



May 29, 2024

Hamid Hekmat
HrH Architecture
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Re: Arborist Report for 516 Lakemead Way, Emerald Hills

Dear Hamid,

This arborist report addresses the proposed residential project at 516 Lakemead Way. Per the County of San Mateo's Significant Tree Ordinance (Section 12,000) and Regulations for the Preservation, Protection Removal and Trimming of Heritage Trees Ordinance No. 2427 (Section 11,000), the scope of work includes:

- Tag, identify and measure significant and heritage trees on or overhanging the project site that may be encroached by the proposed improvements. Trees shall be measured at 4 ½' vertically above the ground or immediately below the lowest branch, whichever is lower.
- Significant trees are defined as:
 - Any tree with a single-stem diameter of 12" (38" circumference)
 - Any tree with a single-stem diameter of 6" (19" circumference) in the RH/DR Zone Districts.
- Note whether a tree is considered Indigenous or Exotic, defined as:
 - Indigenous tree: native San Mateo County tree, may be narrowed to include only those trees known to occur naturally in a certain portion of the County.
 - In the Emerald Lake Hills Community Plan area, indigenous trees shall include the following species of trees: *Salix coulteri*, *Salix lasiolepis*, *Salix lasiandra* (all native willows); *Acer negundo californica* (box elder); *Aesculus californica* (buckeye); *Arbutus menziesii* (madrone); *Quercus agrifolia* (coast live oak); *Quercus lobata* (valley oak); *Quercus douglasii* (blue oak); and *Umbellularia californica* (California bay laurel). This list may be amended to include indigenous trees not currently known to occur naturally upon confirmation by a reputable authority on native trees of San Mateo County.
 - Exotic tree: any tree that is not a native indigenous tree
- Note whether a tree is considered Heritage, defined as:
 - Class 1: Any tree or grove of trees designated by the Board of Supervisors
 - Class 2: Select indigenous species (see ordinance for species & size requirements)
- Assess proposed improvements for potential encroachment.
- Based on proposed encroachment, tree health, structure, and species susceptibility, make recommendations for preservation.
- Provide above information on a Tree Protection Plan, to include: tag #s, approximate dripline, whether a tree is removed or preserved, tree protection fencing locations, and tree protection recommendations.

Project Summary

The subject property is located on the southern half of Emerald Hills and was previously comprised of two separate, long and narrow lots. The eastern half of the property includes an existing home, while the western portion is vacant.

The proposed project will be executed in two phases. The first phase will demolish the existing backyard patio and construct an Accessory Dwelling Unit (ADU) in roughly the same location. The second phase will demolish the existing home and build a new one with an expanded footprint into the vacant side of the property. A new pool, garage, fruit orchard, as well as parking, walkways, and terraces are also proposed throughout the property.

I inventoried eight significant trees, three of which are off-site. The trees are distributed on or within a few feet of the eastern side of the property, with the exception of one tree on the southwest corner. Two of the eight trees are indigenous oaks (*Quercus agrifolia* & *Q. lobata*). Six exotic trees consist of one northern California black walnut (*Juglans hindsii*), one crape myrtle (*Lagerstroemia indica*), and four fruit trees.

It is my opinion that five trees will need to be removed to accommodate the proposed project. The remaining three trees can be retained given that the protection measures within this report are followed.

Assumptions & Limitations

This report is based on my site visit on 5/2/24 and the following plans:

- Site Survey by Meridian Surveying Engineering, Inc. dated 9/1/23
- Site Plan & Notes by HrH Architecture revised 1/19/24
- Utility Plan and Grading & Drainage Plan by Lea & Braze Engineering, Inc. revised on 4/24/24
- Landscape Area Overview and Landscape Design Plan by Patty Walters Landscape Design (undated, received on 4/2/24)

It was assumed that the trees and the proposed improvements were accurately surveyed. A few trees were not surveyed, so I approximately located them on the tree protection plan. Their precise locations will not affect the recommendations in this report.

