BIRCH ST SW ENGINEERING REPORT

ROBINSON TRUST SIDEWALK PROGRAM

July 25, 2022

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APPENDIX

The frontage of #506 is clear and relatively flat allowing the sidewalk to be built with minimal grading. The new sidewalk will connect to the existing sidewalk along the side of #214 Battle Street.

The frontage of #508 is clear and relatively flat allowing the sidewalk to be built with minimal grading.

The frontage of #510 is clear and relatively flat- except where the tree has been removed- allowing the sidewalk to be built with minimal grading.

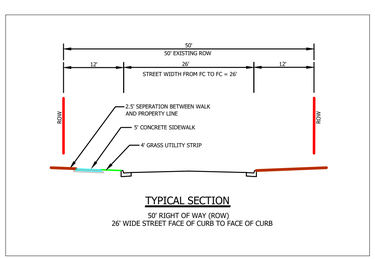
The frontage of #602 is clear and relatively flat allowing the sidewalk to be built with minimal grading. The cracked driveway apron will be replaced with a new standard concrete apron.

There are three trees in #604. Photos (left to right) are 5" Chaste Tree (excellent condition), 6" Hawthorne (good condition), and 13" Saucer Magnolia (good condition). During design consideration can be made to transplant the Chaste Tree or move the sidewalk closer to the curb to preserve the tree. The Hawthorne and Magnolia are in the R/W and in line with the sidewalk; therefore, these two trees cannot be preserved. The existing stone retaining wall (partially in the R/W) will be preserved. The existing fire hydrant will be relocated.

There are three trees in #606. Photos (left to right) are 28" Red Maple (poor condition), 35" Red Maple (good condition), and 34" Red Maple (fair condition, "dying with lots of dieback"). Because the frontage is up to 1' higher than the curb grade there will be more tree roots disturbed for the sidewalk construction. These trees cannot be preserved.

The frontage of #610 is clear and relatively flat allowing the sidewalk to be built with minimal grading. The sidewalk will be placed in front of the utility pole shown in the background of the photo. Also a new ADA ramp and crossing of Birch St will be provided.

Concept 1 will connect to the existing sidewalk along the side of #611 Plum Street.



TYPICAL SECTION

50' RIGHT OF WAY (ROW)
26' WIDE STREET FACE OF CURB TO FACE OF CURB

CONCEPT 1
Sidewalk along the "Even" side addresses (west side) of Birch Street SW. This concept will extend from the existing sidewalk along the corner property of Birch and Plum Street (#611 Plum St) to the existing sidewalk along the corner property of Birch and Battle Street (#214 Battle St). The total length of new sidewalk is 705 feet.

TOWN OF VIENNA
DEPARTMENT OF PUBLIC WORKS
FAIRFAX COUNTY, VIRGINIA

CONCEPT 1-
SIDEWALK ALONG "EVEN" ADDRESSES

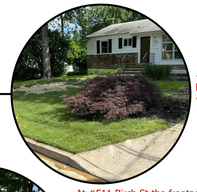
BIRCH STREET SW
PLUM ST TO BATTLE ST

PREPARED JULY 21, 2022

Concept 2 will connect to the existing sidewalk at the curb return of the Birch/Battle intersection.

Sidewalk will be aligned in front of the utility pole and against the curb (no utility strip). The existing 27" Holly will be significantly impacted by the grading for the sidewalk. Approximately 44% of the CRZ will be disturbed; therefore the tree is recommended for removal.

At #507 Birch St the 8" Catalpa will be preserved. Some branches may need to be trimmed to provide clearance for the sidewalk. Immediately before the utility pole the sidewalk will be built against the curb without a utility strip.



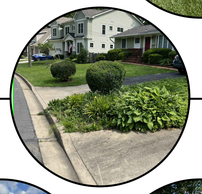
#601 Birch St will be redeveloped with a new house. The developer will be constructing a 5' wide sidewalk with a 6' wide utility strip.

At #511 Birch St the frontage is clear and level. The standard typical section, 5' sidewalk with a 4' utility strip will be constructed along the frontage of the property. To clear the utility pole the sidewalk will be placed against the curb (without a utility strip).

The frontage of #603 Birch St (shown in photo foreground) is clear and level. The sidewalk can be built with minimal grading. The sidewalk will be constructed behind the utility pole. The property in the background, #601 Birch St, is under construction. The developer will be constructing a 5' wide sidewalk with a 6' wide utility strip.

