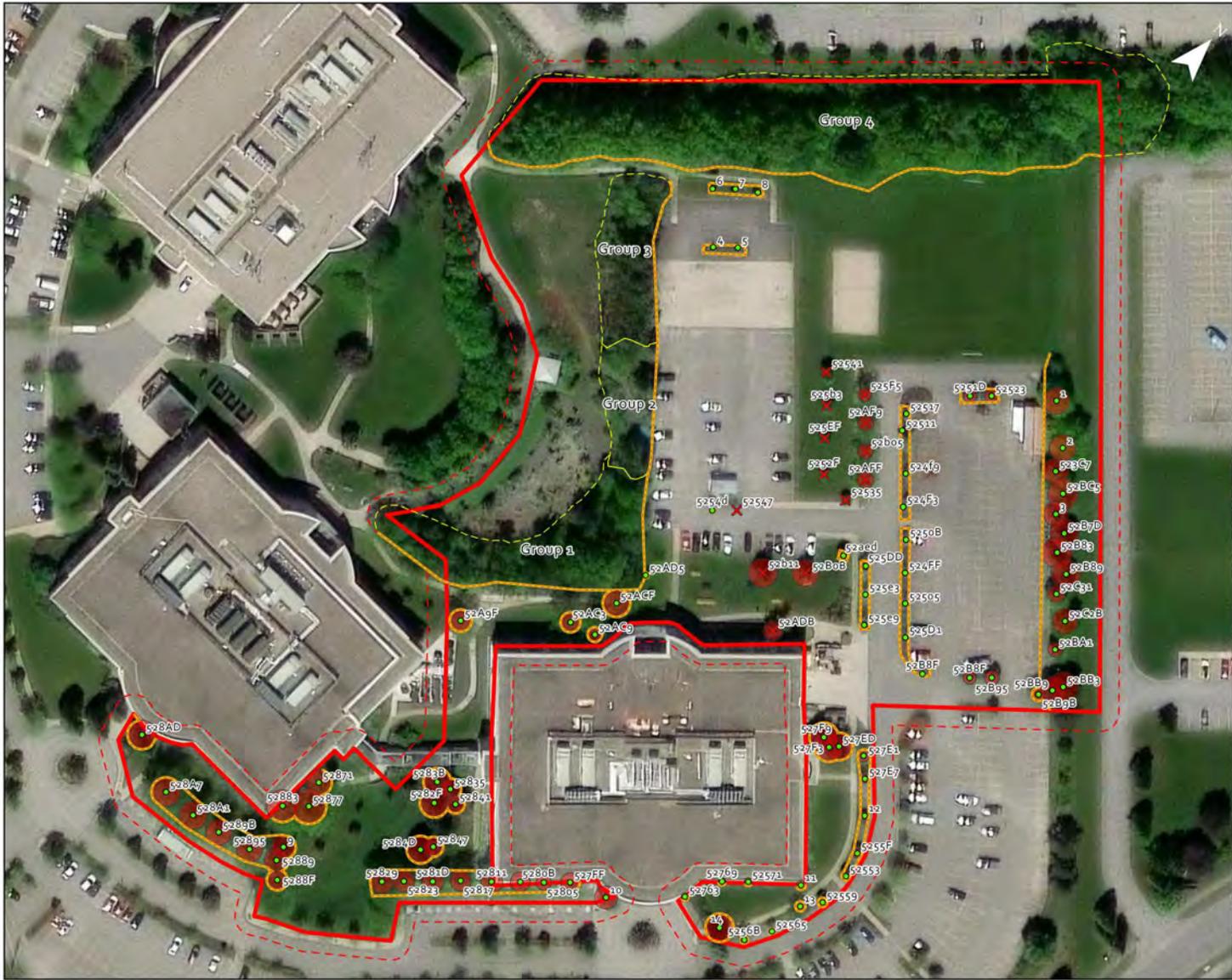
### 7.1 Impacts on Trees

Based on the conditions of the trees and extent of the proposed construction limits, **Table 2** summarizes the impact and recommended actions of the 101 trees and four (4) tree groups assessed within the Site. It is anticipated that 13 trees >10 cm diameter at breast height (DBH) will need to be removed. These details are depicted on Mandatory Map 2 below, as per the City of Ottawa, 2021, and outlined in the Tree Inventory and Assessment Table included in **Appendix A**.

