Appendix C

Arborist Reports

ARBOR RESOURCES
professional consulting arborists and tree care

TREE PROTECTION REPORT

660 UNIVERSITY AVENUE

PALO ALTO, CALIFORNIA

(511 BYRON ST., 660 & 680 UNIVERSITY AVE.)

Submitted to:

Smith Development
682 Villa Street, Suite G
Mountain View, CA 94041

Prepared by:

David L. Babby
Registered Consulting Arborist® #399
Board-Certified Master Arborist® #WE-4001B

Prior: December 20, 2023
Current: February 7, 2024

p.o. box 25295, san mateo, california 94402 ▪ email: arborresources@comcast.net
office: 650.654.3351 ▪ cell: 650.274.3656 ▪ licensed contractor #796763

TABLE OF CONTENTS

TABLE

EXHIBITS

1.0 INTRODUCTION

Smith Development is planning to construct a mixed-use, four-story building with two levels of underground parking on three properties[1] aligning the southeast side of University Avenue, between Middlefield Road and Byron Street; the project is titled 660 University Avenue. Two existing buildings and a surface parking lot currently occupy the site and will be demolished. As part of their planning submittal, Smith Development has retained me to prepare this *Tree Protection Report*, and specific tasks assigned to execute are as follows (this report serves to update my prior one, dated 12/20/23, prepared for this project):

- Visit the site on 1/16/21, 11/9/21 and 12/12/23 to identify 25 trees which have trunks located within the subject property, on adjoining properties within close proximity to the boundary, and along street frontages up to 30 feet from the boundary.
- Determine each tree's trunk diameter pursuant to the City of Palo Alto's (CPA) *Tree Technical Manual*[2] and the *Guide for Plant Appraisal, 10th Edition*;[3] all diameters represent inches and are rounded to the nearest whole number.
- Estimate each tree's height and average canopy spread (rounded to the nearest fifth).
- Ascertain each tree's health, structural integrity and form, and assign an overall condition rating (e.g. good, fair, poor or dead).
- Rate each tree's suitability for preservation (e.g. high, moderate or low).
- Obtain photographs; see Exhibit C (they represent those obtained in 2021).
- Assign numbers in a sequential pattern from #1 thru 25, and plot on the site map in Exhibit B (base map is a copy of the *Topographic & Boundary Survey* prepared by BKF, dated 2/17/21).
- Affix round metal tags with corresponding, engraved numbers onto the trunks of onsite and street trees (i.e. all but #10).
- Identify which are defined by the PAMC as protected and/or street trees.
- Ascertain the potential tree disposition and potential impacts by reviewing [1] the Planning Resubmittal #5 drawing set, dated 10/31/23, and [2] two landscape plans, dated 2/7/24, showing the proposed deck beneath #10's canopy.
- Provide design guidelines and protection measures to help avoid or mitigate potential impacts to retained trees, as well as conform with the CPA requirements.
- Prepare a written report presenting the above information, and submit via email as a PDF document.

[1] The three property addresses include 511 Byron Street, 660 and 680 University Avenue.
[2] Available for viewing at *www.cityofpaloalto.org/civica/filebank/blobdload.asp?BlobID=6436*.
[3] Authored by the Council of Tree & Landscape Appraisers, and published by the ISA.

2.0 TREE DESCRIPTION

Twenty-five (25) trees of 11 various species were inventoried for this report. They are sequentially numbered as 1 thru 25, and the table below identifies their common names, assigned numbers, counts and overall percentages.

Table 1 - Tree Count and Composition

NAME	TREE NUMBER(S)	COUNT	% OF TOTAL
Chinese pistache	8	1	4%
Coast live oak	10	1	4%
Crape myrtle	19 thru 24	6	24%
European hackberry	1	1	4%
Glossy privet	4 & 5	2	8%
London plane tree	2, 3 & 6	3	12%
Olive tree	11	1	4%
Purple Robe locust	17 & 18	2	8%
Raywood ash	12 thru 16	5	20%
Southern magnolia	7 & 9	2	8%
Yew pine	25	1	4%
	Total	**25**	**100%**

Specific information regarding each tree is presented within the table in Exhibit A. The trees' assigned numbers and approximate locations can be viewed on the site map in Exhibit B, and photographs are presented in Exhibit C.

Nine (9) trees, #1 thru 9, have trunks within the public right-of-way and are defined and regulated by the PAMC as street trees. Tree #1 is along Middlefield Road, #2 thru 6 align University Avenue, and #7 thru 9 align Byron Street. Of these, #1 thru 8 are along the street frontage of the project site, whereas #9 is along the frontage of the neighboring southeastern property (and included to conform with CPA report standards).

Tree #10 is located offsite in close proximity to the property boundary. Trees #11 thru 25 have trunks situated within the property.

Two (2) trees, #9 and 19, are not shown on the topo survey used for Exhibit B. As such, consider their trunk locations represented in Exhibit B as being only roughly approximate locations and not surveyed by me.

Trees #1-9 and 11-25 are considered ornamentals and not native to the local region. Tree #10 is a coast live oak is native, and represents the largest, most visible tree inventoried for this project.

Tree #10 (coast live oak)

Tree #10 is defined by the CPA as a protected tree (refer to Section 3.0 in this report for additional information). Its trunk diameter is 50 inches[4] at 54 inches above soil grade, is around 60 feet tall, and has a mostly balanced canopy spreading nearly 90 feet across.

As part of the initial site study, Smith Development retained me in January 2021 to evaluate #10's condition, as well as provide development setbacks to adequately protect its root zone and canopy while achieving a reasonable assurance of survival, structural integrity and form. A summary of additional observations obtained on 1/16/21 follows (and confirmed to be the same on 12/12/23), and photos obtained on 1/16/21 then can be observed in Exhibit C (page C-3). Information regarding my recommended setbacks and review of potential impacts are presented in Section 5.0.

The oak appears viable and healthy, and exhibits no symptoms or signs of being infected or infested by harmful pathogens. Shoot growth, color and density appear typical for a coast live oak, and woundwood has favorably closed off the vast majority of prior wounds.

[4] The diameter represents an approximation using a Biltmore stick.

Existing features beneath its canopy and surrounding the trunk appear dated, and based on its generally healthy condition, I conclude the tree has adapted well to current site and growing conditions. Its base is buried by leaf debris, and is situated roughly 6 inches or less from a 2-foot tall wall. Northeast of its trunk is barren soil, surface roots, and a raised deck which nears 2 feet above grade and serves as a walkway. Towards the southwest, this walkway continues by nearly 30 feet from the trunk, steadily descending and serving as an ADA ramp leading to the neighbor's parking lot.

Beneath the section of canopy overhanging the project site is an asphalt parking lot elevated above original grade by roughly 2 feet. There are no signs of roots forming cracks or mounds of the asphalt surface; however, given the dated age of the wall and surrounding features, I suspect roots are present, but highly limited as compared to the more favorable root-growing conditions on the neighboring property. A parking lot medium, particularly elevated as this one, is quite unsuitable for root growth, and the retaining wall footing also contributes towards deflecting root growth away from the lot.

Its structure also appears intact and stable, consisting of a main trunk dividing into five leaders at 10 feet high; their unions are favorably spaced apart, although visual and manual examination of the junction should occur once neighboring site access can be obtained to identify the presence of any defects, or lack thereof. The section of trunk and root collar buried by leaf debris should also be examined at that time.

The canopy is highly elevated above the parking lot, and appears to have been regularly pruned over its many years. The elevated canopy, however, does unfavorably displace limb and branch weight towards the canopy's edges, and potentially increases the possibility of limb and branch failure (although the regular maintenance provided certainly helps minimize this risk).

Review of Arborist Reports

Two arborist reports were provided to the project team by the CPA; one authored by Arborist OnSite, dated 5/23/22, and the other by Walter Levison Consulting Arborist, dated 12/21/22. Following my review, I maintain that my analysis and recommendations for this project, as presented herein, are accurate.

3.0 REGULATED TREES

The PAMC regulates specific types of trees on public and private property for the purpose of avoiding their removal or disfigurement without first being reviewed and permitted by the CPA. Three categories within the status of regulated trees include protected trees (PAMC 8.10), street trees (PAMC 8.04.020) and designated trees. Additional Information regarding regulated trees can be viewed on page xiii of the CPA's *Tree Technical Manual*.

One tree, #10, is defined as a protected tree due to being a coast live oak with a trunk diameter of 50 inches (the threshold for coast live oaks is having a trunk diameters of ≥11.5 inches at 54 inches above grade). Note that although a new and expanded definition for protected trees was recently codified by the CPA on 7/21/22, the prior definition, presented herein, applies to this project as the planning application precedes 7/21/22.

Trees #1 thru 9 are situated within the public right-of-way and defined as street trees.

The designated tree category applies to existing trees planted on a commercial or planned development site, for either designated tree landscape or to mitigate tree removal. This category can be enacted by the CPA and applied to any specific tree associated with a proposed development.

4.0 SUITABILITY FOR TREE PRESERVATION

Each tree has been assigned either a high, moderate or low suitability for preservation rating as a means to cumulatively measure its health, structural integrity, anticipated life span, remaining life expectancy, location, size, particular species, tolerance to construction impacts, growing space, and safety to property and persons within striking distance. Descriptions of these ratings are presented below, and the high category comprises 1 tree (4%), the moderate category 15 (or 60%), and the low category 9 (or 36%).

High: Applies to #10.

This coast live oak appears healthy and structurally stable; has no obvious, significant health issues or structural defects; presents a good potential for contributing long-term to the site; and requires only periodic or regular care and monitoring to maintain its longevity and structural integrity.

Moderate: Applies to #1-3, 7, 8, 11 and 17-25.

These trees contribute to the site, but at levels less than those assigned a high suitability; might have health and/or structural issues which may or may not be reasonably addressed and properly mitigated; and frequent care is typically required for their remaining lifespan.

Low: Applies to #4-6, 9 and 12-16.

These trees have significant health and/or structural issues expected to worsen regardless of tree care measures employed (i.e. beyond likely recovery). As a general guideline, they should be removed regardless of future site improvements, and any which are retained require frequent monitoring and care throughout their remaining lifespans to minimize risk to any persons or property within striking distance.

5.0 IMPACT ANALYSIS

5.1 Tree Disposition Summary

My review of project plans reveals the following tree disposition:

- **Remove** (19 in total): #4-6, 8 and 11-25.
- **Retain in Place** (6 in total): #1-3, 7, 9 and 10.

Table 2 below, and continued on the next page, summarizes each tree's proposed disposition, and lists their name, trunk diameter, canopy spread, and suitability for preservation.

Table 2 - Tree Disposition Table

TREE #	COMMON NAME	DISPOSITION		DIAM (in.)	CAN (ft.)	SUITABILITY FOR PRESERVATION
		RETAIN	RMV			
1	European hackberry	X	-	20	40	Moderate
2	London plane tree	X	-	15	50	Moderate
3	London plane tree	X	-	14	40	Moderate
4	Glossy privet	-	X	6	15	Low
5	Glossy privet	-	X	13	20	Low
6	London plane tree	-	X	10	35	Low
7	Southern magnolia	X	-	21	35	Moderate
8	Chinese pistache	-	X	14	35	Moderate
9	Southern magnolia	X	-	20	35	Low
10	Coast live oak	X	-	50	90	High
11	Olive tree	-	X	8, 8	10	Moderate
12	Raywood ash	-	X	2	10	Low
13	Raywood ash	-	X	12	15	Low
14	Raywood ash	-	X	11	20	Low
15	Raywood ash	-	X	6	15	Low
16	Raywood ash	-	X	15	20	Low
17	Purple Robe locust	-	X	6	20	Moderate
18	Purple Robe locust	-	X	5	20	Moderate

Table continued:

TREE #	COMMON NAME	DISPOSITION		DIAM (in.)	CAN (ft.)	SUITABILITY FOR PRESERVATION
		RETAIN	RMV			
19	Crape myrtle	-	X	5	10	Moderate
20	Crape myrtle	-	X	3, 3, 2	5	Moderate
21	Crape myrtle	-	X	6	10	Moderate
22	Crape myrtle	-	X	6	10	Moderate
23	Crape myrtle	-	X	6	15	Moderate
24	Crape myrtle	-	X	4, 3, 2	10	Moderate
25	Yew pine	-	X	8	10	Moderate

LEGEND
RMV = Remove
DIAM = Diameter (trunk)
CAN = Canopy spread (average)

5.2 Proposed Removals

The 19 trees proposed for removal include #4-6, 8 and 11-25. Trees #4 thru 6 are street trees aligning University Avenue, and will be removed due to their poor condition and low suitability for preservation. Trees #4 and 5 are small privets with advanced and extensive decline and decay. Tree #6 is a London plane which has partially uprooted; leans towards the street; and opposite the lean, has formed a pronounced buttress root causing extensive and somewhat dramatic hardscape damage. Removing #4 thru 6 provides the opportunity to significantly improve the future, long-term tree landscape and site/public safety.

Tree #8 is a street tree of moderate suitability for preservation, and requires removal to accommodate the future drive aisle off Byron Street.

Trees #11 thru 25 are located onsite and within the proposed building and parking garage footprint. Each represents a relatively small, non-native assigned either a low or moderate suitability for preservation.

For replacement sizes, amounts and species, refer to the CPA's recommendations.

5.3 Retained Trees

Trees planned for retention include #1-3, 7, 9 and 10. This section provides my analysis for those exposed to impacts, to include all but #9, and discusses general recommendations to minimize described impacts.

Additional and more detailed mitigation measures are presented within the next section of this report. They should be incorporated into project plans; carefully followed throughout the entire demolition, grading and construction stages; and are subject to revision upon reviewing any revised plans.

Trees #1-3 and 7

These street trees align the project site, and their protection zones can be regarded as being from their trunks up to the existing back of sidewalks and street curbs, and 10 feet in all other directions. Each tree will sustain an estimated 15- to 20-percent canopy loss to achieve building construction. Shoring installation for the parking garage may require an additional 5- to 10-percent of additional canopy removal.

Overall, I find the trees will not be adversely impacted provided these items are followed: pruning is judiciously performed through limited and highly-selective cuts by a California State licensed tree-service company approved by the CPA; scaffolding is minimized in width, and manlifts are utilized, where needed, to avoid unnecessary limb removal; and the shoring methodology is carefully studied and locations for drilling or driving piles are strategically placed to minimize canopy loss. Protection for these trees should include what the CPA defines as Type III Protection (aka trunk wrap), plus plywood to cover unpaved ground (i.e. planters) within their TPZ.

Tree #10

The architectural design substantially conforms to my recommendations provided in January 2021, which stipulates a minimum 30-foot setback from the oak's trunk to construct the future building and parking garage, and a minimum setback of 20 feet from the trunk for all ground disturbance beneath the existing asphalt surface.

The CPA's Tree Protection Zone (TPZ) standard is a radial distance from the trunk equal to 10 times its diameter, which for oak #10, identifies a TPZ of 41 feet from the trunk. The proposed project establishes the TPZ to be 30 feet from the trunk, which equates to a multiplier of 7 times the trunk diameter (and 11 feet inside). Information regarding anticipated impacts to the canopy and roots are discussed on the next page.

Canopy

The 30-foot setback from #10's trunk considers an additional 5 to 6 feet towards the tree where pruning would occur to establish clearances from the building, scaffolding, manlifts, and any shoring equipment. The proposed balconies do encroach inside the 30-foot setback by 5 to 6 feet, but provided construction scaffolding does not need to be erected beyond the balconies' edges (i.e. between the balconies and tree's trunk), then the building remains in conformance with the setback. During construction of the parking garage, strategically placing shoring and highly-selective pruning can limit impacts.

The estimated total canopy loss to construct the proposed building is 15-percent, the extent of which will not adversely affect the oak's existing form. This considers removing a low, 17-inch diameter limb overhanging the lot (see page C-3 of Exhibit C for a photo); an 8-inch diameter branch emerging from a 14-inch diameter limb growing mostly upright at a slight westerly angle; and roughly a dozen smaller branches ranging in size from 1 to 6 inches in diameter. All cuts will be highly selective, occur beyond the main trunk, and performed under direct supervision of the project arborist.

Additional and minor sections of canopy may also require removal to facilitate shoring installation to build the underground parking garage; based on my site analysis, I estimate only 5- to 10-percent, provided the shoring methodology is carefully studied and locations for drilling or driving piles are strategically placed.

Roots

The 20-foot setback from #10's trunk for ground disturbance applies to any soil compaction, grading, subexcavation, overexcavation, trenching, drilling/auguring, storm drains, swales, etc. My review of proposed plans reveals this has been achieved, and a large section of existing asphalt within this area will be retained, a wood deck built on top, and section of existing retaining wall within the TPZ kept in place. Exhibit D includes both Sheet L1.1 and a detailed section of the proposed deck.

Based on my site analysis and plan review, I estimate implementing the proposed design will affect approximately 15- to 20-percent of its root zone, a level considered highly tolerable, particularly for inherently resilient species of coast live oaks.

Protection for #10 would consist of CPA Type I Protection (aka chain link mounted on driven posts).

6.0 TREE PROTECTION MEASURES

Recommendations presented within this section are based on my review of the 10/31/23 plan set, and serve as measures to help mitigate or avoid impacts to trees anticipated for retention. I (hereinafter, "project arborist") should be consulted in the event any cannot be feasibly implemented. Please note, unless otherwise stated, all referenced distances from trunks are intended to be from the closest edge, face of, their outer perimeter at soil grade.

6.1 Design Guidelines

1. Consider each Tree Protection Zone (TPZ) as those minimum distances specified within Section 5.0 of this report. The TPZ is the area where the following minimum activities should be avoided: trenching, soil scraping, compaction, mass and finish-grading, overexcavation, subexcavation, tilling, ripping, swales, bioswales, storm drains, dissipaters, equipment cleaning, removal of underground utilities and vaults, altering existing water/drainage flows, stockpiling and dumping of materials, and equipment and vehicle operation. Where an impact encroaches slightly within a setback, it can be reviewed on a case-by-case basis by the project arborist to determine appropriate mitigation measures.

2. The CPA requires all design changes occurring near retained trees are reviewed by the project arborist prior to resubmitting plans, for purposes of identifying potential impacts and any possible mitigation measures.

3. Per CPA requirements, incorporate this report into the project plan set, following the CPA T-1 sheet, and copying onto T-2, T-3, etc. until its entirety is shown (and in a manner which all report text can be clearly read on the plan sheets).

4. On all architectural, civil, landscape and electrical site-related plans, show the trunk locations, trunk diameters (as circles to scale), and assigned numbers of all inventoried trees (see map in Exhibit B). Also, add notes instructing contractors to comply with recommendations presented in this report and on Sheet T-1, and to contact the project arborist prior to permitted work being performed within a TPZ.

5. On L4.1 and SD1.0, include the following: the notes mentioned in item 4 (second sentence), identify which trees are proposed for removal by placing an "X" across their trunks, and identify the Tree Protection Zones and protection fencing types as shown on the map in Exhibit B.

6. On SD1.0, add a note specifying to abandon any underground portions of existing and unused lines, pipes and manholes, etc. within a TPZ (prescribe they are cut off at existing soil grade versus being dug up and causing root damage). Also, to comply with this, modify the utility demolition currently prescribed within #1's TPZ.

7. Route underground utilities and services beyond TPZs, and per CPA guidelines for street trees, establish at least 10 feet from their trunks. Where this is not feasible, consider the following alternative trenching or installation methods (listed in order of least to most impactful): directionally bore by at least 3.5 to 4 feet below grade, tunnel using a pneumatic air device (e.g. an AirSpade®), or manually dig with a shovel (i.e. no jackhammer); these assume pipe bursting, an optimal method, does not apply to this project. For boring, establish access pits and above-ground infrastructure (e.g. splice boxes, meters and vaults) beyond TPZs.

8. Where within 30 feet from #10's trunk, ensure specifications by the geotechnical, soils and structural engineers do not require compaction, overexcavation, subexcavation or fill beyond 2 feet from the parking garage wall (towards the tree) and 5 feet beyond the building's foundation. Shoring utilized to achieve these setbacks, such as a pile driver or drill rig, shall not be used where significant damage to a tree's canopy would occur (can be determined on a case-by-case basis).

9. The proposed sidewalks within the trees' TPZs should be designed and built entirely above existing soil grade and surface roots (i.e. a no-dig design), including for base material, edging and forms. Also, direct compaction of soil shall be avoided (levels comparable to foot-tamping are acceptable), and soil fill used to bevel the top of walk to existing grade should not exceed 18 to 24 inches from a walk's edge, not be compacted, nor placed closer than 10 feet from a tree's trunk. Tensar® BX Geogrid *(www.tensarcorp.com)* is a material which can help address these limited excavation and compaction requirements.

10. For any retaining or landscape wall within a TPZ, utilize a pier and above-grade beam system, establish the beam spanning between footings to be above-grade (i.e. a no-dig design except for footings), and avoid fill and compaction between footings.

11. Design any new bioswales, storm drains and swales well-beyond TPZs.

12. The permanent and temporary drainage design, including downspouts, should not require water being discharged beneath #10's canopy.

13. All electrical routes should be designed and represented on the electrical site plan to be beyond TPZs.

14. Any new light poles should be established beyond tree canopies, or at a minimum, only where minor branch clearance is needed. The proximity of tree trunks should also be considered, and placed as far from them as possible.

15. The future staging area and route(s) of access should be shown on the final site plan and avoided on unpaved areas beneath or near canopies.

16. The erosion control design should represent silt fence and/or straw rolls at locations beyond TPZs, and at a minimum, not against a tree's trunk. Where within a TPZ, the material should not be embedded into the ground by more than 2 inches, nor require the severance of surface or shallow roots.

17. Avoid specifying the use of herbicides use within a TPZ; where used on site, they should be labeled for safe use near trees. Also, liming shall not occur or be prescribed within 50 feet from a tree.

18. The landscape design should conform to the following additional guidelines:
    a. Tilling, ripping, surface scraping and compaction within TPZs should be avoided.
    b. Irrigation should not strike within 12 inches from trunks of existing trees, nor applied against trunks of new trees.
    c. Plant material installed beneath tree canopies should be >12 to 24 inches from their trunks.

d. New street tree(s) should be designed to be at least 10 feet from any existing or new utility (per CPA guidelines).
e. All new trees should be installed, including necessary irrigation, by an experienced California state-licensed landscape contractor (C-27) or tree service company (D-49), and performed to professional industry standards. Only if necessary to stand upright, they should be double-staked (no cross-brace) with rubber tree ties or equivalent, and the support stakes cut below the first main lateral branch. All nursery stakes shall be removed. Root crowns of new trees shall be visible and absent of encircling roots.
f. Irrigation and lighting features (e.g. main line, laterals, valve boxes, wiring and controllers) should not require trenching inside TPZs, including header/lateral lines. In the event this is not feasible, they may require being installed in a radial direction to, and terminate a specific distance from a trunk (versus crossing past it). In certain instances, a pneumatic air device may be needed to avoid root damage, and any Netafim tubing placed on grade.
g. Irrigation for new trees should be supplied through an automatic timer, separate from other plant material, and supplied by one to two bubblers (minimum two for a 48-inch box). The bubblers should be placed and staked on the rootball's surface (not against a trunk, in a sleeve or on mulch), at around 1/2 to 1/3 the distance between the trunk and rootball edge. Additionally, an 8-inch tall circular berm formed by soil should established around a rootball's perimeter, and a 3-inch layer of mulch spread over their tops, kept 1-inch from the trunks' bases.
h. Ground cover beneath canopies of existing trees should be comprised of a 3-inch layer of coarse wood chips or other high-quality mulch (gorilla hair, rock, stone, gravel, black plastic or other synthetic ground cover should be avoided). Mulch should kept off the trees' trunks or visible root collars.
i. Bender board or other edging material proposed beneath the canopies should be established on top of existing soil grade (such as by using vertical stakes).
j. Herbicides should be avoided within a TPZ, and where used on site, labeled for safe use near trees. Liming shall not occur within 50 feet from a trunk.

6.2 Before Demolition, Grading and Construction

19. Several weeks prior to mobilizing equipment for demolition, and again, prior to shoring, grading and utility work, conduct a site meeting between the general contractor, applicable subcontractors, and project arborist. The purpose for these meetings is to review tree protection, demolition procedures, shoring methodology and vertical clearances needed for the pile driver or drill rig, and excavation for the underground garage, trench routes, limits of grading, supplemental watering, mulching, pruning, routes of access, staging, and other items and protection measures presented in this report.

20. The project arborist must also regularly inspect the project site as outlined on page 2-14 of the *Tree Technical Manual* (Section 2.30 Inspection Schedule), and verify conformance to tree protection measures. Inspections shall occur at least once per month and continue through final inspection, and additional site visits are necessary to observe/advise regarding tree care and/or services. A summary of pertinent observations and recommendations shall coincide with each inspection.

21. Avoid interrupting any existing irrigation. In the event interruption does occur, supplemental with potable water, and discuss the methodology, frequency and amount with the project arborist beforehand.

22. Prior to mobilizing equipment to the site, install tree protection to enclose all unpaved sections of the TPZs. For tree #10, utilize Type I Protection, which include affixing 5- to 6-foot tall chain link onto 2-inch diameter steel posts spaced apart as needed to remain upright. For all street trees, utilize Modified Type III Protection, which consists of wrapping a single straw wattle horizontally around the trunk at roughly 10 feet high and another around its base (loosely); placing boards (2"x4") vertically around the outside, from ground to 10 feet high; then wrapping orange-plastic fencing around the boards two to three times and tying together. Additionally, lay 3/4- to 1-inch thick plywood over unpaved sections of the planters within the TPZs, or if better, chain link panels mounted on concrete blocks or metal stands. All protection shall remain in place until otherwise instructed by the project arborist, and Sheet T-1 for additional information. Note that should fencing for #10 require being temporarily opened, conduct work under supervision by the project arborist.

23. Affix warning signs every 10± feet of #10's fencing, and one onto the trunk wrap of each street tree. The signs shall be at least 8-½ by 11 inches in size, and refer to Sheet T-1 for a CPA template.

24. Prior to utility installation and grading, review the staked locations with the project arborist where within or near a TPZ. Also, identify the precise locations of where underground utilities within TPZs will be capped (i.e. where being abandoned).

25. All pruning shall be performed under the direction of the project arborist, conducted in accordance with the most recent ANSI A300 standards, and implemented by a California licensed tree-service contractor (D-49) with an ISA certified arborist in a supervisory role. All pruning work on oak #10 shall be supervised directly by the project arborist.

6.3 During Demolition, Grading and Construction

26. Where within the assigned TPZs, all work must performed under the presence of and direct supervision by the project arborist; by foot-traffic only without the travel or operation of heavy equipment, including small tractors; and any approved excavation manually conducted using hand tools only (no jackhammers) and/or utilizing a pneumatic air device operated by a tree service.

27. Great care is needed during demolition and construction to avoid excavating into the ground and disturbing roots within TPZs, and equipment shall not travel over newly exposed ground/roots during the process. Additionally, equipment and truck operators must also be aware of existing trees (both along the street and onsite) to avoid damaging limbs, branches and trunks, as well as the scorching of foliage. Contact the project arborist well in advance of a potential conflict (wrap protection around limbs may be necessary before potential damage occurs).

28. Removing existing asphalt and base material located beyond the proposed deck and within #10's TPZ shall be performed under direct supervision by the project arborist. Once work is completed, restrict heavy equipment from traveling over the newly exposed ground, manually spread a 4- to 6-inch layer of coarse wood chips (or as determined by the project arborist), and expand protection fencing.

29. The removal of any existing plant material within a TPZ must be manually performed, and the work reviewed with the project arborist beforehand.

30. Digging for any bollards or permanent fencing within a TPZ, such as for #10, shall be manually performed using a shovel or post-hole digger. For any root encountered during the process with a diameter ≥2 inches, shift the hole over by 12 inches and repeat the process.

31. Spoils generated during demolition, excavation and trenching must not be piled or spread over unpaved ground within a TPZ. If necessary, temporarily pile on existing concrete, plywood or a tarp.

32. Any authorized digging within a TPZ should retain and protect roots encountered with diameters of ≥2 inches. Once exposed, cover with wet burlap and keep continually moist until they can be assessed by the project arborist; note that roots of street trees must be evaluated by the CPA arborist prior to severing. If authorized by the project arborist and/or CPA arborist for cutting, cleanly severe at 90° to the angle of root growth against the cut line using a fine tooth saw, and then immediately after, bury the cut end with soil or keep continually moist by burlap until the dug area is backfilled. Roots encountered with diameters <2 inches can be cleanly severed at a 90° angle to the direction of root growth.

33. All electrical and irrigation routes shall be staked, reviewed and approved by the project arborist prior to trenching occurring within a TPZ.

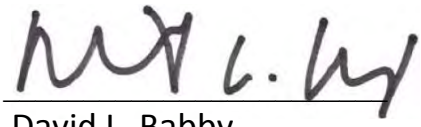
34. Avoid using tree trunks as winch supports for moving or lifting heavy loads, or for tying rope, cables, chains, signs or other items around.