The 5" Crepe Myrtle is located in the R/W and too close to the alignment of the sidewalk. This tree cannot be preserved.

At #605 Birch St the frontage is clear and level. The sidewalk can be built with minimal grading.



At #607 Birch St the two shrubs are in the R/W and in the alignment of the sidewalk- they will be removed. The sidewalk will curve in front of the utility pole.

The two Crepe Myrtle's are located in the R/W and in the alignment of the sidewalk. These trees (12" and 8" Crepe Myrtle) cannot be preserved.

A potential sidewalk would need to be placed behind the existing pole along the corner property (#210 Oak St). This alignment would create more grading disturbance near to the 16" Yoshino Cherry located inside the fence. The CRZ of the tree would be significantly impacted.

At #706 Birch St the 38" White Oak (good condition) has a large Critical Root Zone (CRZ) that would be significantly impacted by a sidewalk on this side.

There are 7 trees that may be affected by the project if sidewalk is constructed along #701 Plum Street. The Flowering Dogwood (excellent condition) at the corner (leftmost photo) would be significantly affected because the new sidewalk will be over 1 foot lower than existing grade. The two large trees, 36" Red Oak (good condition and shown in the center photo), and the 40" White Oak (good condition and shown in the rightmost photo) have large Critical Root Zones (CRZ's) that would be significantly impacted by a sidewalk on this side.

The frontage of #610 is clear and relatively flat allowing the sidewalk to be built with minimal grading. The sidewalk will be placed in front of the utility pole shown in the background of the photo. Also a new ADA ramp and crossing of Birch St will be provided.

Concept 2 will connect to the existing sidewalk along the side of #611 Plum Street.

TYPICAL SECTION
50' RIGHT OF WAY (ROW)
26' WIDE STREET FACE OF CURB TO FACE OF CURB

CONCEPT 2
Sidewalk along the "Odd" side addresses (east side) of Birch Street SW from Oak Street to Battle Street and along #610 Birch Street. The new sidewalk along #610 Birch Street plus the existing sidewalk along #611 Plum Street will be the sidewalk for the block of Birch from Oak Street to Plum Street. A sidewalk in this block on the Odd side (east side) is not recommended in this block because of the impact on the mature trees in #705 Birch Street and #701 Plum Street. The new sidewalk routes will be connected by a new crosswalk at the north side of the Birch/Oak intersection.

There are several "bends" of the sidewalk alignment to clear utility poles at several locations. The length of new sidewalk for Concept 2 is 700 feet.