*Table 2: Impact Assessment and Recommendations for Trees on Site*

Trees to be Removed	Trees to be Retained
13	88

Refer to **Section 8.2** below for information on measures recommended to protect all remaining trees within the Site prior to and during construction.



### Legend

- Site
- - - Search Area (5 m)

#### Tree Inventory Recommendation

- ✗ Remove
- Retain
- Critical Root Zone
- Vegetation Area
- Tree Protection Fencing

Scale: 1:1,000

Project Name:	
<b>Cisco OTT Campus: Tree Conservation Report</b>	
Title:	
<b>Recommended Actions</b> (Map 2 as per City Guidelines)	
Prepared By:	
<b>ARCADIS</b> <small>Design &amp; Consultancy for natural and built assets</small>	
Project: 30270525	<b>Figure: 3</b>
Date: 12/8/2025	

## 8 Mitigation Measures and Construction Management

### 8.1 Tree Removal

Based on the proposed project design and existing conditions of the trees on site, 13 trees have been recommended for removal. The following recommendations are provided:

- Retain a Certified Arborist during site layout operations to confirm recommended tree removals, pruning, and tree protection fencing in proximity to the construction limits.

### 8.2 Tree Protection Measures

The most typical construction damage to trees is root damage from compaction and severance. While the drip line of a tree's canopy is typically thought to be associated with the root area, the root zones can extend significantly beyond the drip line of the tree, sometimes up to 2 or 3 times the height of the tree. Some of the trees inventoried are growing close to the edge of proposed construction and will be at risk of contact with, and damage from, heavy equipment. To protect trees, grade changes and construction activities that could cause soil compaction should generally be kept away from trees as much as possible.

To successfully preserve trees that are recommended for on-site retention, the following series of mitigation measures is recommended. These recommended measures largely center on the minimum CRZ of trees (The CRZ is calculated as  $DBH \times 10 \text{ cm}$ ), as defined by the City's *Tree Conservation Report Guidelines*. The following measures are recommended to protect the CRZ of all trees slated for retention and/or impact:

- Delineation of the disturbance limits within work areas will be clearly defined in drawings and on the site prior to construction.
- Install Tree Protection Fencing prior to commencement of construction activities, and retain fencing until construction activities have been completed, as per City of Ottawa's Tree Protection (By-law No. 2020-340), Part VI:
  - Tree protection fencing shall be at least 1.2 m in height and installed in such a way that the fence cannot be altered.
  - Refer to **Appendix B** for the City of Ottawa's Tree Protection Fencing Specification.
- Ensure that site clearing is carried out only in areas where it is specifically required, and that the areas to be cleared are carefully and clearly delineated.
- Do not place any material or equipment within the CRZ of a tree.
- Do not raise or lower the existing grade within the CRZ of a tree.
- Do not extend any hard surface or significantly change landscaping.
- If the construction will have to encroach into a tree's minimum CRZ, installing a temporary layer of 150 mm deep partially composed wood chips, or mulch over the root zone can help to protect roots from compaction damage, and conserve soil moisture levels.
- Equipment and materials should not be stored near trees.
- Ensure that exhaust fumes from all equipment are not directed towards any tree's canopy.
- Do not attach any signs, notices, or posters to trees.

## 8.3 Branch and Root Pruning

- If branches are likely to hang in the way of passing equipment, the branches should be pruned by a Certified Arborist or Registered Forester to avoid tearing and undue injury to the tree.
- All pruning work must be performed under the supervision and guidance of a qualified tree professional in accordance with the latest ANSI A300 Pruning Standards and best management practices identified by the International Society of Arboriculture.
- Do not damage the root system, trunk, or branches of any tree; if any roots are encountered during excavation while working outside the CRZ, they should be cut off cleanly with sharp pruning tools rather than allow them to be torn by large equipment; clean cuts will help to minimize decay and entry points for disease.
- All exposed roots of trees to be retained should be covered in a minimum of 5 cm of firm soil within 24 hours of exposure.
- If root pruning is implemented, the crown of the tree should be reduced proportionately under the direction of a Certified Arborist or Registered Forester, to decrease wind sail. Pruning should be kept to thinning cuts (no major limb removal), and crowns should be monitored, and maintenance carried out for two (2) years after root pruning to remove any dieback under the direction of a Certified Arborist or Registered Forester.