35. Dust accumulating on trunks and canopies during dry weather periods may need to be periodically washed away (e.g. every three to four months).

36. Where beneath canopies, avoid disposing harmful products (such as cement, paint, chemicals, oil and gasoline) anywhere on site that allows drainage within or near TPZs; do not wash any equipment; and avoid applying herbicides (if applied, they should be labeled for safe use near trees). Avoid liming within 50 feet from a canopy.

7.0 ASSUMPTIONS AND LIMITING CONDITIONS

- All information presented herein covers only the inventoried trees listed in Exhibit A, and reflects their size, condition, and areas viewed from the project site, as well as adjoining streets and sidewalks on 1/16/21 and 12/12/23. I hold no opinion towards other trees on or surrounding the project area.
- The documented condition and suitability ratings of dormant trees are subject to change once they can be observed following their annual regrowth of leaves.
- Observations were performed visually from the ground without probing, coring, dissecting or excavating.
- I cannot provide a guarantee or warranty, expressed or implied, that deficiencies or problems of any trees or property in question may not arise in the future.
- No assurance can be offered that if all my recommendations and precautionary measures (verbal or in writing) are accepted and followed, that the desired results may be achieved.
- I cannot guarantee or be responsible for the accuracy of information provided by others.
- I assume no responsibility for the means and methods used by any person or company implementing the recommendations provided in this report.
- The information provided herein represents my opinion. Accordingly, my fee is in no way contingent upon the reporting of a specified finding, conclusion or value.
- Numbers shown on the site map in Exhibit B are solely intended to represent a tree's roughly approximate location and should not be construed as surveyed points.
- This report is proprietary to me and may not be copied or reproduced in whole or part without prior written consent. It has been prepared for the sole and exclusive use of the parties to who submitted for the purpose of contracting services provided by David L. Babby.
- If any part of this report or copy thereof be lost or altered, the entire evaluation shall be invalid.

Prepared By:  Date: February 7, 2024

David L. Babby
Registered Consulting Arborist® #399
Board-Certified Master Arborist® #WE-4001B
CA Licensed Tree Service Contractor #796763 (C61/D49)

ASCA RCA #399 Registered Consulting Arborist®

EXHIBIT A:

TREE INVENTORY TABLE

(four sheets)

TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE			CONDITION				Suitability for Preservation (High/Moderate/Low)	Proposed for Removal	REGULATED	
		Trunk Diameter (in.)	Height (ft.)	Canopy Spread (ft.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Form (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)			Protected Tree	Street Tree
1	European hackberry (*Celtis australis*)	20	35	40	60%	40%	80%	Fair	Moderate	-	-	X

Comments: Within a 4' wide planter strip between street and sidewalk. Trunk's base abuts curb. Highly elevated canopy. Sidewalk is slightly raised, now and historically. Codominant leaders emerge at 8' high. Has three large, partial girdling roots, one of which grows over a buttress root and can be pruned away.

2	London plane tree (*Platanus × hispanica*)	15	55	50	60%	70%	60%	Fair	Moderate	-	-	X

Comments: Dormant. W/in a narrow, 3' wide by 4.5' long planter. Adjacent sidewalk is raised now and historically, and adjacent curb is cracked. Asymmetrical canopy with excessive limb weight, and lowest limb is elongated and grows towards the building. Surface root in lawn adjoining sidewalk.

3	London plane tree (*Platanus × hispanica*)	14	50	40	60%	70%	80%	Fair	Moderate	-	-	X

Comments: Dormant. Within a 3' wide by 15' long planter. Adjacent sidewalk is cracked at E corner of planter. Surface root in lawn adjoining sidewalk. Vertical form.

4	Glossy privet (*Ligustrum lucidum*)	6	15	15	30%	30%	30%	Poor	Low	X	-	X

Comments: Within a 2' wide by 3.5' long planter. Leans slightly NW. Significant decline, and top section is dead. Prior leader cut at 6' cut - the resulting wound is decaying. At light pole and adjacent concrete is raised.

5	Glossy privet (*Ligustrum lucidum*)	13	20	20	20%	20%	20%	Poor	Low	X	-	X

Comments: Within a 2' wide by 4' long planter. Adjacent curb is buckled and raised, and adjacent sidewalk has been historically raised at multiple locations. Significant decline, w/ 50%+ being dead. Large decaying wounds at 6' and 9' high. Asymmetrical canopy with multiple large dead limbs.

6	London plane tree (*Platanus × hispanica*)	10	45	35	70%	30%	60%	Poor	Low	X	-	X

Comments: Dormant. Within a 2.5' wide by 3.5' long planter. Has a 16° NW lean, and opposite the lean is a large buttress root. Sidewalk and curb have been historically raised at multiple locations. Codominant top. Asymmetrical canopy with an extended limb over street, as well as a low branch lying on top of #22. Deadwood, including a small dead branch suspended in canopy.

TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE			CONDITION				Suitability for Preservation (High/Moderate/Low)	Proposed for Removal	REGULATED	
		Trunk Diameter (in.)	Height (ft.)	Canopy Spread (ft.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Form (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)			Protected Tree	Street Tree
7	Southern magnolia (*Magnolia grandiflora*)	21	30	35	40%	50%	50%	Poor	Moderate	-	-	X

Comments: Within a 3.5' wide by 15' long planter. Root crown occupies entire planter width. Adjacent curb is buckled at multiple locations, including historically. Advanced and extensive decline. Canopy has been reduced sometime ago.

8	Chinese pistache (*Pistacia chinensis*)	14	30	35	60%	60%	70%	Fair	Moderate	X	-	X

Comments: At NW edge of a 2' wide by 9' long planter. Adjacent sidewalk historically raised at multiple locations. Large old wound at canopy's bottom. Low canopy over street and roof. Buried root collar.

9	Southern magnolia (*Magnolia grandiflora*)	20	35	35	30%	30%	30%	Poor	Low	-	-	X

Comments: Along frontage of adjoining SE property (offsite), its trunk being nearly 22' from the property's fence. Within a narrow 2.5' wide planter. Trunk is 4' from CPA electrical and PacBell vaults. Sidewalk bulbs out near trunk. Asymmetrical, highly elevated canopy, and a large amount of foliage within its lower canopy consists of watersprouts (rapidly-growing, weakly-attached shoots). Has several large girdling roots over a buttress root. Advanced, extensive decline, and prior deadwood from 2021 was removed.

10	Coast live oak (*Quercus agrifolia*)	50	60	90	70%	40%	50%	Fair	High	-	X	-

Comments: Offsite on the adjoining SE property. Its base is ~6" from a 2' tall wall and buried by leaf litter. Trunk divides into 5 leaders at 10' high and are favorably spaced apart. Canopy is highly elevated over the site (existing parking lot). Low branches overhang neighbor's roof. Dead branches in canopy's upper S side is very minor and from squirrel damage.

11	Olive tree (*Olea europaea*)	8, 8	15	10	70%	50%	40%	Poor	Moderate	X	-	-

Comments: Canopy is rounded. Sucker growth has creatively been formed into a shrub surrounding the lower trunk. Trunk bifurcates at 2.5' high and forms a narrow attachment.

12	Raywood ash (*Fraxinus a*. 'Raywood')	2	15	10	70%	30%	20%	Poor	Low	X	-	-

Comments: Dormant. Within a square planter in parking lot. Trunk curves, and has a mostly one-sided canopy due to being suppressed and growing out from beneath #10.

TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE			CONDITION				Suitability for Preservation (High/Moderate/Low)	Proposed for Removal	REGULATED	
		Trunk Diameter (in.)	Height (ft.)	Canopy Spread (ft.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Form (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)			Protected Tree	Street Tree
13	Raywood ash (*Fraxinus a* . 'Raywood')	12	25	20	30%	30%	30%	Poor	Low	X	-	-
	Comments: Within a square planter. Trunk bifurcates at 6' high. Significant dieback with deadwood. Adjacent asphalt is cracked and forms a short mound. Asymmetrical canopy an multiple tops.											
14	Raywood ash (*Fraxinus a* . 'Raywood')	11	20	20	40%	30%	30%	Poor	Low	X	-	-
	Comments: Within a square planter. Has many large decaying cuts. Deadwood. Adjacent asphalt is cracked and slightly raised. Has multiple tops.											
15	Raywood ash (*Fraxinus a* . 'Raywood')	6	15	10	20%	10%	20%	Poor	Low	X	-	-
	Comments: Small tree within a square planter. Has a large decay column along entire trunk, as well as a large decaying wound at 6' high where a prior leader was cut away. Advanced levels of dieback and deadwood. Asymmetrical canopy and multiple tops.											
16	Raywood ash (*Fraxinus a* . 'Raywood')	15	25	20	30%	20%	20%	Poor	Low	X	-	-
	Comments: Within a square planter. Has a pronounced E lean. Low limb overhangs adjacent parking space. Significant decay throughout. Deadwood. Adjacent asphalt forms a mound. Has multiple tops.											
17	Purple Robe locust (*Robinia* 'Purple Robe')	6	35	20	60%	40%	70%	Fair	Moderate	X	-	-
	Comments: Dormant. Single support stake should be removed. Overhangs adjacent building.											
18	Purple Robe locust (*Robinia* 'Purple Robe')	5	25	20	60%	40%	40%	Poor	Moderate	X	-	-
	Comments: Dormant. Excessive limb weight overhangs parking lot. Asymmetrical form away from #17 and the adjacent building.											
19	Crape myrtle (*Lagerstroemia indica*)	5	10	10	60%	40%	50%	Fair	Moderate	X	-	-
	Comments: Is of Tuscarora variety (as well as #20 thru 24). Within a 2' raised planter. Dormant. Multiple trunks originate 8" high. Canopy is slightly asymmetrical.											

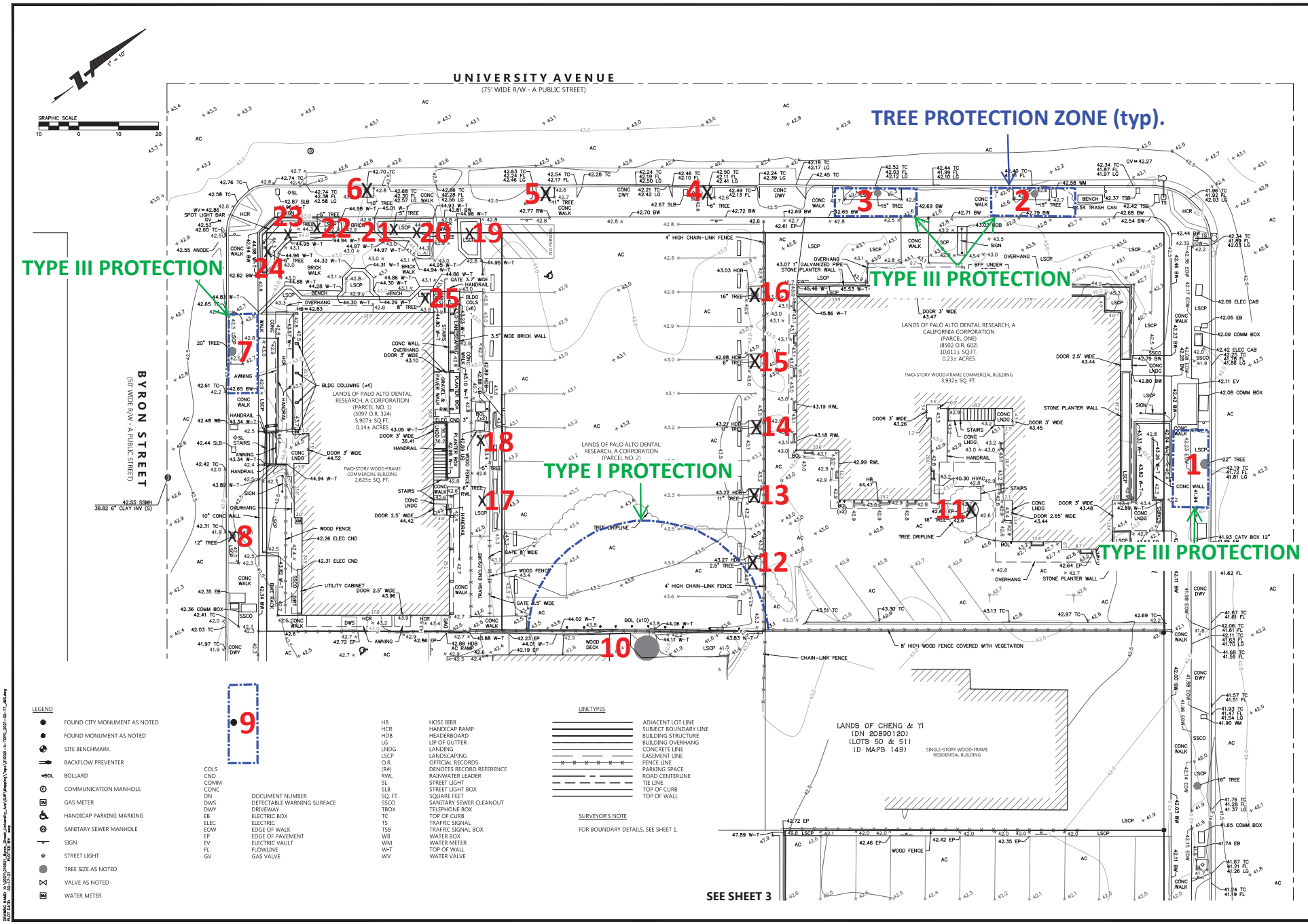
TREE INVENTORY TABLE

TREE/ TAG NO.	TREE NAME	SIZE			CONDITION				Suitability for Preservation (High/Moderate/Low)	Proposed for Removal	REGULATED	
		Trunk Diameter (in.)	Height (ft.)	Canopy Spread (ft.)	Health Condition (100%=Best, 0%=Worst)	Structural Integrity (100%=Best, 0%=Worst)	Form (100%=Best, 0%=Worst)	Overall Condition (Good/Fair/Poor/Dead)			Protected Tree	Street Tree
20	Crape myrtle (*Lagerstroemia indica*)	3, 3, 2	10	5	60%	40%	50%	Fair	Moderate	X	-	-
	Comments: Within a 2' raised planter. Dormant. Multiple trunks emerge at grade. Canopy is asymmetrical.											
21	Crape myrtle (*Lagerstroemia indica*)	6	15	10	60%	40%	50%	Fair	Moderate	X	-	-
	Comments: Within a 2' raised planter. Dormant. Multiple trunks originate 6" high. Canopy is slightly asymmetrical.											
22	Crape myrtle (*Lagerstroemia indica*)	6	15	10	60%	40%	50%	Fair	Moderate	X	-	-
	Comments: Within a 2' raised planter. Dormant. Multiple trunks originate 5" high. Canopy is slightly asymmetrical. A low limb of #6 is on top of its canopy.											
23	Crape myrtle (*Lagerstroemia indica*)	6	15	15	60%	40%	60%	Fair	Moderate	X	-	-
	Comments: Within a 2' raised planter. Dormant. Multiple trunks originate 5" high. Canopy is slightly asymmetrical.											
24	Crape myrtle (*Lagerstroemia indica*)	4, 3, 2	15	10	60%	40%	60%	Fair	Moderate	X	-	-
	Comments: Within a 2' raised planter. Dormant. Multiple trunks emerge at grade. Canopy is asymmetrical.											
25	Yew pine (*Podocarpus macrophyllus*)	8	10	10	70%	40%	30%	Poor	Moderate	X	-	-
	Comments: Adjacent to building. Shrub form and shaped into a cube. Trunk bifurcates at 3' high.											

EXHIBIT B:

SITE MAP

(one sheet)



LEGEND

- FOUND CITY MONUMENT AS NOTED
- FOUND MONUMENT AS NOTED
- SITE BENCHMARK
- BACKFLOW PREVENTER
- BOLLARD
- COMMUNICATION MANHOLE
- GAS METER
- HANDICAP PARKING MARKING
- SANITARY SEWER MANHOLE
- SIGN
- STREET LIGHT
- TREE SIZE AS NOTED
- VALVE AS NOTED
- WATER METER

COLS	COLUMNS
CND	CONDUIT
COMM	COMMUNICATION
CONC	CONCRETE
DN	DOCUMENT NUMBER
DWS	DETECTABLE WARNING SURFACE
DWY	DRIVEWAY
EB	ELECTRIC BOX
ELEC	ELECTRIC
EOW	EDGE OF WALK
EP	EDGE OF PAVEMENT
EV	ELECTRIC VAULT
FL	FLOWLINE
GV	GAS VALVE
HB	HOSE BIBB
HCR	HANDICAP RAMP
HDB	HEADERBOARD
LG	LIP OF GUTTER
LNDG	LANDING
LSCP	LANDSCAPING
O.R.	OFFICIAL RECORDS
(R#)	DENOTES RECORD REFERENCE
RWL	RAINWATER LEADER
SL	STREET LIGHT
SLB	STREET LIGHT BOX
SQ. FT.	SQUARE FEET
SSCO	SANITARY SEWER CLEANOUT
TBOX	TELEPHONE BOX
TC	TOP OF CURB
TS	TRAFFIC SIGNAL
TSB	TRAFFIC SIGNAL BOX
WB	WATER BOX
WM	WATER METER
W-T	TOP OF WALL
WV	WATER VALVE

LINETYPES

- ADJACENT LOT LINE
- SUBJECT BOUNDARY LINE
- BUILDING STRUCTURE
- BUILDING OVERHANG
- CONCRETE LINE
- EASEMENT LINE
- FENCE LINE
- PARKING SPACE
- ROAD CENTERLINE
- TIE LINE
- TOP OF CURB
- TOP OF WALL

SURVEYOR'S NOTE

FOR BOUNDARY DETAILS, SEE SHEET 1.

BKF Engineers
255 SHORELINE DR., SUITE 200
REDWOOD CITY, CA 94065
(650) 482-6300
www.bkf.com

TOPOGRAPHIC & BOUNDARY SURVEY

511 BYRON STREET, 660 & 680 UNIVERSITY AVENUE & APN: 120-03-046

CALIFORNIA
COUNTY OF SANTA CLARA
PALO ALTO

Revisions	No.

Date: 2021-02-17
Scale: 1" = 10'
Design:
Drawn: AMS
Approved: DCJ
Job No: 20210021-50

Drawing Number: 210021

2 OF 3

EXHIBIT C:

PHOTOGRAPHS

(five sheets)

Photo Index


#1
SPEED LIMIT
25


#2


#3
PATIENTS ONLY


#4


#5


#6


#7


#7


#8


#9


#10


#10
location for pruning cut
17" limb


#10


#10


#11


#12


#13


#14


#15


#16


#17
#18


#19
#20
#21


#23
#22
#24


#25

EXHIBIT D:

LANDSCAPE PLANS - DECK BENEATH TREE #10

(two sheets)

Plan Index

Sheet L1.1 (one page)

Landscape Section at Wood Deck (one page)

UNIVERSITY AVE

BYRON STREET

MIDDLEFIELD ROAD

TWO SHORT-TERM BIKE RACKS IN 5'X14' INDENT IN PLANTER SEE L2.1 FOR IMAGE

4 x 6' TREE WELL WITH DECOMPOSED GRANITE AND NEW STREET TREE

4 x 6' TREE WELL WITH DECOMPOSED GRANITE AND NEW STREET TREE

ACCENT PAVING

RAMP WITH HANDRAIL

4 x 6' TREE WELL WITH DECOMPOSED GRANITE AND NEW STREET TREE

EXISTING TREE TO REMAIN, WITH DECOMPOSED GRANITE AT BASE,TYP.

ACCENT PAVING

DASHED LINE INDICATES BUILDING OVERHANG ABOVE,TYP.

EXISTING TREE TO REMAIN, WITH DECOMPOSED GRANITE AT BASE,TYP.

RAISED CONCRETE TREATMENT PLANTER, TYP. SEE L2.1 FOR IMAGE

EXISTING BENCH AT BUS STOP TO REMAIN

RAISED CONCRETE TREATMENT PLANTER, TYP. SEE L2.1 FOR IMAGE

EXISTING TREE TO REMAIN, WITH DECOMPOSED GRANITE AT BASE, TYP.

FLOOD PROTECTION WALL

RESIDENTIAL LOBBY

6" THICK FLOOD PROTECTION CURB BETWEEN RAMP AND BUILDING, TYP.

DASHED LINE INDICATES BUILDING OVERHANG ABOVE,TYP.

OFFICE ENTRY

ONE SHORT-TERM BIKE RACK IN 5'X7' INDENT IN PLANTER SEE L2.1 FOR IMAGE; SEE ENLARGEMENT BELOW

A

A

SEE SECTION AA BELOW

FLOOD PROTECTION WALL

GARAGE OUTLINE BELOW

EXISTING ASPHALT TO REMAIN(RED DASH LINE)

PRECAST RECTANGULAR PLANTER

BOLLARD LIGHT, TYP.

WOOD DECK ON PEDESTALS BUILT ON TOP OF THE EXISTING ASPHALT. DO NOT REMOVE ASPHALT AT DECK

PRECAST RECTANGULAR PLANTER

PLANTERS ON DECORATIVE GRAVEL, TYP.

GARAGE OUTLINE BELOW

ACCENT PAVING

LOW HEIGHT RAISED CONCRETE PLANTER WITH A BACK WALL 6" ABOVE UPPER LANDING IN HEIGHT

FLOOD PROTECTION WALL

GARAGE STAIRS

EXISTING TREE TO REMAIN, WITH DECOMPOSED GRANITE AT BASE,TYP.

GRAVEL TURF BLOCK, DRIVABLE SURFACE IN FRONT OF TRANSFORMERS

RES. TRASH COMPACTOR ROOM

4 x 4' TREE WELL WITH DECOMPOSED GRANITE AND NEW STREET TREE

GARAGE ENTRY RAMP

TRANSFORMER PAD

TRANSFORMER PAD

1 L1.1 HORIZONTAL WOOD SLAT SCREEN ON OPERABLE GATES IN FRONT OF TRANSFORMERS. SEE DETAIL

1 L1.1 PLANTED TURF BLOCK, DRIVABLE SURFACE IN FRONT OF TRANSFORMERS

1 L1.1 HORIZONTAL WOOD SLAT SCREEN ON OPERABLE GATES IN FRONT OF TRANSFORMERS. SEE DETAIL

PLANTING ON GRADE

NEW TREES

PROPOSED CONCRETE WALL, PAINTED WHITE, SMOOTH FINISH

6' TALL OMEGA OPEN WIRE FENCE

PRECAST POTS ON DECORATIVE GRAVEL OVER EXISTING ASPHALT, TYP.

SECTION AT WOOD DECK

7' TALL, PROPOSED HORIZONTAL WOOD SLAT SCREEN FENCE MOUNTED ON EXISTING CONCRETE WALL (TO REMAIN WITHIN ENTIRE TPZ)

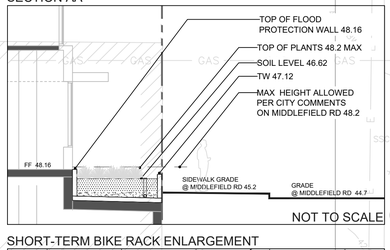
EXISTING OAK TREE ON ADJACENT PROPERTY TO REMAIN , TYP.

SLOPED CONCRETE WALKWAY

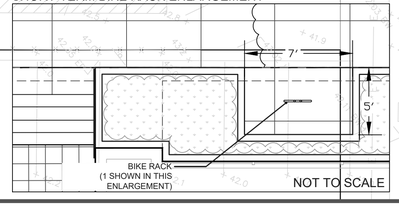
RETAINING WALL ON STRUCTURE

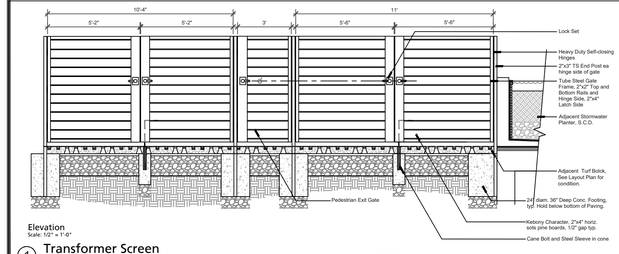
MOUNTED PLANTING AREA WITH NEW TREES ON STRUCTURE

SECTION AA



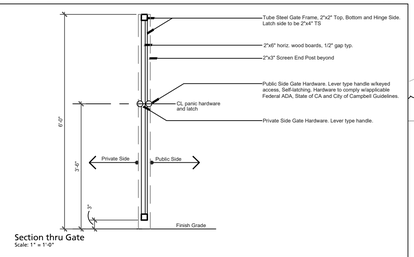
SHORT-TERM BIKE RACK ENLARGEMENT





Elevation
Scale: 1/2" = 1'-0"

1 Transformer Screen
Scale as Noted



Section thru Gate
Scale: 1" = 1'-0"

SMITH DEVELOPMENT

660 UNIVERSITY
PALO ALTO, CA 94301

THE Guzzardo Partnership, INC.
Landscape Architects | Land Planners
Pier 9, The Embarcadero, Suite 115
San Francisco, CA 94111 | www.tgp-inc.com

ISSUES AND REVISIONS

NO.	DATE	DESCRIPTION
	12.01.21	PLANNING SUBMITTAL
	05.13.22	PLANNING RESUBMITTAL #1
	08.15.22	PLANNING RESUBMITTAL #2
	11.02.22	PLANNING RESUBMITTAL #3
	08.28.23	PLANNING RESUBMITTAL #4
	10.31.23	PLANNING RESUBMITTAL #5
	12.21.23	PLANNING RESUBMITTAL #6
	02.07.24	PLANNING RESUBMITTAL #7

PROJECT NUMBER
21003

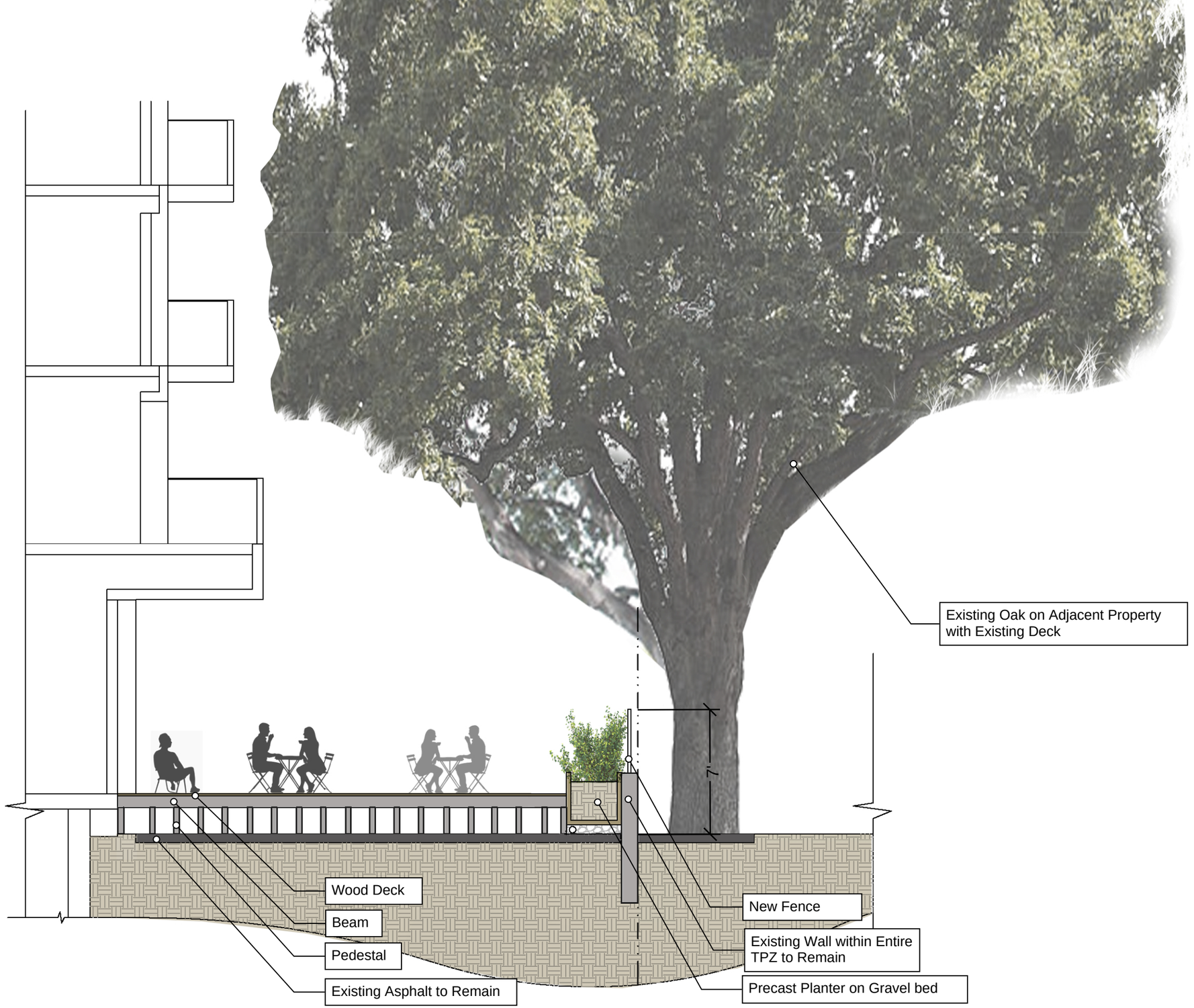
SHEET TITLE
LANDSCAPE PLAN - GROUND FLOOR

SCALE

PROJ NORTH
TN

SCALE: 1" = 10'-0"
0' 5' 10' 20'

SHEET NUMBER
L 1.1



Landscape Section at Wood Deck

.