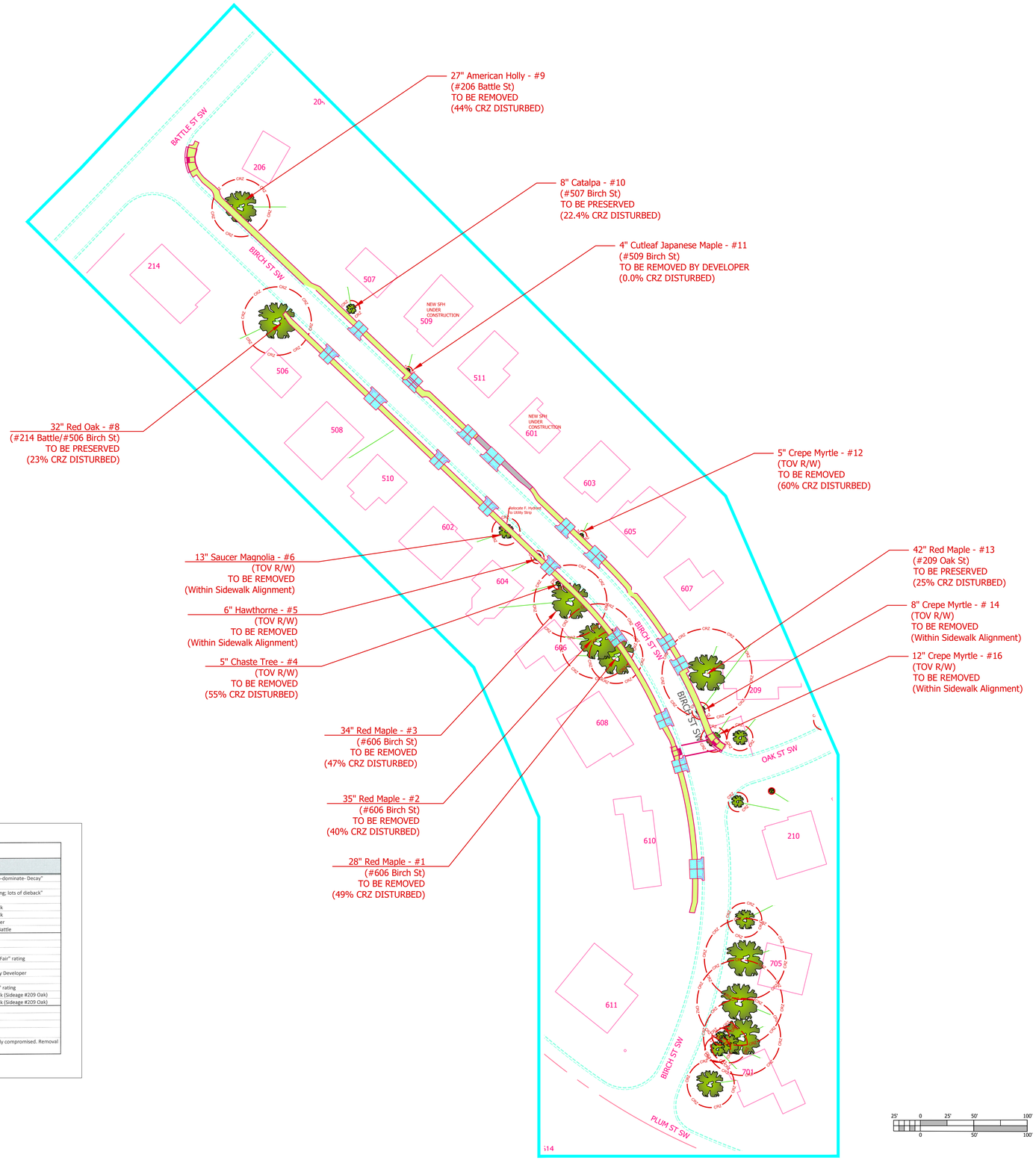
25' 0 25' 50' 100'
0 50' 100'

TOWN OF VIENNA
DEPARTMENT OF PUBLIC WORKS
FAIRFAX COUNTY, VIRGINIA

CONCEPT 2-
SIDEWALK ALONG "ODD" ADDRESSES

BIRCH STREET SW
PLUM ST TO BATTLE ST

PREPARED JULY 22, 2022



CRITICAL ROOT ZONE (CRZ)
This drawing plots the critical root zone (CRZ) of existing trees.
1" of tree diameter dbh (diameter breast height) equals 1' radius of CRZ.

(TOV R/W) indicates that the tree is on Town of Vienna right of way based upon field measurement.

TABULATION OF TREE IMPACTS- CONCEPTS 1 and 2

Tree #	Size & Species	Side of Street	Dia.	Area CRZ	Area CRZ Disturbed	% CRZ Disturbed	In R/W	Address	Preserve	Transplant	Remove	Comment
1	28" Red Maple	West	28	1963	958	48.8%		#606			Yes	"Poor" rating, "Co-dominate- Decay"
2	35" Red Maple	West	35	3847	1519	39.5%		#606			Yes	
3	34" Red Maple	West	34	3630	1713	47.2%		#606			Yes	"Fair" rating, "Dying; lots of dieback"
4	5" Chaste Tree	West	5	79	43.5	55.4%	Yes				Yes	
5	6" Hawthorne	West	6	113	604	534.3%	Yes				Yes	In path w/sidewalk
6	13" Saucer Magnolia	West	13	531	332	62.6%	Yes				Yes	In path w/sidewalk
7	50" White Oak	West	50	7850	7850	100.0%	Joint	#510			N/A	Removed by Owner
8	32" Red Oak	West	32	3215	739	23.0%	Yes	#506	Yes			Joint #506/#214 Battle
									CONCEPT 1 TOTAL		6	
9	27" Am. Holly	East	27	2289	1002	43.8%		#206			Yes	(#206 Battle St), "Fair" rating
10	8" Catalpa	East	8	201	45	22.4%		#507	Yes			
11	4" Jap. Cutleaf Maple	East	4	50	35	69.7%	Joint	#116			N/A	To be Removed by Developer
12	5" Crepe Myrtle	East	5	79	47	59.9%	Yes				Yes	
13	42" Red Maple	East	42	5539	1609	29.0%		#209	Yes			(#209 Oak) "Poor" rating
14	8" Crepe Myrtle	East	8	201	201	100.0%	Yes				Yes	In path w/sidewalk (Sideage #209 Oak)
16	12" Crepe Myrtle	East	12	452	452	100.0%	Yes				Yes	In path w/sidewalk (Sideage #209 Oak)
										CONCEPT 2 TOTAL	4	