## 8.4 Tree Planting Recommendations

For new tree planting(s) the Landscape Plan considerations may include:

- Prioritizing the use of native species, where appropriate.
- Where post-development growing conditions and landscape management requirements are not favorable for native species, the use of known invasive species shall be restricted.
- The species and health of existing tree as an indicator of appropriateness.
- The age of existing trees and potential for succession planting.
- Seek to mitigate any loss of canopy cover.
- Diversity of species in newly planted and existing trees.
- Micro-climatic conditions.

## 9 Permits and Approvals

The City of Ottawa's Tree Protection By-law No. 2020-340 describes the rules that govern tree ownership in Ottawa and the responsibility of tree maintenance, including administration and enforcement. As per Part IV: Sections 42 – 44 Prohibition: *No person shall injure or destroy a tree without a permit.* Sections 45 to 48 - Application for tree permit stipulates the process of applying for a permit under this by-law.

Therefore, it is recommended that consultation should be undertaken with the city prior to construction to confirm the requirements for tree removal permits associated with the municipal tree protection by-law. Where required, tree removal permits must be obtained from the city prior to the start of construction.

## 10 Summary

One hundred and one (101) trees were inventoried within the proposed development area located at 2000 & 3000 Innovation Drive, in Kanata, Ontario. Based on the proposed design, the inventory resulted in eighty-eight (88) trees to be retained, and thirteen (13) trees proposed for removal. A list of proposed avoidance and mitigation measures have been included in Section 6 of this report in relation to tree removals, tree protection, and tree preservation.

Landscape plans have been developed separately as part of the development application.