Arborist OnSite®

Horticultural Consulting, Inc.

ISA Certified Arborist Report

Submitted To:

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

Project Location:

660 University Avenue
Palo Alto, California

Submitted By:

Robert Booty, Registered Member # 487
ISA Qualified Tree Risk Assessor
The American Society of Consulting Arborists
ISA Certified Arborist WC-4286
May 23, 2022

Limits of Assignment

This assignment is limited to one Coast Live Oak #1572 (*Quercus agrifolia*) my investigation involves a root study as part of a tree protection plan. Ground penetrating radar can not identify the presence of structural defects in roots located below ground, such as cracks, girdling or roots weakened by decay that can be associated with tree failures. GPR can evaluate both depth, location and estimate root diameters. Since trees can fail during unpredictable weather events this GPR study and its recommendations are invalid during those abnormal times. Because trees continually change, this evaluation is valid only for the date of this inspection.

Disclaimer[1]

Although studies have shown ground penetrating radar to have a high degree of accuracy[2] for below-ground root identification, these are not photographs but images of predicted root targets or changes in wood composition as in the case of trunk imaging or Sonic Tomography . Arborist OnSite endeavors to use equipment that generates useful information to prepare reports that will reflect its best judgment in light of the facts as it knows them.

Assignment

I have been retained by Katherine Green who is a project manager for Rincon Consultants, Inc. Katherine has a project at 660 University Avenue in Palo Alto, California. This property will be redeveloped and will include an underground parking structure. A heritage oak tree is near the property line on an adjoining property. Because the tree is protected, it's important to understand where the root system of the tree is located to determine the best location for the parking garage. I have been requested to utilize ground penetrating radar to identify and provide a root study identifying tree roots within the proposed excavation area as part of a tree protection plan.

Observations

I visited the site on two occasions May 5 and 8, 2022. The Oak tree #1572 (*Quercus agrifolia*) is located on a neighboring property and appears to be in good health. It has a trunk diameter measured from grade to a height of 4.5 feet of 45.5 inches. The tree has a height[3] of 53.9 feet. The natural soil grade of the oak is 3 feet lower than the height of the parking lot, fill soil was brought in during the construction of the parking lot to raise the grade. The two properties are separated by a brick retaining wall with the oak about 28 inches away from the wall.

---

[1] **Use of Copyrighted material.** Services provided under this Agreement, including all reports, information or recommendations prepared or issued by Arborist OnSite®, are for the exclusive use of Rincon Consultants for the project specified herein. No other use is authorized under this agreement. Client will not distribute or convey Consultant's reports or recommendations to any other person or organization other than those identified in the project description without Consultant's written authorization. Client hereby releases Consultant from liability and agrees to defend, indemnify and hold Arborist OnSite® harmless from any and all claims, liabilities, damages or expenses arising, in whole or in part, from such unauthorized distribution.

[2] Nina Bassuk, "Ground-Penetrating Radar Accurately Locates Tree Roots in Two Soil Media Under Pavement" Arboriculture & Urban Forestry, International Society of Arboricultural 2011.

[3] Height measurement was obtained by using a Nikon Forestry PRO II Laser Rangefinder/Hypsometer.

Conclusions

I utilized a 400MHz radar antenna to obtain the depth necessary to reach the root system of the oak tree which was 3 feet below the asphalt parking lot. We set the radar computer to penetrate the soil 7 feet to reach the root system of the oak tree. Fill soil does at times create issues with GPR systems since the fill may contain materials other than soil that may have been discarded during previous construction that can affect radio signals. We decided to design a scan layout over the parking lot to provide us two types of information. First we laid out a grid using 12 half circles. This we could use, with the help of special software to create a conceptual 3D image of the below-ground root structure out to a distance of 51 feet. This will help to visualize where the excavation of the below-grade garage placement will be, with the least amount of root loss involved.

The second grid set-up on the pavement for root scanning involves straight lines, 12 lines from one side of the asphalt to the other parallel with the tree. These can be viewed as virtual trench plates found on pages 15-41. These will provide information regarding root location, height, depth and estimated sizes. All the scanning whether half-circle or straight lines were conducted the same distances from the tree.

As a note keep in mind that these scans are very long. Because of that the predicted root hits on those virtual trench scans look dense. This is an optical illusion on the paper, look at the scan distances and mentally spread those root hits out to the distance of the actual scan. Radar identifies roots by reflecting from the moisture within them.

Root Pruning and protection

1. Prune the larger roots using a fine tooth saw.

2. Smaller roots use a hand lopper.

3. If roots are to be left exposed for long periods of time, especially in warm weather whey must be covered in burlap cloth and kept wet.

4. During any root pruning the project arborist must be on site overseeing the activity.

Methodology

How does it work?

Ground-Penetrating Radar (GPR) is an established technology that has been used worldwide for over 60 years. Radar is an object-detection system that uses *electromagnetic waves* – specifically *radio waves* – to identify the range, altitude, direction, or speed of both moving and fixed objects. When an electromagnetic wave[4] emitted from a small surface transmit antenna / receiver encounters a boundary between objects with different electromagnetic properties, it will reflect, refract, and or diffract from the boundary in a predictable manner. Radar waves or signals are reflected especially well by materials of considerable *electrical conductivity.*

The radar signals that are reflected back towards the antenna are the desirable ones that create the image and make radar work. The radar signal detects water in the root system of the tree and can distinguish this water from water in the surrounding soil matrix. An air-filled tree trunk (*with a decayed hollow*) or a partially air-filled incipient (early stage) decay zone inside a cell wall within a tree are excellent reflectors for detection by GPR systems. Use of GPR instrumentation for internal tree trunk decay detection and below ground root locating is one of its latest uses in the field of tree risk assessment.

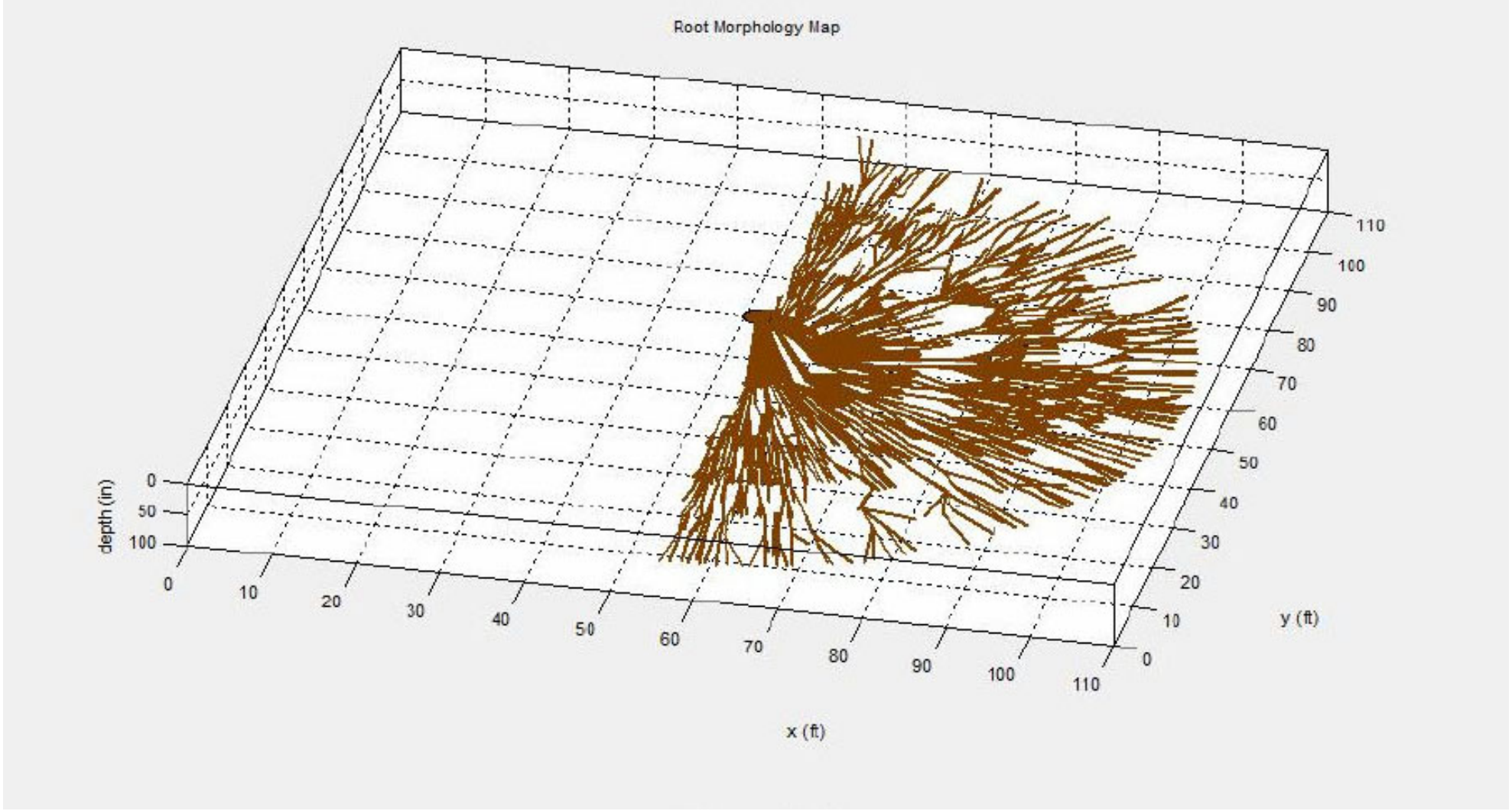
Its uses today seem endless. When you look at the weather report, you are looking at a weather radar scan; it will tell you where the heaviest amounts of rain will fall in your area. It works like this, the radar signal, as it passes through the clouds is reflected back to a transmit receiver antenna that measures the density of the moisture in them and the speed they are traveling. You can then determine approximately when it will start raining and how much rain will fall in a given area. Radar is used in aviation, automobiles, law enforcement and locating objects below ground.

[4] Daniels, D.J. 1996, Surface-Penetrating Radar. The Institute of Electrical Engineers, ISBN 0-85296-0.

These chalk lines represent the locations of half circle scans. Scan #8 represents the edge of the canopy drip-line. Scan #7 represents the edge of the proposed excavation for the below ground garage about 30 feet away from the Oak tree.

This is a conceptual 3D Top-Down diagram of what the root structure may look like below the ground of Oak Tree #1572 on University Avenue. It is obtained from the root data collected from the 12 half circle scans performed over the asphalt parking lot.

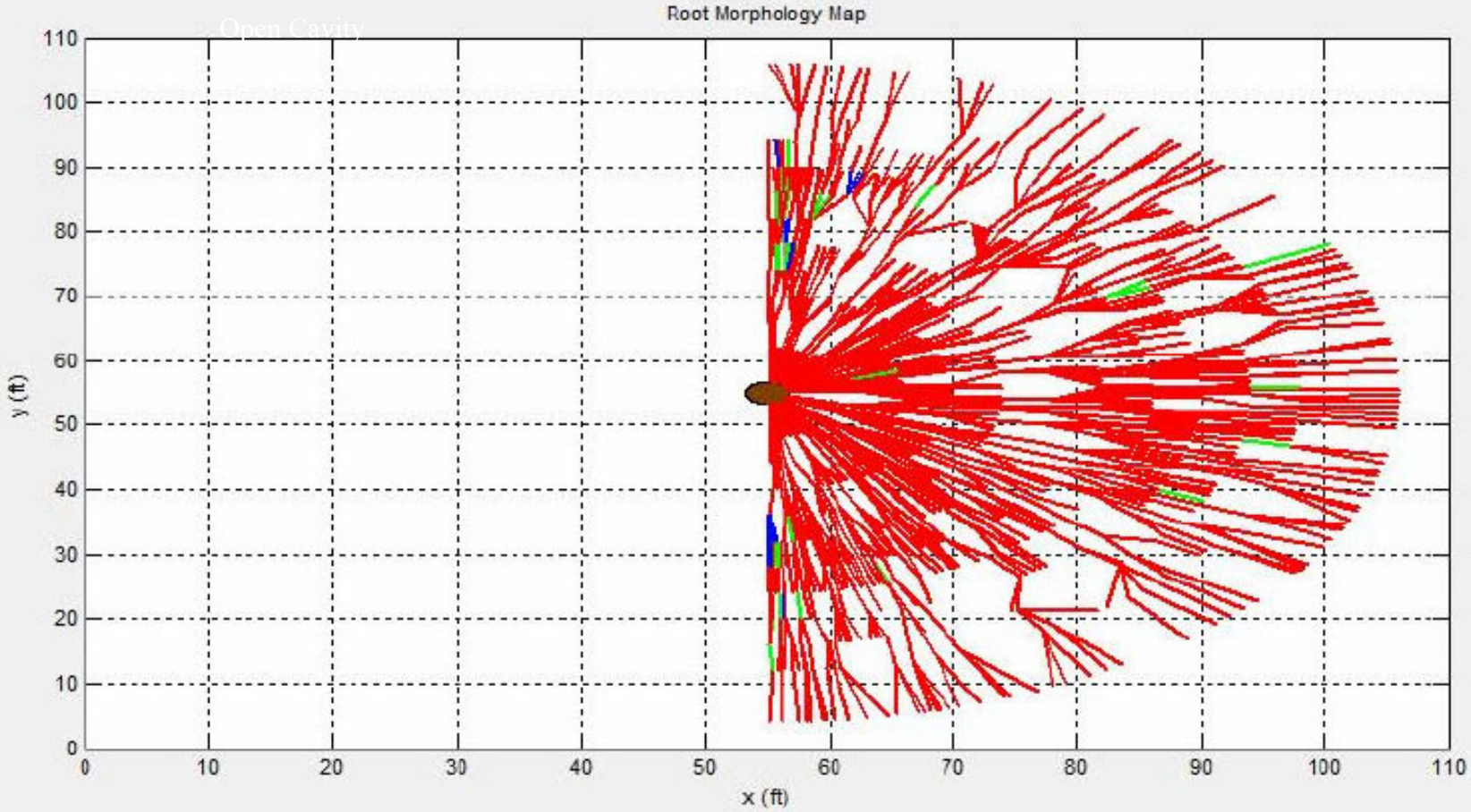
The software uses the results of the predicted root locations from the 12 half circle scans generated from the virtual trench data on the following pages and connects the predicted root hits, creating what you see on this page. This provides a visualization concept of what the root structure may look like below ground. The scan begins from a distance of 7ft. from the tree and ends at a distance of 51ft. The scanning depth was set to penetrate to 7 feet, in an effort to compensate for the 3 foot difference of the lower grade the tree is actually growing in.

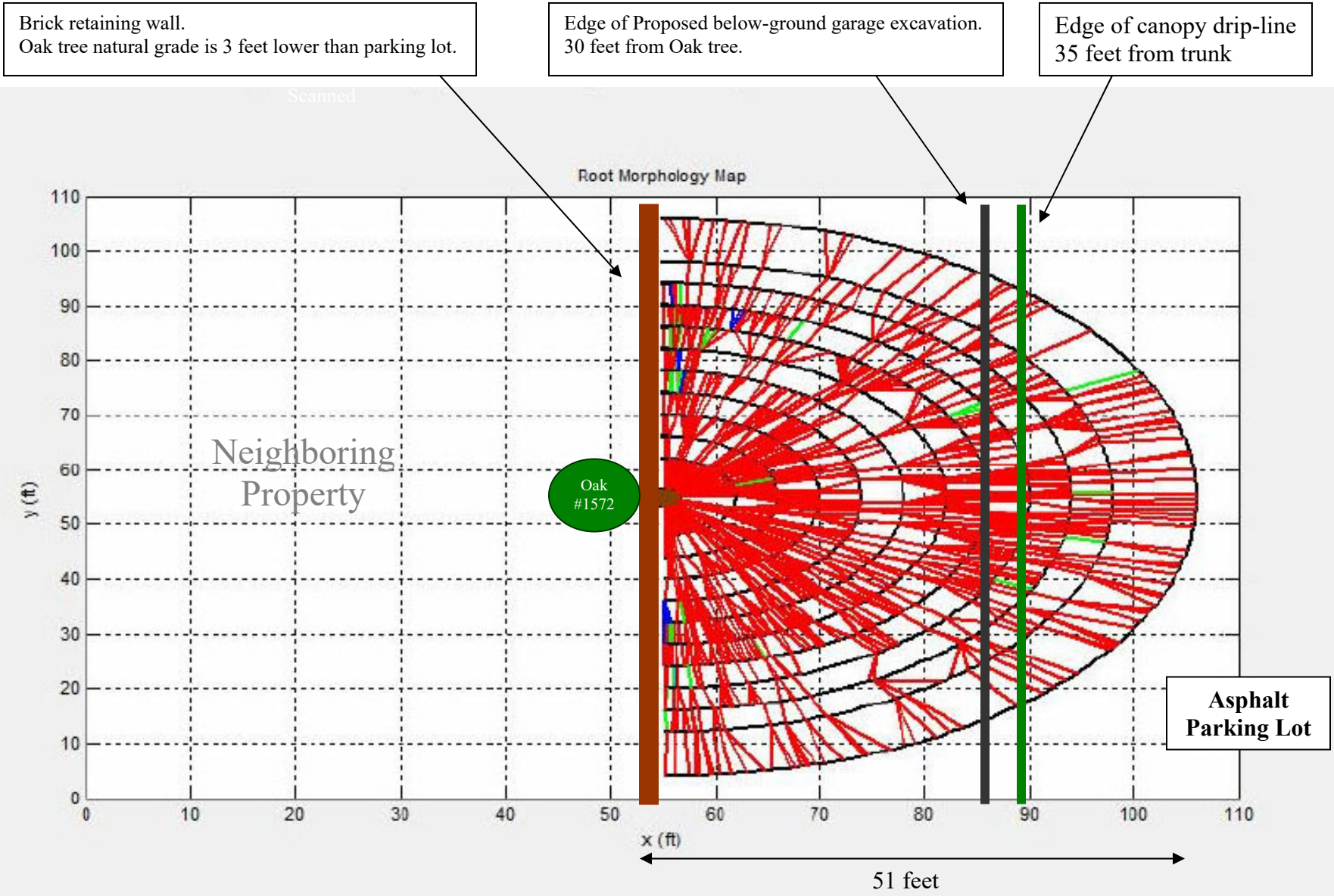


Estimated root sizes are indicated by the colors red, green and blue

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger**.**

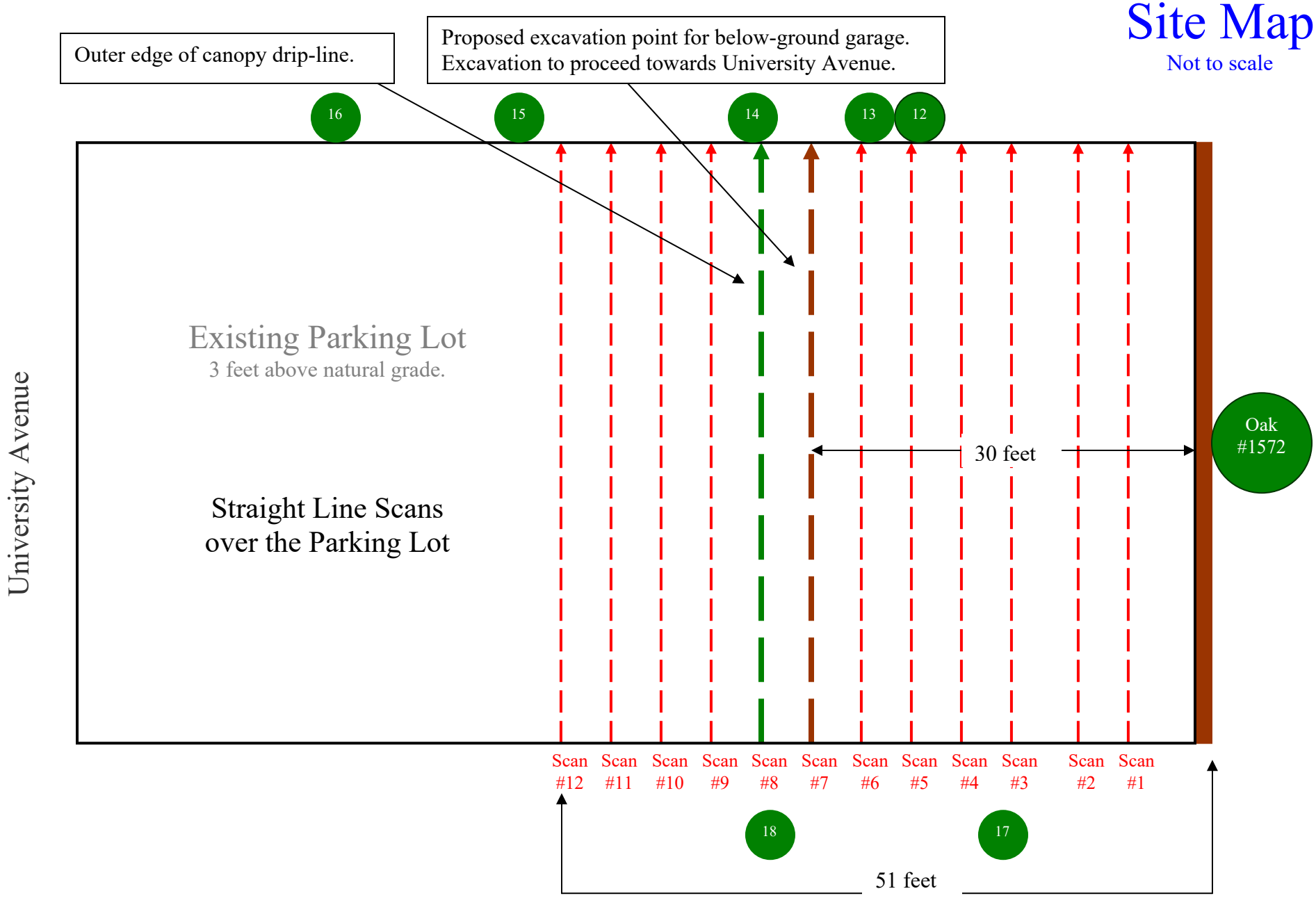
Top-down view of the root system





Site Map

Not to scale



Root Mapping

An Introduction to Below-Ground Tree Root Mapping using Ground – Penetrating Radar (GPR)

Ground-Penetrating Radar used as a method of mapping tree roots has several of the following advantages over other methods of root locating,

1. It is capable of scanning the root systems of multiple trees under field conditions in a short time.
2. It is completely non-invasive and does not disturb the soils or damage the trees being examined, and causes no harm to the environment.
3. Being non-invasive, it allows repeated measurements that reveal long-term root system development.
4. It allows observation of root distribution beneath hard surfaces (concrete, asphalt, and bricks) roads and buildings.

It's accuracy is sufficient to resolve structural roots with diameters from less than 1 cm (0.4 in.) to 3 cm (1.2 in.) or more. It can characterize roots at both the individual tree and stand levels, facilitating correlations with tree and stand level measurements of physiological processes in complex ecological studies.

This is how the radar looks at the existing roots, as the antenna is moved along the ground every 2/10ths of an inch a radar signal is released into the soil at a predetermined depth.

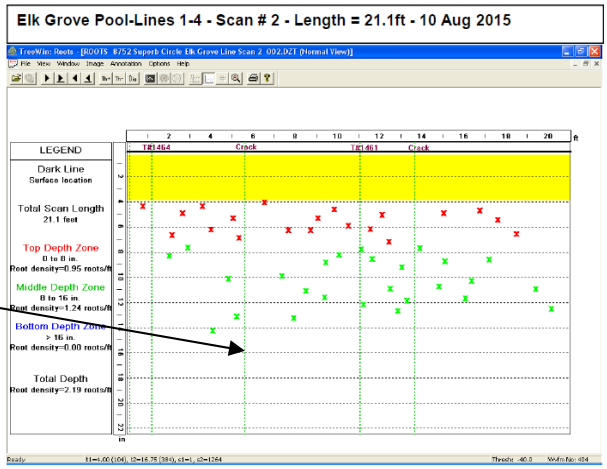
As this signal encounters a root it is reflected off its top and back to a receiver inside the antenna. This returned signal is displayed as an x in the final report indicating the presence of a root, the colored x indicates the depth of the root.

Secondly one can observe all roots within a given soil profile depth, on the following pages you will notice 3 soil profiles depicted. When looking at the virtual trench view of maps keep in mind that each x marks the presence of a root. These roots are connected to the tree or root flare as they grow into the soil and then grow out ward in all directions, some have indicated roots that have no obstructions can travel laterally twice the height of the tree; this is what gives the tree stability.

The use of green markers

During the scan markers are placed on the field computer by the technician. These markers are used to identify points of interest along the scan line such as in this case, passing of object landmarks such as a numbered tree. These manually placed markers show up in the final root analysis and can then be used to compare roots found below ground in relation to a physical concrete crack or landmark such as a tree located above ground.

Green dotted lines are markers physically placed on the field computer by the technician during the scanning.



Virtual Trench View

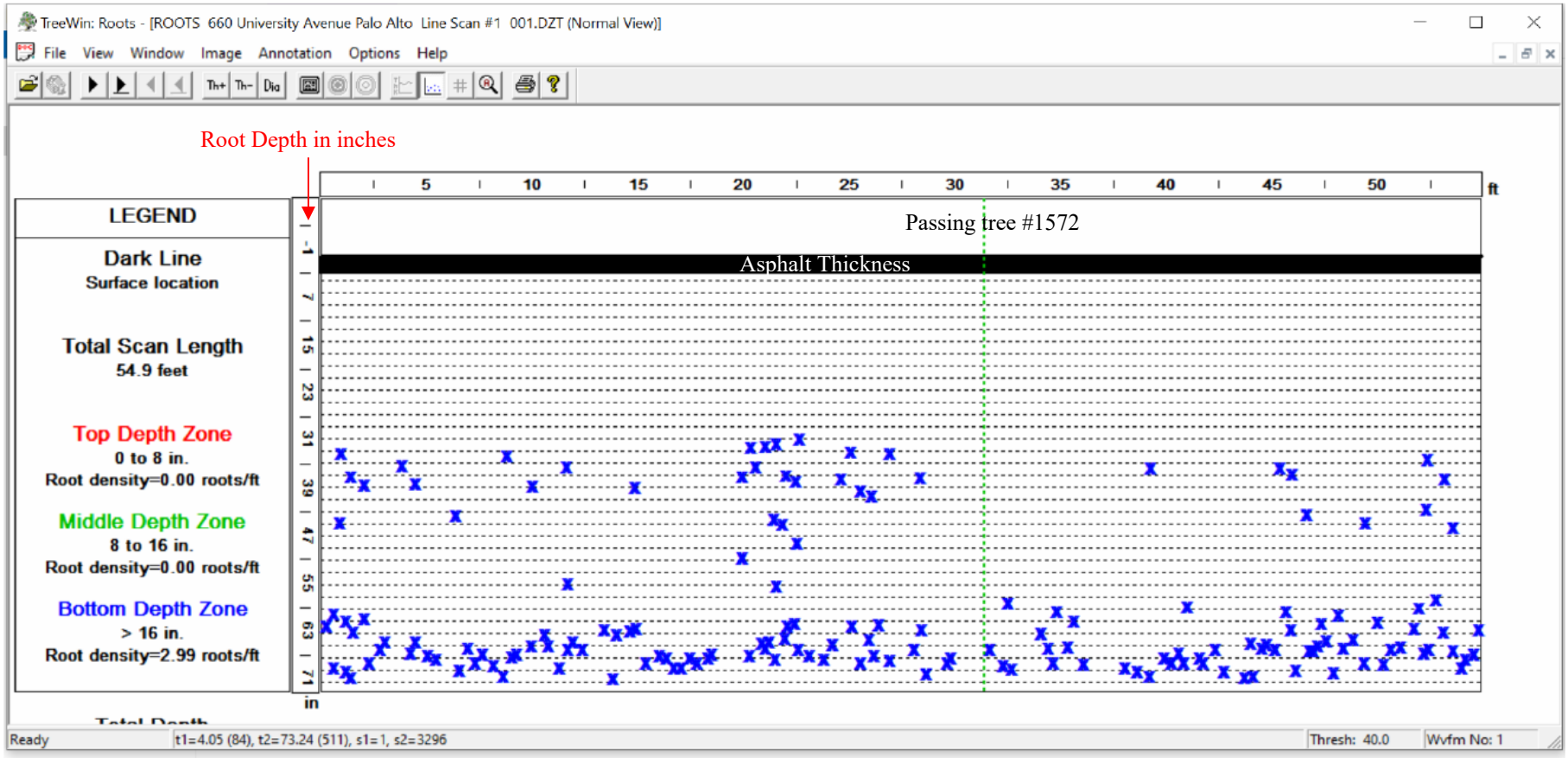
A way of viewing the root data is as a virtual trench. The following virtual trench panels represent each of the twelve individual radar line scans from the site as if they were the walls of a trench. Think of this as if you were excavating a deep trench with a back-hoe. As you dig, tree roots will be encountered at various levels in the soil profile, after you have completed your trench you then are able to walk down and stand in the bottom.