The health and structure of the trees were assessed visually from ground level. No drilling, root excavation, or aerial inspections were performed. Internal or non-detectable defects may exist and could lead to part or whole tree failures. Due to the dynamic nature of trees and their environment, it is not possible for arborists to guarantee that trees will not fail in the future.

Tree Inventory & Assessment Table

#s: Each tree was given a square metal tag with numbers ranging from #271-278. Their locations are given in the tree protection plan.

Diameter: Trunk diameters in inches were measured with a diameter tape at 4.5' above average grade or immediately below the lowest branch, whichever is lower. Height of measurements that deviate from the standard (4.5') on atypical trunks are noted under the "Comments" section.

Height: Tree height (in feet) was visually estimated from the ground.

Health Rating

Dead: Dead or declining past chance of recovery.

Poor (P): Stunted or declining canopy, sparsely foliated with poor foliar color. Possible disease or insect issues. Unreliable specimen for preservation. Would require significant maintenance, and a protection zone well beyond the dripline in order to retain. Acceptable to leave for nature if not a threat to property.

Fair (F): Fair to moderate vigor, typical for the species. Will require an adequate protection zone, and supplemental maintenance such as: crown cleaning of mistletoe, dead, broken, or diseased branches. Additional maintenance such as fertilizing, soil aeration, and mulching may be recommended to improve vigor.

Good (G): Good vigor and color, with no obvious problems or defects. Generally more resilient to impacts. Minor maintenance may be recommended.

Very Good (VG): Exceptional specimen with excellent vigor and structure. Unusually nice.

Structure Rating

Poor (P): Exhibiting defects such as weak attachments, extensive decay, large deadwood, root defects, leans, cracks or cavities that may threaten existing or future targets. May or may not be correctable with pruning, cabling or bracing.

Fair (F): Minor correctable defects, may or may not have a target. Should receive maintenance as recommended.

Good (G): Well structured with no significant or obvious defects.

Dripline: Canopy radius (in feet) was visually estimated in each cardinal direction.

Age

Young (Y): Within the first 20% of expected life span. High resiliency to encroachment.

Mature (M): Between 20% - 80% of expected life span. Moderate resiliency to encroachment.

Overmature (OM): In >80% of expected life span. Low resiliency to encroachment.

DE: Dripline Encroachment (X indicates encroachment)

CI: Anticipated Construction Impact (L = Low, M = Moderate, H = High)



Figure 1. The existing home on the eastern side of the property (right side of image) is proposed to be demolished. Tree #271 (left) is only 2' from the proposed parking area and is proposed to be removed.

#	Species	Diameter	Height	Health	Structure	Dripline				Age	DE	CI	Comments	Recommendations
						N	E	S	W					
271	Northern California Black Walnut (<i>Juglans hindsii</i>)	9	20	G	F	10	15	5	10	Y	X	H	Exotic tree; deciduous hardwood. Buried trunk. Previously topped. Large, crowded watersprouts/stems. <i>In proposed grading, 2' from proposed parking & 6' from proposed walkway.</i>	Remove.
272	Valley Oak (<i>Quercus lobata</i>)	12	20	G	G-F/F	15	10	10	10	Y-M	X	H	In ROW. Indigenous tree; deciduous hardwood. Asphalt on 3 sides of root system. Pruned for view or wire clearance. Codominant stems at 10'. <i>2' from proposed driveway.</i>	Remove.
273	Crape Myrtle (<i>Lagerstroemia indica</i>)	7.5	10	G	F-P	3 all				M	X	H	Exotic tree; deciduous hardwood. Topped & pollarded. <i>In proposed home.</i>	Remove.
274	Avocado (<i>Persea americana</i>)	8	10	F/F-P	G-F/F	5	7	5	5	Y	X	H	Exotic tree. Diameter measured at 4" above grade. Declining - top dying back, little new foliage. <i>In proposed ADU.</i>	Remove.
275	Peach (<i>Prunus persica</i>)	7.5	8	G-F/F	G-F	8	7	8	7	M		L	Exotic tree; deciduous hardwood. Diameter measured at 2.5' above grade. Severe leaf peach curl. Heading cuts & crossing branches. <i>Adjacent to construction.</i>	Install temporary protection fencing at tree dripline.
276	Coast Live Oak (<i>Quercus agrifolia</i>)	12	20	G-F/F	G-F	10	5	10	15	Y-M		L	Neighbor's tree. Indigenous tree; evergreen hardwood. Tag on fence. Not surveyed; trunk location & DBH estimated. Codominant stems below 5' (not visible). Codominant stems with included bark at 8'. Slightly sparse, stunted, undersized foliage, especially on E side of canopy. <i>Adjacent to construction.</i>	Install temporary protection fencing 10' from trunk.
277	Lemon (<i>Citrus limon</i>)	6	7	F/F-P	P	7	3	5	3	OM	X	H	Exotic tree; evergreen hardwood. Not surveyed; trunk location estimated. Diameter measured at 12". Extensive dead bark & sapwood, some new wood growing underneath dead bark. Some stem & branch decay. Some dead twigs in upper canopy. <i>In proposed walkway.</i>	Remove.