## 11 Certification and Closure

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

# Appendix A

## Tree Inventory and Protection Plan

Appendix A: CISCO OTT - Tree Inventory and Recommendations

Tree #	Common Name	Scientific Name	No. Stems	DBH (cm) * approx.	Crown Spread (m)	Structural Defects <sup>1</sup>											Condition <sup>2</sup>	CRZ (m from trunk)	Ownership	Impact / Recommendation	Comments
						DB	CBR	MBR	AVD	EXR	FC	GR	MEC	BNL	VI	UC					
1	Common Hackberry	<i>Celtis occidentalis</i>	1	35	7	✓	✓	✓		✓		✓					Good	3.5	Private	Retain	
2	Common Hackberry	<i>Celtis occidentalis</i>	1	35	8	✓	✓	✓		✓							Good	3.5	Private	Retain	
3	White Spruce	<i>Picea glauca</i>	1	32	5												Very Good	3.2	Private	Retain	
4	Japanese Tree Lilac	<i>Syringa reticulata</i>	1	5	1	✓											Fair	0.5	Private	Retain	
5	Japanese Tree Lilac	<i>Syringa reticulata</i>	1	6	1	✓											Fair	0.6	Private	Retain	
6	Common Apple	<i>Malus pumila</i>	1	7	3												Very Good	0.7	Private	Retain	
7	Apple spp	<i>Malus spp</i>	1	7	3												Very Good	0.7	Private	Retain	
8	Apple spp	<i>Malus spp</i>	1	7	3												Very Good	0.7	Private	Retain	
9	Honey-locust	<i>Gleditsia triacanthos</i>	1	32	5		✓	✓		✓							Good	3.2	Private	Retain	
10	American Basswood	<i>Tilia cordata</i>	1	30	6		✓										Good	3	Private	Retain	
11	Honey-locust	<i>Gleditsia triacanthos</i>	1	12	4												Very Good	1.2	Private	Retain	
12	Little-leaf Linden	<i>Tilia cordata</i>	1	11	3												Good	1.1	Private	Retain	
13	Honey-locust	<i>Gleditsia triacanthos</i>	1	13	6												Good	1.3	Private	Retain	
14	American Basswood	<i>Tilia cordata</i>	1	37	6	✓	✓					✓					Fair	3.7	Private	Retain	
52553	Little-leaf Linden	<i>Tilia cordata</i>	1	11	3												Good	1.1	Private	Retain	
52559	Little-leaf Linden	<i>Tilia cordata</i>	1	12	3												Good	1.2	Private	Retain	
52565	Honey-locust	<i>Gleditsia triacanthos</i>	1	6	3												Good	1	Private	Retain	
52571	Honey-locust	<i>Gleditsia triacanthos</i>	1	11	2												Very Good	1.1	Private	Retain	
52763	Little-leaf Linden	<i>Tilia cordata</i>	1	10	2												Very Good	1	Private	Retain	
52769	Honey-locust	<i>Gleditsia triacanthos</i>	1	10	2												Very Good	1	Private	Retain	
52805	Honey-locust	<i>Gleditsia triacanthos</i>	1	20	5		✓										Good	2	Private	Retain	
52811	Honey-locust	<i>Gleditsia triacanthos</i>	1	29	6		✓										Good	2.9	Private	Retain	
52817	Honey-locust	<i>Gleditsia triacanthos</i>	1	27	7			✓		✓							Good	2.7	Private	Retain	
52823	Honey-locust	<i>Gleditsia triacanthos</i>	1	28	7		✓	✓		✓							Good	2.8	Private	Retain	
52829	Honey-locust	<i>Gleditsia triacanthos</i>	1	31	7			✓		✓							Good	3.1	Private	Retain	
52835	White Spruce	<i>Picea glauca</i>	1	28	5	✓											Good	2.8	Private	Retain	
52841	Apple spp	<i>Malus spp</i>	1	24	7	✓				✓							Good	2.4	Private	Retain	
52847	Apple spp	<i>Malus spp</i>	1	26	5	✓	✓										Good	2.6	Private	Retain	
52871	Red Oak	<i>Quercus rubra</i>	1	34	9		✓										Good	3.4	Private	Retain	
52877	Red Oak	<i>Quercus rubra</i>	1	46	10						✓	✓					Good	4.6	Private	Retain	30% Lean
52883	Red Oak	<i>Quercus rubra</i>	1	42	10						✓						Good	4.2	Private	Retain	
52889	Honey-locust	<i>Gleditsia triacanthos</i>	1	31	6		✓	✓		✓							Good	3.1	Private	Retain	
52895	Honey-locust	<i>Gleditsia triacanthos</i>	1	32	6		✓	✓		✓							Good	3.2	Private	Retain	
523C7	Common Hackberry	<i>Celtis occidentalis</i>	1	34	8	✓	✓	✓		✓			✓				Good	3.4	Private	Retain	
524F3	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	2												Very Good	0.7	Private	Retain	Crown growth impeded by metal sign
524F9	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	3	✓											Very Good	0.7	Private	Retain	
524FF	Honey-locust	<i>Gleditsia triacanthos</i>	1	6	2	✓							✓				Fair	0.6	Private	Retain	
52505	Honey-locust	<i>Gleditsia triacanthos</i>	1	4	2	✓			✓								Fair	0.4	Private	Retain	Tree tie top of leader
