



A Plant Health Care Consultant

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TREE INVENTORIES • APPRAISALS • DIAGNOSIS • Qualified TREE RISK ASSESSMENTS

Town of North Reading – Peter and Anthony Rd Construction-Tree Evaluation

Peter & Anthony Rd
North Reading, MA 01864

Prepared for:

John Klipfel, Town Engineer
Town of North Reading
235 North Streets
North Reading, MA 01864

Prepared by:

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June 24, 2019

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Introduction

I responded to a call from the Town Engineer of North Reading, regarding trees located around an upcoming street and sidewalk re-pavement work zone. He requested a meeting to evaluate trees along Peter and Anthony Roads in North Reading to determine feasibility of survival of those trees. A meeting was conducted at Peter and Anthony Roads, North Reading on June 19, 2019 at 10:00am. Present at the meeting were John Klipfel, Town Engineer and Stephen Lutterman, GIS Coordinator, from the Town of North Reading.

Summary

At the meeting we inspected thirty-nine trees that will be impacted during the construction project. The purpose of the inspection was to determine the likelihood of the trees surviving the interference with their root systems as a result of pavement and curb reclamation and new pavement and curb installation. Twenty-one (21) maple trees are located in the small grass strip between the street and the sidewalk and eighteen (18) trees of varying genus (maple, oak & pine) are located behind the sidewalk. All twenty-one (21) of the trees located in the strip of grass are town owned trees. Five (5) of the trees behind the sidewalk are town owned and the remaining thirteen (13) are on residential properties. Please see tree list and maps on pages 6 and 7. Further detail can be examined using the GIS interactive map:

[Peter & Anthony Rd GIS Map](#)

We visually inspected the root systems of all the trees as well as evaluated the canopy and crown for general health and potential risks to determine the likelihood of survival.

Assignment

The purpose of this project is to conduct an inspection and evaluation of the trees to be impacted by the construction and determine the likelihood of survival of the trees, and then compile the information in this report. Based on findings in this report, education and professional experience make recommendations regarding actions to take.

Limits of Assignment

The recommendations and conclusions provided in this report are based on visual observations only. No examinations of the trees interiors were taken nor were soil or plant tissue taken and submitted for laboratory testing.

Purpose and Use of Report

The purpose of this report is to present a professional opinion as to the most likely outcome of the trees in the Peter & Anthony Rds. neighborhood as a result of the impending construction project. This report is the property of the Town of North Reading to assist in the decision process regarding the construction project.

Observations

All twenty-one (21) trees planted in the small grass strip between the street and sidewalks have a root system that is limited to a very small area. As a result many of the roots have grown right up against the curbing and the sidewalk (see photo 1 pg. 8). Additionally, many of the roots have cracked and raised the sidewalk well (see photo 2 pg. 8). The eighteen (18) trees behind the sidewalk are close the

sidewalk and display similar impact on the existing sidewalk, raised and cracked. In addition to the impact along the sidewalk several trees exhibited sign of potential risk; decay, broken and damaged branches as well as heavy leans (see photos 3, 4 & 5 pgs. 9-10).

Discussion

There are multiple types of tree roots, each with their own function. Fine, hair-like roots absorb water and nutrients from the soil. The water is transferred to the trunk through lateral roots. Large buttress roots (along with lateral root) provide structural support and anchor the tree into the ground.

Tree roots grow wherever they can find conditions to do so. In an open, unbounded area they will spread out in all directions, usually in the top 6-12 inches of soil. If an area is unavailable, such as a roadway with deep heavily compacted substrate, they will find any spaces they can. Typically the substrate of a sidewalk is less compacted than a roadway as the requirements for support aren't as great. Rain and water cause the substrate under the sidewalk to settle and as a result air spaces form. These air spaces are close to the surface, between the substrate and the sidewalk. In these air spaces roots will grow. These roots tend to be much closer to the surface. As the roots develop and grow larger, cracks and lifting occur on the sidewalk. Not only is this less than ideal for the tree it also presents trip and fall hazards.