#	Species	Diameter	Height	Health	Structure	Dripline				Age	DE	CI	Comments	Recommendations
						N	E	S	W					
278	Avocado	10	20	G	G-F/F	10	10	10	5	M	X	M	<p>Neighbor's tree. Exotic tree; evergreen hardwood. Tag on fence. Not surveyed; trunk location & DBH estimated. West side of canopy hedged back at fenceline, up to 10' height. Appears to have been previously topped at 10'. <i>4' from proposed walkway & electrical conduit & 6' from proposed sanitary sewer line.</i></p>	<p>Install temporary protection fencing from existing property line fence to existing concrete retaining wall within 10' of trunk.</p> <p>If fencing hinders construction access, consult project arborist for alternative root protection such as 6" thick layer of mulch with 3/4" plywood on top OR steel plates.</p> <p>Project arborist shall be called on-site to monitor any ground-disturbing work within 10' of trunk. Some work may need to be performed by hand or with an air excavation device at the discretion of the project arborist.</p> <p>The proposed walkway, electrical conduit, and new property line fence may need to be adjusted to accommodate large roots. If large roots conflict and cannot be accommodated, the project arborist may recommend removal (will require permission from neighbor).</p>

Tree Encroachment Summary

- Trees that will need to be removed: 5 trees (#271-274 & 277)
- Trees to be saved that will be subjected to dripline encroachment: 1 tree (#278)
- Trees to be saved that will not be encroached: 2 trees (#275-276)

Discussion

Proposed Removals

Trees #273-274 & 277 are in direct conflict with the proposed main residence, ADU, and walkway, respectively, so all three trees will need to be removed. These trees have some structural or health issues, so it doesn't make sense to design around them.

Two additional trees, #271-272, are within 2' of the proposed hardscape (figures 1-2). At this distance, I expect large structural roots to conflict with hardscape installation. These roots are responsible for anchoring a tree in the soil, so damaging them not only impacts overall tree health, but can jeopardize whole tree stability.

Typical hardscape preparation requires excavation into the existing grade and sometimes necessitates soil compaction. Per email communication with Design Engineer Waleed Alzori, excavation for the overflow parking area near tree #271 will likely be a minimum of 21", which would conflict with most tree roots in that portion of the tree's root system. Moreover, tree #271 is a black walnut, a species which is intolerant of root loss. This tree is likely to decline following the proposed excavation for the parking and walkway, as well as the proposed grading up to the trunk. To retain the walnut, significant design changes would be needed including minimizing grade changes and relocating the parking area further from the tree.



Figure 2. Large structural roots will likely conflict with the proposed driveway, so tree #272 is proposed to be removed.