5250B	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	3												Very Good	0.7	Private	Retain	Lean >30%
52511	Honey-locust	<i>Gleditsia triacanthos</i>	1	11	5												Very Good	1.1	Private	Retain	
52517	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	2	✓											Good	0.7	Private	Retain	
5251D	Norway Maple	<i>Acer platanoides</i>	1	17	3	✓					✓				✓		Fair	1.7	Private	Retain	
52523	Norway Maple	<i>Acer platanoides</i>	1	18	4	✓					✓						Fair	1.8	Private	Retain	
52535	Little-leaf Linden	<i>Tilia cordata</i>	1	10	3												Fair	1	Private	Remove	Severe skeletonization of leaves
52541	Norway Maple	<i>Acer platanoides</i>	1	12	3												Good	1.2	Private	Remove	
525EF	Norway Maple	<i>Acer platanoides</i>	1	10					✓								Good	1	Private	Remove	
5252F	Norway Maple	<i>Acer platanoides</i>	1	10	3												Very Good	1	Private	Remove	
52547	Japanese Tree Lilac	<i>Syringa reticulata</i>	1	5	1	✓											Poor	0.5	Private	Remove	Dead leader, 50% dieback
5254D	Japanese Tree Lilac	<i>Syringa reticulata</i>	1	5	1	✓											Good	0.5	Private	Retain	
5255F	Little-leaf Linden	<i>Tilia cordata</i>	1	12	3												Good	1.2	Private	Retain	
5256B	Honey-locust	<i>Gleditsia triacanthos</i>	1	9	5												Good	1	Private	Retain	
525B3	Norway Maple	<i>Acer platanoides</i>	1	10	3												Good	1	Private	Remove	
525D1	Honey-locust	<i>Gleditsia triacanthos</i>	1	6	1	✓								✓			Fair	0.6	Private	Retain	
525DD	Honey-locust	<i>Gleditsia triacanthos</i>	1	10	4							✓					Good	1	Private	Retain	
525E3	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	3												Good	0.7	Private	Retain	
525E9	Honey-locust	<i>Gleditsia triacanthos</i>	1	10	4												Good	1	Private	Retain	
525F5	Honey-locust	<i>Gleditsia triacanthos</i>	1	18	6	✓											Good	1.8	Private	Remove	
527E1	Honey-locust	<i>Gleditsia triacanthos</i>	1	16	5												Good	1.6	Private	Retain	
527E7	Little-leaf Linden	<i>Tilia cordata</i>	1	11	3												Good	1.1	Private	Retain	
527ED	White Spruce	<i>Picea glauca</i>	1	36	6	✓											Good	3.6	Private	Retain	
527F3	Colorado Blue Spruce	<i>Picea pungens</i>	1	38	6	✓											Good	3.8	Private	Retain	
527F9	Colorado Blue Spruce	<i>Picea pungens</i>	1	38	6	✓											Good	3.8	Private	Retain	
527FF	Honey-locust	<i>Gleditsia triacanthos</i>	1	25	5			✓									Good	2.5	Private	Retain	
5280B	Honey-locust	<i>Gleditsia triacanthos</i>	1	26	5						✓						Good	2.6	Private	Retain	
5281D	Honey-locust	<i>Gleditsia triacanthos</i>	1	29	7			✓		✓							Good	2.9	Private	Retain	
5282F	White Pine	<i>Pinus strobus</i>	1	38	6	✓											Good	3.8	Private	Retain	Sapsucker holes
5283B	White Spruce	<i>Picea glauca</i>	1	36	6	✓											Good	3.6	Private	Retain	
5284D	White Spruce	<i>Picea glauca</i>	1	36	6	✓											Good	3.6	Private	Retain	
5288F	Honey-locust	<i>Gleditsia triacanthos</i>	1	27	5			✓		✓							Good	2.7	Private	Retain	
5289B	Honey-locust	<i>Gleditsia triacanthos</i>	1	34	5			✓		✓							Good	3.4	Private	Retain	
528A1	Honey-locust	<i>Gleditsia triacanthos</i>	1	37	7			✓		✓							Good	3.7	Private	Retain	
528A7	Honey-locust	<i>Gleditsia triacanthos</i>	1	42	8			✓		✓							Good	4.2	Private	Retain	
528AD	American Basswood	<i>Tilia cordata</i>	1	38	6						✓						Good	3.8	Private	Retain	
52A9F	Honey-locust	<i>Gleditsia triacanthos</i>	1	29	9	✓	✓										Good	2.9	Private	Retain	
52AC3	Honey-locust	<i>Gleditsia triacanthos</i>	1	27	7	✓	✓										Good	2.7	Private	Retain	
52AC9	Honey-locust	<i>Gleditsia triacanthos</i>	1	20	5	✓	✓										Good	2	Private	Retain	
52ACF	Honey-locust	<i>Gleditsia triacanthos</i>	1	36	3						✓						Very Good	3.6	Private	Retain	
52AD5	Honey-locust	<i>Gleditsia triacanthos</i>	1	7	5												Very Good	0.7	Private	Retain	
52ADB	Red Oak	<i>Quercus rubra</i>	1	28	6	✓											Poor	2.8	Private	Remove	50% main trunk missing: large scarring

