

Arborist Report

Gananoque Town Hall
30 King St E, Gananoque, Ontario

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PREPARED FOR

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A handwritten signature in black ink, appearing to read 'John Madden', is written over a white background.

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Introduction

The purpose of this report is to describe the effects of construction activities that will take place to build an extension of Town Hall in Gananoque, Ontario.

Construction activities include the building of an addition to town hall, the expansion of parking areas and the resurfacing of all asphalt surfaces of these parking areas. These construction activities will take place within a close proximity to more than thirty trees of various sizes, species and ages/maturity levels. These trees will all be impacted from the changes to this site; however, the impacts will vary from tree to tree based on how close the tree is to the construction and at what stage of life that tree is in. Table 1 lists the type and number of each species at risk from these construction activities.

Table 1: Tree Count and Number of Each Species on Site at Risk from Construction Activities

Common Name	Latin Binomial	Count
Norway Maple	<i>Acer platnoides</i>	11
Red Maple	<i>Acer rubrum</i>	1
Silver Maple	<i>Acer saccharinum</i>	4
Sugar Maple	<i>Acer saccharum</i>	8
White Ash	<i>Fraxinus americana</i>	3
Honey Locust	<i>Gleditsia triacanthos</i>	1
Norway Spruce	<i>Picea abies</i>	1
White Spruce	<i>Picea glauca</i>	2
Black Cherry	<i>Prunus sarotina</i>	1
Bur Oak	<i>Quercus macrocarpa</i>	1
Siberian Elm	<i>Ulmus pumila</i>	1

Please note: this count is only representative of trees under threat of construction damage. This is not an inventory of all trees on the Gananoque town hall site.

Site Description

This site is located in the heart of Gananoque, ON. This site has been established since the mid 1800s and has been used as the town hall since the early 1900s. Some of the most mature trees on site are of an age that may date back to these periods. Park land for public use was also established in the early 1900s.

The soil on these grounds includes a combination of native soils and imported fill used to change the ground grade in the past. Walking traffic has compacted soil in several areas surrounding town hall.

Tree Removals

A minimum of ten trees will require removal as a direct result of being within the planned area of expansion of town hall and its associated parking areas. An additional three trees will also require removal due to poor health conditions. All recommended tree removals must take place prior to the commencement of construction activities to mitigate the risk of damaging trees that could lead to structural failure. Figure 2 consists of a map showing all trees that will be affected by construction activities (see appendix B). Some of these trees will require removal.

Tree Preservation

Twenty-two trees will be affected by construction on this site but removal is unnecessary. These trees vary greatly in size and age and consist of eleven different species. These trees will be affected primarily by the disturbance of soils including trenching, paving, and soil compaction. If any damage should occur to the trunk and/or limbs of a tree, correctional treatment such as wound tracing and/or pruning shall take place to reduce the introduction of decay into these wounds. These corrective measures should be implemented as soon as possible after construction activities take place. Figure 1 represents an inventory of all 35 trees expected to be affected by construction activities (see appendix A). It also provides a general description of tree condition and recommendations to help those trees during and after construction.

Root Pruning

Roots require soil coverage and moisture to prevent drying out and dying. During construction activities like trenching or digging, it is unavoidable that roots will be encountered. Depending on the type of interaction between the equipment and the roots, different type of damage may occur, and therefore different mitigation strategies should be employed, as follows:

1. If a root is completely severed, it can be left exposed until construction activities are completed, as pruning it when it could face additional damage is inefficient. Upon the end of construction, the root should be pruned before being backfilled.
2. If a root is not completely severed, but is damaged, it should be wound traced and backfilled as soon as possible.
3. If the length of a root is exposed but not damaged, it should be covered with soil immediately to prevent drying out.

Tree Protection Zones (TPZs)

Tree Protection Zones (TPZs) must be implemented to preserve the retainable trees on site. These trees include all trees listed in this report and all other trees on site that may be in conflict with construction activities, vehicles and stock piling of materials, with the exception of those slated for removal. The minimum size of the TPZ for each tree must be to the edge of the drip line of each tree. The drip line is the outer edge of canopy. This will provide protection to a large portion of the absorbing roots of each tree. If additional space is available for tree/root protection, then a ratio of 30 cm of protection for every 2.5 cm of tree diameter at breast height (DBH) should be used in the establishment of the perimeter of the TPZ.

Establishing Tree Protection Zones

The scope of the work to establish TPZs for each tree will involve:

1. Establishing a perimeter for the TPZ.
2. Preparing fencing materials that are considered adequate to prevent construction operations and materials from entering the TPZ.
3. Installing the fencing materials along the defined TPZ perimeter.
4. Mulching the trees within the TPZs to nourish and further protect the tree.

Soil Compaction

Established trees on site must be considered when selecting locations for stock piling material on site and when considering areas that heavy equipment will travel frequently. Soil compaction is very detrimental to tree root structures and must be accounted for regarding all heavy machinery or large volumes of material. Surface soils are composed of fill material and some native soils all of which are likely to compact as a result of any amount of overburden. These soils that may compact are the very materials that will support the growth and expansion of tree roots. Compaction of soils can be avoided by reducing heavy machinery traffic around trees and strategically placing material to avoid placing overburden in areas that will considerably compact tree root systems. Areas where trees are furthest apart from one another as well as areas where tree removals must take place are considerably better site selections for the storage of construction materials.