Looking up at the earthen wall you are able to see the severed tree roots from your trenching protruding from the soil at the various depths of your trench. As you look at the following individual 12 virtual trench scans each x on the wall represents a severed root. Each colored x represents a different depth where the root is located.

One advantage of the trench view is that one can look at individual roots within their 3 represented depth zones and see the actual depth of each individual root and their estimated sizes.

May 8, 2022 660 University Avenue Palo Alto, California.

Scan #1 Line scan over parking lot 7 feet away from Oak tree #1572



.

Estimating Root Diameter Size

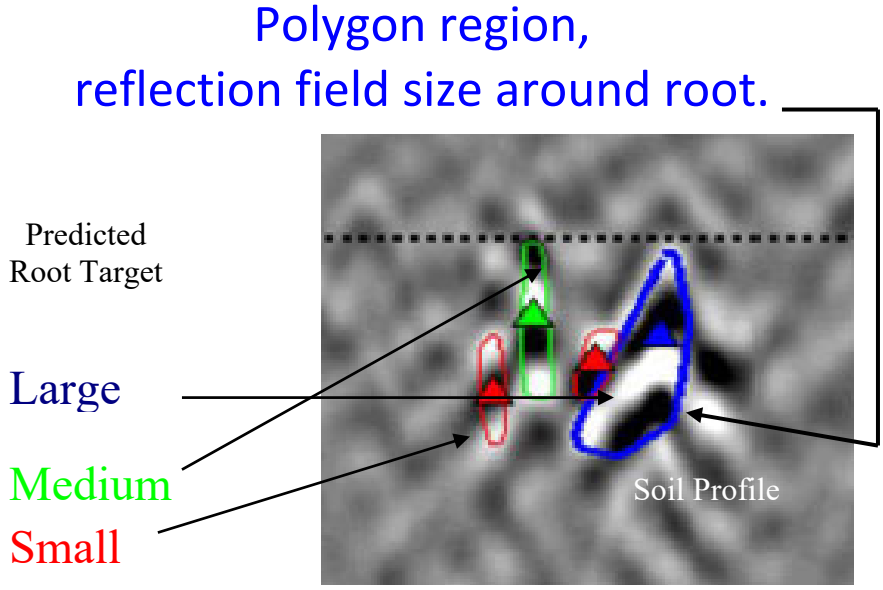
Estimating root diameter is a challenge. TreeRadar® has devoted years of research into developing the ability to provide this type of information. Early Ground truth studies began at Fresno State University, U.S.A. these studies were also conducted by groups using the same protocol in Europe. The studies involved numerous locations and soil types. First ground penetrating radar was used to identify below ground root systems. These areas were then excavated, studied and root diameters measured. Algorithms were created for the software based on these ground truth studies in an effort to estimate root size. Root studies and software sizing algorithm up-grades will continue as new information is brought to the fore.

The following are the results of current studies that now can, to a reasonable degree estimate root diameters.

•This approach attempts to label detections into three size categories: **SMALL** 2.5 inches and smaller, **MEDIUM** 2.5 - 5 inches, **LARGE** 5 inches and larger.

•These category labels are estimated based on each detection's reflection field size –this is measured by the number of pixels contained within each polygon region identified during a ground penetrating radar scan over the soil.

•Recent research[5] has shown that this metric has a reasonable correlation to root biomass, which in turn is correlated to the root's diameter

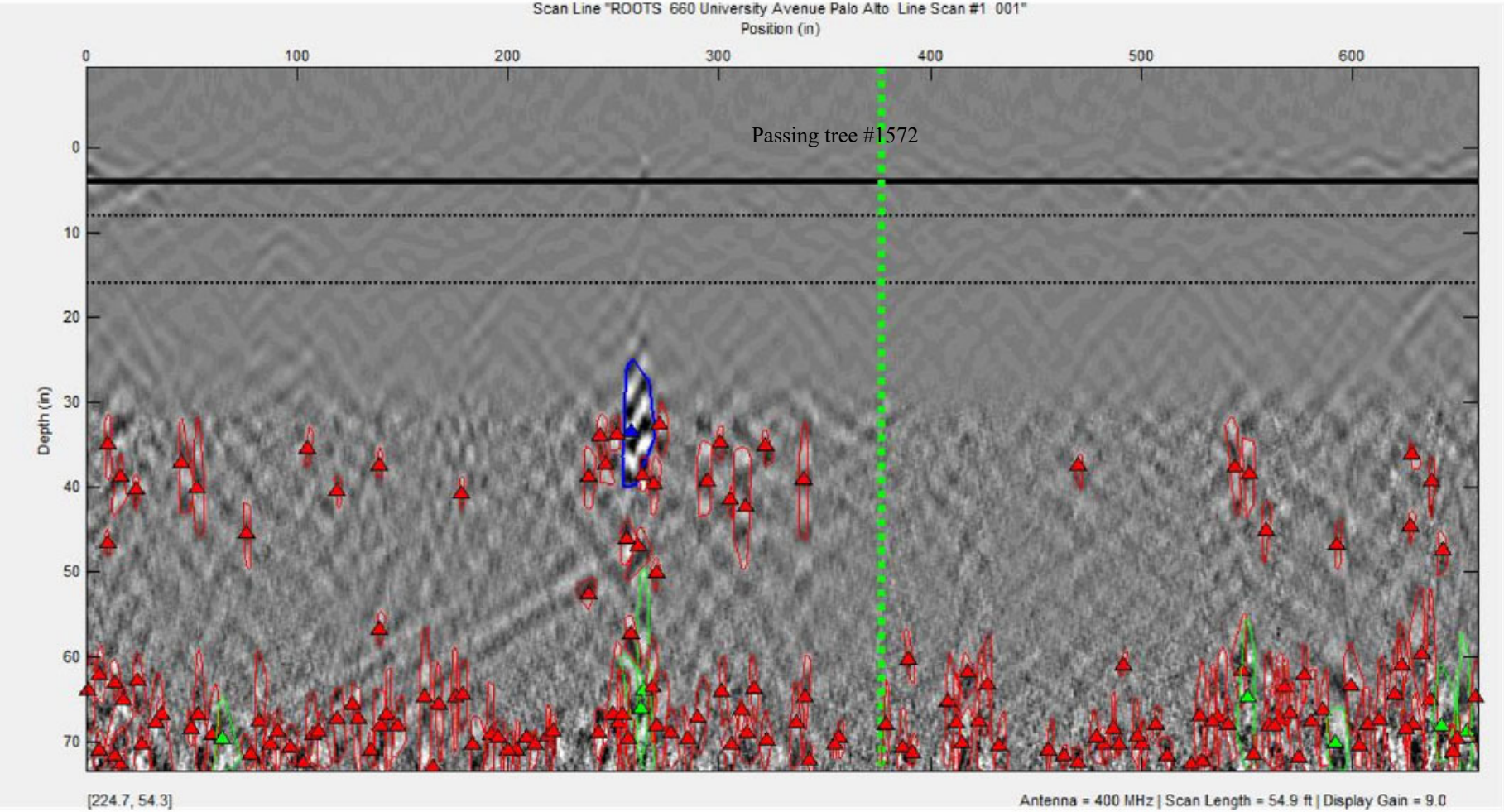


[5] *Hirano et al., "Detection frequency of Pinusthunbergiiroots by ground-penetrating radar is related to root biomass", Plant Science 2012*

.

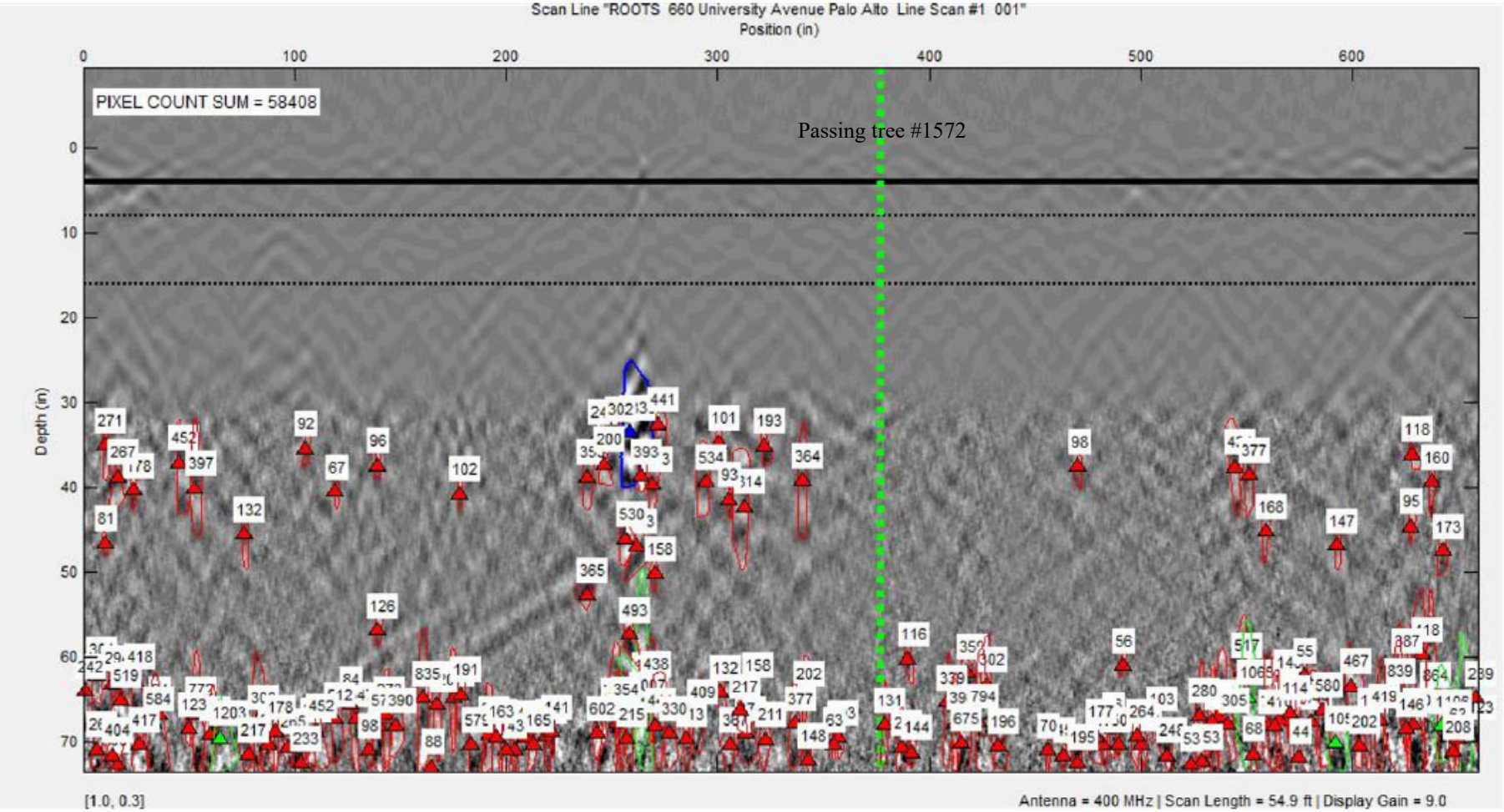
Scan #1 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



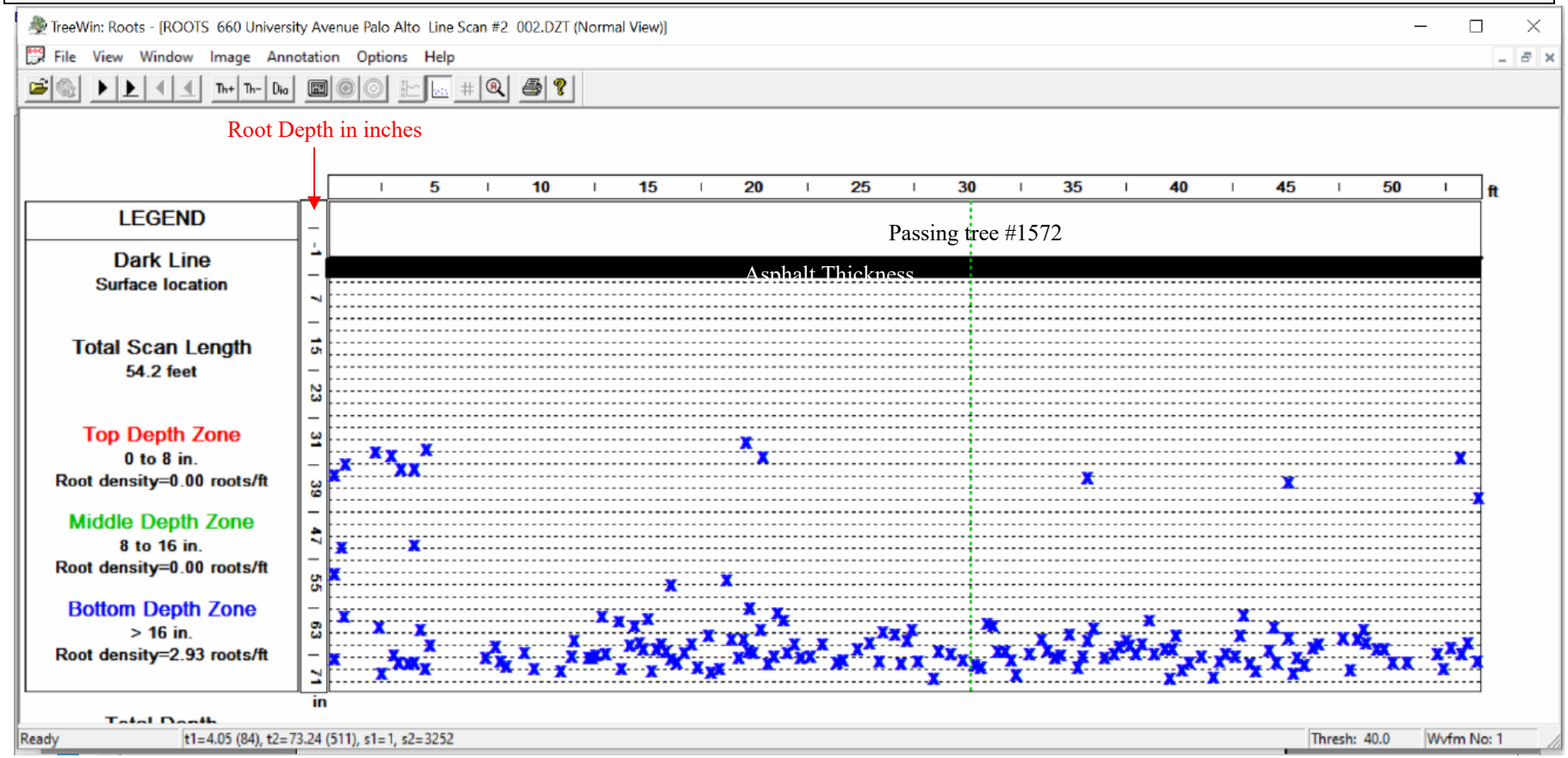
Scan #1 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



May 8, 2022 660 University Avenue Palo Alto, California.

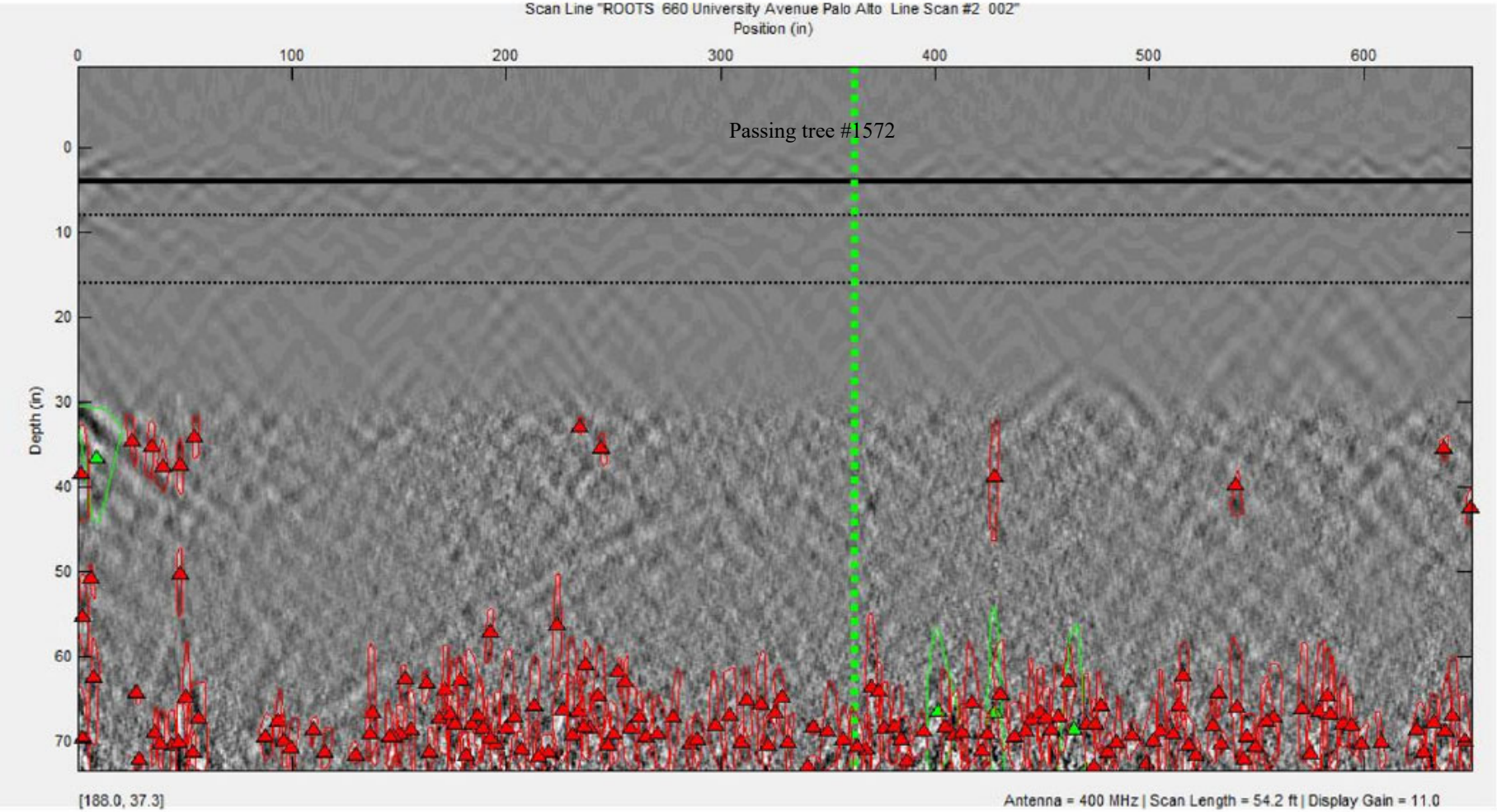
Scan #2 Line scan over parking lot 11 feet away from Oak tree #1572



.

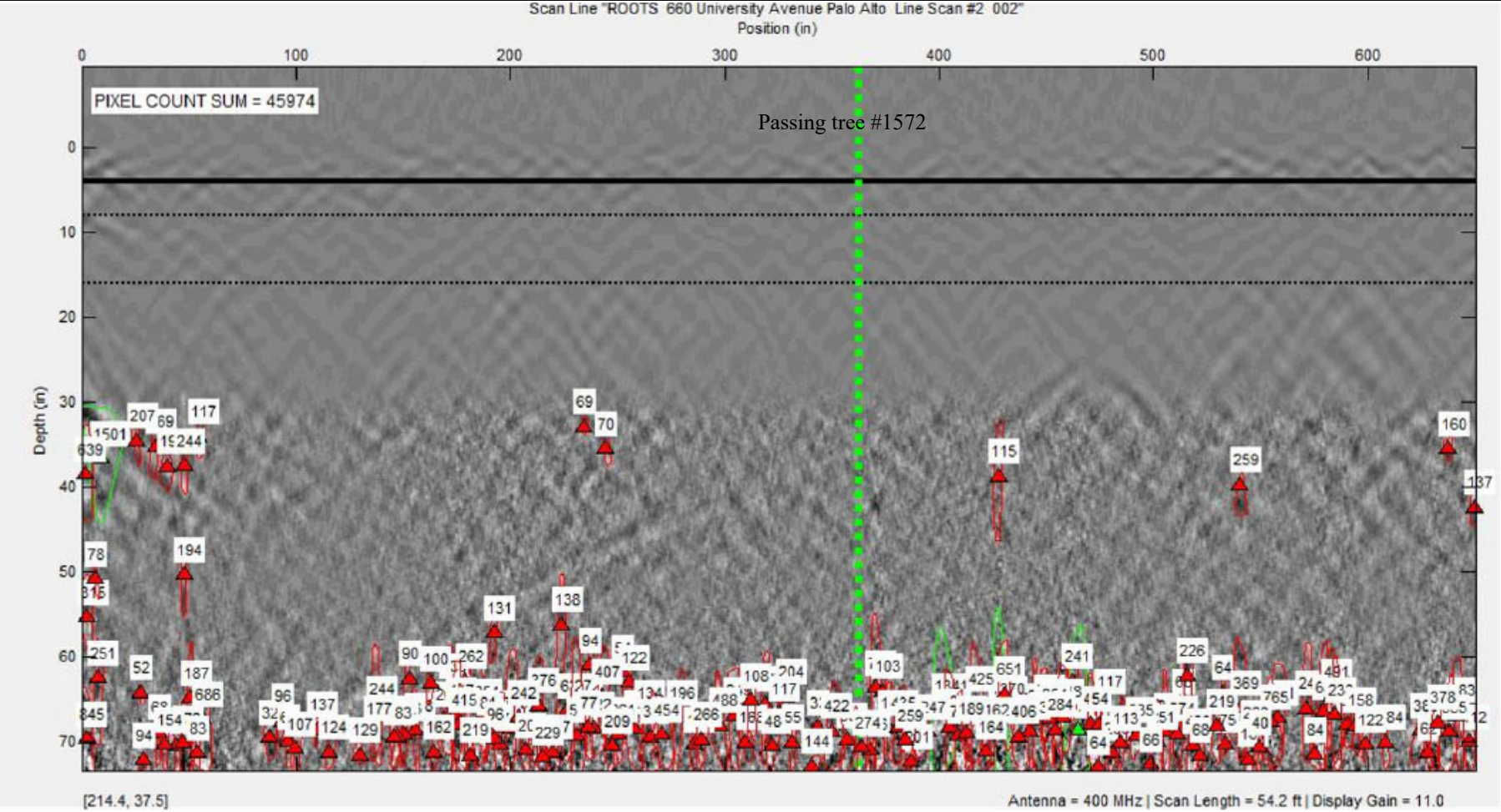
Scan #2 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



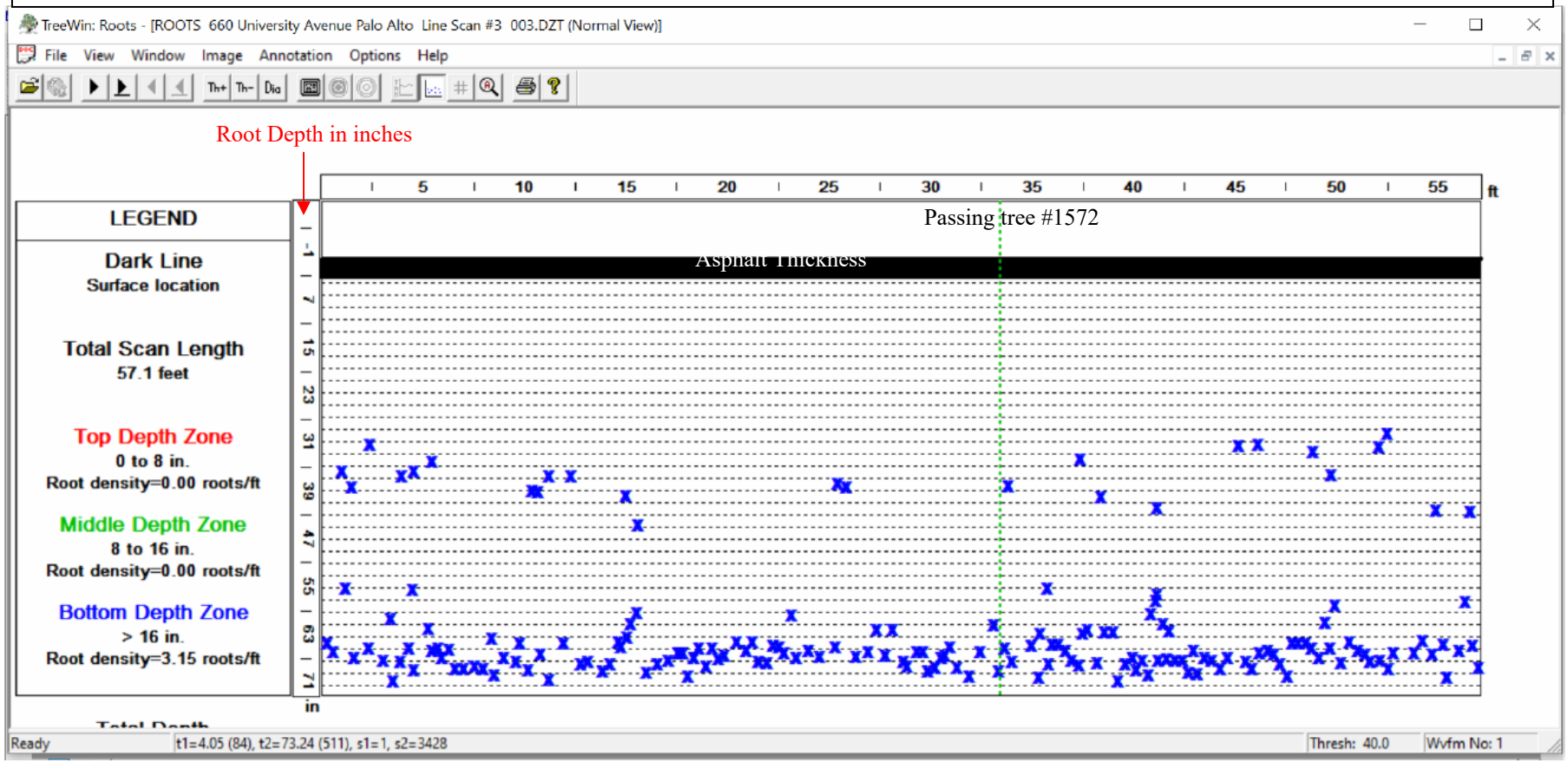
Scan #2 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



May 8, 2022 660 University Avenue Palo Alto, California.

