CRESSMAN
TREE MAINTENANCE & LANDSCAPING LTD.
P.O. Box 57, Cobourg, ON K9A 4K2

October 15, 2021

Municipality of Clarington
40 Temperance Street
Bowmanville, Ontario
L1C 3A6
Attention: Steve Brake and Ken Mercer
By email to: sbrake@clarington.net and kmercer@clarington.net

RE: Review of Arborist's Reports for 21 Beech Street, Bowmanville, Ontario

As requested, I have reviewed the Arborist's Reports as prepared by Michael Richardson and Ruurd van de Ven. I have also visited the site and observed the tree from the ground. The following are my observations from the two reports and my recommendations.

OBSERVATIONS:

1. From Michael Richardson: The Tomogram Cross-section on page 10 shows an intact wall of live, solid wood and the Resistograph Drilling confirmed the same. This was done one metre above the ground but from my observations, I believe that this characterizes the entire trunk, up into the crown. Therefore, the structural stability of the trunk is not in question. Michael also mentions this on page 7 of his report when referring to the large limb that did fail. He said, "The cavity within the trunk played no role in the failure". I would agree with that statement.
2. Both reports indicate the current risk is with the two long, heavy limbs; one on the west side and one on the south side. I would agree. The union of the two limbs with the trunk both have included bark which creates weakness and the possibility of failure.
   Both limbs, as noted in the report by Ruurd van de Ven, have developed Tension wood and Compression wood. This is the tree's way of supporting the weight of the limb. Neither limb, from my observation and from the pictures in Michael Richardson's report, indicate that the unions have begun to fail.
   So, the question is: how can we preserve the tree and reduce the risk of failure?
   From research over the past 20 years or more, in the Arboriculture industry, we have learned that when you reduce the weight at the end of long, heavy limbs, you substantially reduce the stress on the limb and trunk union. From my experience, this is true. I have preserved many mature trees by reducing the size of the crown, installing cabling to help support the limbs, and by deeproot fertilizing. I know of mature trees that have been preserved for 20 to 40 years, however this is achieved with a long-term commitment, not a "one and done" procedure.

RECOMMENDATION:

I believe that this Red Oak can be preserved for many years to come. Firstly, I recommend the pruning program as proposed on pages 5 to 8 in the report prepared by Ruurd van de Ven. The goal will be to reduce the size of the crown starting with shortening back the west and south sides, as shown on pages 6 to 8 in the report, with proper drop crotch pruning. I would also recommend that no branches be removed from the inner crown of the tree. My hope is that we encourage more growth in the inner crown so that, in the future, we could shorten back the two

large, heavy limbs even more thus improving the overall health and structure of the tree for many years to come.
Secondly, I recommend the cabling program as proposed on page 10 of the report prepared by Ruurd van de Ven. With the installation of cables, the west limb will be supported, however proper positioning of the cables is critical.
Finally, I recommend that the tree be deeproot fertilized using WIN Tree 30-8-8 fertilizer by Plant Products, as per the attached data sheet. This would be applied to as much of the root area as possible and be repeated every 2 to 3 years.

As Michael and Ruurd have suggested, this Red Oak is approximately 150 to 200 years old. It is a magnificent tree and it, along with several other mature trees, are a significant part of the heritage and character of the street. I wish we would have started pruning for crown reduction and cabling on this tree 30 years ago because we probably wouldn't have lost the large limb on the east side. But I believe the balance of the tree can be preserved, however, we need to start the preservation plan now and be committed to follow-up with ongoing inspections, prunings and fertilizations.

I trust this review will be of value to you. Feel free to call me with any questions or concerns.

Yours truly,

Del Cressman, President
I.S.A. Board Master Certified Arborist
ON-0183

Attachments:

- Pages 7 & 10 from the report prepared by Michael Richardson
- Pages 5-9 (Pruning) from the report prepared by Ruurd van de Ven
- Page 10 (Cabling) from the report prepared by Ruurd van de Ven
- WIN Tree fertilizer data sheet

The tree has begun to segment into functional units. This means that a functional unit of a distinct section of the tree consisting of a limb or branch with associated foliage, a portion of the trunk and roots connected through a buttress roots has formed that is acting independently of the rest of the tree. This is particularly evident on the two lower limbs. If a functional unit is over-pruned or the limb completely removed the associated stem and roots will die.