Similarly, to retain tree #272, the driveway would need to either be shifted further from the tree or it would need to work around large structural roots. This would also require the project arborist be on-site to monitor demolition and excavation work adjacent to the tree. Removing trees #271-272 is the most cost-effective approach to constructing the desired driveway and parking layout.

Trees #275-276

These trees are far enough away from the proposed construction that overall encroachment will be low to none. However, trees can still be inadvertently impacted in ways other than excavation. Heavy equipment, constant foot traffic, and the staging of materials compacts soil and crushes fine absorption roots. This reduces soil capacity for water, air, and root growth, thereby negatively impact tree health. To protect tree roots and soil during construction, contractors shall install temporary protection fencing 10' from tree #276 and at the dripline of tree #275. The fencing will act as a barrier and keep construction-related activities away from the trees.

Tree #278

The neighbor's avocado (figure 3) was not surveyed, so distances from the proposed improvements are approximate. The tree is 4' from the proposed walkway and electrical conduit as well as 6' from the proposed sanitary sewer line. Moreover, it is roughly 1' from the new property line fence, which is proposed to align with the actual property boundary. There is a possibility that large structural roots could conflict with these improvements.

To minimize damage to tree roots, I recommend the project arborist be called on-site to monitor all ground-disturbing work within 10' of the trunk. This includes demolition of the existing walkway, boulders, and property line fence as well as excavation and trenching. The project arborist may recommend that some digging be performed by hand or with an air excavation device, a tool which uses compressed air to dislodge soil without harming tree roots. If large roots conflict with the proposed improvements and adjustments cannot be made to accommodate them, the project arborist may recommend the tree be removed. Removal will require permission from the neighbor.

As discussed in the previous section, contractors shall install temporary protection fencing between the existing property line fence and retaining wall to keep construction-related activities away from tree roots and soil. If the fencing will hinder construction access, contractors shall discuss alternatives with the project arborist. Two alternatives are to apply a 6" thick layer of mulch with 3/4" plywood on top OR use steel plates.

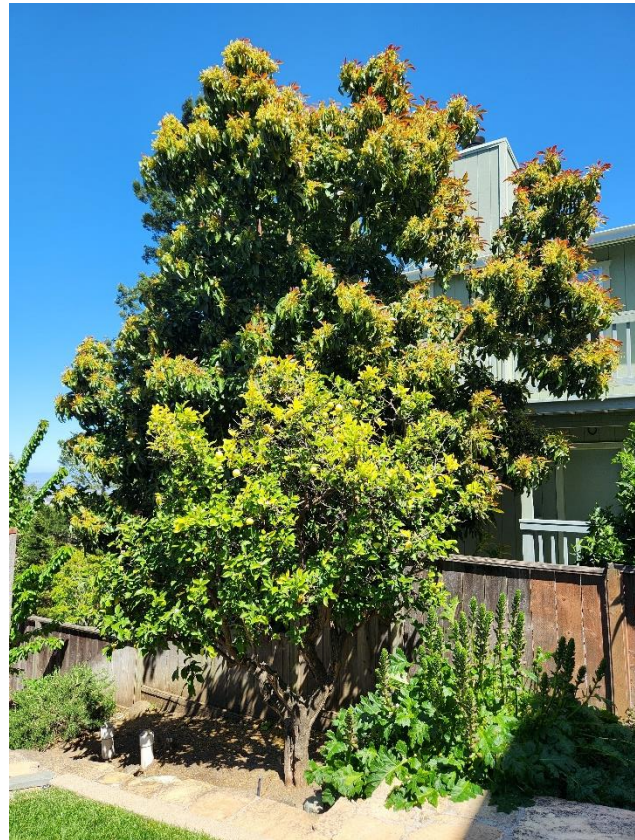


Figure 3. Proposed improvements will likely encroach on the avocado's structural roots (large tree in back of image). The project arborist shall be called on-site to monitor work within 10' of the trunk. Tree #277 (small tree in front of image) will be removed to accommodate the proposed walkway.