Tree #	Common Name	Scientific Name	No. Stems	DBH (cm) * approx.	Crown Spread (m)	Structural Defects <sup>1</sup>											Condition <sup>2</sup>	CRZ (m from trunk)	Ownership	Impact / Recommendation	Comments	
						DB	CBR	MBR	AVD	EXR	FC	GR	MEC	BNL	VI	UC						
52AED	Little-leaf Linden	<i>Tilia cordata</i>	1	12	4													Fair	1.2	Private	Retain	Severe skeletonization of leaves
52AF9	Honey-locust	<i>Gleditsia triacanthos</i>	1	21	7	√				√								Good	2.1	Private	Remove	
52AFF	Honey-locust	<i>Gleditsia triacanthos</i>	1	22	7	√				√								Good	2.2	Private	Remove	
52B05	Honey-locust	<i>Gleditsia triacanthos</i>	1	20	7	√				√								Good	2	Private	Remove	
52B0B	Colorado Blue Spruce	<i>Picea pungens</i>	1	35	5													Good	3.5	Private	Remove	
52B11	Colorado Blue Spruce	<i>Picea pungens</i>	1	38	6													Very Good	3.8	Private	Remove	
52B7D	White Spruce	<i>Picea glauca</i>	1	38	6													Very Good	3.8	Private	Retain	
52B83	White Spruce	<i>Picea glauca</i>	1	40	6													Very Good	4	Private	Retain	
52B89	White Spruce	<i>Picea glauca</i>	1	38	6													Very Good	3.8	Private	Retain	
52B8F	Norway Maple	<i>Acer platanoides</i>	1	17		√					√			√				Fair	1.7	Private	Retain	Large scarring on trunk
52B8F	Honey-locust	<i>Gleditsia triacanthos</i>	1	6	2	√												Fair	0.6	Private	Retain	
52B95	Norway Maple	<i>Acer platanoides</i>	1	19	4													Good	1.9	Private	Retain	
52B9B	Honey-locust	<i>Gleditsia triacanthos</i>	1	17	5													Good	1.7	Private	Retain	
52BA1	Common Hackberry	<i>Celtis occidentalis</i>	1	19	5	√	√	√										Good	1.9	Private	Retain	
52BB3	Red Pine	<i>Pinus resinosa</i>	1	39	6													Good	3.9	Private	Retain	
52BB9	Red Pine	<i>Pinus resinosa</i>	1	36	5													Good	3.6	Private	Retain	Oozing sap
52BC5	White Spruce	<i>Picea glauca</i>	1	40	6													Good	4	Private	Retain	
52C2B	Common Hackberry	<i>Celtis occidentalis</i>	2	33	7	√	√	√		√	√							Good	3.3	Private	Retain	
52C31	Common Hackberry	<i>Celtis occidentalis</i>	1	23	5		√	√	√		√							Good	2.3	Private	Retain	
Tree Group 1	---	---	---	---	---													Good	---	Private	Retain	10x Trembling Aspen ( <i>Populus tremuloides</i> ) with height ranging from 6-8 m and an average DBH of 40; 12x Freeman's Maple ( <i>Acer x Freemanii</i> ) with a DBH between 15-35cm and heights between 10-15m; 10x Blue Spruce ( <i>Picea pungens</i> ) with heights between 10-15m and DBH's between 10-25m; Understory species include Green Ash ( <i>Fraxinus pennsylvanica</i> ), European Buckthorn ( <i>Rhamnus cathartica</i> ); Groundcover is fairly bare. 1x American Elm ( <i>Ulmus americana</i> ) in fair condition with a DBH of 10cm;
Tree Group 2	---	---	---	---	---													Good	---	Private	Retain	5x Common Hackberries ( <i>Celtis occidentalis</i> ) with 10-15cm DBH in poor condition due to severe dieback. Understory dominated by Staghorn Sumac ( <i>Rhus typhina</i> ). 3x White Spruce ( <i>Picea abies</i> ) in good condition with an average DBH of 35 and measuring approximately 12-15m high; 3x White Pines ( <i>Pinus strobus</i> ) in good condition measuring approximately 15-18m on average with a ranged DBH between 20-30cm; 40x Austrian Pines ( <i>Pinus nigra</i> ) in good condition with DBH's ranging from 10-40cm and a height range of 10-18m.
Tree Group 3	---	---	---	---	---													Good	---	Private	Retain	Understory dominated by Staghorn Sumac ( <i>Rhus typhina</i> ). Majority of the canopy is Burr Oak ( <i>Quercus macrocarpa</i> ) in good condition with a height range of 15-18m and a DBH ranging from 30-60cm; Several American Basswood ( <i>Tilia americana</i> ) in good condition in the canopy measuring 15-40cm DBH and stand 15-18m high; Understory is dominated by European Buckthorn, River Grape ( <i>Vitis riparia</i> ), and a few Green Ash both dead and alive.
Tree Group 4	---	---	---	---	---													Good	---	Private	Retain	