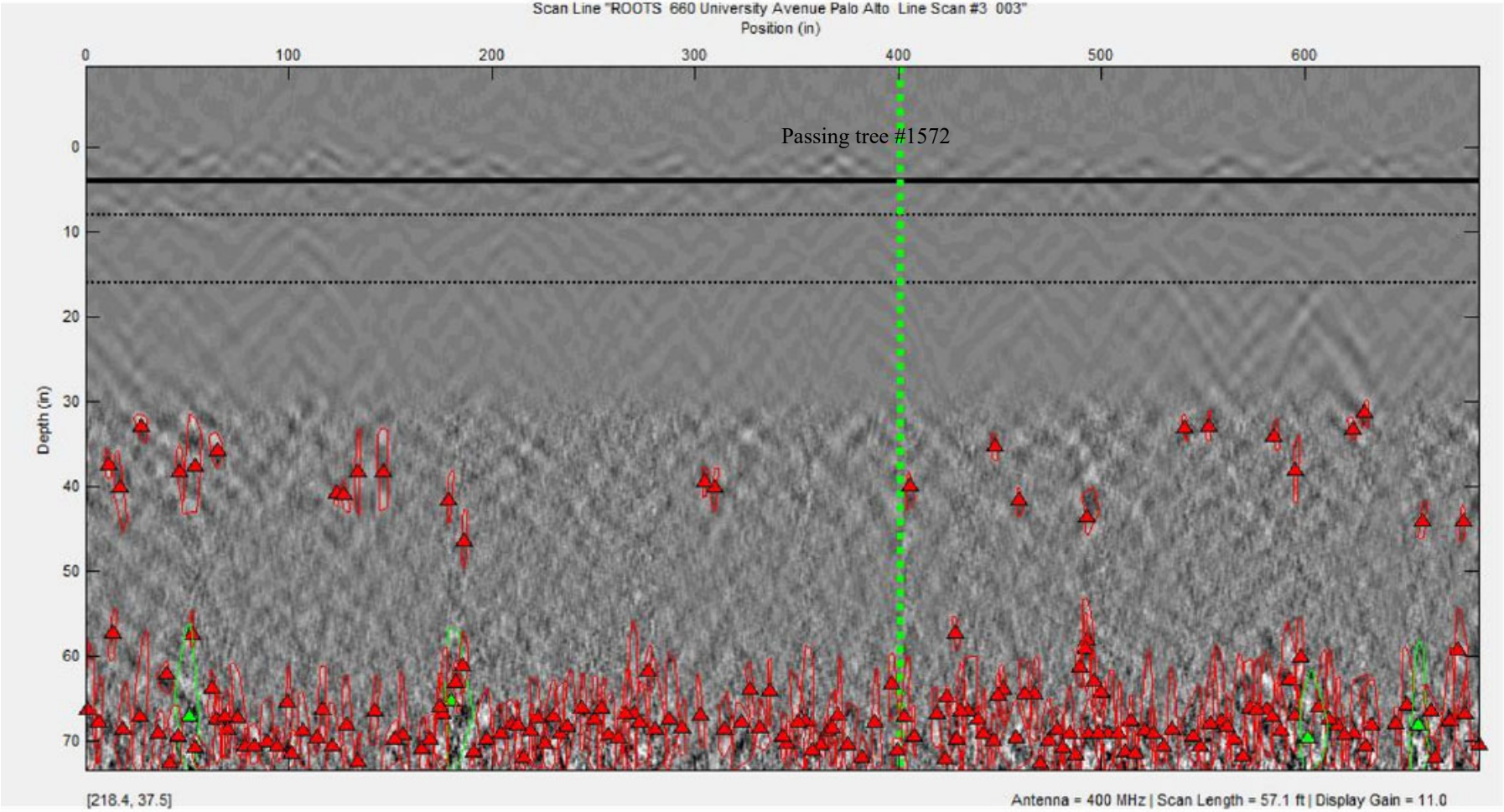
Scan #3 Line scan over parking lot 15 feet away from Oak tree #1572



.

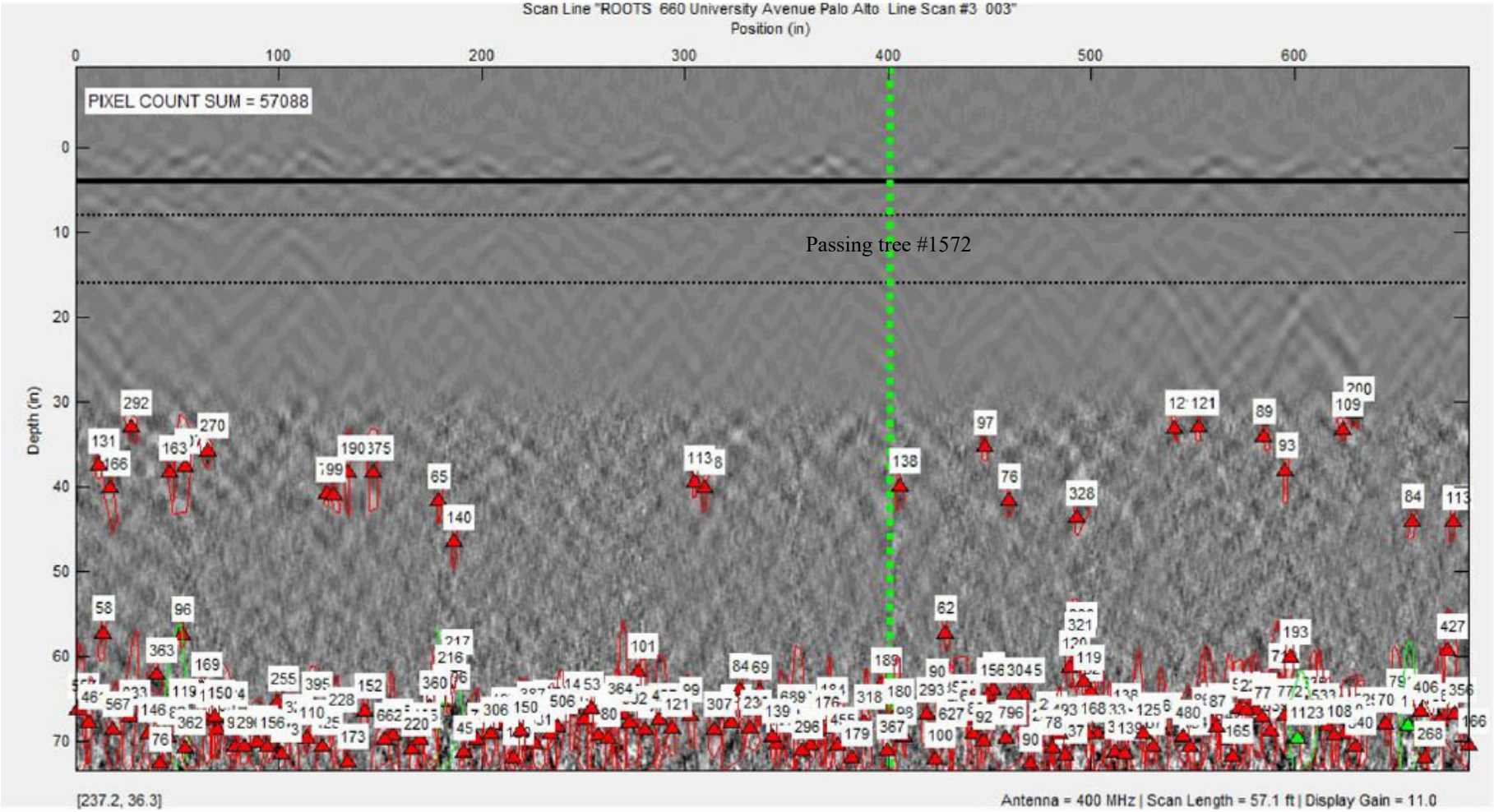
Scan #3 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



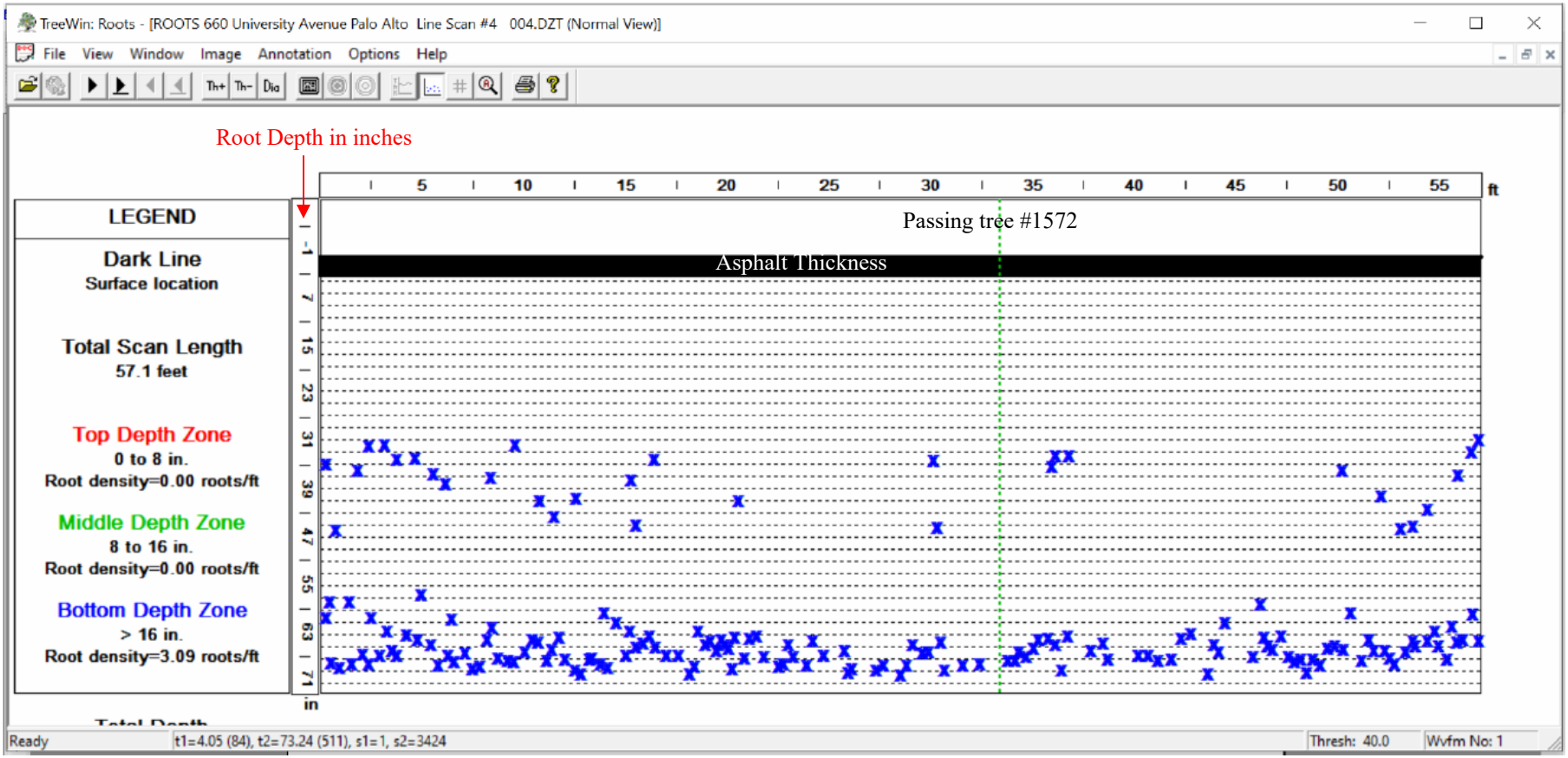
Scan #3 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



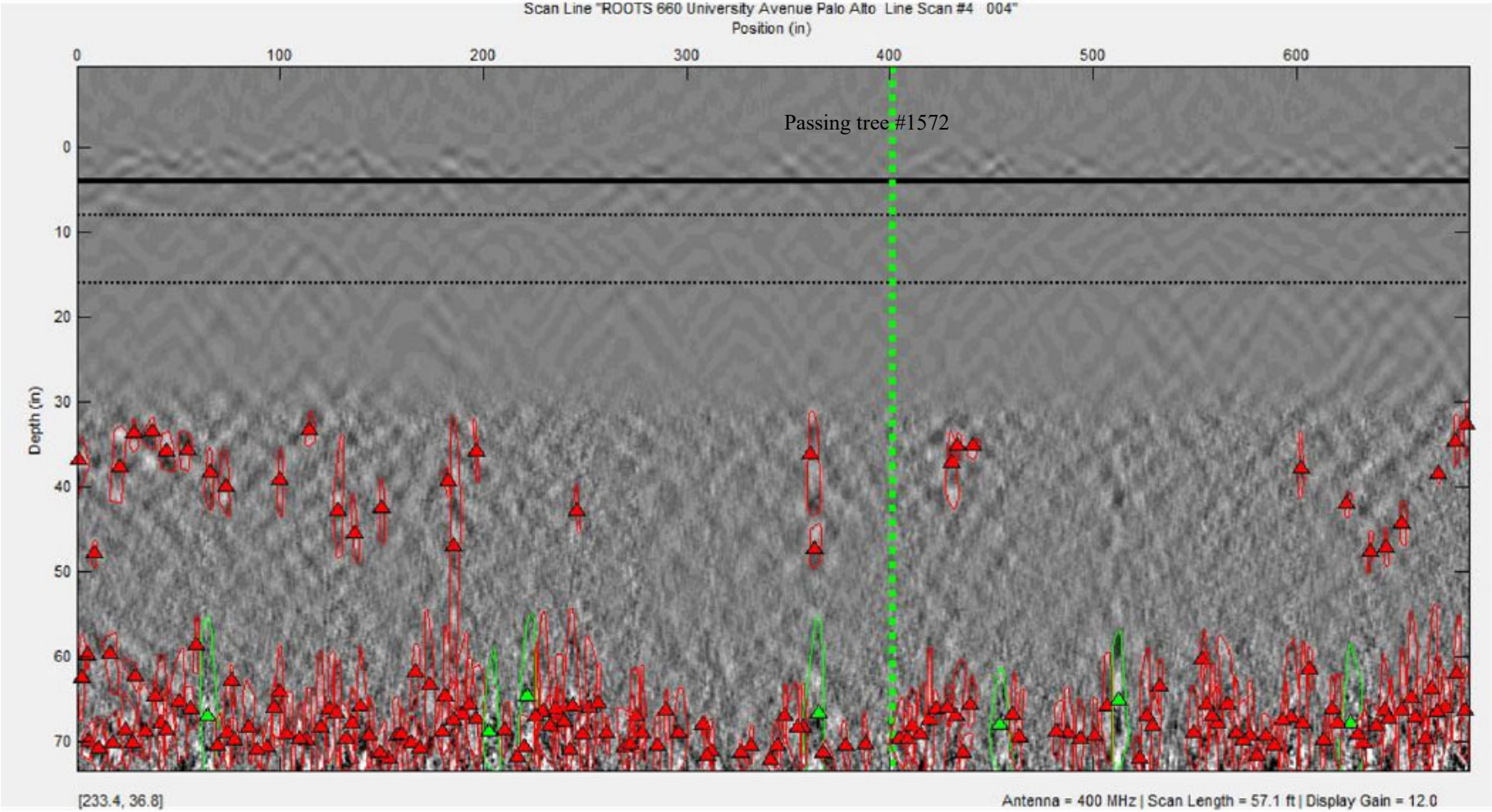
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #4 Line scan over parking lot 19 feet away from Oak tree #1572



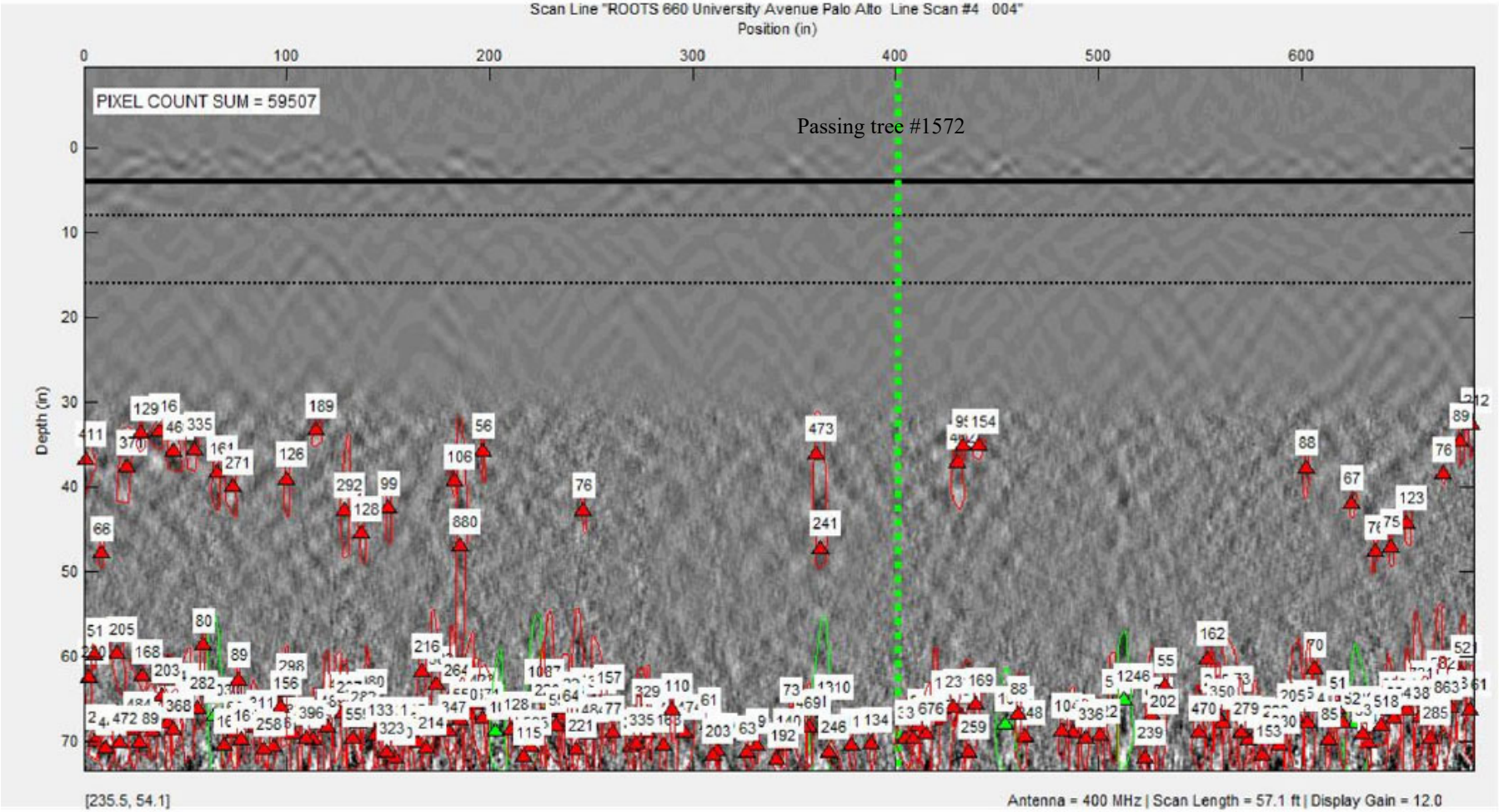
Scan #4 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



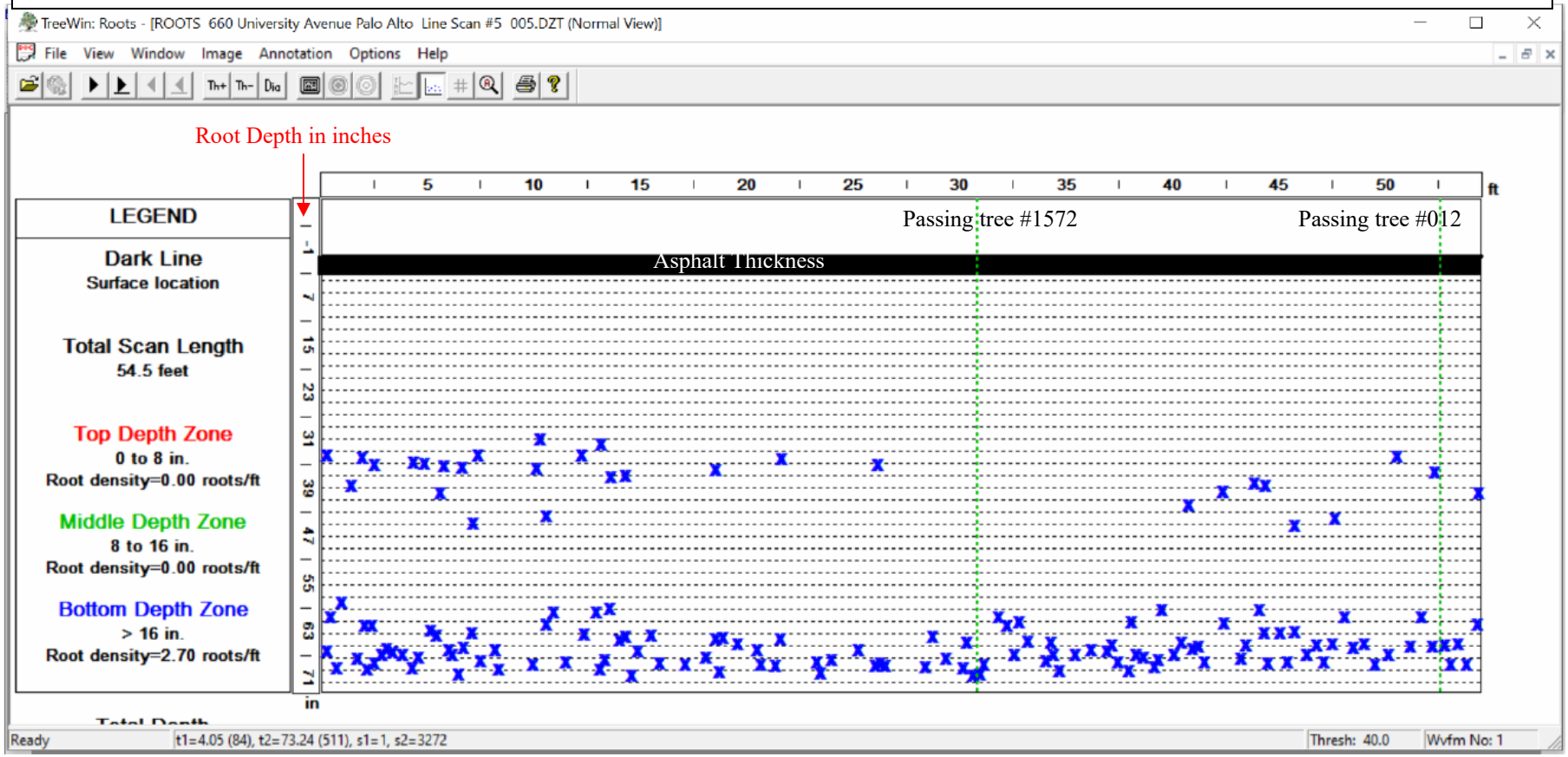
Scan #4 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



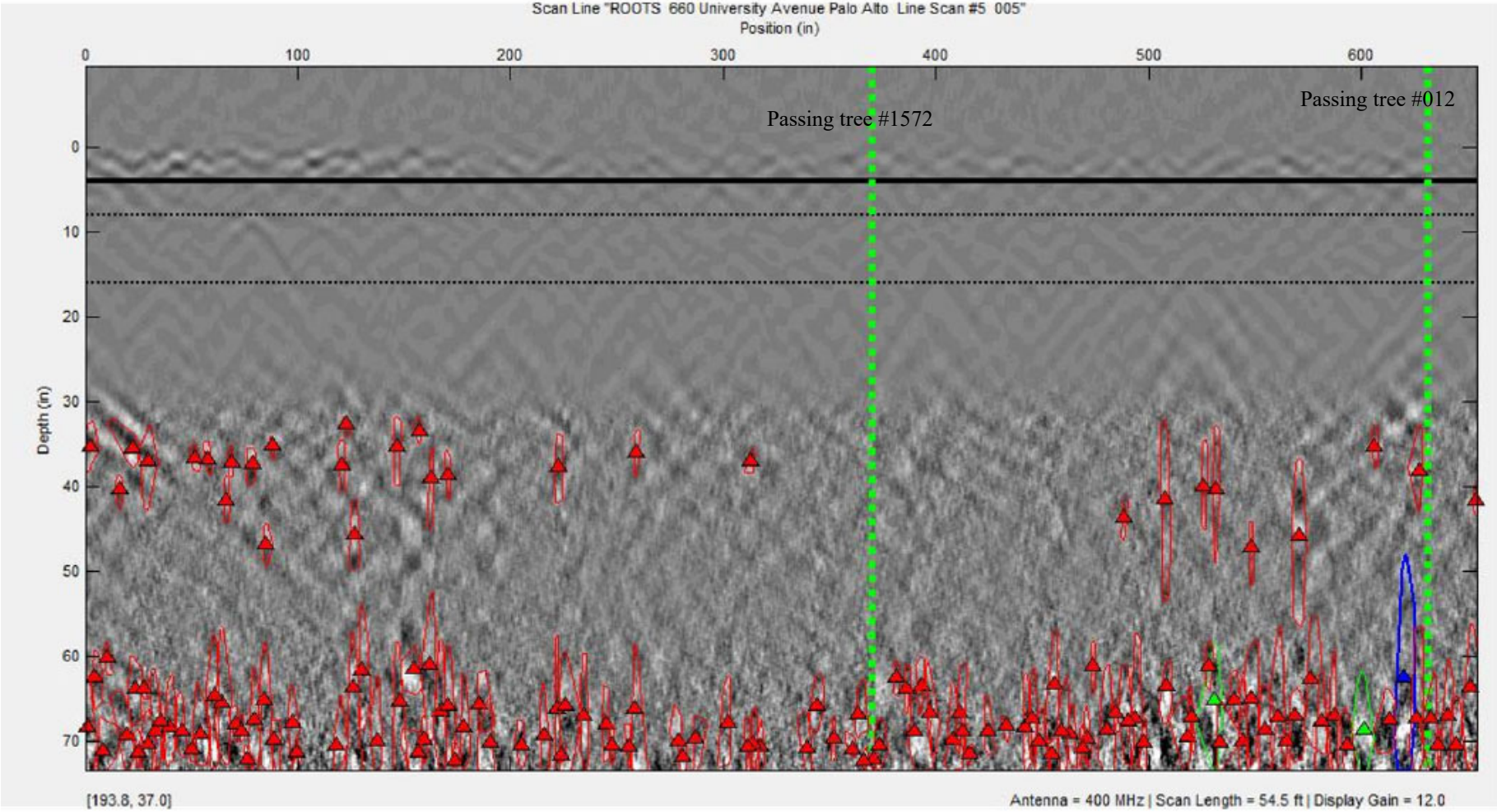
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #5 Line scan over parking lot 23 feet away from Oak tree #1572



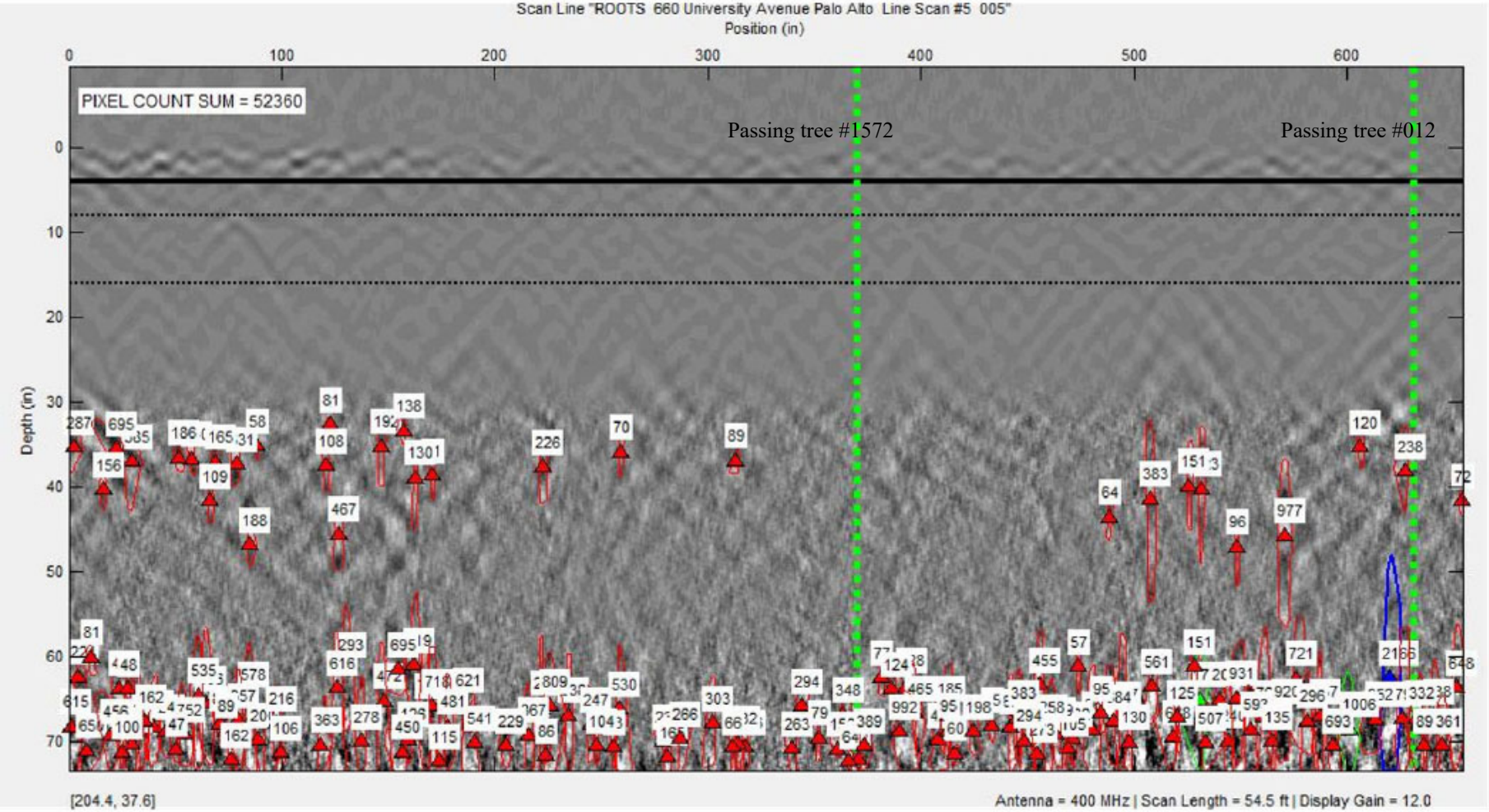
Scan #5 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