Tree Protection Recommendations (to be printed on site plans)

Pre-Demolition Phase

- Prior to demolition, construction or grading, contractor shall install 6' chain-link fencing to construct a temporary Tree Protection Zone (TPZ) around each tree as indicated on the tree protection plan.
 - Fencing shall be attached to metal stakes spaced 10' apart and driven firmly into the ground. They can be supported by stands if over pavement & wired together to avoid easily moving them.
 - If fencing hinders construction access, consult project arborist for alternatives including a 6" thick layer of mulch with 3/4" plywood on top OR use steel plates.
- TPZ fencing shall remain in an upright sturdy manner from the start of grading until the completion of construction. Fencing shall not be adjusted or removed without consulting the project arborist.

Demolition Phase

- Remove trees #271-274 & 277.
 - Do not pull root ball of tree #277 out of ground – either leave stump or grind out to avoid damaging roots from tree #278.
- Mulch from tree removals may be spread out under the driplines of trees that will be retained, keeping at least 12” away from the trunks.

Foundation, Grading, and Construction Phase

- Prior to construction, contractors shall meet with the project arborist to discuss working around trees and ensure protection measures are in place.
- The project arborist shall be called on-site to monitor excavation/grading within 10’ of tree #278. If appropriate, roots shall be cleanly pruned with a handsaw or sawzall, immediately covered, and kept moist till backfilled.
- If needed, pruning shall be performed by personnel certified by the International Society of Arboriculture (ISA) under project arborist supervision. All pruning shall adhere to ISA and American National Standards Institute (ANSI) Standards and Best Management Practices.
- Should Tree Protection Zone (TPZ) encroachment be necessary, the contractor shall contact the project arborist for consultation and recommendations.
- Contractor shall keep TPZs free of all construction-related materials, debris, fill soil, equipment, etc. The only acceptable material is mulch spread out beneath the trees.
- Should any damage to the trees occur, the contractor shall promptly notify the project arborist to appropriately mitigate the damage.

Landscaping Phase

- The Tree Protection Zone (TPZ) fencing shall remain in place with the same restrictions until landscape contractor notifies and meets with the project arborist.
- Avoid all fill work, grade changes, and trenching within driplines unless it is performed by hand.
- Pipes shall be threaded under or through large roots without damaging them.

Thank you for the opportunity to provide this report, and please do not hesitate to contact me if there are any questions or concerns.

Please see the attached tree protection plan.

Sincerely,



Maija Wigoda-Mikkila
Certified Arborist #WE-12986A
ISA Tree Risk Assessor Qualified

TREE PROTECTION PLAN

for 516 Lakemead Way

By: Maija Wigoda-Mikkila

Certified Arborist # WE-12986A

Traverso Tree Service, Inc.

