

5/18/2021

Arborist report

21 Beech Ave, Bowmanville

Ruurd van de Ven, ISA BCMA

VAN DE VEN CONSULTING GROUP

vandevengroup@gmail.com

905 955 4856

For:

Mark and Darlene Clermont



Introduction

There was a limb failure in the oak tree located on 21 Beech Ave in Bowmanville on June 30, 2020, this resulted in questioning the safety of this tree.

The assignment was to assess the tree for health as well as the risk associated with this tree.

The report was created to describe mitigation that can be used to preserve this tree and maintain it for the future.

Observations

Investigation methods

The method of investigation did not include any probative methods other than measuring the depth of cavities with a measuring tool such as is used to measure depth of tiles in an agricultural field. This is a fiberglass tool about 125 cm long and 12 mm in diameter.

This tree was climbed in the process of the assessment and photographs were taken for documentation.

A tree risk assessment was performed to determine the risk that this tree poses to the immediate surroundings. When assessing trees, the parts of the trees that are at risk of causing damage or injury are assessed using various methods. In this instance only visual cues were used in the assessment as well as the assessor's knowledge and experience with this species of tree.

The initial investigation was performed on July 4, 2020 with a subsequent visit to the property on May 11, 2021 for additional photographs.

Site and Field Observations

The location of this tree is in the front yard of 21 Beech Ave, a historic neighborhood in the Town of Bowmanville.

The sidewalk runs under this tree and the base of the tree is right at the sidewalk. There is a small boulevard between the sidewalk and the roadway.



Subject Tree Observations

This red oak (*Quercus rubra*) is 193 cm in diameter measured 140 cm from the ground (DBH).

The diameter of this tree just below the first branches at 335 cm above the ground is 204 cm and the diameter above the first branches at 490 cm above the ground is 164 cm.

A large limb had broken off this tree on June 30, 2020, the limb that broke off left a wound on the trunk measuring 60 cm in diameter. This had broken away from the trunk leaving a 40 cm gap in behind. There was some decay in this gap. Two areas of reaction wood have formed at the underside of this limb (compression wood).

The photograph to the left shows the wounds as well as the two areas of reaction wood at the bottom of this limb.

This tree is approximately 20 m tall and has a crown spread of about 50 m. This tree has some very long over extended limbs in the lower half of the tree. One limb is over the traveled portion of the road. This limb extends 24 m over the road and where the limb is attached to the tree it is 69 cm in diameter. This long limb over the road has an oval shape with a substantial amount of reaction wood on the top side of this branch (tension wood).





Expert Opinion & Observations

The age of this tree is not known exactly, however the surrounding homes were built about 150 years ago thus I would surmise that this tree is at least 150 years old, possibly older.

An extensive study using Rinntech Arbotom® Sonic Tomography and Rinntech Resistograph®. Was done by Mr. Michael Richardson and described in a report dated September 22, 2020. This report shows there is some decay in the trunk resulting in a 9% strength loss.

Discussion

Red oak trees are part of the angiosperm group of plant in other words they are flowering plants that bear fruit covered seeds, whereas gymnosperm (conifers) bare uncovered seed. They are a long lived native species of tree that has played a great role in providing food for the native aboriginal population as well as lumber used mostly in the making of furniture.

Its native range is from eastern Canada, Ontario, Quebec, Atlantic provinces to south eastern United States into Georgia and Louisiana.

Longevity

Red oak is very resistant to decay and can live very long even in the adverse environment such as this suburban location. As indicated earlier it is my opinion that this tree is at least 150 years old, possibly as old as 200 years. It is at the height of its maturity and from here on forward it will start to decline naturally. No sign of decline was observed at this time, but as trees age they will become smaller in stature byway of limb mortality in the top of the crown and at the end of the limbs, thus reducing their size and preserving the amin structure of the tree.

Trees such as this could possibly live to be 250-350 years old given the right conditions and the least amount of urban disturbance.

Mature tree pruning

Tree pruning is considered a good maintenance practice, ANSI A300 pruning standard allows no more than 25% of live tissue removed from a tree. To maintaining mature and over mature trees, our thinking about pruning needs to be revised, these trees need as much of their canopy to keep their stored food reserves up and if too much live material is removed the tree could decline.