If roots are cut or damaged, as in a construction project, multiple tree functions are affected. Typically the lateral roots are affected as they grow close to the surface, especially when in restricted areas such as along streets and sidewalks. As the lateral roots transfer water and nutrients as well as provide support, disturbing or damaging them can have dire consequences on the tree. If it is a limited root zone the results are amplified. If a large enough portion of the lateral root system is damaged the tree will surely decline and ultimately die. Additionally the structural integrity of the tree will be compromised and the tree could fail and fall. This is even more of a concern with trees that already have a heavy lean.

Trees with a wound or excessive decay in the trunk or branches also pose a potential risk. Without enough sound wood to support the mass the tree part, or even entire tree can collapse under its own weight.

Conclusion

The planned construction at the Peter & Anthony neighborhood of North Reading will adversely affect root systems of all thirty-nine (39) trees in the work zone. The removal of the street, curbing and sidewalk will affect the root systems of all the trees. Given the root zones are already so limited the trees will suffer greatly from any impact to the roots. As many roots are growing directly against the curb, extensive root removal will be required. Additionally, trees that have roots that are cracking and raising the sidewalks will need roots removed to allow for a new, safe and level sidewalk, again resulting in severe stress to the trees. In my professional opinion, all of these trees will be severely affected. They will most certainly decline and die in the next year or two if they don't fail structurally much sooner. I would deem any tree not removed to be a potential hazard with a high-risk failure.

Recommendations

It is my recommendation, based on the evidence collected as well as my education and many years of experience that all thirty-nine (39) trees in the Peter & Anthony Rds. Project be removed before construction begins. This will mitigate the risk of potential hazards in the future as well as prevent need for future maintenance and removal of dead and dying trees after the project is completed.

Glossary of Terms

Absorbing Roots	Fine, fibrous roots that take up water and minerals; most of them are within the top 12 inches of soil
Air Spaces	Gaps that form between existing materials resulting in areas for roots to grow
Buttress Roots	Large support roots located along the root collar at the base of the trunk
Canopy	The part of the crown composed of leaves and small twigs.
Certified Arborist	A professional arborist possessing current certification issued by the Massachusetts Arborists Association (MAA) and/or the International Society of Arboriculture (ISA)
Crown	the upper part of a tree, measured from the lowest branch, including all the branches and foliage
Lateral Roots	Roots that branch out from the trunk with the primary function of providing structural support as well as trans-locating water and nutrients from the absorbing roots to the trunk
Root Collar	Area at the base of the tree where the roots and the stem merge.
Root Zone	The area where roots are able to grow for a given tree, influenced by location and barrier factors
Soil Compaction	Compression of the soil resulting in a reduction of the total air or pore space
Substrate	Material used under a roadway, sidewalk or similar structure to provide a compacted, stable base
Stress	Any change in environment conditions that produce a less than ideal plant response

Appendix A: Tree List

Anthony & Peter Tree Removal List

The following trees are detrimental to the installation of the new street, curb and sidewalk paving project

Address	Diameter (inches)	Type	Location	Notes
Grass Strip				
9 Peter Road	36	Maple		
9 Peter Road	26	Maple		
11 Peter Road	19	Maple		
11 Peter Road	37	Maple		
15 Peter Road	18	Maple		
15 Peter Road	20	Maple		
15 Peter Road	18	Maple		
15 Peter Road	19	Maple		
16 Peter Road	13	Maple		
20 Peter Road	20	Maple		
20 Peter Road	14	Maple		
27 Peter Road	19	Maple		
27 Peter Road	18	Maple		
29 Peter Road	24	Maple		
29 Peter Road	13	Maple		
31 Peter Road	23	Maple		
34 Peter Road	22	Maple		Tree is Dead
35 Peter Road	23	Maple		
35 Peter Road	21	Maple		
35 Peter Road	0	Maple Stump		Stump Only
36 Peter Road	16	Maple		
36 Peter Road	26	Maple		
Behind Sidewalk				
22 Anthony Road	0	Maple Stump	Directly Behind Sidewalk	Stump Only
42 Anthony Road	30	Maple	Directly Behind Sidewalk	Town Owned Land
42 Anthony Road	36	Maple	6' Behind Sidewalk	Town Owned Land
42 Anthony Road	18	Maple	Directly Behind Sidewalk	Town Owned Land
42 Anthony Road	23	Maple	1' Behind Sidewalk	Town Owned Land
42 Anthony Road	19	Maple	5' Behind Sidewalk	Town Owned Land
30 Anthony Road	22	Maple	5' Behind Sidewalk	TIBERII MATTHEW D
38 Anthony Road	31	Oak	8' Behind Sidewalk	WHALEN DANIEL J
33 Peter Road	19	Maple	4' Behind Sidewalk	WOOD JR ROBERT M
34 Peter Road	19	Pine	2' Behind Sidewalk	GIRALDO HUBER A
34 Peter Road	21	Pine	2' Behind Sidewalk	GIRALDO HUBER A
28 Peter Road	32	Pine	2' Behind Sidewalk	FITZPATRICK GLEN J
26 Peter Road	29	Pine	4' Behind Sidewalk	SANDOVICH DMITRITY
2 Peter Road	42	Pine	7' Behind Sidewalk	TURLAND PHILLIP W
19 Peter Road	13	Oak	1' Behind Sidewalk	INES DANA M
19 Peter Road	6	Maple	2' Behind Sidewalk	INES DANA M
19 Peter Road	14	Oak	2' Behind Sidewalk	INES DANA M
21 Peter Road	16.9	Pine	1' Behind Sidewalk	SOTIROPOULOS ARTHUR & HELEN T
21 Peter Road	20	Pine	5' Behind Sidewalk	SOTIROPOULOS ARTHUR & HELEN T