Grade Changes

A change in grade is a critical factor when considering the protection of these trees. Despite protection efforts, an overall change in grade, whether it is the removal or addition of fill material, can significantly affect these trees. If a change of grade is to occur adjacent to a TPZ, a gentle slope angle must be produced to reduce the effects of erosion of any soils and must not allow water to pool within a TPZ. If ditching is to occur near or adjacent to a TPZ, a gentle slope angle must be considered again and all other efforts must be taken to reduce erosion in this circumstance. Grade elevation or reduction angles must be slight so as to prevent a significant change in grade over a short distance. All original soils shall remain in situ where possible and must be protected from disturbance in the case of any change of grade.

Further Consideration – Emerald Ash Borer

All Ash trees on site that can be considered for preservation must be treated for the prevention of damage caused by the Emerald Ash Borer (EAB). At least one Ash tree already exhibits damage caused by the EAB insect and this damage will become terminal to the tree if not treated. That is, all Ash trees must be considered for removal if no treatment is provided within the next two years. The Ash trees on site will require additional observations to confirm their condition to determine if these trees are in fact retainable. If a given Ash tree on site is considered retainable, then an EAB treatment should be scheduled for the summer of 2017.

Conclusion

The construction activities to expand the Gananoque Town Hall and parking areas will impact 34 trees on site. Mitigation strategies including root pruning and tree protection zones will provide the trees a level of protection and damage response to preserve the specimens for continued growth following construction activities. Of the 34 affected trees, 12 of these trees will require removal and the remaining 22 will require preservation and damage mitigation strategies. It is recommended that all work be completed with best practices and additional consulting as required.

APPENDIX A**Figure 1:** Inventory of trees that may be injured or destroyed at Town Hall

ID	Type	Species	DBH (cm)	Condition	Retainable?	Observations
1	Deciduous	Norway Maple	48	Fair	No	Tree has poor form Tree will require removal as a result of being in path of building expansion
2	Deciduous	Norway Maple	26	Fair	Yes	Tree has good form Tree will require root pruning
3	Deciduous	White Ash	75	Good	Yes	Tree will require EAB treatment to preserve specimen Tree will require root pruning
4	Deciduous	Sugar Maple	59	Fair	Yes	Tree will require root pruning
5	Deciduous	Sugar Maple	78	Good	Yes	Tree will require root pruning
6	Deciduous	Silver Maple	124	Fair	No	Tree will not be able to cope with construction activities – tree is too close to road rehabilitation efforts
7	Deciduous	Norway Maple	31	Good	Yes	Tree will require root pruning
8	Deciduous	Bur Oak	14	Good	Yes	Tree will require root pruning
9	Deciduous	Black Cherry	11	Good	Yes	Tree will require root pruning
10	Deciduous	Silver Maple	19	Good	Yes	Tree will require root pruning
11	Deciduous	Norway Maple	36	Good	Yes	Tree will require root pruning
12	Deciduous	Honey Locust	8	Good	Yes	Tree has good form Tree will cope with construction activities

13	Deciduous	Norway Maple	57	Good	Yes	Tree has girdling roots Tree will require root pruning
14	Deciduous	Norway Maple	35	Fair	Yes	Tree has girdling roots Tree will require root pruning
15	Deciduous	Siberian Elm	75	Good	No	Tree will require removal as a result of being in direct conflict of parking lot expansion
16	Deciduous	Norway Maple	26	Fair	No	Tree will require removal as a result of being in direct conflict of parking lot expansion
17	Deciduous	Norway Maple	19	Fair	No	Tree will require removal as a result of being in direct conflict of parking lot expansion
18	Deciduous	White Ash	22	Fair	No	Tree has been harmed by Emerald Ash Borer and will require removal and replacement
19	Coniferous	Norway Spruce	15	Good	No	Tree will require removal as a result of being too close to edge of parking lot extension
20	Deciduous	Sugar Maple	28	Good	Yes	Tree will require root pruning
21	Coniferous	White Spruce	20	Good	No	Tree will require removal as a result of being too close to edge of parking lot extension
22	Deciduous	Silver Maple	33	Good	Yes	Tree will require root pruning
23	Coniferous	White Spruce	24	Fair	No	Tree will require removal as a result of being too close to edge of parking lot extension
24	Deciduous	White Ash	27	Fair	Yes	Tree will require EAB treatment to preserve this specimen Tree will require root pruning
25	Deciduous	Sugar Maple	92	Fair	Yes	Tree will require root pruning

26	Deciduous	Sugar Maple	26	Fair	Yes	Tree will require root pruning
27	Deciduous	Sugar Maple	58	Fair	Yes	Tree will require root pruning
28	Deciduous	Sugar Maple	46	Fair	Yes	Tree will require root pruning
29	Deciduous	Sugar Maple	73	Poor	No	Tree removal is suggested. Tree is experiencing significant dieback and construction activities will adversely affect the long term health of this tree
30	Deciduous	Red Maple	8	Poor	No	Tree removal is suggested. This tree is experiencing dieback and has experienced frost cracking
31	Deciduous	Norway Maple	41	Poor	No	Tree removal suggested. Tree has poor form and large Eutypella canker that has compromised tree structure and tree health
32	Deciduous	Norway Maple	26	Fair	Yes	Tree will require root pruning
33	Deciduous	Silver Maple	92	Good	Yes	Tree will require root pruning
34	Deciduous	Sugar Maple	18	Good	Yes	Tree will require root pruning

APPENDIX B

Figure 2: Map of trees that may be injured or destroyed at Town Hall