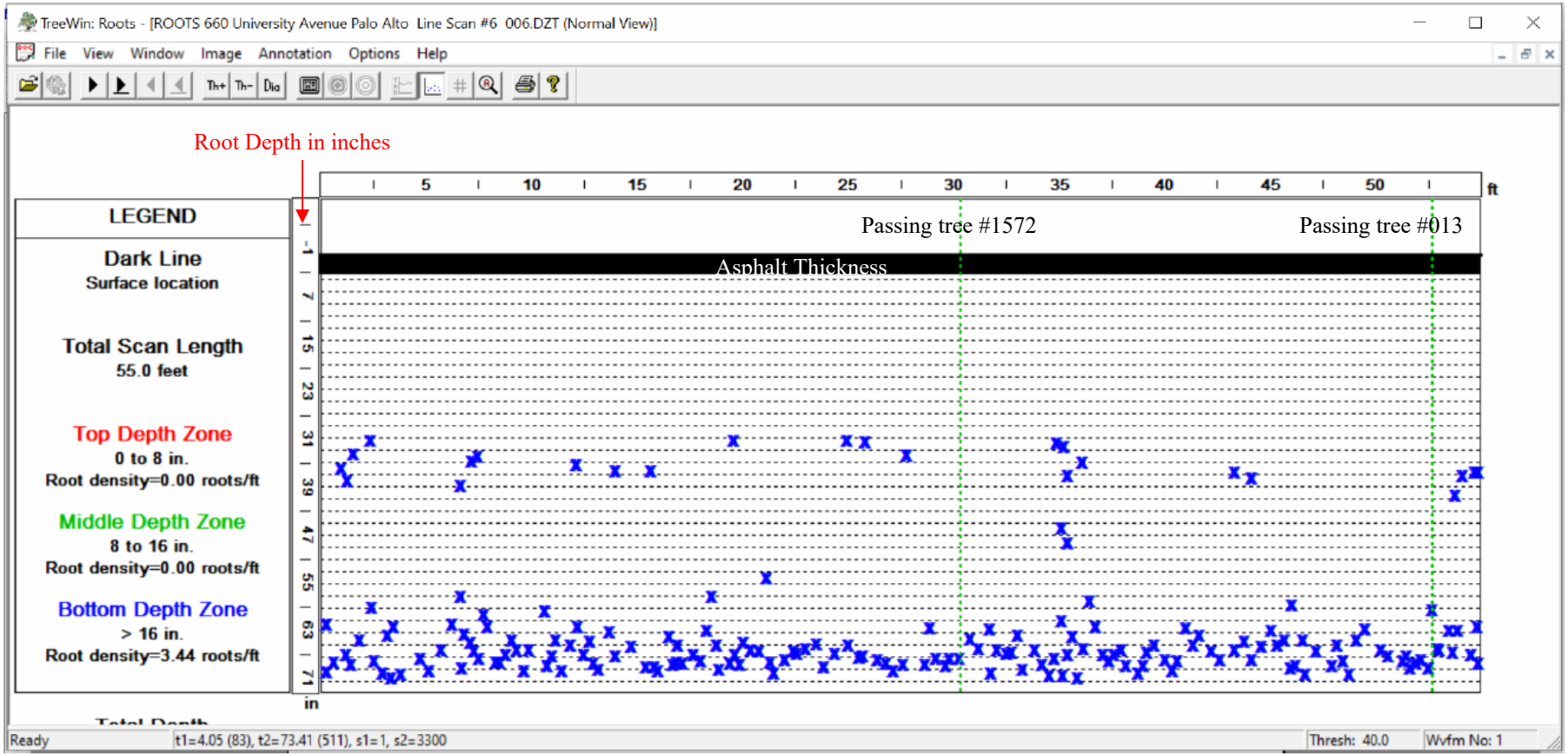
Scan #5 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



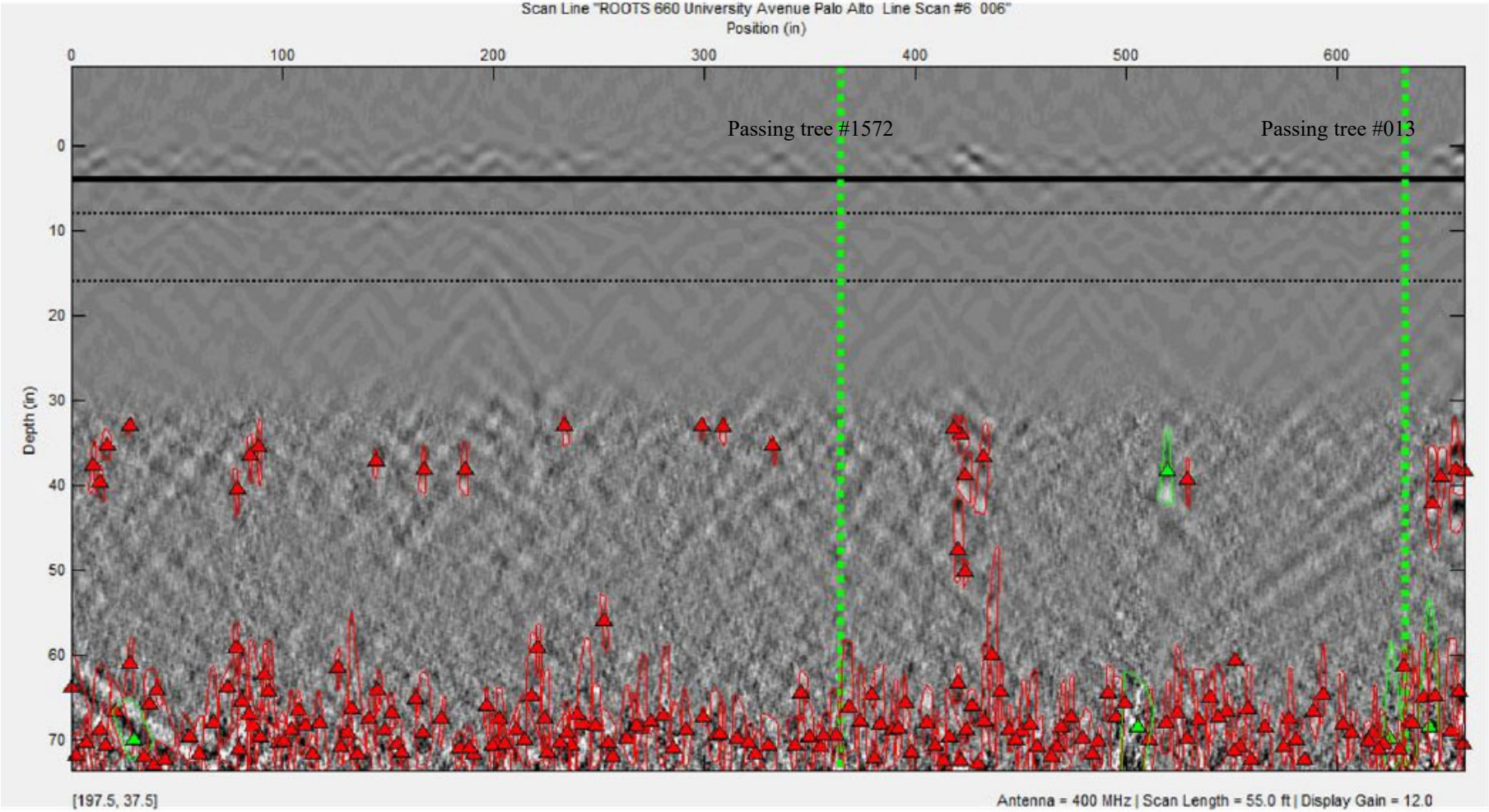
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #6 Line scan over parking lot 27 feet away from Oak tree #1572



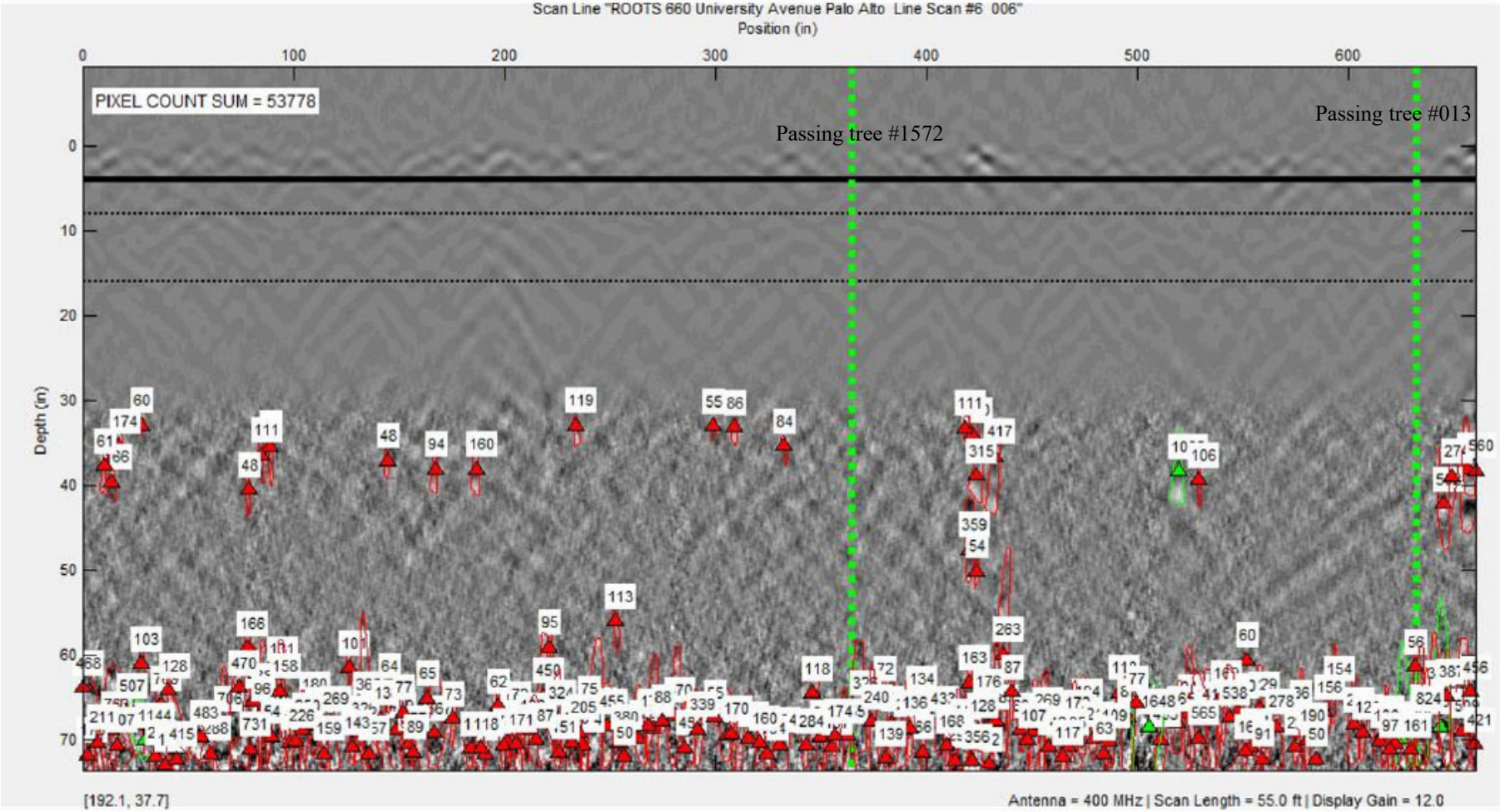
Scan #6 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



Scan #6 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.

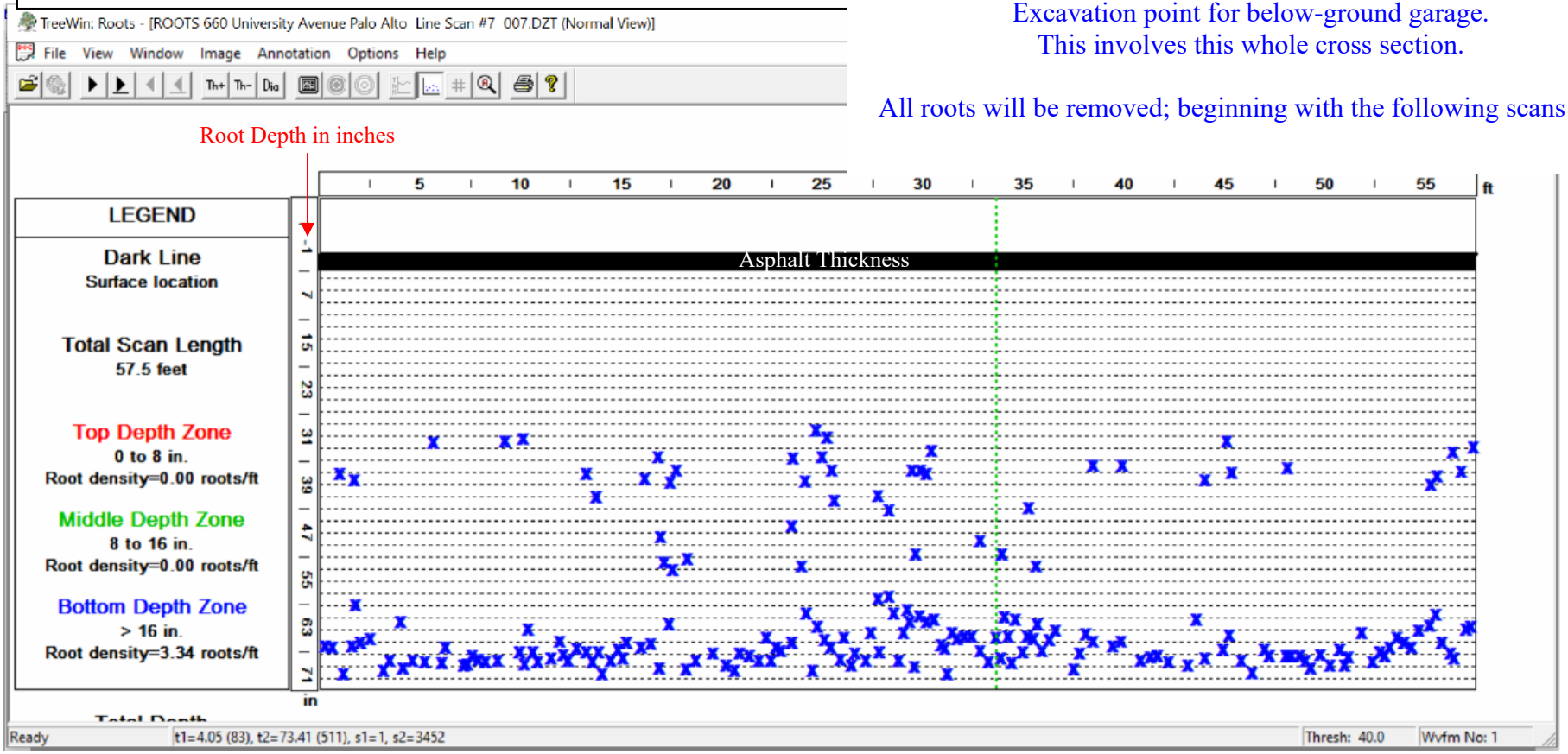


May 8, 2022 660 University Avenue Palo Alto, California.

Scan #7 Line scan over parking lot 31 feet away from Oak tree #1572

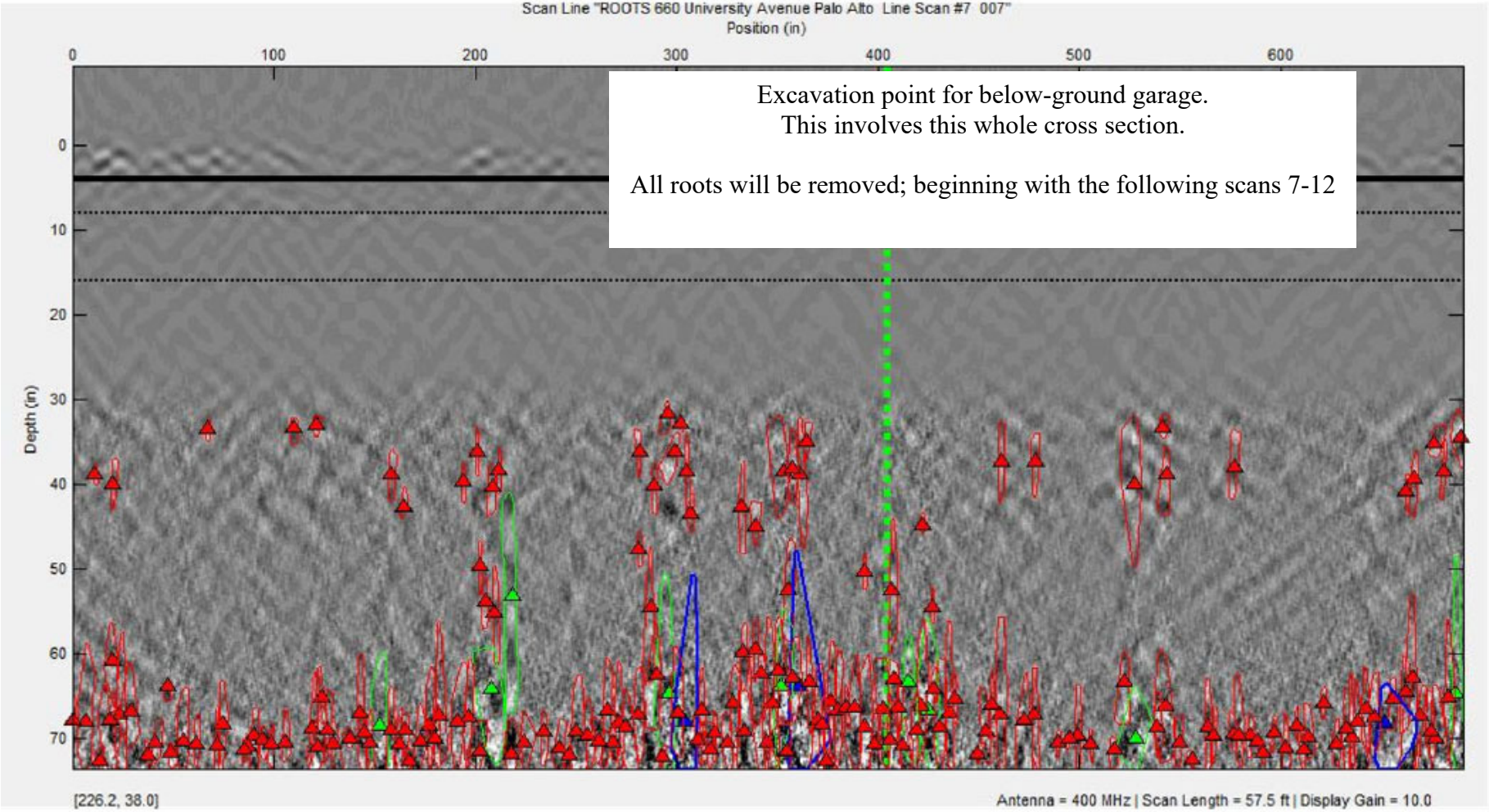
Excavation point for below-ground garage.
This involves this whole cross section.

All roots will be removed; beginning with the following scans 7-12



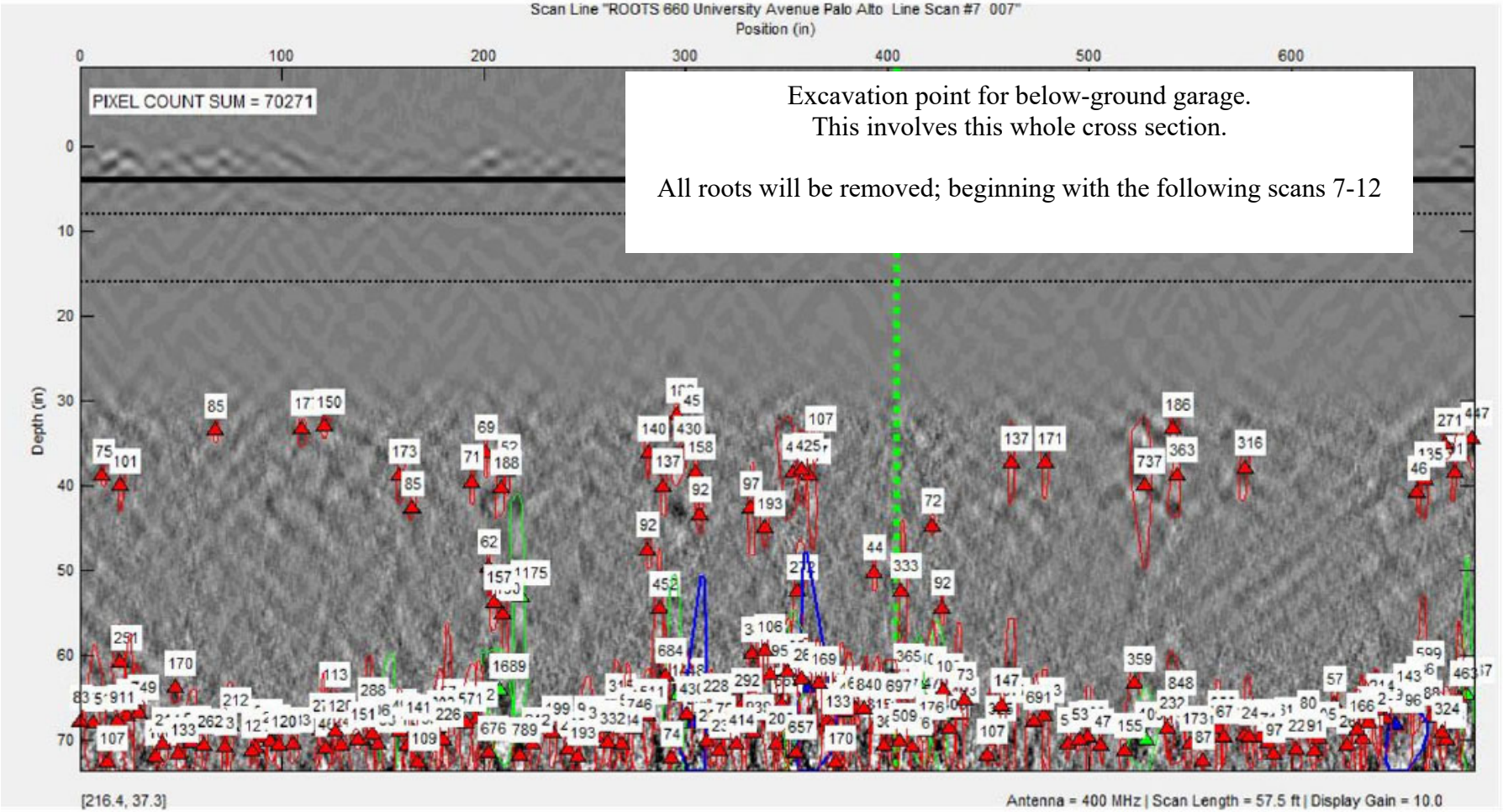
Scan #7 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



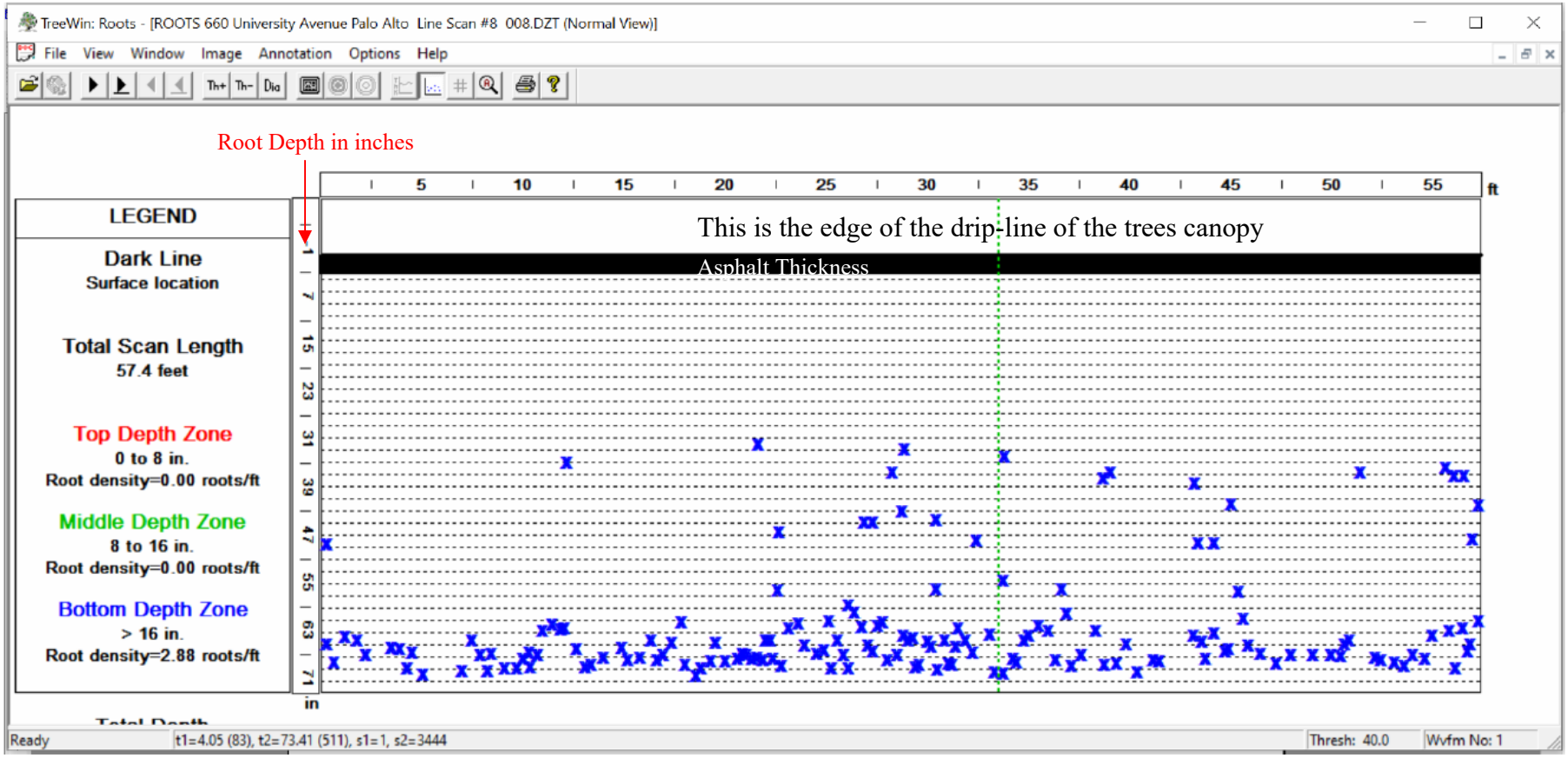
Scan #7 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