1. This spreadsheet is based upon conceptual designs 1 and 2.
2. Any trees listed as to be removed are recommendations only. No tree on private property can be removed without permission from the owner.
3. As a general guideline trees that will have more than 40% of the CRZ disturbed by the construction may be significantly affected and may be structurally compromised. Removal of the tree should be considered.

TOWN OF VIENNA
DEPARTMENT OF PUBLIC WORKS
FAIRFAX COUNTY, VIRGINIA

PLAN OF CRITICAL ROOT ZONES (CRZ'S) CONCEPTS 1 AND 2

BIRCH STREET SW
PLUM ST TO BATTLE ST

PREPARED JULY 21, 2022

	Analysis of Concept 1- Birch St SW	Analysis of Concept 2- Birch St SW
DESCRIPTION	Sidewalk along the "Even" side addresses (west side) of Birch Street SW. This concept will extend from the existing sidewalk along the corner property of Birch and Plum Street (#611 Plum St) to the existing sidewalk along the corner property of Birch and Battle Street (#214 Battle St). The total length of new sidewalk is 705 feet.	Sidewalk along the "Odd" side addresses (east side) of Birch Street SW from Oak Street to Battle Street and along #610 Birch Street. The new sidewalk along #610 Birch Street plus the existing sidewalk along #611 Plum Street will be the sidewalk for the block of Birch from Oak Street to Plum Street. A sidewalk in this block on the Odd side (east side) is not recommended in this block because of the impact on the mature trees in #705 Birch Street and #701 Plum Street. The new sidewalk routes will be connected by a new crosswalk at the north side of the Birch/Oak intersection.
SIDEWALK SUPPORT-RESPONSE TO QUESTIONNAIRE	Based upon the Questionnaire from DPW to homeowners that was sent in Fall of 2020 the odd side of the street had more supporters of sidewalk. The odd side addresses responded 4 in favor and 5 not in favor. The even side addresses responded 3 in favor and 4 not in favor.	Based upon the Questionnaire from DPW to homeowners that was sent in Fall of 2020 the odd side of the street had more supporters of sidewalk. The odd side addresses responded 4 in favor and 5 not in favor. The even side addresses responded 3 in favor and 4 not in favor.
TREE IMPACTS	Construction of this concept requires removal of six trees. The trees to be removed are the 28" Red Maple, 35" Red Maple, and 34" Red Maple (#606 Birch), the 5" Chaste Tree, 6" Hawthorne, and the 13" Saucer Magnolia (frontage of #604). Of the three trees in #606, two are in "poor" or "fair" condition. The arborist further notes the trees have "decay" and "dying with dieback respectively". Of the three trees along the frontage of #604 all three are in the R/W. The 13" Saucer Magnolia and 6" Hawthorne are in the alignment of the sidewalk. The 5" Chaste is located very close to the back of the proposed new sidewalk where much of the tree's roots will be damaged by the construction- therefore, removal of this tree is recommended.	Construction of this concept requires removal of four trees. The trees to be removed are the 27" American Holly (in #206 Battle St), 5" Crepe Myrtle (in R/W along #605 Birch St), 8" Crepe Myrtle (in R/W along #209 Oak St), and 12" Crepe Myrtle (in R/W along #209 Oak St).
IMPACTS ON VEGETATION (OTHER THAN TREES)	There are other plants and vegetation that may be affected by the construction. This analysis focuses more on the potential construction impacts to larger trees. If this concept is pursued replacement vegetation and possibly transplantation of plants/shrubs will be considered.	There are other plants and vegetation that may be affected by the construction. This analysis focuses more on the potential construction impacts to larger trees. If this concept is pursued replacement vegetation and possibly transplantation of plants/shrubs will be considered.