Appendix B: Tree Map



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Appendix C: Photos

Photo 1 – Root system



Photo 2 – Sidewalk Cracks



Photo 3 – Decay



Photo 4 - Damage



Photo 4 – Heavy Lean



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Assumptions and Limited Conditions

1. It is assumed that any property is not in violation of any applicable codes, ordinances, Statutes or other governmental regulations.
2. Care has been taken to obtain all information from reliable sources. All data has been verified insofar as possible; however, the consultant can neither guarantee nor be responsible for the accuracy of information provided by others.
3. The consultant shall not be required to give testimony or to attend court by reason of this report unless subsequent contractual arrangements are made, including payment of an additional fee for such services as described in the fee schedule and contract of engagement.
4. Unless required by law, otherwise, possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the person to whom it is addressed, without the prior expressed written or verbal consent of the consultant.
5. Unless required by law, neither all nor any part of the contents of this report, nor copy thereof, shall be conveyed by anyone, including the client, to the public through advertising, public relations, news, sales or other media, without the prior expressed written or verbal consent of the consultant-particularly as to value conclusions, identity of the consultant, or any reference to any professional society or institute or to any initialed designation conferred upon the consultant as stated in his qualifications.
6. This report expressed herein represent the opinion of the consultant, and the consultant's fee is in no way contingent upon the reporting of a specified value, a stipulated result, the occurrence of a subsequent event, nor upon any finding to be reported.
7. Sketches, drawings, and photographs in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys unless expressed otherwise. The reproduction of any information generated by architects, engineers, or other consultants on any sketches, drawings, or photographs is for the express purpose of coordination and ease of reference only. Inclusion of said information on any drawings or other documents does not constitute a representation by Carl A. Cathcart *A Plant Health Care Consultant* as to the sufficiency or accuracy of said information.
8. Unless expressed otherwise: 1) information contained in this report covers only those items that were examined and reflects the condition of those items at the time of inspection; and 2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, or coring unless otherwise specified. There is no warranty or guarantee, expressed or implied, that problems or deficiencies of the plants or property in question may not arise in the future.
9. Loss or alteration of any part of this report invalidates the entire report.


Certification of Performance

I, Carl A Cathcart, certify that:

1. I have personally inspected the tree and property referred to in this report and have stated my findings accurately.
2. I have no current or prospective interest in the trees or the property that is the subject of this report and have no personal interest or bias with respect to the parties involved.
3. The analysis, opinions and conclusions stated herein are our own and are based on current scientific procedures and facts.
4. Our analysis, opinions and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices.
5. No one provided significant professional assistance to me, except as indicated within the report.
6. My compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party or upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events.

I further certify that I am a member in good standing of the Massachusetts Arborist Association, American Society of Consulting Arborists, and the International Society of Arboriculture. I have been involved in the field of Arboriculture for over 60 years.

Carl A. Cathcart

Signed 

Date: June, 24, 2019

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Massachusetts Certified Arborist # 1114
International Society of Arboriculture # WE-0716A
Tree Risk Assessment Qualified