May 29, 2024

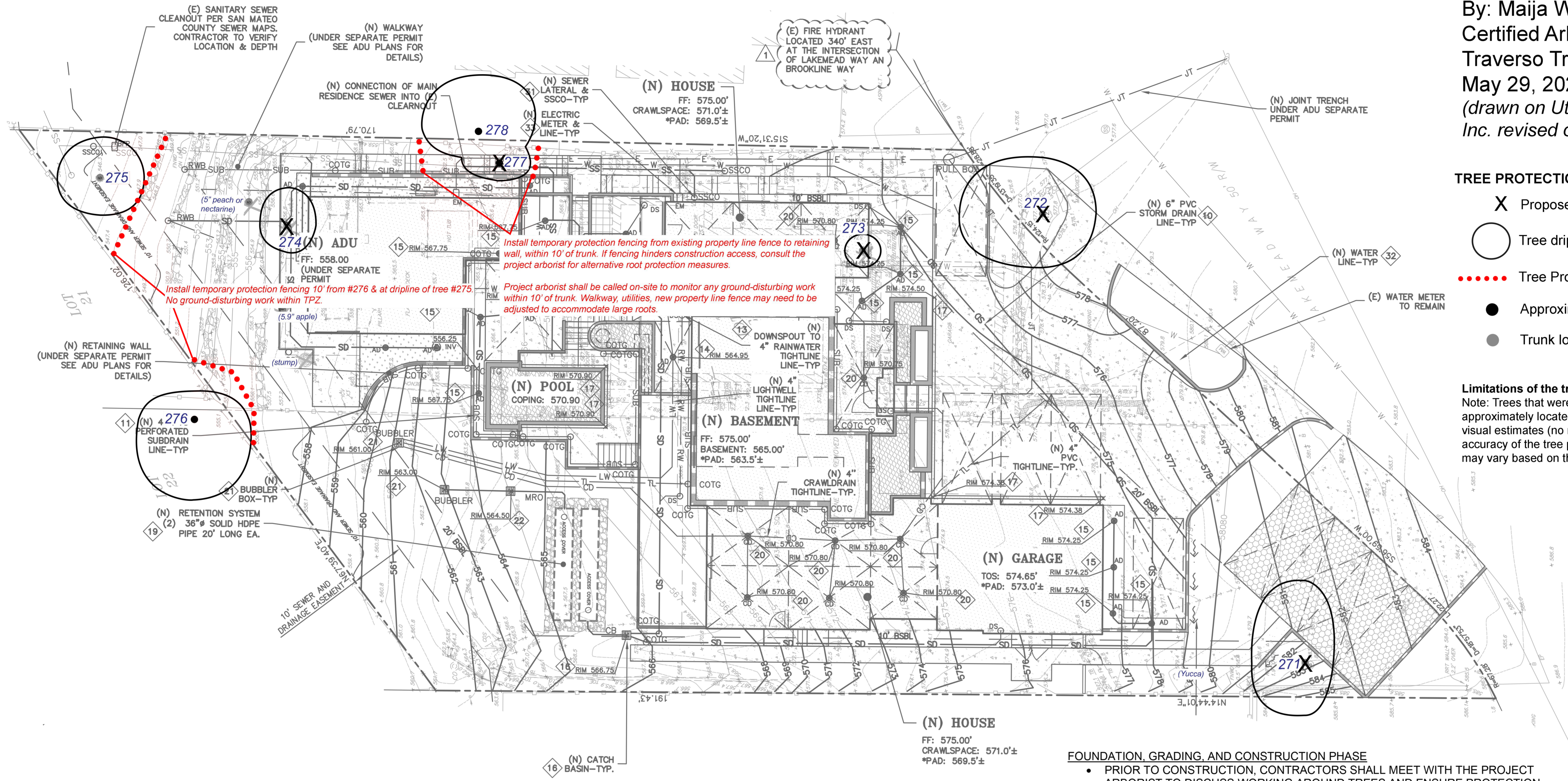
(drawn on Utility Plan by Lea & Braze Engineering, Inc. revised on 4/24/24)

TREE PROTECTION LEGEND

- X Proposed tree removals
- Tree driplines, drawn by arborist
- Tree Protection Zone (temporary 6' chain-link protection fencing)
- Approximate trunk location estimated by arborist
- Trunk location adapted from survey

Limitations of the tree protection plan

Note: Trees that were not surveyed were approximately located by the arborist using visual estimates (no measurements or GPS); accuracy of the tree protection recommendations may vary based on the location accuracy.