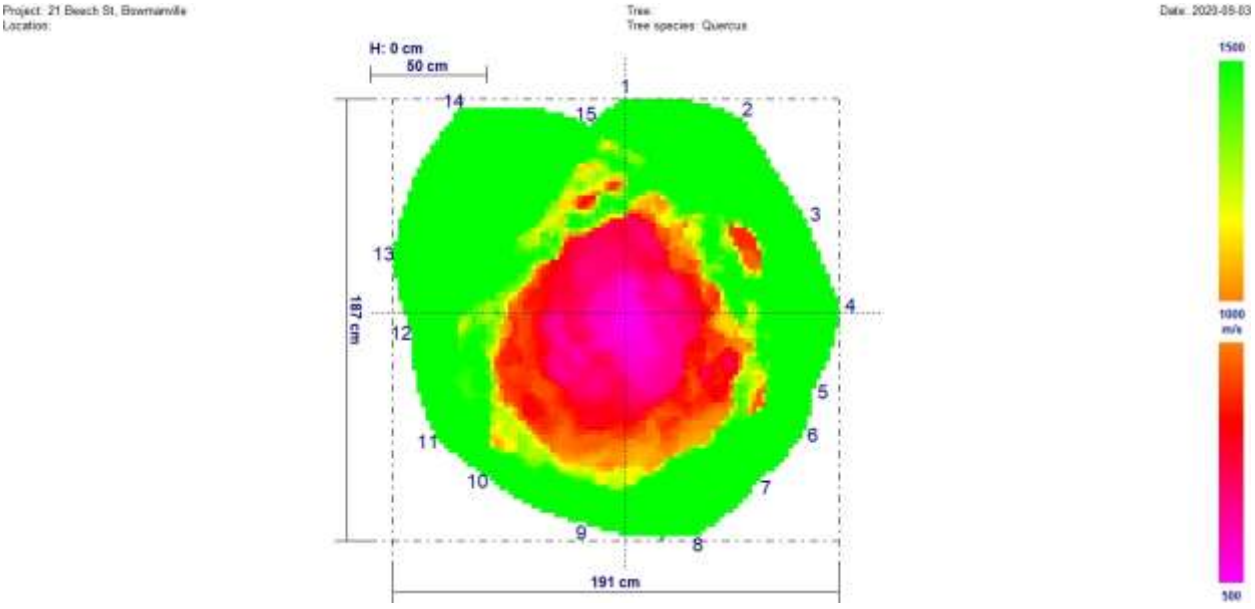
Failure Mode Assessment of the Failed Limb

The failed limb fractured because there was no integration of the branch fibers into the trunk on the upper portion of the of limb combined with the weight applied to the long lever arm. This is a very common failure mode in large oaks. The cavity within the trunk played no role in the failure.

There are very well-formed growth ribs on the underside of the failed limb. The large growth ribs are pushing the limb up but the traditional tension mode of angiosperms was lost many years ago on this limb.

There is no connection between the limb and the trunk on the upper half of the limb. This is identified by included bark, the loss of the branch bark ridge. Near vertical apparent connection interface, and in the photo of the fracture the loss of toothpick like fibres above the fracture line.

Tomogram of Cross-section Shown in Above Photograph



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.

Van de Ven
Consulting Group
905-955-4856

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 her 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 the 25 cm.
    - The accompanying photograph indicate 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 the 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)

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 her 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 of Aircraft cable ½'' 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

WIN Tree • Ar

30-8-8

DIRECTIONS FOR USE:

APPLICATION RATES:
Mix Plant-Prod® 30-8-8 at a rate of 15 kg in 490 L of water.

TREES:
Apply 200 L 30-8-8 suspension per 100 m². For injecting apply 2 L per injection at a depth of 20 - 25 cm, spacing 1 meter apart.

SHRUBS:
Apply 0.5 L of 30-8-8 suspension per injection. Space injections 60 cm apart and at a depth of 10 - 15 cm. For small shrubs drench the soil with 30-8-8 using a standard spray gun with the disc removed. Apply 1L per m² of root area.

EQUIPMENT:
Plant-Prod 30-8-8 will stay in suspension with good agitation. If agitation stops for more than 10 minutes, the material can be resuspended by directing the spray gun into the tank. For soil injection a standard minimum operating pressure of 1035 kpa (150 psi) should be used.

CAUTION: This fertilizer contains boron, copper, manganese, molybdenum and zinc, and should be used only as recommended. It may prove harmful when misused.

GUARANTEED MINIMUM ANALYSIS /
ANALYSE MINIMUM GARANTIE:

Total Nitrogen / Azote Totale (N)	30%
11.7% water insoluble nitrogen from urea formaldehyde	
Available Phosphoric Acid / Acide Phosphorique Assimilable (P_2O_5)	8%
Soluble Potash / Potasse Soluble (K_2O)	8%
Boron (actual) / Bore (réel) (B)	0.02%
Chelated Copper (actual) / Cuivre Chélaté (réel) (Cu)	0.05%
Chelated Iron (actual) / Fer Chélaté (réel) (Fe)	0.10%
Chelated Manganese (actual) / Manganèse Chélaté (réel) (Mn)	0.05%
Molybdenum (actual) / Molybdène (réel) (Mo)	0.0005%
Chelated Zinc (actual) / Zinc Chélaté (réel) (Zn)	0.05%
EDTA (Chelating Agent) / (Agent Chélatant)	1.24%

15 kg

MASTER PLANT-PROD INC.
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