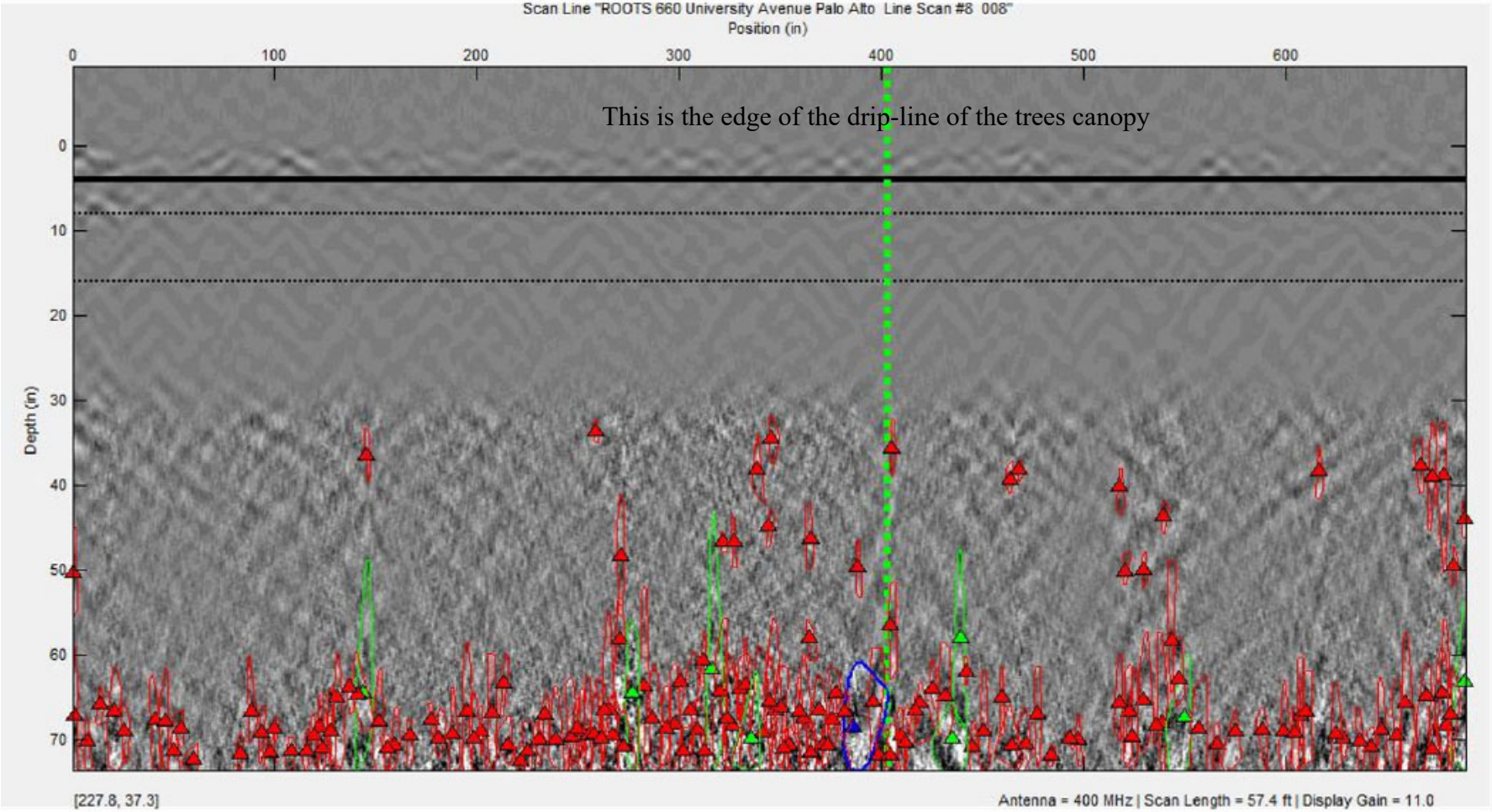
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #8 Line scan over parking lot 35 feet away from Oak tree #1572



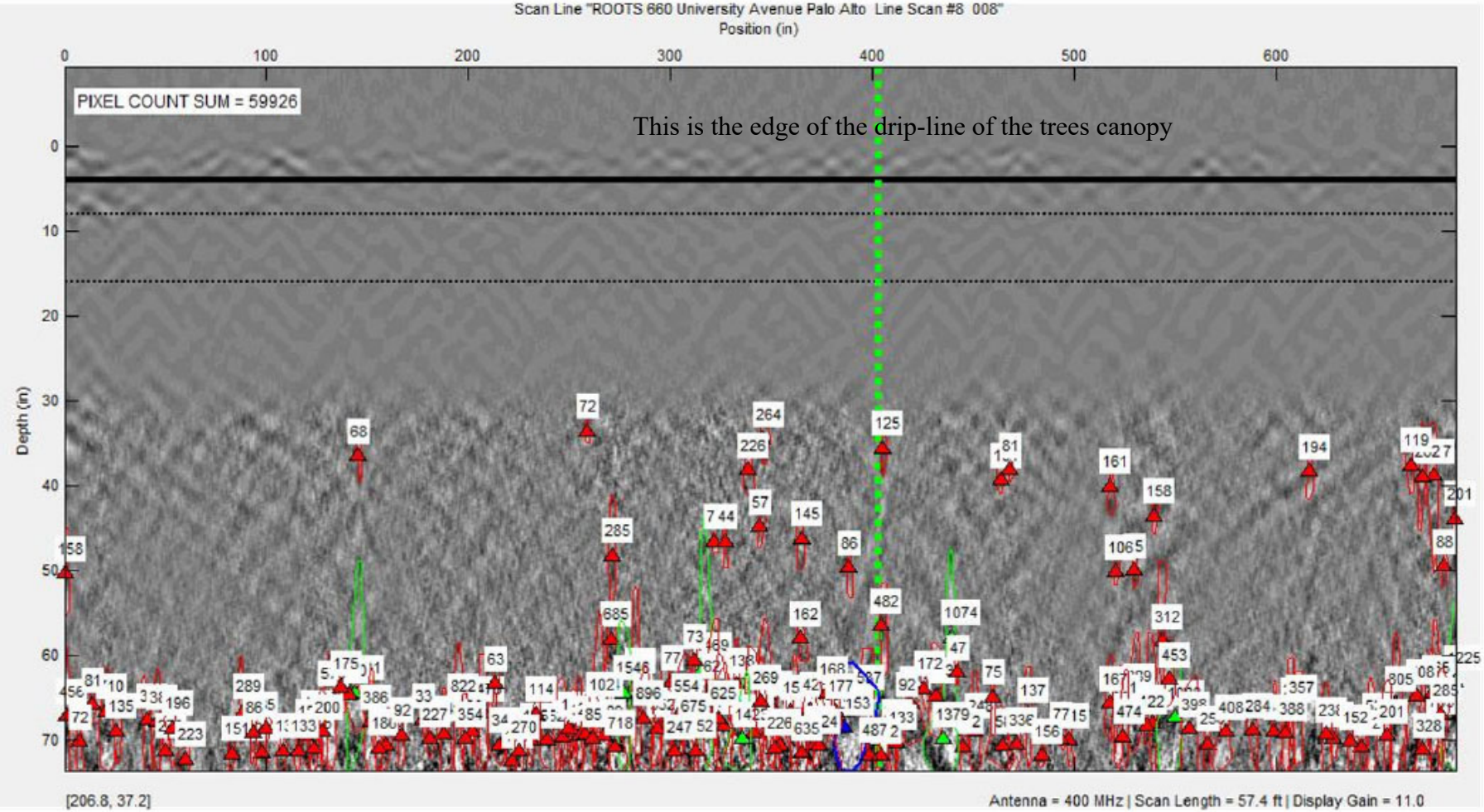
Scan #8 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



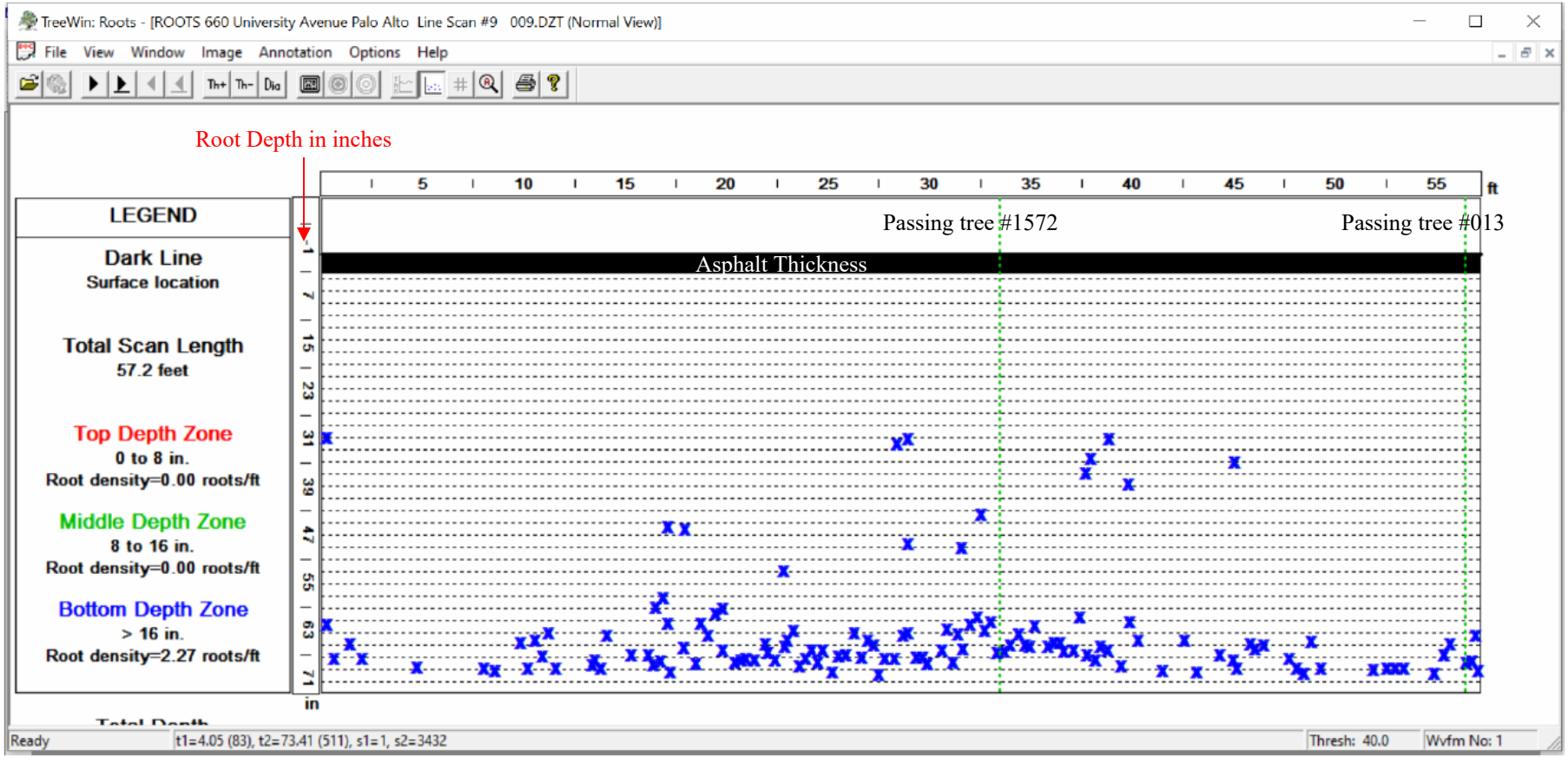
Scan #8 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



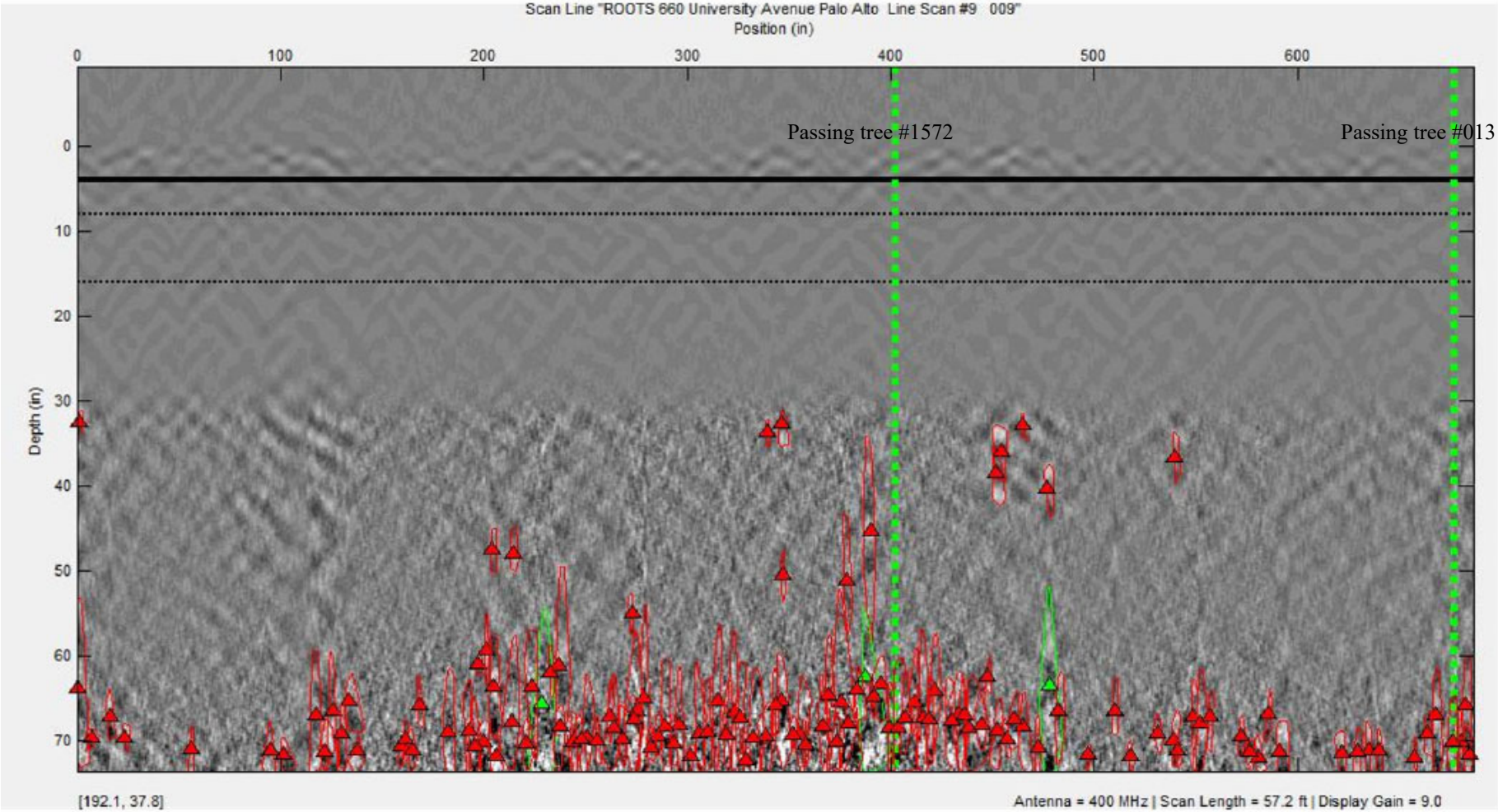
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #9 Line scan over parking lot 39 feet away from Oak tree #1572



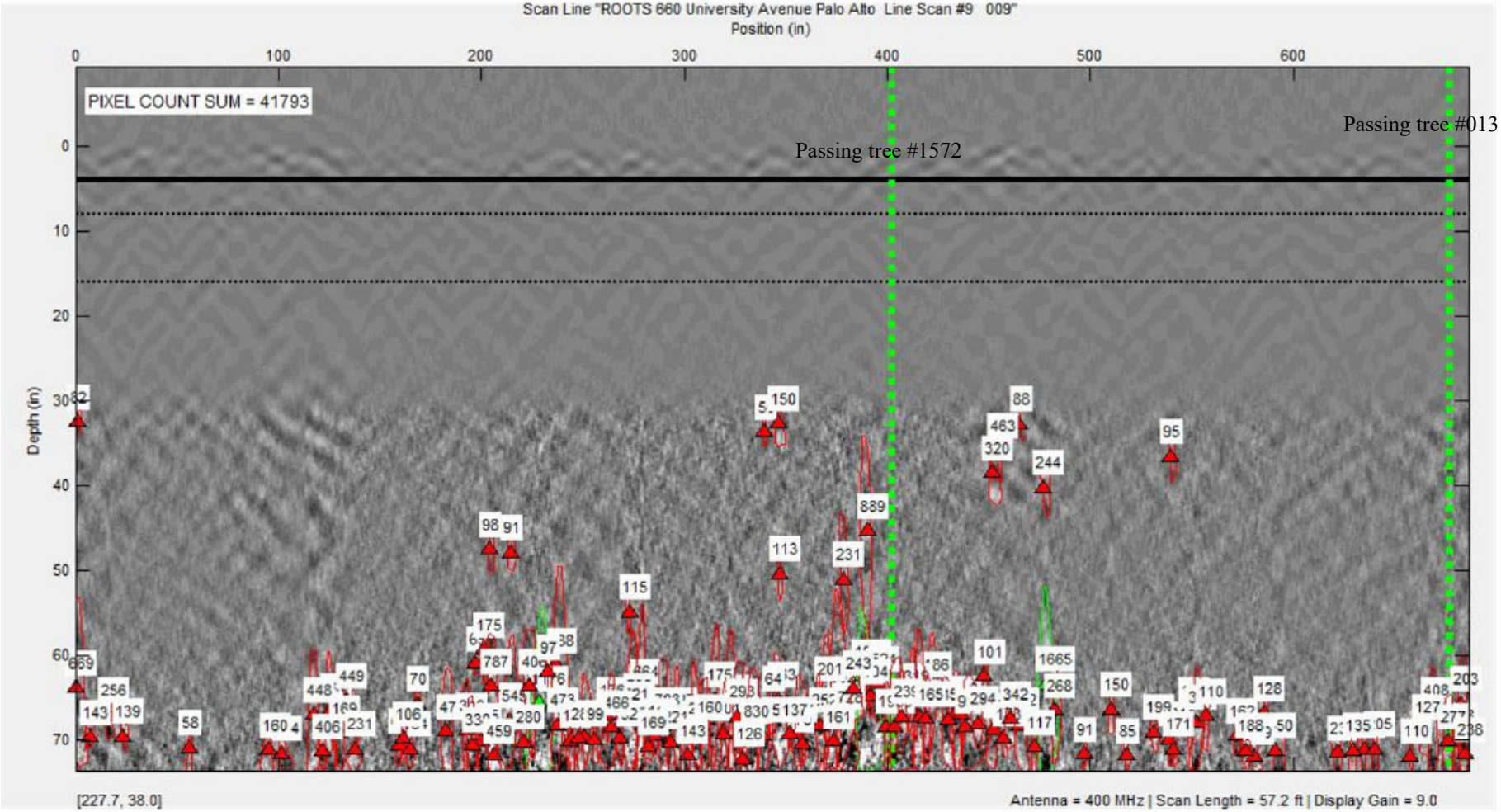
Scan #9 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



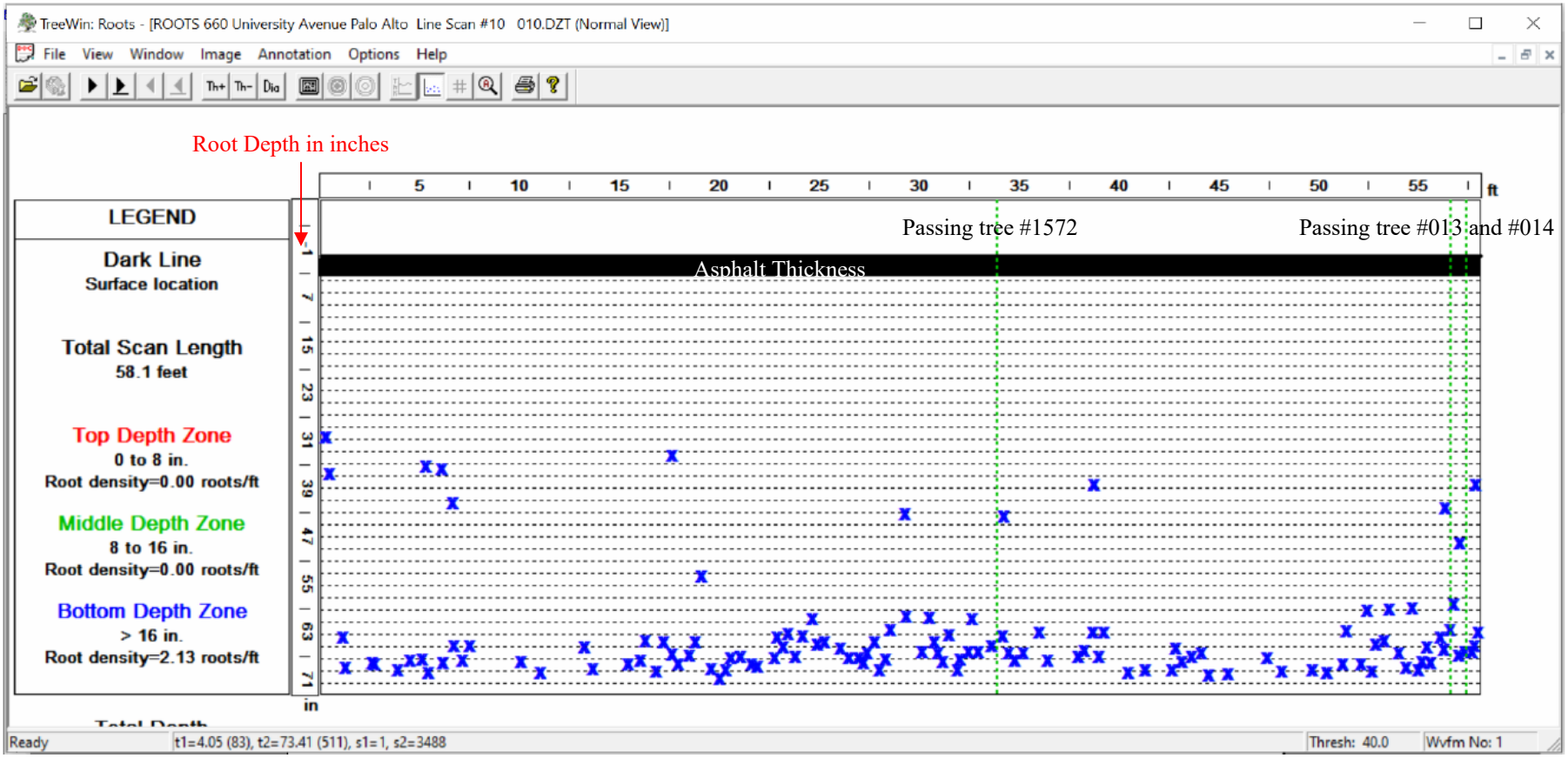
Scan #9 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



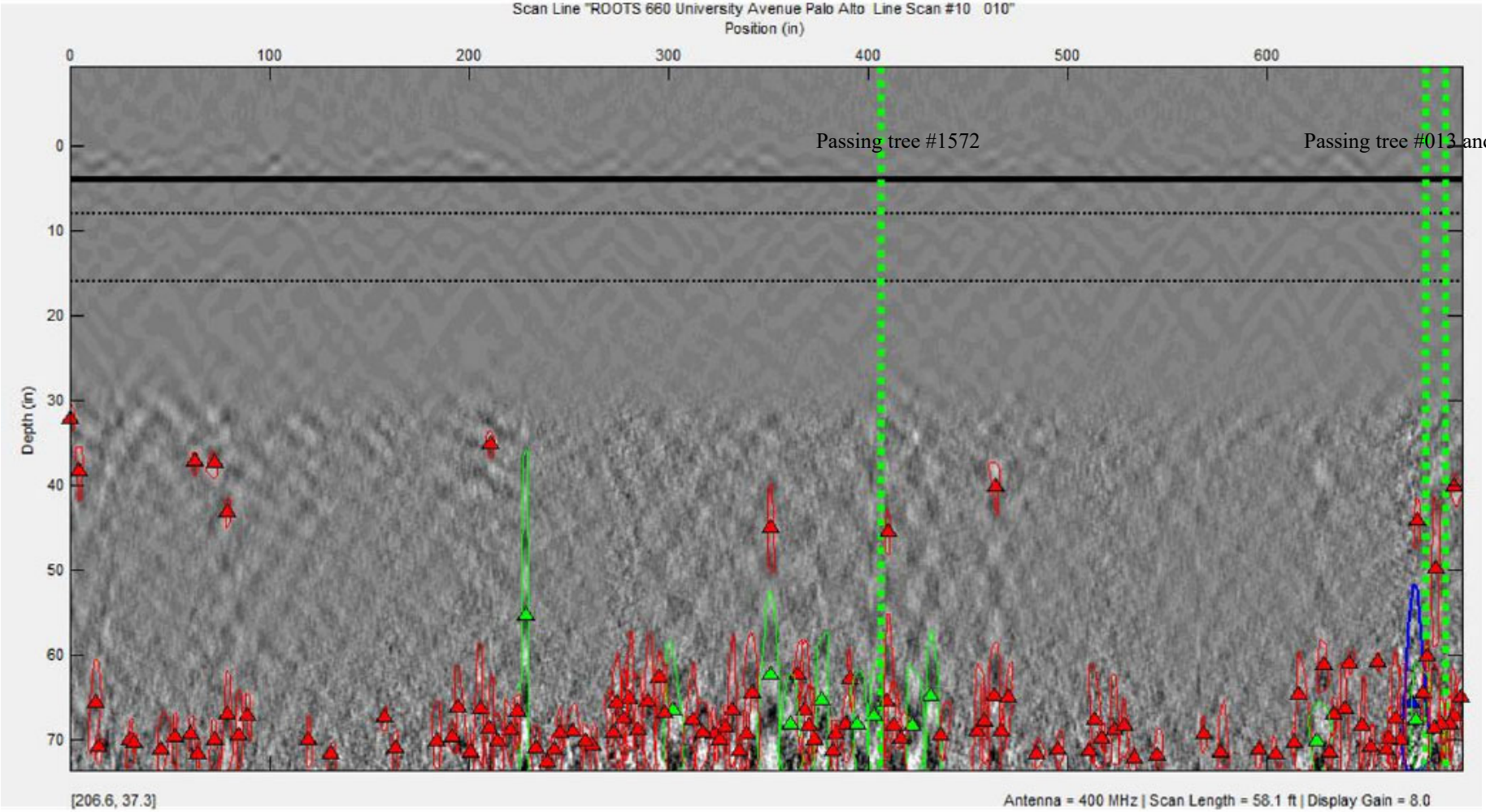
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #10 Line scan over parking lot 43 feet away from Oak tree #1572



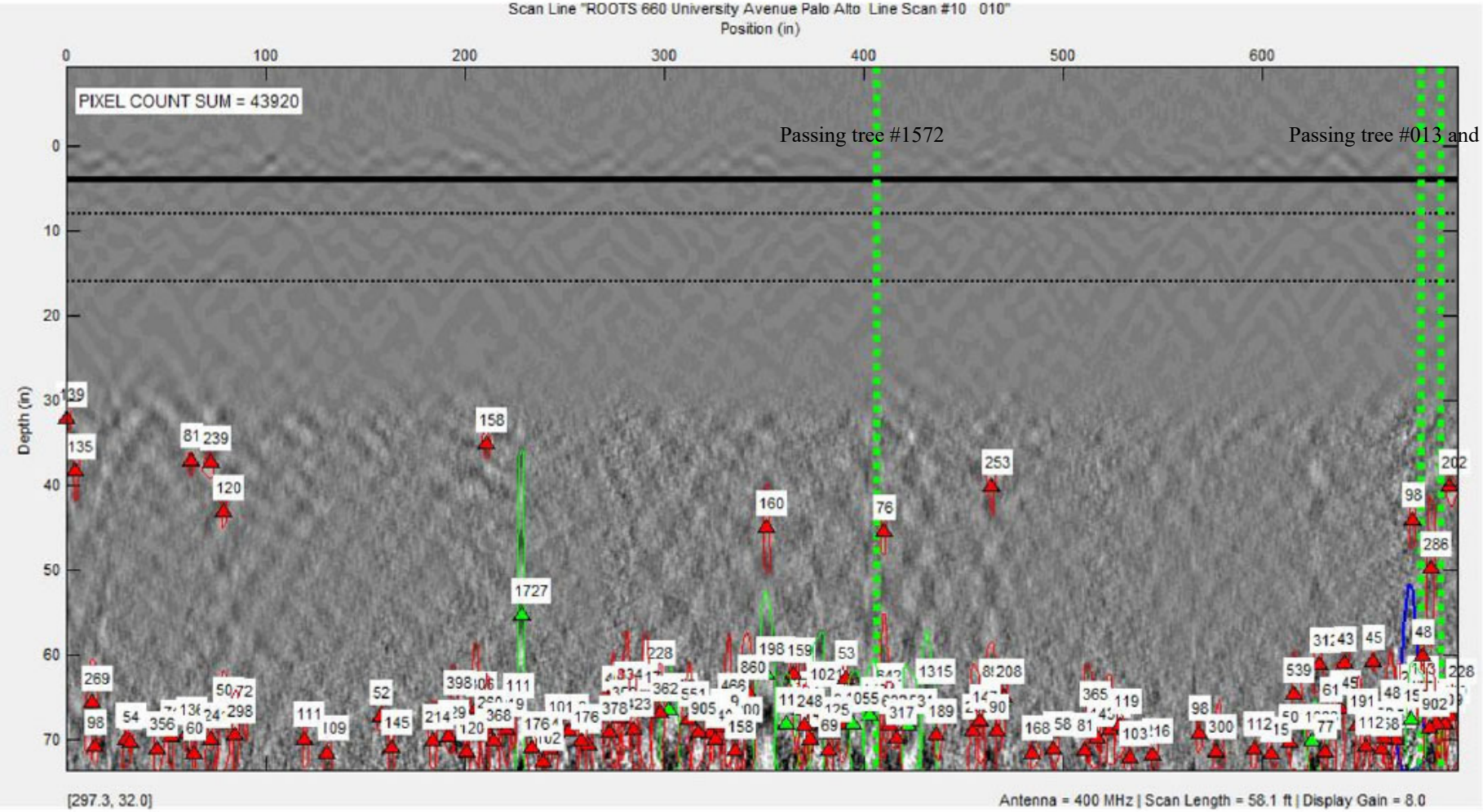
Scan #10 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