TREE PROTECTION RECOMMENDATIONS

PRE-DEMOLITION PHASE

- PRIOR TO DEMOLITION, CONSTRUCTION OR GRADING, CONTRACTOR SHALL INSTALL 6' CHAIN-LINK FENCING TO CONSTRUCT A TEMPORARY TREE PROTECTION ZONE (TPZ) AROUND EACH TREE AS INDICATED ON THE TREE PROTECTION PLAN.
 - FENCING SHALL BE ATTACHED TO METAL STAKES SPACED 10' APART AND DRIVEN FIRMLY INTO THE GROUND. THEY CAN BE SUPPORTED BY STANDS IF OVER PAVEMENT & WIRED TOGETHER TO AVOID EASILY MOVING THEM.
 - IF FENCING HINDERS CONSTRUCTION ACCESS, CONSULT PROJECT ARBORIST FOR ALTERNATIVES INCLUDING A 6" THICK LAYER OF MULCH WITH 3/4" PLYWOOD ON TOP OR USE STEEL PLATES.
- TPZ FENCING SHALL REMAIN IN AN UPRIGHT STURDY MANNER FROM THE START OF GRADING UNTIL THE COMPLETION OF CONSTRUCTION. FENCING SHALL NOT BE ADJUSTED OR REMOVED WITHOUT CONSULTING THE PROJECT ARBORIST.

DEMOLITION PHASE

- REMOVE TREES #271-274 & 277.
 - DO NOT PULL ROOT BALL OF TREE #277 OUT OF GROUND – EITHER LEAVE STUMP OR GRIND OUT TO AVOID DAMAGING ROOTS FROM TREE #278.
- MULCH FROM TREE REMOVALS MAY BE SPREAD OUT UNDER THE DRIPLINES OF TREES THAT WILL BE RETAINED, KEEPING AT LEAST 12" AWAY FROM THE TRUNKS.

FOUNDATION, GRADING, AND CONSTRUCTION PHASE

- PRIOR TO CONSTRUCTION, CONTRACTORS SHALL MEET WITH THE PROJECT ARBORIST TO DISCUSS WORKING AROUND TREES AND ENSURE PROTECTION MEASURES ARE IN PLACE.
- THE PROJECT ARBORIST SHALL BE CALLED ON-SITE TO MONITOR EXCAVATION/GRADING WITHIN 10' OF TREE #278. IF APPROPRIATE, ROOTS SHALL BE CLEANLY PRUNED WITH A HANDSAW OR SAWZALL, IMMEDIATELY COVERED, AND KEPT MOIST TILL BACKFILLED.
- IF NEEDED, PRUNING SHALL BE PERFORMED BY PERSONNEL CERTIFIED BY THE INTERNATIONAL SOCIETY OF ARBORICULTURE (ISA) UNDER PROJECT ARBORIST SUPERVISION. ALL PRUNING SHALL ADHERE TO ISA AND AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARDS AND BEST MANAGEMENT PRACTICES.
- SHOULD TREE PROTECTION ZONE (TPZ) ENCROACHMENT BE NECESSARY, THE CONTRACTOR SHALL CONTACT THE PROJECT ARBORIST FOR CONSULTATION AND RECOMMENDATIONS.
- CONTRACTOR SHALL KEEP TPZS FREE OF ALL CONSTRUCTION-RELATED MATERIALS, DEBRIS, FILL SOIL, EQUIPMENT, ETC. THE ONLY ACCEPTABLE MATERIAL IS MULCH SPREAD OUT BENEATH THE TREES.
- SHOULD ANY DAMAGE TO THE TREES OCCUR, THE CONTRACTOR SHALL PROMPTLY NOTIFY THE PROJECT ARBORIST TO APPROPRIATELY MITIGATE THE DAMAGE.

LANDSCAPING PHASE

- THE TREE PROTECTION ZONE (TPZ) FENCING SHALL REMAIN IN PLACE WITH THE SAME RESTRICTIONS UNTIL LANDSCAPE CONTRACTOR NOTIFIES AND MEETS WITH THE PROJECT ARBORIST.
- AVOID ALL FILL WORK, GRADE CHANGES, AND TRENCHING WITHIN DRIPLINES UNLESS IT IS PERFORMED BY HAND.
- PIPES SHALL BE THREADED UNDER OR THROUGH LARGE ROOTS WITHOUT DAMAGING THEM.