This tree has some very large limbs that will need to be reduce in length to prevent failure of the limbs. One limb over the road is posing the highest risk currently. Reduction of this limb will result in the removal of about 10% of live tissue.

Tree engineering

Angiosperms create reaction wood on top of branches away from the force that is working on it. In this case gravity is pulling the limbs down to the ground so the tree has formed tension wood on top of the branches to help hold them up. The cell structure in this portion of the limb is different and stronger than the rest of the cells and thus it helps in keeping the branches in place. This tree in addition to forming tension wood it has also developed some compression wood at the base of the limb that has



failed. Here the compression wood was holding the branch in place until it ultimately failed. Not due to the limb failing but due to the branch union failing.

Risk assessment

The failure of the limb over the house can be contributed to two main factors, poor attachment to the tree and excessive weight of the limb. Since this tree had not been maintained for many years, this condition was allowed to continue and over time a failure such as this will occur. Very old pruning wounds can be seen throughout the canopy. These large wounds indicate that when the tree was pruned last an attempt was made to reduce the canopy.

The risk assessment of this tree does indicate that in its current state this tree is a moderate risk of failure. If left unattended that large limb over the road will eventually fail and could potentially cause damage or injury.

Risk assessment looks at a variety of factors in determining the risk of a tree part failing and that tree part doing damage or personal injury. The surrounding area where a tree is growing will determine the likely hood of a failed part causing damage or injury. In this situation the tree is located at the front of a private residence along a public road with a sidewalk. The public road is in a quiet neighborhood, it does support through traffic but mostly only for those living in the area. Therefore, the likelihood of damage and/or injury is not as high as if the tree would be located on a busy through fare.

Likelihood of failure considers normal weather conditions for the area. Trees generally will not fail under calm weather conditions, there is usually a combination of tree defects and adverse weather that will cause a failure.

Current risk situation: This tree if left unattended will probably fail in the next 5-7 years. This in combination with a severe likelihood of damage and/or injury results in a moderate risk for this tree.

Risk after mitigation: prune to reduce the weight and length of the limb over the road as well as some other limbs in this tree; the installation of a cabling system for support of the long limbs. The likelihood of failure will be reduced to possible in the next 5-7 years, thus reducing the risk for this tree to low.

Health

Health and structure in trees are two separate items. A tree can be very healthy and structurally unsound to the point it will need to be removed, conversely a tree can be almost dead structurally very sound. This tree appears to be healthy and growing well. Pruning will reduce the ability for the tree to produce needed elements for proper tree growth. Soil where a tree grows contributes to a trees well-being, it provides nutrients and moisture. Improving the soil conditions will keep trees healthy.

Soil improvement should include adding organic matter and possibly some nutrients. By adding organic matter we will increase the soil biology and this increases the availability of nutrients to the tree.

Conclusions

Maintaining trees is an ongoing exercise and with older and veteran trees this needs to be handled with care and a delicate balance between risk to the community and the well being of the tree. If the risk of



keeping a tree becomes too great it may need to be removed, however there are many mitigation options available to preserve the old veteran trees and keep a safe neighborhood.

Veteran trees such as this red oak represent our past and binds heritage communities together. It is important to maintain these assets of the community.

Recommendations

Mitigation for reducing the likelihood of damage or injury from this tree will require a multi-pronged approach.

- **Traffic reduction:**
Reducing the amount of time spent by the public underneath this tree will greatly reduce the risk of damage and or injury.
 - Making this street one way
 - Creating a no parking zone under the tree
 - Removing the sidewalk and installing a new sidewalk in the west side of the road.
- **Pruning:**
Older trees require a delicate touch when it comes to pruning. Too much pruning will hurt the tree and, in this case, not enough pruning will not provide the desired results. Therefore, I am proposing to do the pruning in two stages as a significant amount of live branches will need to be removed to reduce the risk on this tree.
Year 1
 - Removal of all deadwood 2 cm and larger in the crown of the tree;
 - The long limb over the road should be cut back to reduce the weight and the length of it. Reduction cuts for this limb shall be no larger the 25 cm.
 - The accompanying photographs indicate the propose location of the reduction cuts.
 - The limb growing to the south over the lawn shall be thinned and only reduced slightly. Reduction cuts for this limb shall be no larger than 5 cm.
Year 2-3
 - Evaluation of the tree to monitor for any decline;
 - Based on evaluation suggest further reduction pruning:
 - The limb to the south shall be reduced further. Reduction cuts for this limb shall be no larger the 25 cm
Year 4-6
 - Monitor tree for decline and visually inspect cabling system
Year 7
 - Removal of deadwood and pruning to further reduce the weight of limbs throughout the tree. Removal of life material shall be no more than 15%.