GRADING IMPACTS	The area where sidewalk would be built is relatively flat with the grade difference between the existing curb and the back of the R/W being less than 1 foot. The grading appears to be minimal. At #606 there is slightly more grading to be required- approximately 1 foot of elevation difference between existing grade and the new sidewalk. The construction limits for all properties will be determined during later stages of design if this concept is pursued. Relative to Concept 2- Concept 1 has slightly less grading overall.	The area where sidewalk would be built is relatively flat with the grade difference between the existing curb and the back of the R/W being up to a 1 foot. The construction limits for all properties will be determined during later stages of design if this concept is pursued. Relative to Concept 1- Concept 2 has slightly more grading overall.
CONSTRUCTABILITY ISSUES	There does not appear to be constructability issues with this concept. There is one fire hydrant to be moved. Also there is one utility near the back of the R/W near #610 Birch Street. The sidewalk alignment will be adjusted slightly to clear this pole. In all areas the sidewalk is wide enough to comply with the ADA recommended minimum width of 4 feet. Existing water meters will be relocated to the utility strip as necessary.	There are several constructability issues with this concept. First, the continuous sidewalk on this east side of Birch (odd side addresses) is not possible because of the damage to the trees at #705 Birch and #701 Plum Street. This Concept includes a crosswalk to the east side of Birch at Oak Street intersection to connect with Plum Street. Second, there are 4 poles in this concept. In order to clear these poles the sidewalk alignment bends at these locations. Third, Concept 2 has several frontages where the sidewalk has to be built against the back of existing curb-without the utility strip. The preferred typical section would be the 5' sidewalk separated from the street with the 4' grassed utility strip. In all areas the sidewalk is wide enough to comply with the ADA recommended minimum width of 4 feet. Existing water meters will be relocated to the utility strip as necessary.
COST	The cost of this concept should be comparable to other Robinson Sidewalk Projects. The project length of new sidewalk is 705' for Concept 1 and 700' for Concept 2. The Cost of Concepts 1 and 2 are very similar to each other.	The cost of this concept should be comparable to other Robinson Sidewalk Projects. The Cost of Concepts 1 and 2 are very similar to each other.
CONNECTIVITY	Concept 1 connects directly to existing sidewalks on Battle and Plum Street. Concept 1 will connect to the proposed Oak Street sidewalk by a new crosswalk across Birch Street.	Concept 2 will connect directly to existing sidewalk at Battle Street and to proposed sidewalk on Oak Street. The connectivity to Plum Street will be with a crosswalk to the west side of Oak and a new sidewalk along the frontage of #610 Birch Street.
RECOMMENDATION	***DPW recommends Concept 1. Concept 1 requires less grading, results in a more uniform cross section (an alignment without bending the sidewalk alignment around utility poles, and a typical section with a 4' wide utility strip for the length of the project). Concept 1 provides a continuous sidewalk along the entire side of Birch between Battle and Plum; as opposed to Concept 2 that requires pedestrians to cross at Oak Street when walking between Battle and Plum. Concept 1 does require removal of 6 trees as opposed to 4 in Concept 2, but two of the three trees on #606 are rated as poor or fair condition and noted as having "decay" and "dying with dieback".***	

TOWN OF VIENNA
DEPARTMENT OF PUBLIC WORKS
FAIRFAX COUNTY, VIRGINIA

ANALYSIS OF CONCEPTS 1 AND 2

BIRCH STREET SW
PLUM ST TO BATTLE ST

PREPARED JULY 25, 2022


BATTLE ST SW
BIRCH ST SW
DOGWOOD ST SW
COTTAGE ST SW
OAK ST SW
PLUM ST SW
MEADOW LN SW
HILLCREST DR SW
MOORE AVE SW
206
214
507
509
506
511
504
601
603
510
605
602
604
607
606
608
610
209
210
611
706
701
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22
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24
25
TREE LOCATIONS FOR INVENTORY
BY URBAN - LTD 07/09/2021
Fairfax County, Virginia
N
0
150
300
600
Feet
BIRCH ST SW
Battle to Plum
Scale 1" = 150'

Birch St. SW
Vienna, VA

Tree Inventory and Condition Analysis
Completed: 07/09/2021
Kevin J. Tankersley, ISA Certified Arborist #MA-5871A