<sup>1</sup>Notes

DB - Dieback refers to the ends of branches dying, which is often associated with root problems.

CRB - Crossing branches are often associated with narrow branch angles. Branches that cross over each other often rub, causing damage and therefore weakness to one or both branches, and crossing branches can eventually girdle each other.

MBR - When a tree has multiple branches from the same point of attachment, the branches usually have characteristics of weakly attached branches.

ADV - Adventitious shoots are vigorous growth of shoots from pruning cuts, inner branches, or along the trunk that usually occur in response to stress.

EXR - Exposed surface roots can be a result of erosion and soil compaction combined with increasing root diameter. It is important to protect exposed roots from pedestrian and vehicular traffic, and lawn mowers. Damage to roots can cause stress and can result in canopy dieback.

FC - Frost cracking is a winter injury caused by temperature fluctuations on bark and inner wood when the sun warms a tree trunk and then temperatures drop quickly, causing splitting of the bark that can extend into the wood below. Frost cracking can be associated with snow reflection and southwest-facing trunk exposures, and particularly affects young trees and species with thin bark.

GR - Girdling roots are roots that cross over each other or around the trunk of the tree. As these roots grow larger, they can restrict the uptake of nutrients and water, and inhibit structural anchorage.

MEC - Mechanical Damage is a generalized term to describe damage to vegetation from using equipment and from weather related events. Damage to vegetation from equipment can be simple carelessness or incorrect use of the equipment.

BNL - Broken / No Leader occurs if the central leader is broken, damaged or very weak, or has a dead terminal bud.

VI - Cucumber vine, grapevines and dog-strangling vine growing over the canopy of trees suppress vigour and eventually kill trees by blocking sunlight and restricting growth. They also add weight that can make trees more susceptible to breakage during storms.

UC - Unbalanced Crown is a tree's crown that is much more extensive in one direction than another, often due to competition from the crown of a nearby tree or exposure.

<sup>2</sup>Condition

Very Good: No apparent health problems; good structural form.

Good: Minor problems

Fair: Significant problems with health and/or structural form.

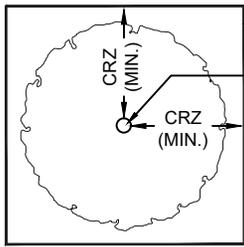
Poor: Major problems

Snag: Standing dead or dying tree, often missing a top.

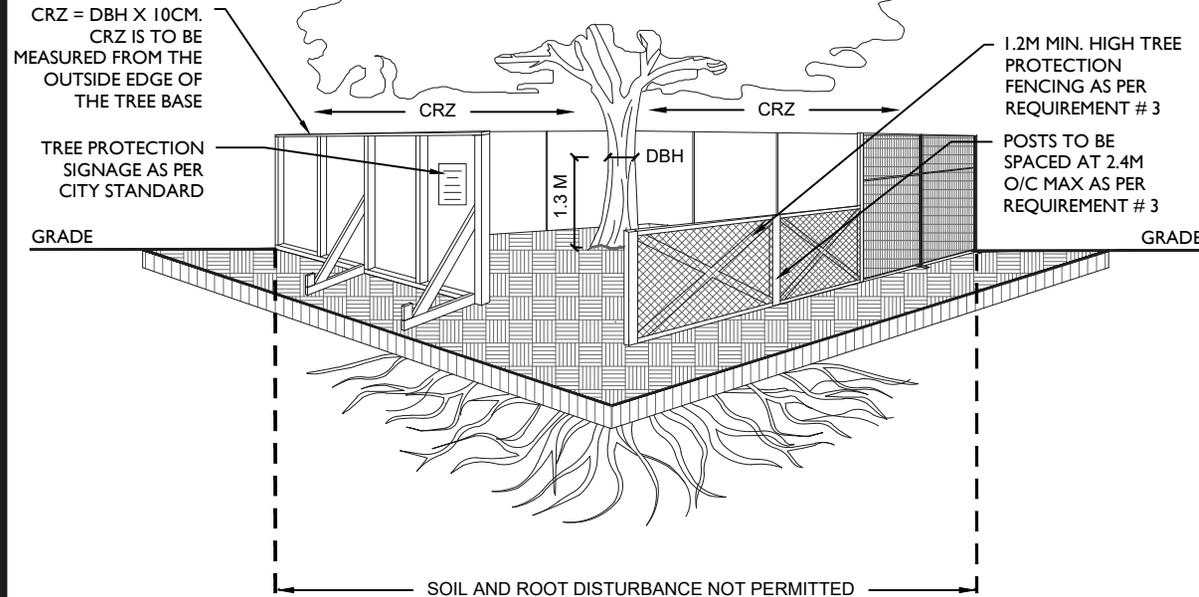
Dead: Dead.