Continued pruning once every 5-7 years as needed to remove deadwood and reduce weight.
- **Cabling:**
The long limbs in this tree can be supported with a cabling system. This will be in addition to the limb reduction. The cables are there to help support the limbs but also in case of a limb failure the cables are more likely to keep the limbs from falling to the ground.



Specifications

Pruning:

This document is to be used as a specification for the pruning of the red oak located in the front yard of 21 Beech Ave, Bowmanville.

The work is to be carried out in accordance with the specifications set out here in which follow the ANSI A00 standard

This work is to be carried out by ISA certified arborists.

Objective: This veteran tree has some very long limbs that will need to be reduced. No more than 15% of live tissue can be removed at any one time over a period of 2 years.

Branches:

Year 1

- Removal of all deadwood 2 cm and larger in the crown of the tree;
- The long limb over the road should be cut back to reduce the weight and the length of it. Reduction cuts for this limb shall be no larger than 25 cm.
 - The accompanying photograph indicates the proposed location of the reduction cuts.





- The limb growing to the south over the lawn shall be thinned and only reduced slightly. Reduction cuts for this limb shall be no larger than 5 cm.





Year 2-3

- Evaluation of the tree to monitor for any decline;
 - Based on evaluation suggest further reduction pruning:
 - The limb to the south shall be reduced further. Reduction cuts for this limb shall be no larger the 25 cm (in red)





Van de Ven
Consulting Group
905-955-4856

Year 4-6

- Monitor tree for decline

Year 7

Removal of deadwood and pruning to further reduce the weight of limbs throughout the tree. Removal of life material shall be no more than 15%.



Cabling:

This document is to be used as a specification for the cabling of the red oak located in the front yard of 21 Beech Ave, Bowmanville.

The work is to be carried out in accordance with the specifications set out here in which follow the ANSI A00 standard

This work is to be carried out by ISA certified arborists.

The cabling system will require annual inspection, This is a visual inspection from the ground. Once every 5-7 years when the tree is pruned the system will need a closer inspection.

Objectives: This tree has some very long limbs that will benefit from the installation of a cabling system.

System:

- The systems shall be installed to the ANSI A300 Standard (Part 3) supplemental support systems.
- The system shall employ through bolts and Amon eye nuts or eyebolts 5/8" in diameter
- The system shall employ Extra high strength cable 7/16" in diameter or Aircraft cable 1/2" in diameter.
- The system, shall be installed in the approximate location as indicated in the photograph. This location shall be confined on site in consultation with the consultant





Budget

Pruning:

Year 1

- Removal of all deadwood 2 cm and larger in the crown of the tree;
- The long limb over the road should be cut back to reduce the weight and the length of it. Reduction cuts for this limb shall be no larger than 25 cm.
- The limb growing to the south over the lawn shall be thinned and only reduced slightly. Reduction cuts for this limb shall be no larger than 5 cm.
 - **\$4000.00**

Year 2-3

- Evaluation of the tree to monitor for any decline;
 - Based on evaluation suggest further reduction pruning:
 - The limb to the south shall be reduced further. Reduction cuts for this limb shall be no larger than 25 cm (in red)
 - **\$4000.00**

Year 4-6

- Monitor tree for decline
 - **\$5-800.00 annually**

Year 7

- Removal of deadwood and pruning to further reduce the weight of limbs throughout the tree. Removal of life material shall be no more than 15%.

Cabling:

System:

- The systems shall be installed to the ANSI A300 Standard (Part 3) supplemental support systems.
- The system shall employ through bolts and Amon eye nuts or eyebolts 5/8" in diameter
- The system shall employ Extra high strength cable 7/16" in diameter of Aircraft cable 1/2" in diameter.
- The system, shall be installed in the approximate location as indicated in the photograph. This location shall be confined on site in consultation with the consultant
 - **\$3-8000.00**

Annual inspection to be done as part of regular maintenance when tree is pruned.