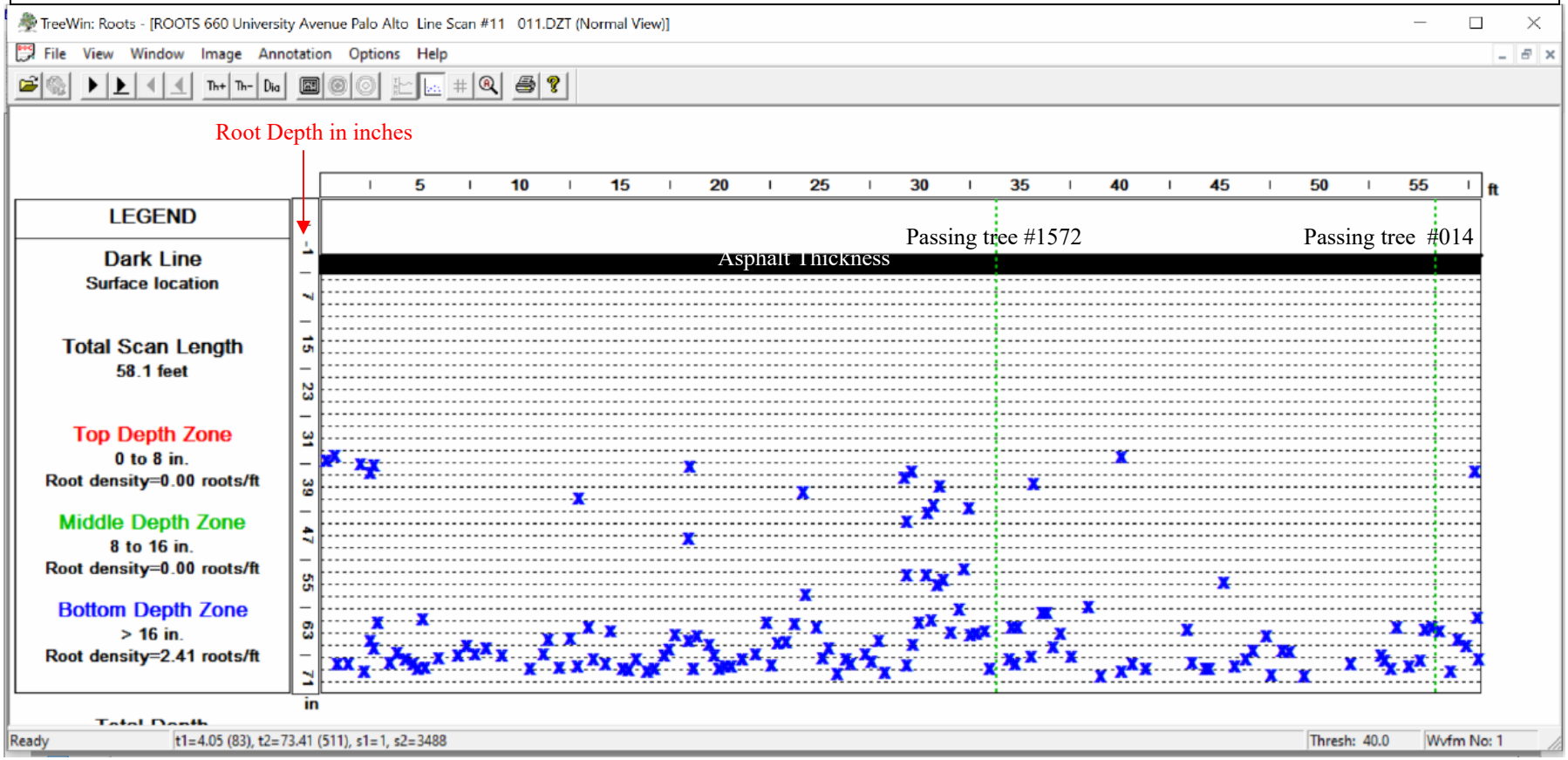
Scan #10 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



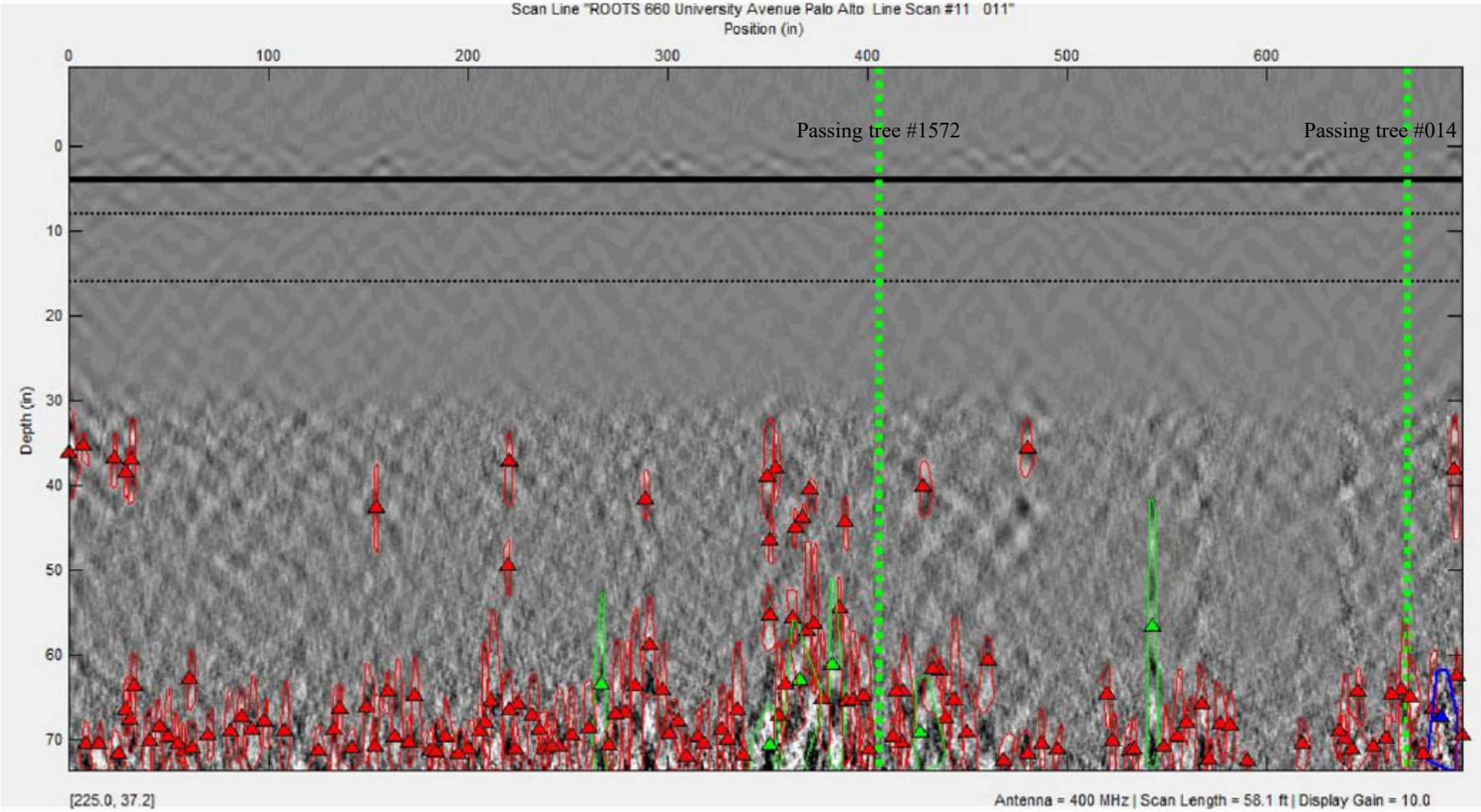
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #11 Line scan over parking lot 47 feet away from Oak tree #1572



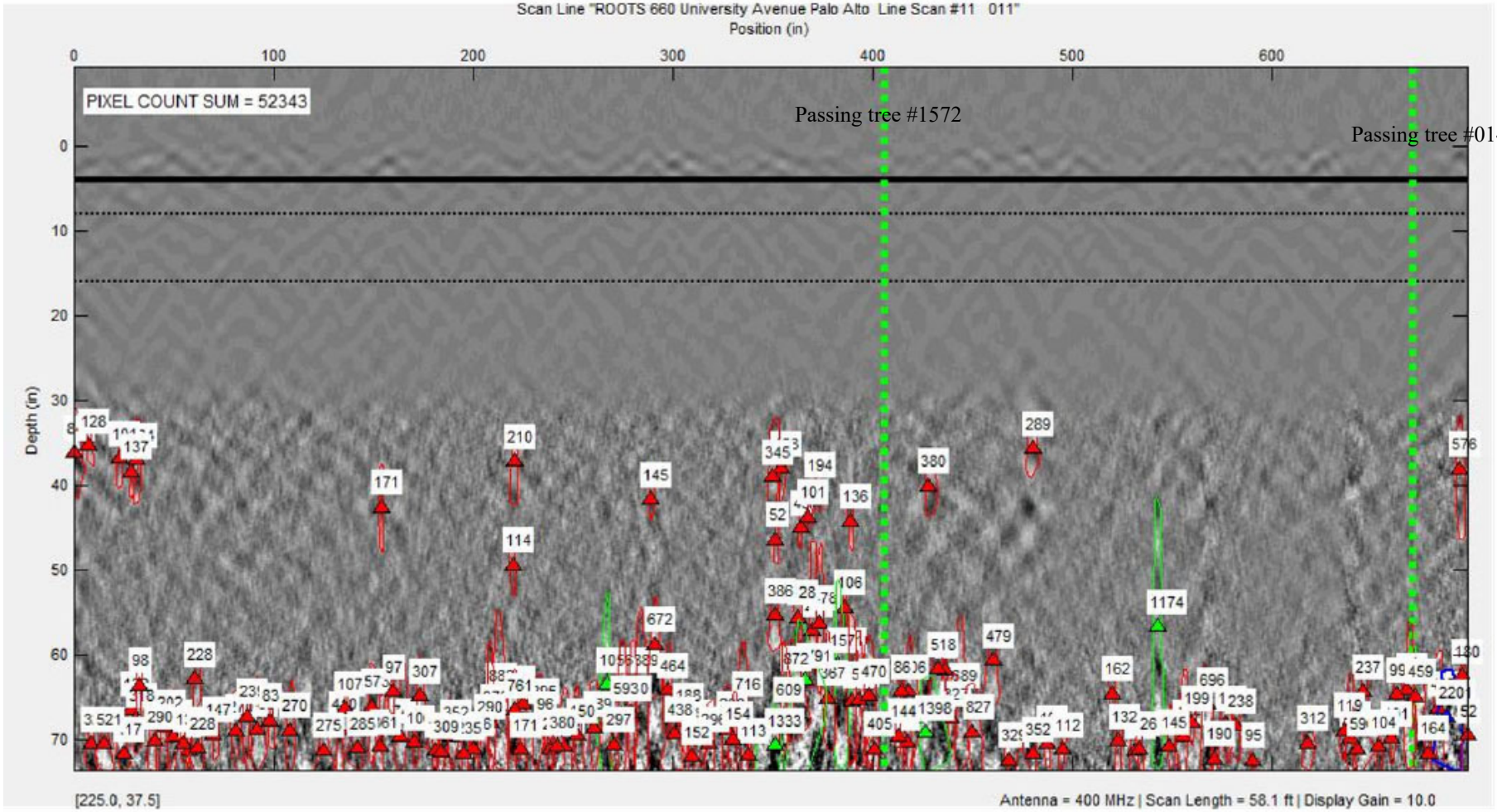
Scan #11 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



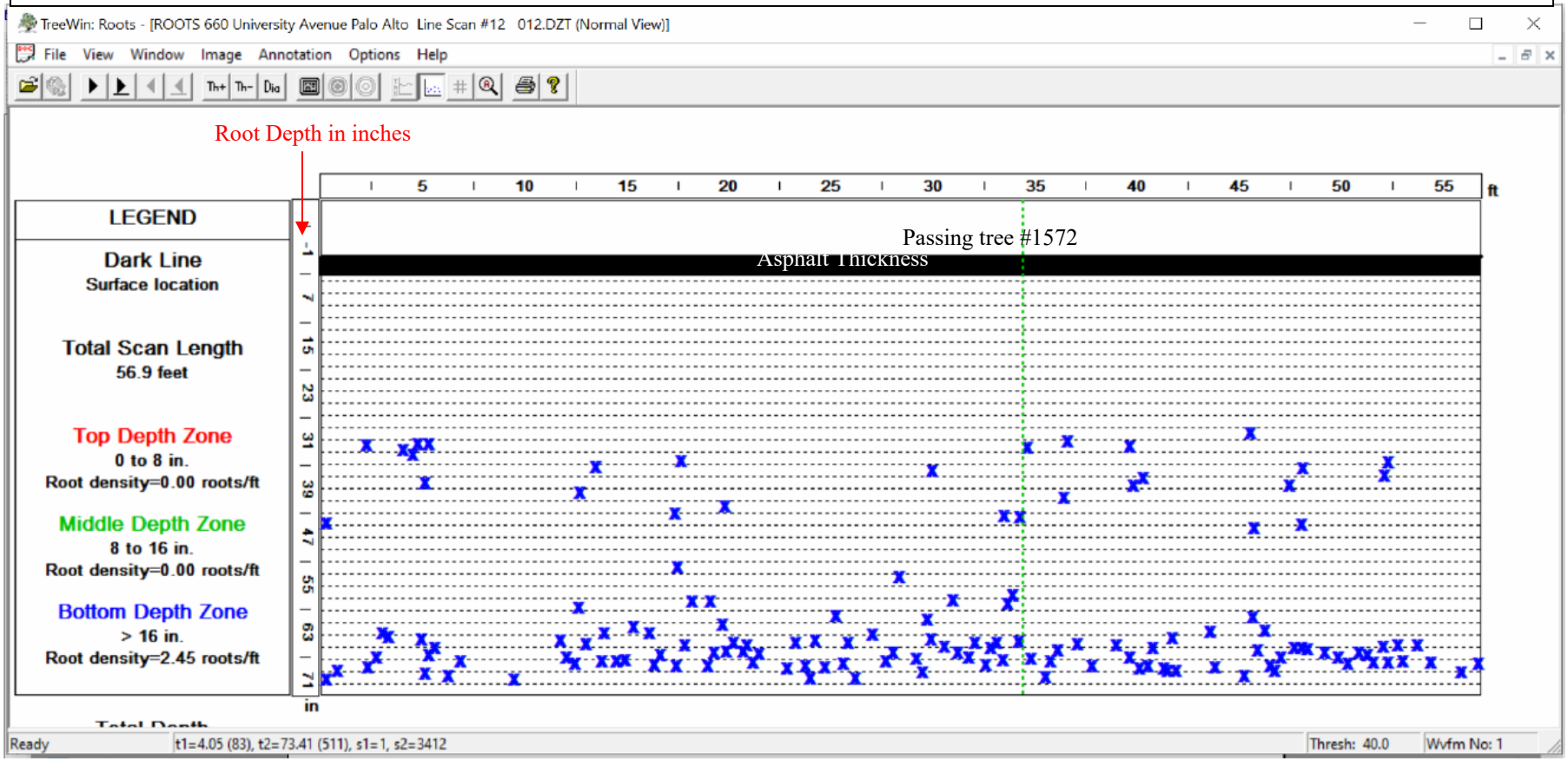
Scan #11 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



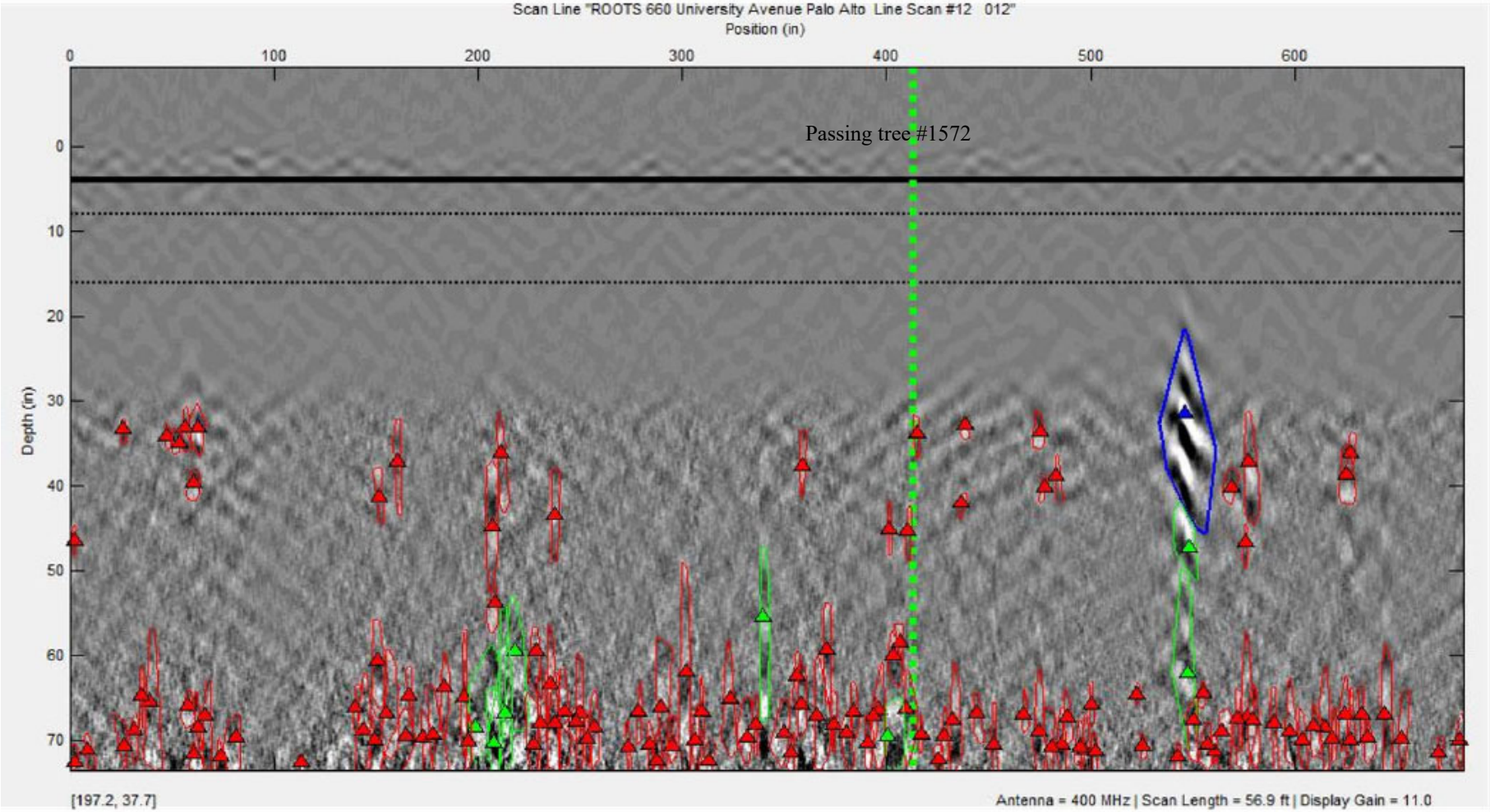
May 8, 2022 660 University Avenue Palo Alto, California.

Scan #12 Line scan over parking lot 51 feet away from Oak tree #1572



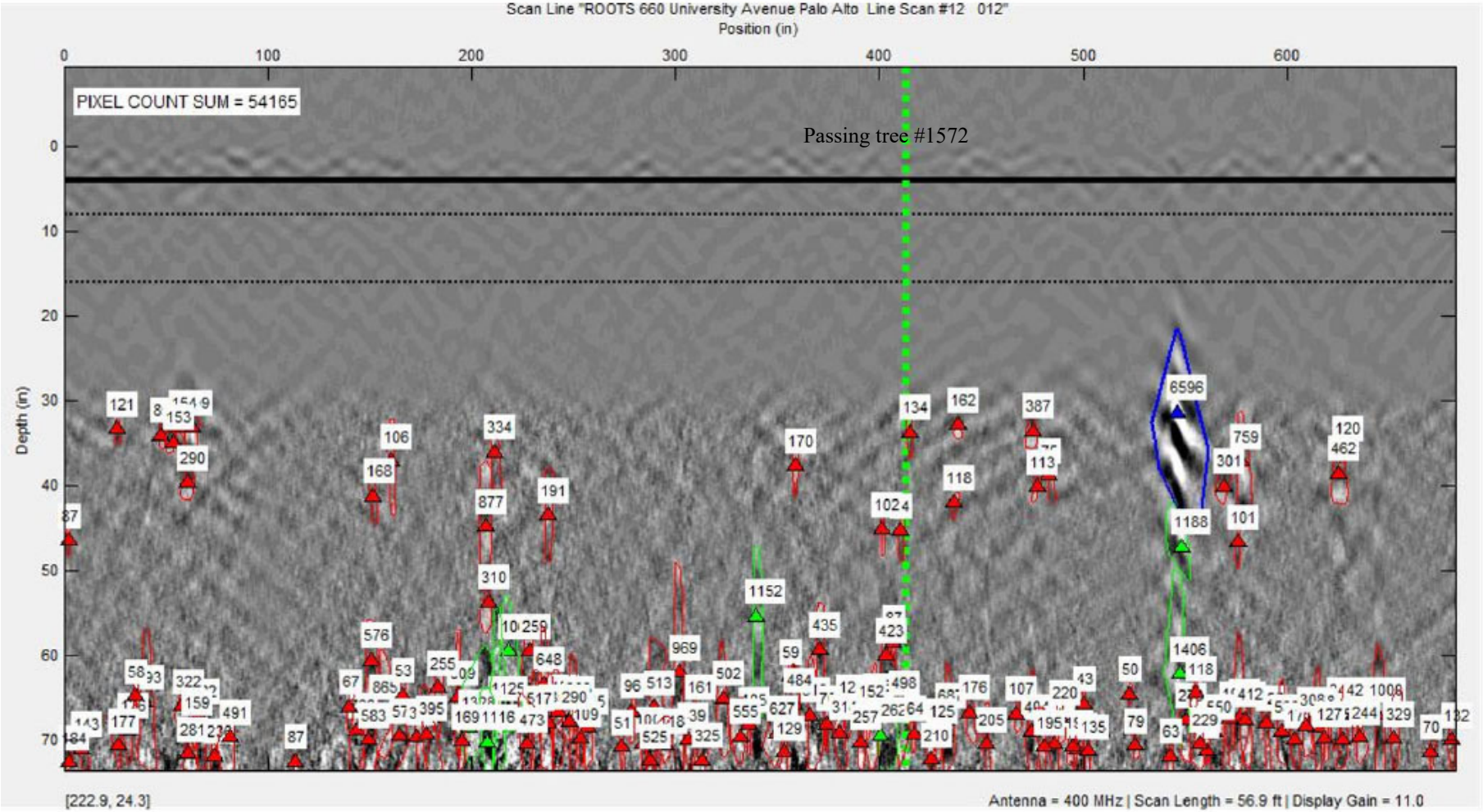
Scan #12 Root size estimate using Polygon region, reflection field size around root.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



Scan #12 Root size estimate, Pixel count. The area inside each Area Shape Polygon reflection field, is determined by the number of pixels (related to root size) printed inside each white box. This will provide more insight as to individual root size estimates within each of the 3 size categories below.

Small Red 2.5 inches or less **Medium** Green 2.5 – 5 inches. **Large** Blue 5 inches and larger.



.

Arborist Disclosure / Performance of Services

1. Disclosure. Arborists are tree specialists who use their education, knowledge, training and experience to examine trees, recommend measures to enhance the beauty and health of the trees and attempt to reduce the risk of living near trees. Arborists cannot detect every condition that could possibly lead to the structural failure of a tree.

Since trees are living organisms, conditions are often hidden within the tree and below ground. Arborists cannot guarantee that a tree will be healthy or safe under all circumstances, or for a specific period of time. Likewise, remedial treatments cannot be guaranteed. Trees can be managed but they cannot be controlled. To live near trees is to accept some degree of risk and the only way to eliminate all risk associated with trees is to eliminate all trees.

2. Indemnification from current and future tree failures. Although radar imaging has no known harmful physical affects on trees the client agrees to indemnify, defend and hold Arborist OnSite Inc. and TreeRadar inc. harmless from and against any and all claims, liabilities, suite, demands, losses, costs and expenses, including, but not limited to, reasonable attorneys' fees and all legal expenses and fees incurred through appeal, and all interest thereon, accruing or resulting to any and all persons, firms or any other legal entities on account of any damages or losses to property or persons, including injuries or death, or economic losses, arising out of the Services and/or this Agreement*, except to the extent that said damages or losses are caused by Consultant's gross negligence or willful misconduct.* This indemnity, shall survive any expiration or termination of this Agreement with regard to any claims arising during, or related to, facts or circumstances that occurred during the term of this Agreement or any extension thereof.

No warranty, representation or guarantee, express or implied, is intended by this agreement. Consultant is not responsible for the completion or quality of work that is dependant upon or performed by Client or third parties not under the direct control of Consultant or for their acts or omissions or for any damages resulting there from.

3. **TreeRadar™ / Arborist OnSite® Disclaimer**

1. Use at Customer's Risk. TreeRadar™ and Arborist OnSite® endeavors to use equipment that generates useful information and, when provided, to prepare reports that will reflect its best judgment in light of the facts as it knows them, TreeRadar™ or Arborist OnSite® does not guarantee the outcome of its efforts or the structural integrity of any tree. Any report prepared by Arborist OnSite® or equipment and data analysis services provided by TreeRadar™ is used strictly at your sole risk

2. Disclaimer of Warranties. You expressly understand and agree that:

(a) Your use of TreeRadar™ equipment or Arborist OnSite's® use of ground penetrating radar technology services, are at your own risk. Such services are provided on an "as is and "as available" basis. TreeRadar™ and Arborist OnSite® expressly disclaims all warranties of any kind, expressed or implied, including but not limited to implied warranties of merchantability, fitness for a particular purpose and non-infringement. TreeRadar™ and Arborist OnSite® make no warranty that the equipment will be error-free or the data results obtained from the use of this equipment will be reliable.

Neither TreeRadar™ or Arborist OnSite® shall not be liable for any direct, indirect, incidental, special, consequential or exemplary damages, including but not limited to damages for goodwill, injury to body or

property, death or other losses even if TreeRadar™ or Arborist OnSite® has been advised of the possibility of such damages resulting from the use or reliance TreeRadar™ equipment or Arborist OnSite's® use of ground penetrating radar technology.

4 General Conditions. Client acknowledges that it has read and agrees to the General Conditions contained in this document which are incorporated herein and made a part of this Agreement and report and shall apply to all services performed by Consultant. If this document is attached to another form of agreement whose terms and conditions conflict with this Agreement the General Conditions contained in this document shall prevail.

Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. No responsibility is assumed for matters legal in character nor is any opinion rendered as to the quality of any title.
2. The consultant can neither guarantee nor be responsible for accuracy of information provided by others, information not provided or disclosed.
3. The consultant shall not be required to give testimony or to attend court by reason of this consultation/reports unless subsequent written arrangements are made, including payment of an additional fee for services.
4. Loss or removal of any part of this report invalidates the entire report/evaluation.
5. Possession of this report or a copy thereof does not imply right of publication or use for any purpose by any other than the persons(s) to whom it is addressed without written consent of this consultant.
6. This report represents the opinion of consultant, and the consultant's fee is in no way contingent upon the reporting upon any pre-determined findings.
7. Sketches, diagrams, graphs, photos, ect., in this report, being intended as visual aids, are not necessarily to scale and should not be construed as engineering reports or surveys.
8. This report has been made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.
9. No tree described in this report was climbed, unless otherwise stated. Arborist OnSite® cannot assume responsibility for any defects which could only have been discovered by climbing. A full root collar or root crown inspection, consisting of excavating the soil around the tree to uncover hidden defects or disease involving the root collar and major buttress roots, was not performed, unless otherwise stated. Arborist OnSite® cannot accept responsibility for any root defects which could only have been discovered by such an inspection.

Certification of Performance

I, Robert Booty, certify:

- That I have personally inspected the tree(s) and/or the property referred to in this report, and have stated my findings accurately. The extent of the evaluation and or appraisal is stated in the attached report and the terms and conditions;

- That I have no current interest in the vegetation or the property that is the subject of this report, and I have no personal interest or bias with respect to the parties involved;

- That the analysis, opinions and conclusions stated herein are my own, and are based on current scientific procedures and facts;

- That my compensation is not contingent upon the reporting of a predetermined conclusion that favors the cause of the client or any other party, nor upon the results of the assessment, the attainment of stipulated results, or the occurrence of any subsequent events;
- That my analysis, opinions, and conclusions were developed and this report has been prepared according to commonly accepted arboricultural practices;

- That no one provided significant professional assistance to the consultant, except as indicated within the report.

I further certify that I am a Registered Member of the American Society of Consulting Arborists, and I am an International Society of Arboriculture Certified Arborist. I have been involved in the practice of arboriculture and the care and study of trees for over 50 years.

Signed: Robert Booty

Date: May 23, 2022