# Appendix B

## Tree Protection Specification (City of Ottawa, 2021)



PLAN VIEW



ACCESSIBLE FORMATS AND COMMUNICATION SUPPORTS ARE AVAILABLE, UPON REQUEST

**TREE PROTECTION REQUIREMENTS:**

1. PRIOR TO ANY WORK ACTIVITY WITHIN THE CRITICAL ROOT ZONE (CRZ = 10 X DIAMETER) OF A TREE, TREE PROTECTION FENCING MUST BE INSTALLED SURROUNDING THE CRITICAL ROOT ZONE, AND REMAIN IN PLACE UNTIL THE WORK IS COMPLETE.
2. UNLESS PLANS ARE APPROVED BY CITY FORESTRY STAFF, FOR WORK WITHIN THE CRZ:
  - DO NOT PLACE ANY MATERIAL OR EQUIPMENT - INCLUDING OUTHOUSES;
  - DO NOT ATTACH ANY SIGNS, NOTICES OR POSTERS TO ANY TREE;
  - DO NOT RAISE OR LOWER THE EXISTING GRADE;
  - TUNNEL OR BORE WHEN DIGGING;
  - DO NOT DAMAGE THE ROOT SYSTEM, TRUNK, OR BRANCHES OR ANY TREE;
  - ENSURE THAT EXHAUST FUMES FROM ALL EQUIPMENT ARE NOT DIRECTED TOWARD ANY TREE CANOPY.
  - DO NOT EXTEND HARD SURFACE OR SIGNIFICANTLY CHANGE LANDSCAPING
3. TREE PROTECTION FENCING MUST BE AT LEAST 1.2M IN HEIGHT, AND CONSTRUCTED OF RIGID OR FRAMED MATERIALS (E.G. MODULOC - STEEL, PLYWOOD HOARDING, OR SNOW FENCE ON A 2"X4" WOOD FRAME) WITH POSTS 2.4M APART, SUCH THAT THE FENCE LOCATION CANNOT BE ALTERED. ALL SUPPORTS AND BRACING MUST BE PLACED OUTSIDE OF THE CRZ, AND INSTALLATION MUST MINIMISE DAMAGE TO EXISTING ROOTS. (SEE DETAIL)
4. THE LOCATION OF THE TREE PROTECTION FENCING MUST BE DETERMINED BY AN ARBORIST AND DETAILED ON ANY ASSOCIATED PLANS FOR THE SITE ( E.G. TREE CONSERVATION REPORT, TREE INFORMATION REPORT, ETC). THE PLAN AND CONSTRUCTED FENCING MUST BE APPROVED BY CITY FORESTRY STAFF PRIOR TO THE COMMENCEMENT OF WORK.
5. IF THE FENCED TREE PROTECTION AREA MUST BE REDUCED TO FACILITATE CONSTRUCTION, MITIGATION MEASURES MUST BE PRESCRIBED BY AN ARBORIST AND APPROVED BY CITY FORESTRY STAFF. THESE MAY INCLUDE THE PLACEMENT OF PLYWOOD, WOOD CHIPS, OR STEEL PLATING OVER THE ROOTS FOR PROTECTION OR THE PROPER PRUNING AND CARE OF ROOTS WHERE ENCOUNTERED.

THE CITY'S TREE PROTECTION BY-LAW, 2020-340 PROTECTS BOTH CITY-OWNED TREES, CITY-WIDE, AND PRIVATELY-OWNED TREES WITHIN THE URBAN AREA. PLEASE REFER TO [WWW.OTTAWA.CA/TREEBYLAW](http://WWW.OTTAWA.CA/TREEBYLAW) FOR MORE INFORMATION ON HOW THE TREE BY-LAW APPLIES.



**TREE PROTECTION SPECIFICATION**

TO BE IMPLEMENTED FOR RETAINED TREES, BOTH ON SITE AND ON ADJACENT SITES, PRIOR TO ANY TREE REMOVAL OR SITE WORKS AND MAINTAINED FOR THE DURATION OF WORK ACTIVITIES ON SITE.

SCALE: NTS

DATE: MARCH 2021

DRAWING NO.: 1 of 1

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