TREE INVENTORY & CONDITION ANALYSIS

TREE NO.	SPECIES		SIZE	DRIP-LINE	CRITICAL ROOT ZONE	STRUCTURAL ROOT ZONE	CONDITION	CONDITION RATING	STATUS	COMMENTS
	Botanical Name	Common Name	DBH (in)	R (ft.)	R (ft.)	R (ft.)		%	(Remove or Preserve)	
1	*Acer rubrum*	Red Maple	28"		28'	14'	Poor	37.50		Co-dominant; Decay
2	*Acer rubrum*	Red Maple	35"		35'	18'	Good	68.75		
3	*Acer rubrum*	Red Maple	34"		34'	17'	Fair	46.88		Dying; Lots of dieback
4	*Vitex agnus-castus*	Chaste Tree	5"		5'	3'	Excellent	90.63		
5	*Crataegus viridis*	Hawthorn	6"		6'	3'	Good	68.75		In front of low stone wall
6	*Magnolia x soulangiana*	Saucer Magnolia	13"		13'	7'	Good	71.88		Shallow roots would be affected if walk were routed between tree and curb.
7	*Quercus alba*	White Oak	50"		50'	25'	Fair	43.75		Triple-trunk; dieback; Canker; Dying; Decay (fungi)
8	*Quercus rubra*	Red Oak	32"		32'	16'	Good	78.13		Existing sidewalk ends at tree and roots there already disturbed.
9	*Ilex opaca*	American Holly	27"		27'	14'	Fair	59.38		Dieback; double trunk; thin leaves; just inside fence, and would be affected by walk.
10	*Catalpa bignonoides*	Catalpa	8"		8'	4'	Good	65.63		Some damage at base of trunk
11	*Acer palmatum var. dissectum*	Cutleaf Japanese Maple	4"		4'	2'	Excellent	81.25		Can potentially be transplanted
12	*Lagerstroemia indica*	Crape Myrtle	5"		5'	3'	Good	75.00		Multi-stem
13	*Acer rubrum*	Red Maple	42"		42'	21'	Poor	28.13		Triple-trunk; mostly dead (two of the three trunks)
14	*Lagerstroemia indica*	Crape Myrtle	8"		8'	4'	Good	75.00		Multi-stem
15	*Carya illinoinensis*	Pecan	9"		9'	5'	Good	62.50		Stress growth
16	*Lagerstroemia indica*	Crape Myrtle	12"		12'	6'	Poor	37.50		Multi-stem; severely pruned
17	*Prunus x yedoensis*	Yoshino Cherry	16"		16'	8'	Fair	56.25		Stress growth at base
18	*Quercus alba*	White Oak	38"		38'	19'	Good	78.13		Back from street however large size has large critical root zone reaching to the curb.
19	*Quercus alba*	White Oak	40"		40'	20'	Good	75.00		Back from street however large size has large critical root zone reaching to the curb.
20	*Cercis canadensis*	Redbud	4"		4'	2'	Fair	59.38		Young tree
21	*Cercis canadensis*	Redbud	8"		8'	4'	Good	71.88		Young tree
22	*Cercis canadensis*	Redbud	12"		12'	6'	Good	65.63		Young tree
23	*Quercus alba*	White Oak	36"		36'	18'	Good	75.00		Large critical root zone may reach curb.
24	*Acer rubrum*	Red Maple	17"		17'	9'	Good	68.75		

Birch St. SW
Vienna, VA

Tree Inventory and Condition Analysis
Completed: 07/09/2021
Kevin J. Tankersley, ISA Certified Arborist #MA-5871A

TREE INVENTORY & CONDITION ANALYSIS

TREE NO.	SPECIES		SIZE	DRIP-LINE	CRITICAL ROOT ZONE	STRUCTURAL ROOT ZONE	CONDITION	CONDITION RATING	STATUS	COMMENTS
	Botanical Name	Common Name	DBH (in)	R (ft.)	R (ft.)	R (ft.)		%	(Remove or Preserve)	
25	*Cornus florida*	Flowering Dogwood	22"		22'	11'	Excellent	81.25		Very good tree; grading from walk going behind nearby telephone pole has potential to affect.

Note: Tree sizes are by visual estimate as most trees are located on private property and were not measured; Tree locations are approximate and not surveyed.